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Contents

Vorwort/Preface <i>The editors</i>	vii
Paradigm gaps: the case of Greek diminutive genitives <i>Artemis Alexiadou</i>	1
Some remarks on the Greek long-distance anaphor <i>ton idhio</i> <i>Elena Anagnostopoulou</i>	11
Here, there, and everywhere? Patterns of partially superfluous extended exponence <i>András Bárány & Paula Fenger</i>	39
An Agree analysis of morphological aspect in Slavic <i>Petr Biskup</i>	55
Strength in the nominal domain <i>Imke Driemel</i>	75
Improper edge features and extraposition <i>Silke Fischer</i>	89
Obligatory adjuncts by partial structure-removal <i>Michael Frazier</i>	107
Zum Abbau der Endung <i>-em</i> <i>Peter Gallmann</i>	125
Unterspezifikation in der althochdeutschen und mittelhochdeutschen Adjektivflexion <i>Jochen Geilfuß-Wolfgang</i>	137
Fiorentino antiagreement does not support a skipping derivation for subject extraction: Suñer 1992 revisited <i>Doreen Georgi & Johannes Hein</i>	149
On split-absolutive <i>Fabian Heck</i>	179

Russian nominal declension revisited <i>Johannes Hein</i>	203
Disjunctions agree differently <i>Anke Himmelreich</i>	225
Prosodic Spell-Out <i>Kyle Johnson</i>	247
Form Copy and wh-dependencies <i>Dalina Kallulli & Ian Roberts</i>	271
Feature gluttony in Senaya differential object marking <i>Stefan Keine</i>	287
Reflections on the scholarly nature of linguistics <i>Tibor Kiss</i>	303
All movement reprojects <i>Gregory M. Kobele</i>	313
External possession in Kipsigis involves movement <i>Maria Kouneli</i>	325
Reanalyzing syntactic ergativity in control and conjunction reduction <i>Lisa Morgenroth & Martin Salzmann</i>	341
Phonological effects of movement gaps <i>Andrew Murphy</i>	365
When cyclicity of operations unearths chains of tone <i>Andrew Nevins</i>	385
Agree and Merge repair Labeling <i>Mariia Privizentseva</i>	407
On FORMCOPY and the form of Copy Raising <i>Marc Richards</i>	423
A cyclic, phase-based approach to coordination structures <i>Luise Schwarzer & Philipp Weisser</i>	449

Telicity-sensitive PPs and double objects <i>Sten Vikner & Caroline Heycock</i>	467
Some qualms about orders and movements <i>Ralf Vogel</i>	477
(NON-)AGENS und (NON-)PATIENS: Über ‚Kasuslinking‘ im Deutschen <i>Bernd Wiese</i>	489
The typology of opacity and Containment Theory <i>Eva Zimmermann & Jochen Trommer</i>	503

Vorwort

Der vorliegende Band enthält eine Sammlung von Papieren zu grammatiktheoretischen Themen, die Gereon Müller anlässlich seines 60. Geburtstags gewidmet sind. Sie sind verfasst von 35 seiner (ehemaligen sowie gegenwärtigen) KollegInnen und/oder Studierenden, um Gereon auf diese Weise Dankeschön zu sagen: für sein Engagement, seine Unterstützung und seine immerwährende Bereitschaft, neue (und alte) Ideen jedweder Couleur und Provenienz zu diskutieren.

Nicht alle Beiträge des vorliegenden Bandes haben einen direkten inhaltlichen Bezug zu Gereons Arbeiten (obwohl das bei vielen der Fall ist). Gereon selbst, so glauben wir zu wissen, macht es die größte Freude, eine originelle, durchdachte und explizite grammatiktheoretische Analyse nachvollziehen zu können, ob sie nun unmittelbar mit seiner Forschung verbunden ist oder nicht. In gewisser Weise folgt der Band damit Gereons Diktum “Lieber ein guter Phonologie-Vortrag als ein schlechter Syntax-Vortrag”.

Der Titel des Bandes, *Strict Cycling*, enthält eine doppelte Anspielung: zum einen auf Gereons Leidenschaft für den Radsport, zum anderen auf die grammatiktheoretische Bedingung des strikten Zyklus, die in seiner Forschung einen prominenten Platz einnimmt (z.B. Müller 2023).

Gereon studierte germanistische und slawistische Sprachwissenschaft sowie Philosophie an der Goethe-Universität Frankfurt am Main und deutsche und Allgemeine Sprachwissenschaft an der Universität Konstanz. Bevor er im Jahre 2004 eine Professur für Allgemeine Sprachwissenschaft an der Universität Leipzig antrat, arbeitete er als wissenschaftlicher Angestellter an den Universitäten in Konstanz und Tübingen, als Heisenberg-Stipendiat an der Universität Stuttgart sowie am Institut für Deutsche Sprache (IDS) in Mannheim. Sein Interesse galt seit jeher der Grammatiktheorie, insbesondere der Syntax und, etwas später, der Morphologie. Dabei liegt sein Hauptaugenmerk nicht auf den viel diskutierten Dichotomien Form vs. Funktion, sprachspezifisch vs. sprachunabhängig, erlernt vs. universalgrammatisch oder regelbasiert vs. konstruktionsbasiert. Für Gereon ist vielmehr die Abstraktheit

Strict Cycling: A Festschrift for Gereon Müller, vii–xviii

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser (eds.)

STRICT CYCLING, Universität Leipzig 2024

der Analyse entscheidend (Müller 2007b): Abstrakte Theoriebildung erlaubt Generalisierungen über scheinbar verschiedene Phänomene, oberflächennahe Analysen erlauben dies nicht.

Im Folgenden wollen wir in groben Zügen (und ohne Anspruch auf Vollständigkeit) einen chronologischen Einblick in Gereons bisheriges Werk geben. Daraus wird nicht nur Gereons enorme Schaffenskraft ersichtlich, sondern gleichzeitig seine eindrucksvolle Fähigkeit, sich immer wieder in wechselnde Forschungskontexte einzupassen und sich auf diese Weise neue Forschungsgebiete zu eigen zu machen.

Als Ausgangspunkt wählen wir hier Gereons Tübinger Dissertation (Müller 1993). Diese entsteht vor dem Hintergrund von Chomskys Rektions-Bindungs-Theorie, und einige der Ideen darin finden sich auch in Aufsätzen Gereons aus dieser Zeit, siehe etwa Müller (1991, 1992), Müller & Sternefeld (1993, 1994). Während die Rektions-Bindungs-Theorie eine in weiten Teilen repräsentationelle Theorie ist, so vollzieht sich Mitte der 90er Jahre mit Chomskys Minimalistischem Programm die Neuorientierung zu einer eher derivationell organisierten Grammatiktheorie. Dieser Paradigmenwechsel wird in Gereons Habilitation (ebenfalls Tübingen, Müller 1996b; siehe auch Müller 1996a, 1998) aufgegriffen und durch eine Analyse von Restbewegungskonstruktionen motiviert. Die Idee, dass eine derivationelle Sichtweise manchen Vorzug gegenüber einer repräsentationellen hat, findet sich als Leitmotiv auch in späteren Arbeiten Gereons immer wieder (etwa Müller 2009, 2010, 2014, 2015a, 2017c, 2020b, Georgi & Müller 2010, Assmann et al. 2015, Börjesson & Müller 2020, Gleim et al. 2023). Vielleicht wichtigster empirischer Beitrag der Arbeit ist die Formulierung einer Beschränkung über Restbewegung, heute in der Literatur oft als “Müller-Takano-Generalisierung” bezeichnet.

Weitere Aspekte des Minimalistischen Programms der ersten Tage, die Gereons Interesse wecken, sind die Konzepte von Ökonomie und Wettbewerb (Müller 1996c, Müller & Sternefeld 1996, 2001). Als ebenfalls Mitte der 90er Jahre die ersten Vorschläge dazu gemacht werden, wie die Optimalitätstheorie von Prince und Smolensky, ursprünglich für die Phonologie entwickelt, auch für die Syntaxforschung fruchtbar gemacht werden kann, erkennt Gereon das Potential der Theorie, diese Konzepte zu explizieren. Schnell entwickelt er sich zu einem international anerkannten Experten auf dem Gebiet der optimalitätstheoretischen Syntax, veröffentlicht in den folgenden Jahren (und auch später immer wieder) zahlreiche wegweisende Aufsätze (z.B. Müller 1997a,b, 1999a,b, 2000a, 2001, 2002a,b,e, 2015c), schreibt das bisher wohl

einziges Lehrbuch zu diesem Thema in deutscher Sprache (Müller 2000b) und leitet (zusammen mit Sten Vikner) ein gleichlautendes DFG-Projekt an der Universität Stuttgart. Zwar ist die Optimalitätstheorie ursprünglich rein repräsentationell formuliert, eine derivationelle Interpretation ist aber durchaus denkbar. Tatsächlich werden in den folgenden Jahren etwa zeitgleich und doch unabhängig voneinander solche Modelle für die Phonologie (McCarthy's Harmonischer Serialismus) und die Syntax (lokale Optimierung) entwickelt. Wieder ist Gereon eine der treibenden Kräfte dieser Entwicklung im Bereich der Syntax, die er über die folgenden Jahre auch weiterverfolgt (siehe etwa Müller 2000c, 2002c, 2003a, 2004c, Heck & Müller 2000, 2003, 2007).

Im Jahre 2000 verlässt Gereon die Universität Stuttgart und geht ans IDS in Mannheim. Zwar ist er dort Mitglied der Abteilung "Grammatik", jedoch ist der Kontext, in dem er nun arbeitet, ein gänzlich anderer als zuvor. In dieser Zeit erschließt sich Gereon mit der theoretischen Flexionsmorphologie ein vollkommen neues Forschungsgebiet in der ihm typischen gründlichen und systematischen Weise. Die ersten Publikationen hierzu entstehen dann auch bereits am IDS (siehe etwa Müller 2002d, 2003b, 2004a,b, 2005). Das Interesse an der Theorie der Flexion soll ihn von da an nicht mehr loslassen, und so veröffentlicht er auch in den Jahren nach seinem Weggang vom IDS ständig neue Arbeiten zur Flexionsmorphologie (Müller 2006a,b, 2007a,c, 2011, 2013a,b, 2020a, Alexiadou & Müller 2008, Hein & Müller 2009, Opitz et al. 2013, Keine & Müller 2020, Grofulović & Müller 2023), letztendlich auch mit der Vision einer einheitlichen Theorie (vom Typ Harmonischer Serialismus) für Syntax, Morphologie und Phonologie (vgl. Müller 2020b).

Nach vier Jahren am IDS tritt Gereon 2004 eine Professur für Allgemeine Sprachwissenschaft an der Universität Leipzig an, und er bleibt ihr, bis zum heutigen Tag, über 20 Jahre lang treu. Während dieser Zeit treibt er eine Vielzahl von Forschungsunternehmungen voran, in Form von Einzelprojekten, aber auch in der Verbundforschung, in jeweils wechselnde Forschungskontexte eingebettet. Im Folgenden wollen wir exemplarisch zwei Projekte der jüngeren Vergangenheit herausheben, auch weil wir denken, dass sie Gereon besonders am Herzen liegen.

Da ist zunächst das DFG-Graduiertenkolleg "Interaktionen grammatischer Bausteine" (IGRA), welches über 10 Jahre lang gefördert wurde und eine Vielzahl von Veröffentlichungen sowie Dissertationen zu grammatiktheoretischen Fragestellungen hervorbringt. Gereon agiert als Sprecher des Graduiertenkollegs, und er geht diese Unternehmung mit viel Engagement und Kreativität an.

Die Ausbildung des wissenschaftlichen Nachwuchses ist ihm ein großes Anliegen. Man kann mit Fug und Recht behaupten, dass insbesondere das Institut für Linguistik in Leipzig, aber auch andere Institute an der philologischen Fakultät in Leipzig, von den vielen Vorträgen, Kompaktkursen und Veranstaltungen, die im Rahmen von IGRA stattfinden, enorm profitierten. Ohne Gereon wäre IGRA nicht durchführbar, wahrscheinlich noch nicht einmal denkbar gewesen. Gereons Idee, die dem Konzept des GKs zugrundeliegt, ist es, dass sich verschiedene Grammatiktheorien nach der Art und Weise klassifizieren lassen, in der die ihnen zugrundeliegenden Annahmen (“Bausteine”) miteinander interagieren (vgl. Müller 2015b). Das Konzept ergibt sich also aus der typisch Gereonschen Vorgehensweise, wissenschaftliche Theorien in Taxonomien zu organisieren (vgl. Müller 2013a).

Als zweites möchten wir gerne das DFG-Einzelprojekt “Strukturabbau in der Syntax” erwähnen. Dieses Projekt illustriert eine weitere von Gereons Strategien, Forschungsideen zu generieren, die darin besteht, dass man etablierte Forschungsannahmen auf den Kopf stellt und die Schlussfolgerungen, die sich daraus ergeben, konsequent zu Ende zu denkt. So werden in einigen Spielarten der generativen Syntax Phrasenstrukturen nicht einfach vorausgesetzt, sondern zunächst einmal durch ein Verfahren erzeugt. Man findet zwar in der syntaktischen Literatur vereinzelt Ansätze, die neben dem Verfahren des Strukturaufbaus auch das Gegenteil postulieren, also eine Operation des Strukturabbaus; eine generelle Theorie des Strukturabbaus und eine Übersicht der Phänomene, die sich für eine Analyse in Form von Strukturabbau anbieten, gab es aber lange Zeit nicht. Ziel des Projekts über Strukturabbau war es, diese Lücke in der Forschungslandschaft zu schließen. Einige Ergebnisse lassen sich in Müller (2016a,b, 2017b, 2018, 2024a) einsehen.

Zum Abschluss sei noch kurz erwähnt, dass Gereon das nächste Projekt schon in Angriff genommen hat: eine Anwendung der Theorie der Gradienten Harmonischen Grammatik auf die Syntax (Müller 2017a, 2019, 2022, 2024b, Müller et al. 2022). Wir sind gespannt und freuen uns auf all das, was noch kommt.

Herzlichen Glückwunsch zum Geburtstag, Gereon!

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser

November 2024

Preface

This volume contains a collection of papers on theoretical linguistics dedicated to Gereon Müller on the occasion of his 60th birthday. They have been written by 35 of his colleagues and students (past and present) with the goal of thanking him for his passion, support and unwavering willingness to discuss new (and old) ideas of all kinds and theoretical persuasions.

While not all of the contributions to this volume have an obvious direct connection to Gereon's work (although many of them do), we believe that Gereon will still take great enjoyment from being able to work through original, well thought out, explicit theoretical analyses, regardless of whether or not they are directly related to his work. In this way, the present volume follows a personal dictum of Gereon's: "Give me a good phonology talk over a bad syntax one".

The title of the volume, *Strict Cycling*, alludes to two important things in Gereon's life: his passion for all things bicycle-related, and the Strict Cycle Condition, something which has played a central role in his research (e.g. Müller 2023).

Gereon studied German and Slavic linguistics as well as philosophy at the Goethe University Frankfurt and the University of Konstanz. Before becoming professor of general linguistics at Leipzig University in 2004, he worked as a researcher at the universities of Konstanz and Tübingen, the University of Stuttgart (as a Heisenberg fellow), and at the *Institut für deutsche Sprache (IDS)* in Mannheim. His prevailing research interests have been in grammatical theory, with a particular focus on syntax and, somewhat later, on morphology. The main focus of his research is not the much discussed dichotomies of form vs. function, language-specific vs. language-independent, acquired vs. innate or rule-based vs. construction-based. Instead, it is the abstractness of analysis that is crucial for him (Müller 2007b): Abstract theories allow for generalizations about apparently disparate phenomena, while surface-oriented ones do not.

In what follows, we will try to give a rough (and certainly non-exhaustive) chronological overview of Gereon's research thus far. This will shed light not only on Gereon's incredible creativity but also on his impressive ability to

continually adapt to an ever-changing research landscape and thereby embrace new research topics.

As our starting point, let us take Gereon's doctoral dissertation completed in Tübingen (Müller 1993). This work was carried out against the backdrop of Chomsky's Government and Binding Theory. Some of the ideas in the dissertation found their way into Gereon's publications from this period, see e.g. Müller (1991, 1992), Müller & Sternefeld (1993, 1994). While GB was a predominantly representational theory, after Chomsky's Minimalist Program in the mid-90s, the tide turned towards derivational approaches to grammatical analysis. This paradigm shift is picked up in Gereon's habilitation thesis (also completed in Tübingen; Müller 1996b; and later published as Müller 1996a, 1998) and supported by his analysis of remnant movement constructions. The idea that a derivational perspective has several advantages over a representational one is a theme that emerges repeatedly in Gereon's later work (e.g. Müller 2009, 2010, 2014, 2015a, 2017c, 2020b, Georgi & Müller 2010, Assmann et al. 2015, Börjesson & Müller 2020, Gleim et al. 2023). Perhaps the most important empirical aspect of his habilitation project is the formulation of a constraint on remnant movement that has come to be known as the "Müller-Takano Generalization".

Further aspects in the early days of the Minimalist Program that piqued Gereon's interest were the concepts of economy and competition (Müller 1996c, Müller & Sternefeld 1996, 2001). As the first proposals were being made in the mid-90s about how to take Prince and Smolensky's 'Optimality Theory', originally developed for phonology, and turn it into a fruitful approach to syntactic research, Gereon quickly recognized the potential that this theory had to help understand these phenomena. In no time, he had transformed himself into an internationally-recognized authority on optimality-theoretic syntax and began (and still continues) to publish countless foundational papers on OT in the years that followed (e.g. Müller 1997a,b, 1999a,b, 2000a, 2001, 2002a,b,e, 2015c). He also wrote perhaps the only textbook on this topic in German (Müller 2000b) and led (together with Sten Vikner) a related DFG-project at the University of Stuttgart.

While the formulation of OT was originally purely representational, a derivational understanding of it was also perfectly conceivable. In the years that followed, this was pursued simultaneously yet independently for phonology (McCarthy's 'Harmonic Serialism') and syntax (local optimization). Once again, Gereon was one of the driving forces behind this development on the

syntax side, which he continued to pursue in the years that followed (Müller 2000c, 2002c, 2003a, 2004c, Heck & Müller 2000, 2003, 2007).

In the year 2000, Gereon left the University of Stuttgart and went to the IDS in Mannheim. While he was part of the department for ‘grammar’, the context in which he was working was an entirely different one to before. In this time, Gereon took on a completely new area of research in the form of inflectional morphology and did so in his usual thorough and systematic fashion. His first publications in this new subfield already appeared during his time at the IDS (see e.g. Müller 2002d, 2003b, 2004a,b, 2005). This newly found interest in the theory of inflectional morphology had clearly taken hold and he continued to continuously publish work on inflectional morphology after he eventually left the IDS (Müller 2006a,b, 2007a,c, 2011, 2013a,b, 2020a, Alexiadou & Müller 2008, Hein & Müller 2009, Opitz et al. 2013, Keine & Müller 2020, Grofulović & Müller 2023), which culminated in the pursuit of a unified theory (in terms of Harmonic Serialism) for syntax, morphology and phonology (cf. Müller 2020b).

After four years at the IDS, Gereon took up a professorship in general linguistics at Leipzig University in 2004 and, after 20 years, is still there to this day. During this time, he was central in instigating a multitude of research endeavours in the form of individual projects but also collaborative research, each situated in their own unique research context. In what follows, we will highlight two recent projects that we believe are particularly close to Gereon’s heart.

The first is the DFG research training group (*Graduiertenkolleg*) “Interaction of Grammatical Building Blocks” (IGRA), which was funded for 10 years and resulted in a great number of dissertations and publications on different questions in theoretical linguistics. Gereon acted as head of the research training group and did so with great commitment and creativity. Developing the next generation of linguists is something near and dear to him. It is fair to say that the linguistics department, but also the other philologies in Leipzig, have profited immensely from the various talks, compact courses and events that were organized as part of IGRA. With Gereon, IGRA would not have been possible, or probably even conceivable. Gereon’s idea, which is at the heart of IGRA, was that different theories of grammar can be categorized in terms of how their foundational assumptions (‘building blocks’) interact (see Müller 2015b). This concept emerges from the typical Gereon method of arranging scientific theories in taxonomies (see Müller 2013a).

The second project we want to mention is the DFG-funded ‘Structure Removal in Syntax’. This project perfectly illustrates another of Gereon’s strategies for generating research ideas. It consists of taking existing theoretical assumptions, turning them on their heads, and pursuing the consequences to their logical conclusion. In certain variants of generative syntax, phrase structure is not simply assumed, but must be generated by some procedure. Although one finds sporadic instances in the literature in which, alongside structure-building operations, the opposite is assumed, a general theory of structure removal and an overview of the phenomena amenable to such an analysis did not exist for a long time. The goal of the structure removal project was to fill this gap in the literature. Some of the fruits of this endeavour can be found in Müller (2016a,b, 2017b, 2018, 2024a).

To conclude, we should also mention that Gereon has already taken on his next project: an application of the theory of Gradient Harmonic Grammar to syntax (Müller 2017a, 2019, 2022, 2024b, Müller et al. 2022). We are excited to see what will become of this and everything else that is still to come.

Happy Birthday, Gereon!

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser

November 2024

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Paradigm gaps: the case of Greek diminutive genitives

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Abstract

In this paper, I discuss paradigm gaps observed in the formation of Greek diminutives as well as other derived nouns ending in *-i*: these nouns lack both genitive singular and genitive plural forms. While the latter form is deficient in several paradigms of the Greek nominal system, the gaps observed with respect to the genitive singular is observed only within this noun class and thus constitutes a morpho-phonological puzzle. I will discuss the factors that lead to this and explore an account that relies on conflicting stress requirements.

1. Introduction

Paradigm gaps in inflectional morphology have received a lot of attention, especially in Optimality Theoretical approaches to morphology (see the discussion and references in Müller (2020)). This paper deals with a particular type of gap observed with genitive formation in Greek.

The existence of genitive gaps in Greek has been acknowledged and discussed by several authors, see Thomadaki (2012) and Mertyris (2014) for an overview. A first systematic classification is offered in Sims (2006). Sims is primarily concerned with gaps in the formation of plural genitives in Greek. In her work, she distinguishes between two types of nouns, illustrated here in (1a–b). In (1a), the nominative bears stress on the antepenultimate, which is considered by many the default stress in Greek, see Revithiadou (1999) for discussion. The genitive singular causes stress to shift to the penultimate. The genitive plural follows the stress pattern of the genitive singular. By contrast, in (1b) the nominative and the genitive singular bear stress on the penultimate, while in the genitive plural stress shifts to the ultimate. Thus, the pattern of the plural does not follow that of the singular and cannot be predicted. According to Sims, gaps occur when a particular form is not predicted by other forms.

*From me, to you. A puzzle you might enjoy solving, in gratitude for a decades-long friendship.

Specifically, gaps are found when the genitive plural is badly predicted: for those nouns that bear stress in the same syllable in genitive singular as in genitive plural, there is no gap, as in (1a). However, when the stress pattern in the plural deviates from that of the singular, as in (1b), then gaps in the plural may emerge.

(1)	a.	prósopo	prosópu	prosópon
		face.NOM	face.GEN.SG	face.GEN.PL
	b.	mitéra	mitéras	??míterón
		mother.NOM	mother.GEN.SG	mother.GEN.PL

The puzzle I discuss here concerns the formation of diminutives, but also other derived forms, which show a gap both in the genitive singular and in the genitive plural. As detailed in Thomadaki (2012) and Mertyris (2014), this affects a particular sub-class of diminutives; as we will see, it also affects other derived nouns that belong to the same inflection class, specifically those ending in *-i*. While arguably, as Thomadaki (op.cit.) points out, Sims's implicational hierarchy predicts that if the singular is defective, the plural will also be defective, it is not entirely clear why this particular class of diminutives and derivatives is affected and no other diminutive/derived forms.

The paper is structured as follows: in section 2, I will discuss diminutive formation in Greek by paying particular attention to the defective paradigm. I will also introduce the other forms that show similar gaps. In section 3, I will present a morpho-syntactic analysis of Greek diminutives. In section 4, I will then turn to a more detailed discussion of the gap under investigation. In section 5, I will conclude my discussion.

2. Greek diminutive formation

As detailed in Triandafilidis (1926), Melisaropoulou & Ralli (2008), Thomadaki (2012), Mertyris (2014), Tsompanidou (2022) among others, diminutive nouns in *-áki* belong to well-known cases of defective nouns in Modern Greek. This affix is also the most productive diminutive formative, other affixes being *-úla*, *-ítsa* (both feminine) and *-úlis* and *-ákos* (both masculine). *-áki*, unlike these other affixes, can attach to masculine, feminine and neuter nouns and always creates neuter diminutives. By contrast, *-úla/-ítsa* and

-úlis/-ákos only attach to feminine and masculine nouns respectively, (2-3), (examples from Thomadaki 2012:551):

- (2) a. domata (FEM) bala (FEM)
tomato ball
- b. papus (MASC) anthropos (MASC)
grandfather man
- c. trapezi (NEUT)
table
- (3) a. domat-úla ‘small tomato’, bal-ítsa ‘small ball’ (FEM)
- b. pap-úlis ‘dear grandpa’ anthrop-ákos ‘poor little man’ (MASC)
- c. domat-áki (NEUT) ‘special kind of small tomatoes’
anthrop-áki (NEUT) ‘miserable little man’
trapez-áki (NEUT) ‘small table’

While the feminine diminutives formed by the affixes *-úla*, *-ítsa* lack genitive plural forms, *-áki* formatives also lack the singular genitive, (4b). The fact that feminine diminutives lack the genitive plural is captured by Sims’s hierarchy: the stress pattern of the genitive plural deviates from that of the genitive singular, see (4b–d). This is not the case with the masculine diminutives, (4e), which have both genitive forms:

- (4) a. trapezáki domatúla
table.DIM tomato.DIM
- b. *trapezakjú domatúlas
table.DIM.GEN tomato.DIM.GEN
- c. trapezákja domatúles
table.DIM.PL tomato.DIM.PL
- d. *trapezakjón *domatulón
table.DIM.GEN.PL tomato.DIM.GEN.PL
- e. agelákos ageláku agelákon
angel.DIM angel.DIM.GEN angel.DIM.GEN.PL

Mertyris (2014:162) points out that there are further derivatives in *-i* that show similar gaps, shown in (5). These affixes create neuter nouns out of adjectives, and nouns. Another neuter diminutive affix, namely *-údi*, is also included in

this list. Thus, the pattern is more general and affects all **derivational** forms that belong to Ralli's (2000) inflectional class VI (see also Alexiadou & Müller 2008):

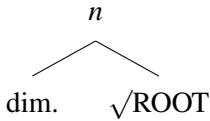
- (5) *-ádi*: kokinádi ('red make-up'): ?kokinadiú/-on (<kokinos 'red')
-ári: katostári ('100 meters'): ?katostar-iú/ -on (<ekato 'one hundred')
-éli: kokinéli ('red wine'): ?kokineliú/ -on (<kokinos 'red')
-ídi: vrisídi ('tirade/ swearing'): ?vrisid-iú/ -on (<vrisia 'swearword')
-íki: arhontaríki ('monastery dorm'): ?arhontarik-iú/ -on (<arhontaris 'monk')
-líki: arhigilíki ('chieftainship' / 'pretending to be the chief'): *arhigilik-iú -on (<arhigos 'captain/ chief')
-údi: agelúdi ('little angel'): *ageludiú/ -on (<agelos 'angel')
-úli: mikrúli ('littlesie'): ?mikruliú/ -on (<mikros 'little')

In all the above examples, as in the case of *-áki*, the affixes bear stress, a point I will come back to. In all, genitive formation requires stress shift both in the singular and in the plural. Importantly, however, as Thomadaki (2012) argues, this cannot be the explanation for the gaps, as stress shift also affects other nominal forms in *-i*, which are non-derived, e.g., *spíti-spitjú* 'house/house.GEN'. Rather there must be something special about the singular genitive formation of the diminutive in particular and of derivative forms of class VI more in general.

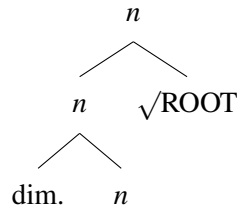
3. Two types of diminutives

It has been argued by e.g., Wiltschko & Steriopolo (2007), Steriopolo (2008) that diminutives come in two types. Some are heads, while some are adjuncts to a head. According to these authors, the status of diminutive affixes is determined on the basis of three diagnostics: i) Do they change syntactic category? ii) Do they change grammatical gender? and iii) Do they change declension class? If the answer to these questions is yes, then the diminutive affix realizes n, i.e., it is a head, as in (6). If the answer is no, then there is evidence for adjunction to n, as in structure (7).

(6) **Diminutives as heads**



(7) **Diminutives as adjuncts**



According to Wiltschko & Steriopo (2007), German *chen/-lein* are diminutives that show properties of heads: they change the gender of the noun they attach to, basically they only derive neuter nouns (8–9):

(8) a. **masculine**

der klein-er Tisch
 the little table
 ‘the little table’

b. **neuter**

das Tisch-chen/-lein
 the table.DIM/DIM
 ‘the little table’

(9) a. **feminine**

die klein-e Flasche
 the little bottle
 ‘the little bottle’

b. **neuter**

das Fläsch-chen/-lein
 the bottle.DIM
 ‘the little bottle’

In Spanish, as discussed in Kramer (2015) and Vadella (2016), certain diminutive affixes preserve the gender of the base. In addition, these affixes attach to a variety of categories, e.g., nouns, adjectives and adverbs, see (10). This is taken as evidence for the adjunct status of the affix:

(10) **Base form** **Diminutive form**

casa	casita	house
chico	chiquito	small
pronto	prontito	soon

Building on Melisaropoulou & Ralli (2008), in Alexiadou (2020) I adopted Kramer’s analysis of diminutive affixes as realizing *n* and showed that *-áki* is similar to *-chen/-lein*, as it changes the gender of the noun it attaches to. On the basis of this analysis, *-áki* should be represented as in (6). By contrast, *-úla* and *-ítsa* behave like adjuncts and could be analyzed as in (7). The masculine affix *-ákos* causes a shift in inflection class, and thus may also be analyzed as

in (6). Support for this analysis of *-áki* comes from further similarities between *áki* and *chen/-lein*. For instance, as Melisaropoulou & Ralli (2008) show, *-áki* changes mass nouns to count nouns, (11), as does *-chen*; it may also change the interpretation of the base noun, as in *melindzan-áki* 'little-eggplant', which also has an interpretation as a particular type of eggplant based sweet:

- (11) a. psom-i psom-ak-i
bread bread.DIM
b. Agorasame dio psomakia
bought-1PL two little breads
'We bought two rolls.'

The affixes in the examples in (5) are clearly all derivational and thus realize an n head and may receive a morpho-syntactic analysis as in (6). I furthermore assume, following Kramer (2015) and Alexiadou (2017), that inflection class information is located on n and is inserted post-syntactically, contra Alexiadou & Müller (2008).

On the basis of this, we can formulate the generalization in (12):

- (12) Genitive singular gaps are found with head-type derivational affixes that yield class VI nouns.

In other words, in agreement with Thomadaki (2012), there is a link between singular genitive gaps and derivational morphology. In support of this, Tsompanidou (2022) notes that when the diminutive affix is semantically transparent, there will most likely be a gap in the formation of the genitive singular. By contrast, when the affix is no longer transparent, there will be no gap. The latter is the case in nouns such as *pagáki* 'bench': here the affix is no longer semantically transparent and thus genitive formation is more acceptable, as Tsompanidou details.

(12) allows us to also maintain Sims's implicational hierarchy and explain the absence of the genitive plural with the derivatives under investigation on the basis of the absence of the singular: since the plural form is based on the presence of the genitive singular, the absence of the singular entails the absence of the plural. The question then is why the genitive singular form is ineffable.

4. The formation of the genitive singular in class VI

Let me now take a closer look at the formation of the genitive singular. Mertyris (2014) establishes a correlation between the presence of a genitive gap and synzesis: specifically, he points out that the gap in genitive formation appeared only in certain dialects of Greek, namely those that also developed synzesis, see (13), which represents Standard Modern Greek. (13) is very telling as it clearly shows that the non-derived noun *pedí* ‘child’ can form the genitive singular, while the derived from *pedáki* ‘child.DIM’ cannot, although they both belong to the same inflection class, namely VI:

(13)		–SYNIZESIS (before 13th c.)		+SYNIZESIS (after 13th c.)
n./a.sg	pedí-(n)	ped-áki-(n)		pedí-Ø ped-áki-Ø
gen.sg	pedí-u	ped-akí-u		pedi-ú —
n./a.pl	pedí-a	ped-áki-a		pedi-á ped-áki-a
gen.pl	pedí-on	ped-akí-on		pedi-ón —

By contrast, in the dialect of Kymi (Central Euboea), the diminutive suffixes *-ági* and *-átsi* have fully productive genitives, e.g., *kosif-ági* (<kosífi ‘blackbird’)/ gen.sg *kosifag-í-u*/ gen.pl *kosif-agí-on*.

Thus, it seems to that the problem arises in the contexts where we would have a *i->j* alternation, i.e., glide formation, in the genitive form of a noun that involves a derivational affix, see Ralli (2000), Revithiadou (1999), van Oostendorp (2012), Topintzi & Baltazani (2014) and references therein. The *i->j* alternation is observed in class VI in the case of non-derived forms. As Topintzi & Baltazani (2014) note, in some cases, hiatus is permitted, e.g., with nouns ending in *-o*, *pedío–pedíu* ‘field’, class V in Ralli (2000); however, in class VI, paradigm uniformity, which requires that the number of the syllables of the noun remains constant across the paradigm, may cause its resolution, e.g., [peðí] – [peðjú] *[peðiú] ‘child’.

The gap observed cannot be further accessed without making the following observations concerning Greek nominal stress. van Oostendorp (2012:1169), following Revithiadou (1999), summarizes this as follows: in Greek “there are three different types of roots: (i) unaccented, (ii) accented, (iii) post-accenting. Different from e.g., Germanic languages like English, Greek requires all lexical words to consist of more than one morpheme: at least a root and a

desinence, denoting case, gender and lexical class in the case of nouns. Since all morphemes can be marked or unmarked for underlying stress, and since every word will contain exactly one stress, we need a calculus on how to derive this one lexical stress from the underlying specifications. In particular, if several morphemes have underlying stress, how do we decide which of those underlying markings we want to preserve?”

Revithiadou (1999) puts forth the following proposal for derivational and inflectional affixes: the former are heads and thus erase the stress of the stem, while the latter are not heads, and thus always lose to the stress of the stem, in which case, the stress will be determined by the root. The stress pattern of the genitive singular of class VI is classified as pre-accented. In this class, /i/ loses its vocalic status in the genitive, and as described in Revithiadou (1999), the stress will move to another vocalic peak of the same morpheme. This is what happens in the non-derived nouns of class VI, i.e., [peðí] – [peðjú].

Consider now the diminutives and let us concentrate on the forms that both Revithiadou and I analyze as heads, namely the neuter and the masculine. In the case of the masculine diminutive, the derivational affix combines with the pre-accenting genitive inflectional suffix, the stress is always on the derivational affix regardless of the stress requirements of the latter, see (14), and see Revithiadou (1999) for details.

(14)	ágelos	agel-ákos	agel-ák-u
	angel	angel.DIM.MASC	angel.DIM.GEN

In class VI neuter derived nouns, an inflectional pre-accenting genitive affix combines with a derivational morpheme, but now the *i*→*j* alternation would apply and as a result /i/ would lose its vocalic status. And now we have two conflicting requirements and as a result ineffability: the stress must move to another vowel of the same morpheme, but derivational affix stress must win, see also Kara (2006), who argues that the ineffability results from a stress conflict between the stress of the affix and the stress pattern of the genitive. Note that this conflict also arises with the other affixes discussed in Mertyrís (2014): if the head *n* is realized by an overt affix carrying stress, genitive formation is blocked, because of conflicting stress requirements that cannot be resolved. If hiatus is allowed, then the genitive formation will be possible.

5. Conclusions

In this paper, I discussed a gap observed in the formation of Greek diminutives as well as other derived nouns ending in *-i*: this noun class thereof lacks both genitive singular and genitive plural, but only in the case of derived nouns. While the latter form is deficient in several paradigms, the gap observed with respect to the genitive singular is characteristic of a particular noun class and thus constitutes a morpho-phonological puzzle. I explored an explanation that capitalizes on the head status of the affixes involved, which requires that stress remains on the affix. This requirement is in conflict with the formation of the genitive, an inflectional affix that is pre-accenting in Revithiadou's (1999) terms, and which forces glide formation and stress shift in class VI neuter nouns. As a result, a stress-conflict emerges that cannot be resolved and thus the singular genitive cannot be formed. Because this form is ineffable, the plural form cannot be formed, following Sims (2006).

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Some remarks on the Greek long-distance anaphor *ton idhio*

Elena Anagnostopoulou*

1. The Greek Anaphoric/Pronominal System and *ton idhio* as a ‘Principle D’ element

Greek has two expressions that need to be bound, a local and a long-distance one, *ton eafto mu* (‘the self my’) and *ton idhio* (‘the same’), respectively (data from Iatridou 1986):

- (1) O Janis_j theli [o Vasilis_k na voithisi ton eafto tu_{*j/k}]
the Janis wants the Vasilis-NOM SUBJ¹ helps the self his
‘John wants Bill to help himself’
- (2) O Janis_j theli [o Vasilis_k na voithisi ton idhio_{j/*k}]
the Janis wants the Vasilis-NOM SUBJ helps the same
‘John wants Bill to help him’

*This paper expands on material contained in a joint publication with Martin Everaert (2013) ‘Identifying Anaphoric Dependencies’ (in Cheng & Corver eds. *Diagnosing Syntax* OUP) and contains observations included in section 17.5 (358–368). However, the properties of *o idhios* are discussed here in much greater detail, and there is discussion of the logophoric properties of *o idhios* in the context of a typology of logophors missing from that publication. I wrote this paper quite some time ago and always wanted it to be published. I am glad I have the opportunity to do this in honor of Gereon, a colleague I very much respect and admire for his work; one of the people from my generation that I have known for a long time and has always been supportive to me and interesting to interact with when we met.

Strict Cycling: A Festschrift for Gereon Müller, 11–38

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser (eds.)

STRICT CYCLING, Universität Leipzig 2024

¹SUBJ = subjunctive marker, *na* marks subjunctives in Greek. Greek subjunctives subsume many uses of infinitives (Greek doesn’t have infinitives) and differ from Romance and Germanic subjunctives in a number of important respects. See Philippaki-Warbuton & Veloudis 1984, Iatridou 1988/1993, Varlokosta 1994, Terzi 1992, Tsoulas 1993, Philippaki & Catsimali 1999, Alexiadou & Anagnostopoulou 1999, Roussou 2009, Alexiadou et al. 2012, among others.

Greek also has two distinct series of pronouns. (i) Personal pronoun clitics occurring as objects, possessives and complements of certain prepositions. They fall under Principle B:

- (3) *O Janis_j theli [o Vasilis_k na ton_{j/*k} voithisi]*
 the Janis wants the Vasilis-NOM SUBJ him helps
 ‘John wants Bill to help him’

(ii) The strong pronoun *aftos-i-o* is deictic, but can also be construed as a regular personal pronoun falling under Principle B (see e.g. Varlokosta 2000):

- (4) *O Janis_k dhiavase [ena vivlio gia afton_k]*
 the John read a book about him
 ‘John read a book about him’

The short-distance anaphor *o eaftos tu* is generally well-behaved, falling under Principle A of Binding Theory.² Iatridou (1986), who was the first to observe the contrast between (1) & (2), proposed that *o idhios* falls under what she called Principle D:

- (5) *Principle D*
O idhios should be bound in the whole sentence but free in the governing category

Unlike ordinary pronouns which can be free, as in (7), *ton idhio* requires a sentence-internal antecedent, as shown in (6), patterning with regular anaphors:

- (6) **O Janis_j theli [o Vasilis_k na voithisi tin idhia_i]*
 the Janis wants the Vasilis-NOM SUBJ helps the same-FEM
 ‘John wants Bill to help her’
- (7) *O Janis_j theli [o Vasilis_k na tin_i voithisi]*
 the Janis wants the Vasilis-NOM SUBJ her helps
 ‘John wants Bill to help her’

²A striking property of *o eaftos tu* is that it can surface as a nominative theme bound by the experiencer in object experiencer constructions (Anagnostopoulou 1999). To account for this, Anagnostopoulou & Everaert (1999) propose that *o eaftos tu* is a [+SELF, +R] element in Reinhart & Reuland’s (1993) sense. Cf. Iatridou (1988) for a similar core intuition expressed in standard BT terms based on a different argument. See Spathas (2010) for a very interesting comparison of *ton eaftos tu* as opposed to English *himself*.

2. Zooming into the properties of *ton idhio*

2.1. Morphosyntactic make-up/ emphatic uses

Ton idhio consists of a definite determiner and a nominal adjectival element co-varying with its antecedent in gender and number. It is strictly 3rd person, i.e. it cannot co-refer with a 1st and 2nd person antecedent:³

(8) **Ego_j thelo* [o Vasilis_k na voithisi *tin idhia_j*]
 I want-1SG the Vasilis-NOM SUBJ helps the same-FEM

(9) **Esi_j thelis* [o Vasilis_k na voithisi *tin idhia_j*]
 you want-2SG the Vasilis-NOM SUBJ helps the same-FEM

O idhios can be used as an emphatic modifier corresponding to *he/John himself*. In this case, it can modify 1st and 2nd person pronouns:

(10) *O Janis_j theli* [o Vasilis_k na voithisi *afton ton idhio_{j/*k}*]
 the Janis wants the Vasilis-NOM SUBJ helps him himself
 ke kanenan allo]
 and noone else
 ‘John wants Bill to help him and noone else’

(11) *Ego_j thelo* [o Vasilis_k na voithisi *emena tin idhia_j*] ke
 I want-1SG the Vasilis-NOM SUBJ helps me myself and
 kanenan allo
 noone else
 ‘I want Bill to help me and noone else’

Note that the Greek local anaphor *o eaftos tu*, never admits emphatic uses, unlike English *himself*:

- (12) a. *O Janis o idhios elise to provlima*
 the Janis-NOM the same-NOM solved the problem-ACC
 ‘John himself solved the problem’
 b. **O Janis o eaftos tu elise to provlima*
 The Janis-NOM the self-NOM his solved the problem-ACC

³It might be the case that this relates to the fact that *o idhios* also qualifies as a logophor, as will be seen later on. It seems that there is a restriction on logophors ‘correfering’ with a matrix element in the 1st person (Schlenker 1999: 32).

The Greek anaphor system thus has two elements, a short distance one (*o eaftos tu*) which behaves similarly to *himself* w.r.t. locality and a long distance one (*o idhios*) which behaves similarly to *himself* w.r.t. to emphatic uses.

2.1.1. *Bare o idhios: three functions*

Bare non-modifying *o idhios* has three functions (see Iatridou 1986, Varlokosta 1994: 11 fn 3):

- a) It can function as a *long-distance anaphor* when it is used non-emphatically. Recall from that it requires a sentence-internal antecedent.
- b) As an emphatic element, it modifies a discourse topic and does not need an antecedent in the sentence. Iatridou (1986) provides the following example illustrating this usage:

(13) A: Thelis na dhis ton jatro i tin nosokoma tu?
 want-2SG SUBJ see-2SG the doctor or the nurse his
 ‘Do you want to see the doctor or his nurse?’
 Thelo na dho TON IDHIO
 want-1SG SUBJ see-1SG THE SAME
 ‘I want to see him himself’

- c) Finally, as an adjective, *o idhios* occurs in examples like the following:

(14) To kratiko laxio epese ston idhio gia triti fora
 the state lottery fell on the same for third time
 ‘The state lottery fell on the same person for the third time’

2.2. *Bare o idhios: three grammatical functions*

Hornstein & Varlokosta (1992), Varlokosta & Hornstein (1993) and Varlokosta (1994) argue that *o idhios* has different properties depending on whether it occurs as (a) an object (examples have been provided above), (b) a subject (as in (15) below) or (c) an accusative object of stative experiencer-object predicates, prototypically with the verb *afora* ‘concern’ (illustrated in (16); from now on psych-*o idhios*).

- (15) O Janis_k nomizi oti *o idhios*_k ine o kaliteros ipopsifios
 the Janis thinks that the same is the best candidate
 ‘John thinks that he is the best candidate’
- (16) O Janis_k diedose oti to provlima afora *ton idhio*_k
 the Janis-NOM spread the rumor that the problem-NOM
 concerns the same
 ‘John spread the rumor that the problem concerns him’

Varlokosta & Hornstein argue that object vs. subject/psych *o idhios* consistently show a different behavior w.r.t. the following diagnostics:

- (i) Requirement for a sentence-internal antecedent (‘yes’ for object *o idhios*, ‘no’ for subject and psych *o idhios*).
- (ii) C-command (‘yes’ for object *o idhios*, ‘no’ for subject and psych *o idhios*)
- (iii) Split-antecedents (‘no’ for object *o idhios*, ‘yes’ for subject and psych *o idhios*)
- (iv) Strict readings (‘no’ for object *o idhios*, ‘yes’ for subject and psych *o idhios*)
- (v) Sensitivity to the type of sentential complement they occur in; supposedly linked to the operator-binding analysis (‘yes’ for object *o idhios*, ‘no’ for subject and psych *o idhios*).

On the basis of this evidence, they argue that the Principle D description is correct only for object *o idhios*, not for subject and psych-*o idhios*. They furthermore propose that object *o idhios* is *A'*-bound by a zero operator in Comp along the lines of Koopman & Sportiche’s (1989) analysis of logophoric pronouns in Abe. On the other hand, subject *o idhios* qualifies as a regular pronoun, perhaps because it is emphatic and carries a focused interpretation. Finally, psych *o idhios* behaves like subject *o idhios*, providing evidence for a subject-analysis of accusative experiencer objects of stative psych-predicates.

While I agree on the basic distinction they draw between subject and non-subject *o idhios*, I disagree on some properties they ascribe to non-subject *o idhios*, partly because I am disagreeing with their data. It seems that non-subject *ton idhio* shows a more mixed behavior with respect to whether it

qualifies as an anaphor/bound variable or not than assumed by Varlokosta and Hornstein. In this respect, it patterns with e.g. the Icelandic long-distance anaphor *sig*, as described by Thráinsson (1991). I furthermore attempt to classify non-subject *o idhios* w.r.t existing typologies of long-distance anaphors, showing that it also seems to differ from typical long-distance anaphors/logophors.

3. Revisiting Varlokosta & Hornstein

3.1. Varlokosta & Hornstein's diagnostics, data and analysis

I concentrate here on the distinction between subject and object *o idhios* and do not discuss psych *o idhios* which basically behaves like subject *o idhios* (see Hornstein & Varlokosta 1992 for the details). According to Varlokosta & Hornstein, object and subject *o idhios* show a consistently different behavior w.r.t. diagnostics (i) – (iv) above which distinguish anaphors from pronouns. Specifically:

(i) *Requirement for a sentence-internal antecedent*. Recall that *tin idhia* in (6), here repeated, requires an antecedent:

(6) *O Janis_j theli [o Vasilis_k na voithisi tin idhia_i]
 the Janis wants the Vasilis-NOM SUBJ helps the same-FEM
 'John wants Bill to help her'

By contrast, subject *o idhios* does not require an antecedent within the clause (Varlokosta's (1994): 32, ex. (42)):

(17) Den itan eki *o idhios*, alla me eksipiretise i grammateas
 not was there the same but me-ACC helped the secretary
 tu
 his
 'He wasn't there, but his secretary helped me'

(ii) *C-command*. Varlokosta (1994: 15) uses the following example to argue that *o idhios* must have a c-commanding antecedent (her (10)):

(18) *_{[DP} Mia photographia tu Jani_k] athoose ton idhio_k
 a picture the Janis-GEN exonerated the same
 'A picture of John exonerated him'

By contrast, subject *o idhios* easily tolerates a non c-commanding antecedent (Varlokosta's (43) p. 32):

- (19) [DP Mia fotografia tu Jani_k] apedikse oti *o idhios*_k
 a picture the Janis-GEN proved that the same
 zouse me tin Maria
 was living with the Mary
 'A picture of John proved that he was living together with Mary'

(iii) *Split-antecedents*. Object *ton idhio* cannot take split antecedents (Varlokosta 1994: 16 ex. (13b)):

- (20) **O Janis*_k ipe ston Vasili_j oti i Maria agapai *tus idhius*_{k+j}
 the Janis told to-the Vasilis that the Mary loves the same-PL
 'John told Vasilis that Mary loves them'

By contrast, subject *o idhios* can support split antecedents (Varlokosta's (46) p. 33):

- (21) *O Janis*_k ipe ston Vasili oti *i idhii*_{k+j} eprepe na
 the Janis told to-the Vasilis that the same-PL must-3SG.PAST SUBJ
 figun
 leave-3PL
 'John told Vasilis that they should leave'

(iv) *Availability of strict readings*. Finally, according to Varlokosta and Hornstein, object *o idhios* allows for sloppy readings in ellipsis contexts (Varlokosta 1994: 36, ex. (54)):

- (22) *O Janis* nomizi oti i Maria tha voithisi *ton idhio* ke o
 the Janis thinks that the Mary FUT help-3SG the same and the
 Vasilis episis
 Bill too
 'John thinks that Mary will help him and so does Bill'

- a. John thinks that Mary will help John and Bill thinks that Mary will help Bill (*sloppy ok*)
- b. *John thinks that Mary will help John and Bill thinks that Mary will help John (*strict unavailable*)

On the other hand, subject *o idhios* is ambiguous, like pronouns (Varlokosta's (53) p. 36):

- (23) *O Janis_k pistevi oti o idhios_k ine o kaliteros iposifios ke o the Janis thinks that the same is the best candidate and the Vasilis episis Vasilis too 'Janis believes that he is the best candidate and so does Vasilis'*
- a. John thinks that John is the best candidate and Vasilis thinks that Vasilis is the best candidate. (*sloppy ok*)
 - b. John thinks that John is the best candidate and Vasilis thinks that John is the best candidate. (*strict ok*)

On the basis of the above data, Varlokosta & Hornstein conclude that object *ton idhio* is an anaphor while subject *o idhios* is a pronoun. They furthermore propose that object *ton idhio* is *A'* bound by a 0-operator residing in Spec,CP extending Koopman & Sportiche's (1989) analysis of logophoric pronouns in Abe to Greek (see Varlokosta 1994: 16, (19b)):

- (24) *O Janis_j pistevi [CP 0_j oti [IP o Vasilis_k tha voithisi ton idhio_j]]*
 the Janis thinks that the Vasilis fut helps the same

The zero operator in (24) must be identified by being bound by *o Janis*, which explains why object *ton idhio* requires obligatorily a sentence internal c-commanding antecedent.

The null operator analysis predicts that *ton idhio* will be licensed whenever the Spec,CP position is free to be occupied by the 0-operator. It will not be licensed whenever this position is occupied by some other element. They claim that this prediction is borne out on the basis of their diagnostic (v):

- (v) *Sensitivity to the type of sentential complement ton idhio occurs in.* They claim that *ton idhio* is not licensed in relative clauses and embedded questions where Spec,CP is occupied, while it is possible within adjuncts, noun-complements and factive complements introduced by the comple-

mentizer pu. In the latter category, Spec,CP is empty and can host the 0-operator. Their examples are listed in (25)–(29) below:

- (25) *Relative clause* (Varlokosta 1994: 14, ex. (5b))
 **O Janis*_j sinandise ton anthropo pu filakise *ton idhio*_j
 the Janis met the man that imprisoned the same
 ‘John met the man that imprisoned him’
- (26) *Question* (p. 14, ex. (6b))
 **O Janis*_j dhen kseri pjos agapai *ton idhio*_j
 the Janis not knows who loves the same
 ‘Janis doesn’t know who loves him’
- (27) *Adjunct* (p.14, ex. (7a), (7b))
 a. *O Janis*_j charike otan i Maria filise *ton idhio*_j
 the Janis was pleased when the Mary kissed the same
 ‘Janis was pleased when Mary kissed him’
 b. *O Janis*_j charike epidhi i Maria voithise *ton idhio*_j
 the Janis was pleased because the Mary helped the same
 ‘Janis was pleased because Mary helped him’
- (28) *Noun complement* (p. 14, ex. (8))
*O Janis*_j arnithike to gegonos oti i Maria agapai *ton idhio*_j
 the Janis denied the fact that the Mary loves the same
 ‘Janis denied the fact that Mary loves him’
- (29) *Factive complement* (p. 14, ex. (9))
*O Janis*_j charike pu i Maria filise *ton idhio*_j
 the Janis was pleased that the Mary kissed the same
 ‘Janis was pleased that Mary helped him’

Crucially, in contrast to Abe, any COMP, not just those under verbs of saying can be the locus of a zero operator in Greek, provided that Spec,CP is empty.

3.2. Revisiting the bound pronoun data

Even though the judgments reported above are adopted as correct in the dissertation of Chiou (2007), I have difficulty to accept examples like (27)–(29) and do not have a contrast between them and ill-formed examples like (25)–(26). I think that the ungrammaticality of the above is an artifact of a restriction in the distribution of non-subject, non-emphatic *o idhios*, namely

that *ton idhio* is deviant when it occurs as an unstressed direct object accusative long distance anaphor, except when combined with very few verbs (*voithao* ‘help’ being one of them).⁴ As an unstressed complement anaphor, *ton idhio* is well-formed (i) as part of a co-ordination of two direct objects and (ii) as an object of a preposition. The following examples are perfect:

- (30) *O Janis_j theli [o Vasilis_k na xeretisi [&P ton idhio_{j/*k} kai tin ikogenia tu]]*
 the Janis wants the Vasilis-NOM SUBJ greets the same and
 his family
 ‘John wants Bill to greet him and his family’
- (31) *O Janis_j pistevi oti i Maria tha milisi [PP me ton idhio_j]*
 the Janis believes that the Maria will talk with the same
 otan tha exi nea
 when FUT has news
 ‘Janis believes that Mary will talk to him when he has news’

By contrast, the ones below are not (with non-emphatic/contrastive *ton idhio*):

- (32) *?*O Janis_j theli [o Vasilis_k na xeretisi ton idhio_{j/*k}]*
 the Janis wants the Vasilis-NOM SUBJ greets the same
 ‘John wants Bill to greet him’
- (33) *?*O Janis_j pistevi oti i Maria agapai ton idhio_j apo tin proti stigmi*
 the Janis believes that the Maria loves the same from the first
 moment
 ‘Janis believes that Mary loves him from the moment she saw him’

Apparently, *ton idhio* is not unique in showing this restriction. The Romanian bare reflexive *sine* does not occur as a direct argument of the verb and must always occur as an object of a preposition (Sevcenco 2006: 37-38):

⁴It is interesting that the verb ‘help’ is prototypically a verb selecting for a single dative object in languages like e.g. German, Ancient Greek, Icelandic where monotransitive verbs can take objects with cases other than accusative, for example dative or genitive. This might suggest that even in cases where accusative *ton idhio* is acceptable, such as (6a), this is actually a hidden oblique *ton idhio* rather than a structural accusative *ton idhio*. More research into this topic is required.

- (34) a. **Amantul ascunde sine în dulap*
lover the hides SELF in wardrobe
'The lover is hiding himself in the wardrobe'
b. *George contează pe sine*
George counts on SELF
'George counts on himself'

In addition, as pointed out by Alexis Dimitradis (p.c.), Faltz (1977) recognizes a distinct category of reflexives that are restricted to oblique argument positions, which he calls “*secondary reflexives*”.

Once this factor is controlled for, the judgments of the above sentences change. All of the sentential complement cases discussed by Varlokosta & Hornstein become grammatical:

- (35) Relative clause:

O politikos_j sinantise telika ton dimosiografo pu ixe
the politician met finally the journalist that had
epikinonisi me ton idhio_j prin apo merikes meres jia to
communicated with the same before from some days about the
skandalo
scandal
'The politician finally met the journalist who had communicated with
him several days ago about the scandal'

- (36) Question:

O politikos_j anarotithike pjos dimosiografos ixe epikinonisi
the politician wondered which journalist had communicated
me ton idhio_j gia to skandalo
with the same about the scandal
'The politician wondered which journalist got in touch with him about
the scandal'

- (37) Adjunct:

O Janis_j charike otan i Maria milise me ton idhio_j gia to
the Janis was pleased when the Mary talked with the same for the
thema
issue
'Janis was pleased when Mary talked to him about the issue'

(38) Noun complement:

O Janis_j arnithike to gegonos oti i Maria exi sinapsi erotikes
 the Janis denied the fact that the Mary has created love
sxisis me ton idhio_j to kalokairi
 relationships with the same the summer
 ‘Janis denied the fact that Mary had a love affair with him in the
 summer’

(39) Factive complement:

O Janis_j charike pu i Maria milise me ton idhio_j gia to
 the Janis was pleased that the Mary talked with the same for the
thema
 issue
 ‘John was pleased that Mary talked to him about the issue’

I do not find that there is a contrast between (35–36) and (37–39). This casts doubt on Varlokosta & Hornstein’s *diagnostic* (v) (sensitivity to the type of sentential complement), and hence the 0-operator analysis. Moreover, the fact that direct object *ton idhio* is generally degraded, potentially obscures the intuitions of native speakers concerning diagnostics (i)–(v). Only if the right type of non-subject *ton idhio* is tested we will be able to draw safe conclusions on its pronominal/anaphoric nature.

3.3. Testing again the anaphor vs. pronoun properties of non-subject *ton idhio*

In this section, I re-apply the anaphora diagnostics (i)–(iv), using more uncontroversial examples with oblique *ton idhio*, specifically:

(i) *Requirement for a sentence-internal antecedent.* As shown in (40), oblique *ton idhio* under a non emphatic/contrastive construal cannot be free:

(40) **O Janis_j theli [o Vasilis_k na milisi me tin idhia]*
 the Janis wants the Vasilis-NOM SUBJ talks with the same-FEM
 ‘John wants Bill to talk with her’

According to this test, *ton idhio* qualifies as an anaphor.

(ii) *Requirement for a c-commanding antecedent.* (Recall that there is no such requirement for subject/psych *idhio*). With respect to this test, I think that it is necessary to distinguish between two cases:

- (a) When the antecedent is embedded within the subject DP, judgments are uncertain. My consultants consistently felt that there is a contrast between the cases where the antecedent c-commands *ton idhio* (e.g. 41a) and when it doesn't (e.g. 41b), but they also commented that the constructions lacking c-command are 'not that bad' or 'not as bad as they should be':

- (41) a. *O Janis_k elpizi oti i Maria tha epikinonisi me ton*
 the Janis hopes that the Mary FUT communicate-3SG with the
idhio_k otan exi nea
 same when has-3SG news
 'John hopes that Mary will communicate with him when she has
 some news'
- b. ??_{[DP I mitera tu Janik] elpizi oti i Maria tha}
 the mother-NOM the Janis-GEN hopes that the Mary FUT
epikinonisi me ton idhiok otan exi nea
 communicates with the same when has-3SG news
 'John's mother hopes that Mary will communicate with him when
 she has some news'

- (b) On the other hand, when the antecedent is embedded inside a CP, lack of c-command leads to sharp ungrammaticality:

- (42) *_{[CP To oti i Maria aghapa ton Jani_k] me epise oti boro}
 the that the Mary loves the John me convinced that can-1SG
na basizome ston idhio_k
 SUBJ base myself to the same
 'That Mary loves John convinced me that I can depend on him'

One can conclude, especially on the basis of examples like (42),⁵ that non-subject *ton idhio* qualifies as anaphor in that it requires a c-commanding antecedent.

- (iii) *Split antecedents*. (Recall that this is possible for subject and psych *o idhios*). As shown in (43), this is impossible for oblique *ton idhio* under a non emphatic/contrastive construal:

⁵It might be the case that *ton idhio* can be marginally licensed in examples like (41b) as a non-command logophor, explaining why they are not as ungrammatical as one would expect.

- (43) **O vasilias_j ipe ston prothipurgo_k oti o proedros tha*
 the king said to the prime-minister that the president FUT
epikinonisi me tus idhiou_{s_{j+k}}
 communicates with the same-PL
 ‘The king told the prime-minister that the president will communicate
 with them’

Once again, *ton idhio* qualifies as an anaphor w.r.t. this diagnostic.

- (iv) *Availability of strict readings in ellipsis.* Contra Varlokosta & Hornstein,
 all my consultants agreed that strict readings are possible for complement
 (oblique) *ton idhio*:

- (44) *O Janis_j nomizi oti i Maria tha milisi me ton idhio_j ke o*
 the Janis thinks that the Mary fut talks with the same and the
 Vasilis episis
 Vasilis too
 ‘John thinks that Mary will talk to him and so does Vasilis’
Sloppy: John thinks that Mary will talk to John and Vasilis thinks that
 Mary will talk to Vasilis
Strict: John thinks that Mary will talk to John and Vasilis thinks that
 Mary will talk to John

Ton idhio qualifies as a pronoun w.r.t. this ambiguity.

It thus seems that non-subject *ton idhio* shows a mixed behavior. It qualifies
 as an anaphor w.r.t. requiring a sentence internal c-commanding antecedent
 and not tolerating split antecedents but as a pronoun w.r.t. strict readings.
 Note, though, that *ton idhio* is not unique in allowing strict readings while
 qualifying as an anaphor w.r.t. all other tests, as described here. The Icelandic
 long-distance reflexive *sig*, shows a comparable behavior. On the one hand,
 speakers accept both strict and sloppy readings in ellipsis contexts (Thráinsson
 1991: 60, ex. (31c):

- (45) *Jón_i sagði [að þú hefðir svikið sig_i] og Pétur gerði það líka*
 John said that you had betrayed him and Peter did so too
 a. Peter said that you had betrayed Peter (*sloppy*)
 b. Peter said that you had betrayed John (*strict*)

On the other hand, *sig* does not allow split antecedents, unlike ordinary pronouns (Thráinsson 1991: 61, ex. (33)):

- (46) a. *Jón_i sagði Maríu_j [að þú hefðir svikið þau_{i+j}]*
 John told Mary that you had betrayed them
 b. **Jón_i sagði Maríu_j [að þú hefðir svikið sig_{i+j}]*
 John told Mary that you had betrayed SELF

A crucial property of *idhios* shares with *sig* is the fact that their antecedent can be arbitrarily far away:

- (47) a. *Jón_j segir [að María telji [að Haraldur vilji [að Billi*
 John says that Mary believes that Harold wants that Bill
heimsæki sig_j]]]
 visits SELF
 (Thráinsson 1991: 55 ex. (17))
 b. *O Janis_j lei oti i Maria pistevi oti o Vasilis tha milisi*
 the Janis says that the Mary believes that the Vasilis fut talk
me ton idhio_j prin ipograpsi
 with the same before signs
 ‘John says that Mary believes that Vasilis will talk with him before
 he signs’

And it turns out that the availability of strict readings under VP-ellipsis/anaphora of *ton idhio* and *sig* can be traced to the fact that they are not locally bound. As is discussed in the literature (Hellan 1988, Hestvik (1990), Reuland & Sigurjónsdóttir 1997, Kiparsky 2002, Safir 2004 among others),⁶ sloppy identity with anaphors is forced only when their antecedent is a co-argument. Elsewhere there is an ambiguity between sloppy and strict readings. This can be seen with *sig* which does not allow a strict reading when it is locally bound, while it is ambiguous in long-distance contexts, as we saw (compare (48) below to (45)):

⁶See Hestvik (1995) for discussion of a further factor relevant to the availability of strict and sloppy readings in VP-ellipsis: subordination of the elided clause relative to the antecedent clause facilitates strict interpretation, while coordination disfavors it.

- (48) *Jón rakaði sig og Pétur gerði það líka*
 ‘John shaved himself and Peter did so too’
 = John shaved John and Peter shaved Peter/*John.

And the following data (taken from Kiparsky 2002: 6) illustrate the same generalization for English *himself* in *do so* VP anaphora:

- (49) John hates himself, and so does Fred
 a. \neq Fred hates John, too
 b. Fred hates himself, too
- (50) John considers himself competent, and so does Fred (*ambiguous*)
 a. Fred considers John competent, too (*strict*)
 b. Fred considers himself competent, too (*sloppy*)

Whatever the explanation for the coargument vs. non-coargument asymmetry may be (see Reuland & Sigurjónsdóttir 1997, Kiparsky 2002, Safir 2004 for some proposals), the ambiguity of the non-locally bound *ton idhio* in (44) is now expected and does not undermine its status as an anaphor. Let me now turn to the question of how *ton idhio* compares to other non-locally bound anaphors.

4. *Ton idhio* and other long-distance anaphors

4.1. Some background

The typology of long distance anaphors is highly complex, and it is impossible to review it here in full detail. Buring (2005: 58, 60) draws a distinction between (a) long-distance *reflexives* or *command anaphors* that need to be bound by a linguistic antecedent and (b) *logophors* which are oriented towards a semantically or pragmatically determined class of antecedents. The former fall under the general definition (51) (Buring’s 3.35, p.60) which incorporates the notions of subject orientation and domain specification (root domain, tense domain, subject domain, co-argument domain) in the form of parameters:

- (51) An NP of *class* must (not) be coindexed with a *commanding* {NP / Subject} within its domain.

The domain relevant for long distance reflexives is the root, i.e. they must

be bound in the domain of the sentence, though not necessarily locally.⁷ Logophors are defined as in (52) (Büring's 3.42, p.63):

- (53) A logophoric pronoun can be used if it is embedded in a constituent *c* such that (i) *c* is embedded, (ii) *c* denotes a proposition *p*, which (iii) can be paraphrased as a mental state or reported utterance of the pronoun's antecedent such that the paraphrase contains a first person pronoun in place of the pronoun.

Originally, the term 'logophor' (the term due to Hagège 1974) was employed for special series of pronouns that occur in African languages and refer exclusively to the source of an embedded statement, as in the following examples from Ewe (Kwa, Niger-Kordofanian; Clements 1975, Sells 1987, Kuno 1987, Büring 2005, ex. 3.36):

- (54) a. kofi₁ be yè_{1/2/*s} -dzo
 Kofi say LOG -left
 b. kofi₁ be e_{*1/2/*s} -dzo
 Kofi say he -left
 c. kofi₁ be me_{*1/*2/s} -dzo
 Kofi say I -left
 'Kofi said that he/I left'

*s = not the speaker

2 = a person that is not the speaker
 or the addressee

⁷Büring (2005: 66) mentions the following elements as having the root as their domain: Chinese *ziji*, Fula *Dum*, Greek *o idhios* and *ton idhio*, Icelandic *sig*, Italian *sè* and *proprio*, Japanese *zibun*, Kannada *ta-nu*, Latin *se*, Malayalam *swa* and *tanne*, Marathi *aapan* and Yoruba *ó*. He furthermore points out that it is not clear that the antecedent needs to c-command or command these elements (for example, this is not the case in Chinese and Fula; see Büring 2005, 66 fn. 25). A further distinction can be drawn between elements that can be bound within any domain up to the root, like Korean *caki* (Büring's example 3.54) and elements, like *o idhios* which must be free in their tense domain and can be bound by any antecedent outside their tense domain. But note that examples like (i) (based on Kiparsky's 2002 ex. (38)) provide evidence that *ton idhio* does not have to be free in its tense domain:

- (52) *O Petros*_k milise gia *ton idhio*_k ke tin Maria
 the Peter talked about the same and the Mary
 'Peter talked about himself and Mary'

In (53) *e* and *me* are pronouns of the usual type: *e* ‘he’ refers to a non-speaker, non-addressee person and, moreover, it cannot relate anaphorically to the matrix subject, while *me* must be the speaker. On the other hand, *yè* is a logophor: it can only refer to the subject of ‘say’. Büring proposes two diagnostics, in order to distinguish long-distance subject-oriented anaphors from logophors. First, true subject-oriented long distance anaphors are strictly subject-oriented while logophoric pronouns are not; rather, they take the source of the embedded proposition as their antecedent. On the basis of this criterion, Japanese *zibun* is a logophoric pronoun because its antecedent must be the source of the embedded proposition, regardless of whether this is realized as a subject and topic, as in (54a), or an oblique, as in (54b) (from Sells 1987: 453 via Büring 2005: 61, ex. 3.39):⁸

- (55) a. Takashi_j wa Taroo_k ni [Yosiko ga zibun_{j/*k} o
Takashi Top Taroo DAT Yosiko NOM self ACC
nikundeiru koto] o hanasita
be-hating COMP ACC told
'Takashi told Taroo that Yosiko hated him (Takashi)'
- b. Taroo_k wa Takashi_j kara [Yosiko ga zibun_{j/*k} o
Takashi TOP Taroo from Yosiko NOM SELF ACC
nikundeiru to] kiita
be-hating COMP heard
'Taroo heard from Takashi that Yosiko hated him (Takashi)'

The same applies to Icelandic *síg* which is ruled out in environments where the corresponding direct speech paraphrases of the embedded sentences wouldn't admit a first person pronoun in place of *síg* (Büring's example 3.70):

- (56) a. Hann₂ sagði [að sig₂ vantaði hæfileika]
he said that self lacked ability
'He said that he lacked ability'. He said: 'I lack ability'
- b. *Honum₂ var sagt [að sig₂ vantaði hæfileika]
he was said that self lacked ability
'He was told that he lacked ability'.
He was told: 'You/#I lack ability'

⁸Büring (2005: 58–59) takes Chinese *ziji* to be an example of a true long-distance subject oriented anaphor.

Second, logophors can occur without a sentence internal antecedent under certain conditions. On the basis of this diagnostic, *síg* once again qualifies as a logophor (Maling 1984; Sells 1987; Thráinsson 1992), as shown by example (56) with *sér*, the dative of *síg* (Büring's example 3.40/ 3.72; see also see Thráinsson 1991: 58):

- (57) Formaðurinn varð óskaplega reiður. Tillagan væri
the chairman became furiously angry. the proposal was
avívirðileg. Væri henni beint gegn sér persónulega?
outrageous. Was-SUBJ it aimed against self personally?
'The chairman became furiously angry. The proposal was outrageous.
Was it aimed at him personally?'

A related property of *síg* which can be linked to its logophoric nature is the fact that it typically occurs in subjunctive complements of verbs of saying, thinking etc. (Thráinsson 1991: 55-56), i.e. verbs introducing embedded statements.⁹

Schlenker (1999: 31–35) introduces a further distinction between true logophoric pronouns, which can only be used in the scope of attitude operators (because they must be interpreted *de se*)¹⁰ and pronouns which are not logophoric in the strict sense, since they can occur outside the scope of an attitude operator, e.g. in a relative clause. According to this classification, the pronoun *yè* in Ewe (see (53) above) and the logophoric agreement marker in Gokana (Hyman & Comrie 1981) are true logophors, and they are excluded, for example, from relative clauses. On the other hand, the Japanese long-distance anaphor *zibun* is not a logophor in a strict sense since it can occur in relative clauses. Note, though, that even though *zibun* does not qualify as a strict logophor w.r.t. the criterion of embedding under attitude verbs it does qualify as one w.r.t. referring to the source of an embedded statement. This has been shown by the examples in (54) above where *zibun* must refer to Takasi,

⁹Logophoric pronouns are not restricted to verbs of saying. In Ewe the subject of *be happy*, *know* and *see* can antecede logophors (Büring 2005: 61, citing Clements 1975; Sells 1987 and Kuno 146). It seems that the correct characterization of the verbs licensing logophors are attitude verbs (see Schlenker 1999: 31-35 and below; see Anand 2006 for further refinements).

¹⁰Because they must be interpreted *de se* (see Schlenker 1999 for discussion). See Chierchia (1989) and Reinhart (1990) for discussion of obligatory *de se* expressions (PRO and logophors) in natural language. See Schlenker (1999) and Anand (2006) for a semantic and typological discussion of logophoricity in this context.

regardless of whether this is the subject and topic (as in 54a) or an oblique (as in 54b).¹¹

There is a final distinction that needs to be mentioned before we proceed to a classification of *ton idhio*. Logophoric pronouns can be either author denoting, as all the cases discussed so far, or addressee/ hearer denoting (Schlenker 1999: 31, 110-111; Anand 2006: 16 calls them ‘de te’ logophors). While the former are used in reported speech to refer to whoever would in direct discourse be referred to as ‘I’, the latter would crucially involve the indexical ‘you’. Object control PRO is obligatorily interpreted *de te*, as shown by the following examples (see Anand 2006: 16, ex. 25):

(58) John is hosting a party. He hears that a certain waiter named Bill is being a nuisance

S1: John tells the nearest waiter, “Bill has to go.” Unbeknownst to him, he’s talking to Bill.

S2: John tells Bill, “You have to go.”

a. John told Bill_i that he_i had to leave. [^{ok} S1, / ^{ok} S2]

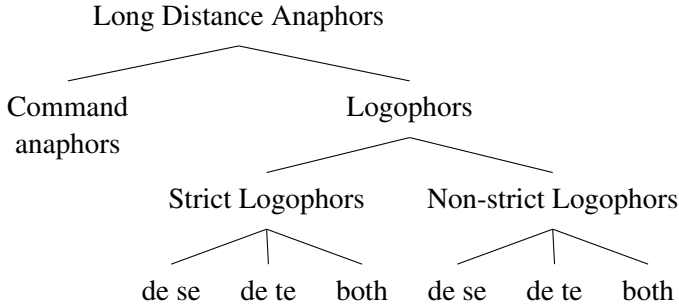
b. John told Bill_i to PRO_i leave. [#S1, / ^{ok} S2]

While the finite clause (57a) is acceptable in the first scenario, (57b) is not, a fact indicating object control PRO must necessarily be hearer-denoting (just as subject control PRO must be author-denoting). Hearer-denoting logophoric pronouns seem to exist in Mapun (Frayzingier 1985; cited in Schlenker 1999: 110–111) and Yoruba (Sells 1987; see Anand 2006: 60¹²). In conclusion, the typology of long-distance anaphors contains the following types of elements:

¹¹See Kusumoto (1998) cited in Schlenker (1999: 110, ex. (43)) for evidence that *zibun* is unambiguously *de se*. See fn 15 for discussion and references.

¹²Anand 2006: 157 claims that Japanese *zibun* and Icelandic *sig* can also be interpreted *de te*.

(59)



Let us now see how *ton idhio* can be classified according to this typology.

4.2. *Ton idhio* as a 'non-strict, de se and de te' logophor

According to Büring (2005: 58–63), the proper characterization of non-locally bound expressions necessitates drawing a distinction between long-distance binding and logophoricity. This is stated explicitly, as follows: “*It is important to keep the option of logophoricity in mind when attempting to describe Binding Conditions in a given language, precisely because it can so easily be mistaken for something else, e.g. long-distance subject-oriented anaphors*”. (Büring op. cit. p. 63). Recall that, for Büring, one crucial diagnostic for logophoricity is whether a long-distance anaphor can ever occur without an antecedent.

If we adopt the position that an expression is either a command anaphor or a logophor, then we are forced to the conclusion that *ton idhio* is a logophor rather than a true command anaphor because it can occur violating all its usual requirements (no need for an antecedent within the clause, no need for c-command) in typical logophoric contexts. More specifically:

a) *Point of view narratives*

Similarly to the English short-distance anaphor *himself*, *ton idhio* can be used as a perspective logophor in written narrative discourse. The examples below are Greek translations of English texts discussed by Zribi-Hertz (1989):

- (60) Ksafnika ekinos ipe dinata: H ktitikotita ine diaboliki.
 Suddenly he said aloud: Possessiveness is the devil
H Maggie ton kitakse: Ennouse tin idhia ke to pedhi?
 Maggie him looked meant-3sg the same and the child?

‘Maggie looked at him. Did he mean herself and the baby?’

(Zribi–Hertz, quoted from Y. Woolf)

- (61) *Ekinos* [o Sapp] kathise sto grafio tu ke anikse ta sirtaria.
 He the Sapp sat in-the desk his and opened the drawers.
 Sto pano deksia ipirxe enas fakelos pu apefthinotan
 In the above right existed-3sg an envelope that addressed-3sg
ston idhio
 to-the same

‘He sat down at the desk and opened the drawers. In the top right-hand one there was an envelope addressed to himself’

(Zribi–Hertz, quoted from Lodge).

In both (59) and (60), there is no antecedent in the clause and yet *ton idhio* is licensed without contrast or emphasis.

b) *Belief-contexts*

In cases of intra-sentential logophoricity which includes a belief predicate not c-commanding the clause in which a logophor occurs (see Reinhart 1990 for discussion), *ton idhio* can be licensed without contrast or emphasis:

- (62) *Oti kanenas den bori na magirepsi kala ektos apo ton idhio* ine
 that noone not can SUBJ cook-3SG well except from the same is
mia apo tis pio profates apospis/emmones tu Jani
 one of the most recent opinions/fixed ideas the Janis-GEN
 ‘That noone can cook well apart of himself is one of the most recent beliefs of John’

Note that when *ton idhio* is used in contexts not c-commanded by its antecedent it admits only strict readings, which indicates that it is not interpreted as a bound variable:

- (63) [I gnomi *tu Jani_k*] ine oti prepi na milisis me
 the opinion the Janis-GEN is that must-3SG SUBJ talk-2SG with
ton idhio_k ke i gnomi tu Petru epi
 the same and the opinion-NOM the Peter-GEN too
 ‘John’s opinion is that you have to talk to him and that is Peter’s opinion too’
 (= it is Peter’s opinion that you have to talk to John; *strict only*)

The same is noted by Thráinsson (1991: 60 ex. (32)) for Icelandic *sig*:

- (64) Skoðun Jóns_k er [að þú hafir svikið sig_k] og það er skoðun
 opinion John's is that you have betrayed self and that is opinion
 Péturs líka
 Peter's too
 'It is John's opinion that you have betrayed him and that is Peter's
 opinion too'
 (= It is Peter's opinion that you have betrayed John)

If *ton idhio* is a logophor, then it is predicted to be interpreted *de se* obligatorily. It is generally agreed upon in the literature that logophors and PRO are systematically employed in natural language as *de se* expressions (see fn 15 above for discussion and references). Indeed, as illustrated by (64a) (Chierchia's 1989 examples), a sentence containing *ton idhio* is only acceptable as a report of Pavarotti's belief 'my students can learn a lot from me' (unlike the pronoun *afton* which is ambiguous, as shown by (64b)).

- (65) S1: Pavarotti is listening to himself singing *La donna e mobile* and is impressed by his own skill. He thinks, "I have to admit it: I really am a genius! My students can learn a lot from me."
 S2: Pavarotti is listening to himself singing *La donna e mobile* and is impressed by his artistry. He thinks, "This performer is a genius! My students can learn a lot from him." Unbeknownst to him, he is the performer he is listening to.
- a. *O Pavarotti* pistevì oti i mathites tu borun na mathun
 the Pavarotti believes that the students his can-PL SUBJ learn
 polla apo ton idhio
 many-PL from the same
 'Pavarotti believes, "my students can learn a lot from me".'
 [ok S1, #S2]
- b. *O Pavarotti* pistevì oti i mathites tu borun na mathun
 the Pavarotti believes that the students his can-pl SUBJ learn
 polla apo afton
 many-pl from him
 'Pavarotti believes that his students can learn a lot from him.'
 [ok S1, ok S2]

Even though *ton idhio* can be claimed to be a logophor with respect to the two properties mentioned so far, i.e. not always requiring an antecedent and being interpreted *de se*, there are also two crucial properties which differentiate it from typical logophors. First, as has been seen, there are no restrictions on the types of embedded clauses *ton idhio* occurs in. It can be licensed in any embedded clause and has even been shown to occur in relative clauses (example (42) here repeated) patterning with Japanese *zibun* and differing from e.g. Icelandic *sig*.

- (66) *O politikos_j sinantise telika ton dimosiografo pu ixe*
 the politician met finally the journalist that had
epikinonisi me ton idhio_j prin apo merikes meres jia to
 communicated with the same before from some days about the
skandalo
 scandal
 ‘The politician finally met the journalist who had communicated with
 him several days ago about the scandal’

Second, as originally pointed out by Varlokosta and Hornstein, *ton idhio* is not subject-oriented, i.e. it doesn’t take as an antecedent the source of the embedded proposition (unlike *sig* and *zibun*):

- (67) *O Janis_k ipe ston Vasili_j oti i Maria tha*
 the Janis-NOM said to-the Vasilis-ACC that the Mary-NOM FUT
milisi me ton idhio_{kj} otan tha iparxun nea
 talk-3SG with the same when FUT exist-3PL news
 ‘Janis told Vasilis that Mary will talk to him when there are news’

This raises the question of whether *ton idhio* can be read both *de se* and *de te*, similarly to PRO (see the discussion of this distinction made in Schlenker 1999 and Anand 2006). And indeed, it turns out that *ton idhio* must be hearer-denoting in sentences like (66b) (based on Anand 2006: 16) where you is crucially involved in the direct discourse:

(68) Mary is hosting a party. She hears that a certain waiter named John is being a nuisance.

S1: Mary tells the nearest waiter: “I will talk to John at the end of the party about his horrible behavior”. Unbeknownst to her, she is talking to John

S2: “I will talk to you at the end of the party about your horrible behavior”

a. I Maria ipe *ston Janni* oti tha milisi *me afton* gia aftin
 the Maria told to-the John that FUT talks with him for this
 tin frixti *simberifora sto telos tu parti*
 the terrible behavior in the end of the party
 ’Mary told John that she will talk with him about this horrible
 behavior at the end of the party’ [^{ok} S1, ^{ok} S2]

b. I Maria ipe *ston Janni* oti tha milisi *me ton idhio* gia
 the Maria told to-the John that FUT talks with the same for
 aftin tin frixti *simberifora sto telos tu parti*
 this the terrible behavior in the end of the party
 ’Mary told John that she will talk with him about this horrible
 behavior at the end of the party’ [#S1, ^{ok} S2]

(66b) is unacceptable in S1 which involves a non *de te* attitude towards John, indicating that non-subject ’bound’ *ton idhio* must be interpreted *de te*.

Summing up, even though *ton idhio* can be claimed to be a logophor it is not a typical logophoric pronoun in two important respects. It is not embedded exclusively under attitude verbs and does not show orientation towards the source of an embedded proposition, unlike other logophors. It can nevertheless be classified as a logophor once the richer typology of logophoric elements in (58) is taken into consideration.

5. Concluding remarks

In the preceding sections I argued that non-subject, non-emphatic *ton idhio* can be licensed in one of two ways:

- (a) As a long-distance anaphor bound by a c-commanding antecedent (subject or object). Except for requiring a sentence-internal c-commanding antecedent, *ton idhio* qualifies as an anaphor with respect to not tolerating

split antecedents. At first sight, it seems to differ from anaphors in allowing strict readings in *do so* VP anaphora, but it turns out that this is a general property of anaphors not bound by co-arguments including English *himself*, Norwegian *seg* and Icelandic *sig*, i.e. regardless of whether they are bound by non-co-arguments short-distance (like *himself*), medium-distance (like *seg*) or long-distance (like *sig*).

- (b) As a logophor not requiring a sentence-internal antecedent or a c-commanding antecedent in written narrative discourse and belief contexts. Except for admitting the possibility of certain logophoric uses, *ton idhio* is necessarily interpreted *de se*, a typical logophoric property. Unlike other logophors, though, *ton idhio* need not be in the scope of an attitude operator and need not be subject oriented. We saw that these two properties can be accommodated if we resort to some further distinctions introduced in the literature on logophoricity, namely between (i) strict and non strict logophors (Schlenker 1999) and (ii) *de se* vs. *de te* vs. both *de se* and *de te* logophors (Schlenker 1999, Anand 2006). *Ton idhio* can then be characterized as a ‘non-strict, both *de se* and *de te*’ logophor.

This raises the question of how usage (a) of *ton idhio* (anaphoric) relates to usage (b) (logophoricity). One possibility might be to assume that an element can be classified as either a command long-distance anaphor or a logophor but not both. In such an approach, *ton idhio* must be classified as a logophor given the existence of examples like (59)–(61). Its ‘anaphoric’ uses must then be analyzed as instances of intra-sentential logophoricity. Alternatively, it can be proposed that an expression is an anaphor, which has the option of being licensed as a logophor in certain contexts. Reinhart & Reuland (1993) adopt this position for English *himself*. Choosing between the alternatives is the topic of a different paper.

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Here, there, and everywhere? Patterns of partially superfluous extended exponence

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Abstract

Many patterns of extended exponence have been documented across languages (Harris 2017, Caballero & Harris 2012). While there has been less of a focus on possible and impossible patterns of extended exponence, Grofulović & Müller (2023) propose that among exponents that share features, the less specified exponent is always realised closer to the stem. In this paper, we test this hypothesis by surveying a number of languages with extended exponence and we discuss potential counterexamples.

1. Within You Without You: Introduction

In extended (or multiple) exponence, a category is realized by more than one exponent in an expression (see a.o. Matthews 1972, Harris 2017, Caballero & Harris 2012, Fenger 2023, Müller 2007). A single category can be expounded more than once, for example PL in (1a), where both the Umlaut (*Hals* [hals] vs. *Hälse* [ˈhɛlzə]) and the suffix *-e* ([ə]) mark the plural of the noun.

In other cases, multiple exponence can show a **partial** overlap of features, such that in addition to a feature shared with another exponent, a particular exponent realizes an additional category. This is illustrated by the German dative plural form *Kindern*, (1b), in which the plural is expounded both by *-er* and *-n*, with the suffix *-n* additionally expressing dative case.

- (1) a. *Hals* — *Häls-e* German
neck neck<PL>-PL

*Being for the Benefit of Mr. Müller! We dedicate this paper to Gereon whose work on formal aspects of grammar and their cross-linguistic validity we admire. Here we test how one such formal aspect plays out across languages. It seems that the predictions hold up, which is of course great news for the recipient of this festschrift, as we have tried our hardest to come up with clear counterexamples. Happy birthday!

- (1) b. *Kind* — *Kind-er* — *Kind-er-n* German
 child child-PL child-PL-DAT.PL

In (1a), then, both exponents express the same feature PL, while in (1b), the exponent *-er*, closer to the stem, expresses only PL and the exponent *-n* expresses PL and DAT. This type of multiple exponence is called “partially superfluous” because there is a partial overlap in features (PL in this case) with one exponent expressing an additional feature (DAT).

Grofulović & Müller (2023) argue that the distribution of features in such partially superfluous multiple exponence is not random, but restricted as described in (2) (see also Anderson 1986, Müller 2007).

- (2) *Distribution of Partially Superfluous Extended Exponence* (Grofulović & Müller 2023: 6)

If there are two exponents /a/ ↔ [f₁] and /b/ ↔ [f₁, f₂] in a word, /a/ is realized closer to the stem than /b/.

Patterns such as **Kind-n-er* are not expected by (2), because the exponent *-n* would realize DAT and PL while *-er* would only realize PL and thus the exponent with more features would be closer to the stem than the one with fewer features. While Grofulović & Müller (2023) focus on how (2) can be modelled in different frameworks, such as Optimality Theory (OT) and Distributed Morphology (DM), the aim of this paper is to explore the empirical landscape of multiple exponence in order to determine whether the distribution of partially superfluous extended exponence (PSEE) holds. We specifically focus on the interaction of verbal agreement with the subject and object, as multiple exponence has been attested for these configurations but the actual distribution of features over the various morphemes is not clear.

Before discussing our typology, we elaborate on the patterns Grofulović & Müller predict (not) to be attested. After this we discuss potentially problematic data in Section 3. We explore how these data fit with the proposed distribution for PSEE in Section 4.

1.1. Predictions

Section 1 schematically illustrates patterns that are and are not, respectively, compatible with (2). The patterns are to be understood as follows: V, f₁, and f₂

refer to the verb (stem) and two features (exponed by agreement markers). The bracketing reflects the hierarchical organisation of the stem and where these features are expressed. In the patterns predicted not to exist, $[f_1, f_2]$ are expressed closer to the stem than $[f_1]$.

Predicted to exist	Predicted not to exist
$[[[V] f_1] f_1, f_2]$	$*[[[V] f_1, f_2] f_1]$

Table 1: Schematic representation of PSEE (2).

Crucially, the hierarchical representation covers various linear orders in which features are expressed in these configurations. This means that a pattern such as $[f_1 [[V] f_1, f_2]]$, linearised as $X[f_1]-V-Y[f_1, f_2]$ is also predicted not to exist, as the exponent expressing two features is hierarchically closer to the stem. Throughout the paper we discuss diagnostics to determine which feature is expressed closer to the stem.

While the patterns in Table 1 represent (un)predicted patterns for any type of feature combination, in this paper we limit ourselves to the interaction of verbal subject and object agreement, for the following reasons. Firstly, PSEE has been reported for these feature combinations in languages from varying families. Second, this will allow for more careful comparison of the interaction of features, as complete paradigms are available to determine whether we are in fact dealing with extended exponence.

2. Across the Universe: Typology

Table 2 shows the languages surveyed for this paper, ordered by their genetic affiliation, and which patterns of extended exponence shown in Table 1 they exhibit. Table 2 reflects a convenience sample based on the existing literature on extended exponence as well as both authors' previous work. The languages in our sample can all show agreement with the subject and the object in transitive structures and the patterns of extended exponence investigated here concern combinations of person and number features of these arguments.

	[[[V] f1] f1,f2]	*[[[V] f1,f2] f1]
Algonquian		
Arapaho (Cowell & Moss Sr. 2008)	✓	✓
Ojibwe (Valentine 2001)	✓	✓
Athabaskan		
Hupa (Campbell 2012)		✓
Carib		
De'Kwana (Hall 1984, 1988)	✓	✓
Chukotko-Kamchatkan		
Chukchi (Bobaljik & Branigan 2006)	✓	✓
Itelmen (Bobaljik 2000)	✓	?
Kiranti		
Camling (Ebert 1997)	✓	
Chintang (Paudyal 2015)	✓	
Dumi (van Driem 1993, Trommer 2006)	✓	
Limbu (van Driem 1987)		✓
Yakkha (Schackow 2015)	✓	✓
Totonacan		
Misantla Totonac (Mackay 1999)	✓	✓
Ulem		
Normalem Ulem (Arkayisi 1990)	✓	✓

Table 2: First look at a non-exhaustive typology of overlap and PSEE patterns.

3. Fixing a Hole: Potential confounds

As Table 2 indicates, several unpredicted patterns based on PSEE seem to be attested. In this section we take a closer look at these patterns, to determine whether they are in fact counterexamples. We discuss three considerations that need to be taken into account before determining whether a data point in fact shows extended exponence: (i) whether or not the morphemes are in the same (word-)domain; (ii) considering the feature make-up of each morpheme in relation to the complete paradigm; (iii) the interaction of Agree and exponence. We illustrate each of these issues on the basis of some data from the typology.

For reasons of space, we cannot discuss patterns of extended exponence in Hupa (Campbell 2012) and Normalem Ulem (Arkayisi 1990).

3.1. The Word: Exponence across words

Frequently reported examples come from Algonquian languages, where there is an abundance of person and number marking throughout the verbal complex. An example from Arapaho is shown in (3), where the preverbal marker encodes person information of one argument, and multiple suffixes encode information of both the subject and the object. This is the case both for the suffix which is glossed as the ‘A»P’, since it encodes voice morphology, including which argument encodes person/number information that is higher on a specific hierarchy, and the outer suffix which only encodes information of two arguments (that the agent is 2PL, and the patient 1SG). This pattern is quite common across the family, even though the formation of the combination of the S/O suffix differs per language on the exact feature combinations.¹

- (3) *hé=íhoow-nohoob-í -be* Arapaho
 2= NEG- see -A»P-2PL>1
 ‘You_{pl} don’t see me.’ (Cowell & Moss Sr. 2008: 488)

What matters here is the order of the prefix and the (outer) suffix in this case, since they would form a counterexample to the generalization if the prefix is further away from the stem than the suffix is. This is in fact what has been reported in the literature on the status of the preverbal and the postverbal agreement marker (Newell & Piggott 2014, Russel 1999). Based on phonological and syntactic factors, the preverbal marker is phonologically less integrated into the verb stem, and can also be hosted by so-called pre-verbs, that seem to have auxiliary like behaviour. If it is true that the preverbal marker is further away from the stem than the postverbal marker, this would make this type of pattern a counterexample to the distribution of PSEE.

However, there are reasons to assume that these examples are not true instances of extended exponence, and therefore do not form a counterexample to PSEE. As mentioned, the preverbal marker seems to be less integrated into

¹There is a similar pattern in intransitives, where the suffix encodes both person and number, but the prefix only encodes person. Moreover, in other cases there is an additional morpheme expressing phi-features of one argument, which occurs after the outer suffix.

the verb than the postverbal marker. This raises the question whether both are in the same domain in which the application of extended exponence applies.² Specifically, Harris (2017) argues that the domain of application for deriving extended exponence is the (morpho-syntactic) word, and is not present on the clausal level, even though there can be doubling of a marker on different words. Since there is evidence that the data in Arapaho, and many other Algonquian languages, do not constitute a single morpho-syntactic domain, it might be that these are not true counterexamples to PSEE.

Similar reasons might be at play for the Chukotko-Kamchatkan and Carib languages, but are not discussed here for reasons of space. This means that these languages do not form a counterexample to the distribution in (2).

3.2. Glass Onion: Ambiguity and underspecification

Many reported patterns have not been investigated in detail, and specifically have not been discussed in terms of the complete paradigm the morphemes fit in. In order to determine whether a pattern is in fact a case of multiple exponence, it is important to understand the complete feature make-up of the complete paradigm. In this section, we provide a few examples from complex agreement paradigms investigated in detail which might provide counterevidence to the distribution of PSEE in (2).³

3.2.1. *Kiranti*

Kiranti languages show several different patterns of extended exponence, some of which appear to provide counterevidence to the proposed distribution of PSEE and some of which do not contradict it. In Camling, Chintang, Dumi, and Yakkha, there are patterns of overlap or PSEE which are unproblematic. An example from Dumi illustrates. In (4), the verb has three suffixes. \emptyset is a zero allomorph of the 1SG.A>2.P suffix *-n* while *-si* is an (optional) copy of the suffix *-sti*, both expressing a dual non-first person.

- (4) *kaŋki-bi na:m* \emptyset *-si* *-sti* Dumi
 water-LOC dunk.underwater-1SG.A>2.P-DU.2.3-DU.2.3(NON.PRT)
 ‘I’ll dunk you (DU) underwater.’ (van Driem 1993: 147)

²Moreover, both affixes occur independently of each other, depending on the other elements.

³Full paradigms have been investigated, but are not included for reasons of space.

1SG.A>2.P is fully specified, expressing the person and number of the agent and the person of the patient. The suffix *-si/-sti*, however, is underspecified with respect to whether it expresses 2DU or 3DU. PSEE holds in this case: while both suffixes express features of the object (overlap), the first one expresses just its person and the second one its (underspecified) person and number. In Limbu and Yakkha, in contrast, the combination of underspecified and fully specified suffixes gives rise to apparent counterexamples. We discuss the two languages in turn.

Limbu Limbu (Kiranti; van Driem 1987) verbs show extended exponence of features relating to the subject and object. In (5), both *-n* and *-tchi* spell-out of features of the subject. *-n* is a portmanteau for first person subjects acting on second person objects, while *-tchi* marks the transitive subject's number.

- (5) *mɛt-n -ɛ -tchi -ge -ø.* Limbu
 tell-1>2-PRT-NON.SG.A-EXCL-PFV
 'We.EXCL told you.' (van Driem 1987: 100, (122))

In (6), *-baŋ* marks the 1SG subject acting on the third person object in the context of negation and the preterite. *-baŋ* thus expresses the person and number of the subject and the person of the object. The more peripheral marker *-ŋ*, in contrast, only expresses person and number of the subject.

- (6) *mɛ- n- hu? -baŋ -si -ŋ -ø.* Limbu
 NEG-NEG-bring.and.give-1SG>3/PRT-NON.SG.P-1SG.A-PFV
 'I did not bring and give it to them.' (van Driem 1987: 98, (107))

Is this a counterexample to proposed distribution of PSEE? The features expressed by the portmanteau marker *-baŋ* come from two sources while the more peripheral marker *-ŋ* only expresses features of a single source. If the PSEE generalisation only concerns features f_1, \dots, f_n associated with one phrase, (6) is not a counterexample. If the source of features does not matter, however, the order of *-baŋ* and *-ŋ* contradicts (2).

However, van Driem (1987: 98) points out that *-baŋ* also appears in *intransitive* contexts in the negated preterite. In those cases, *-baŋ* only expresses a 1SG intransitive subject in the preterite. It is possible to analyze

-baŋ as only expressing a 1SG argument in (6) without specifying whether there is a third person object argument or not. This underspecification would make *-baŋ* compatible with intransitive and transitive contexts if the latter have a third object person argument. For other configurations of subject and objects, Limbu has more specific exponents. If *-baŋ* is underspecified, example (6) also conforms to the proposed distribution of PSEE (ignoring PRT, as our focus lies on agreement markers).

Yakkha Yakkha presents a similar case. In (7), the suffix *-i* is closer to the stem than *-g(a)* but Schackow's glosses suggest that *-i* expresses more features, [2PL], than *-g(a)*, which expresses only [2]. On this analysis, with f_1 being person and f_2 being number, *-i* expresses [f_1, f_2] and is closer to the stem than *-g(a)*, expressing [f_1], giving rise to a potential counterexample to PSEE.

- (7) *khe-i-g=ha* Yakkha
 go[PST]-2PL-2=NMLZ.NON.SG
 'You went.' (Schackow 2015: 222)

But Schackow (2015: 222) points out that *-i* can be interpreted as 1PL.EXCL if it co-occurs with *-ŋ*, 2PL if it co-occurs with *-g(a)* (as in (7)), or 1PL.INCL on its own. The three possible interpretations have in common that they refer to a plural speech act participant (SAP). This way, the two suffixes can be analysed as *-i* exponing [SAP, PL] and *-g(a)* exponing [2]. On this analysis, while [SAP] and [2] are both (values of) person features, they are not identical.

The suffix *m-* is similar. Schackow (2015: 225) writes that it codes "first or second person plural agents acting on third person", as shown in (8).

- (8) *cek -met -u -m-ci -m -ga=m ...* Yakkha
 speak-CAUS-3.P-N-3.NON.SG.P-2PL.A-2 =ALT
 'Did you make them speak ...?' (Schackow 2015: 235)

The relevant markers are the second instance of *-m* and, directly following it, *-ga*. If *-m* expresses 2PL.A, then the analysis of (8) shown in the glosses again contradicts the proposed distribution of PSEE because *-m* expones more features than *-ga* and *-m* is closer to the stem. But *-ga* can also express other participant plural agents, as shown in (9), where it is glossed as 1PL.A.

- (9) *pi -wa -m =na.* Yakkha
 give-NON.PST[3.P]-1PL.A=NMLZ.SG
 ‘We (pl., incl.) give it to him.’ (Schackow 2015: 224)

If *m-* expresses an underspecified plural SAP acting on a third person patient, the sequence of *-m-ga* in (8) need not violate the the proposed distribution of PSEE, as the two suffixes do not express identical feature values.

Yakkha is thus similar to Limbu where, too, the analysis of particular morphemes determines what kind of PSEE we observe. While an analysis in terms of underspecification is more economical than assuming several homophonous morphemes which differ minimally in their feature specifications, it is interesting that the validity of the proposed distribution of PSEE should depend on a particular analysis of morphemes. If (2) reflects a principle of grammar, does it rule out that a reanalysis of *-i* and *-m* as [2PL] and [2PL.A(>3.P)], respectively, could take place?

3.2.2. Totonacan

Person and number agreement in Misantla Totonacan (Mackay 1999) involves both prefixes and suffixes. 1PL plural object agreement marking is realised in different ways depending on the properties of the subject. When the subject is third person, a 1PL object is expressed by a prefix and a suffix, as in (10a). If the subject is second person, the 1PL object is marked by two markers, glossed as 1.OBJ=3.OBJ.PL. In the presence of these markers, there is no second person subject marking, leading to ambiguity regarding the number of the subject, unless the subject is expressed overtly. An example is shown in (10b).

- (10) a. *ut kin- tihwan -yaa -na* Misantla Totonac
 s/he 1.OBJ-look.for.X-IPFV-2.OBJ
 ‘s/he looks for us’
- b. *wiř kin= laa- tihwan -yaa*
 you.SG 1.OBJ=3.OBJ.PL-look.for.X-IPFV
 ‘you look for us’ (Mackay 1999: 175)

kin- and *laa-* can appear independently of each other, see (10a) and (11).

- (11) *ta- laa- tihwan -la(ʔ)* Misantla Totonac
 3.SBJ.PL-3.OBJ.PL-look.for.X-PFV
 ‘they₁ looked for them₂/each other₁’ (Mackay 1999: 183)

With respect to PSEE, the relevant example is (10b), where *kin=* and *laa-* co-occur. There is a single first person plural object, so both prefixes appear to be linked to it. Both express person, but *laa-* expresses number in addition. In terms of *features* being expressed by the two markers, the result is a configuration in which a marker closer to the stem expresses two features [*f*₁, *f*₂] (person and number), while a more peripheral marker expresses only one feature [*f*₁]. Again, this goes against observation (2).

However, the values of the person features differ, so it is not clear whether the combination of *kin=* and *laa-* really reflects *partially superfluous* exponence.

The prefix *laa-* could be underspecified for person, being interpreted as contributing PL in the context of *kin=*. In that case, the two prefixes in (10b) do not show any PSEE with the first prefix providing a person feature and the second a number feature. Note, though, that the PL contributed by *kin=* is not necessary for first person plural objects either, as shown by (10a).

While the sequence *kin=laa-* could also be interpreted as a single marker that expresses 1PL.OBJ, (12) shows that the sequence can be interpreted as consisting of two markers, co-indexed with two arguments. In (12), *kin=* cross-references to the first person recipient while *laa-* refers to the theme argument. Given that the sequence can cross-reference two arguments and both parts can appear independently, it seems less likely that *kin=laa-* acts as one marker in some cases. If *laa-* is underspecified for person, the agreement patterns in (10)–(12) conform to the proposed distribution of PSEE.

- (12) *Juan kin= laa- iškĩ -la(ʔ) (hun-libru)* Misantla Totonac
 Juan 1.OBJ=3.OBJ.PL-give.X.to.Y-PFV DET-book
 ‘Juan gave them to me (the books).’ (Mackay 1999: 190)

3.3. Come Together: Agree and extended exponence

Grofulović & Müller (2023: 20–22) discuss forms of extended exponence in Itelmen that do not conform to (2) but argue that these do not pose a problem, because what looks like extended exponence actually reflects two separate

instances of the same features. Chukchi, a closely related language, shows similar patterns of extended exponence. One affix expresses features of the subject and the object, while another expresses features of the subject only (see e.g. Bobaljik & Branigan 2006, Dunn 1999: 179–181). (13) illustrates. The relevant markers are *n-*, a 3SG agent marker in intentional mood, and *-nin*, a portmanteau marker for 3SG subjects and objects.

- (13) *ŋelwəl* *ɣən-in* *murəɣ-ŋelwəlʔ-e* Chukchi
 herd.3SG.ABS 2SG-POSS.3SG.ABS 1PL-herd-ERG
n-ə-tenti-cqə-jəw-nin
 INT.3SG.A-EP-stamp.down-PURP-INTS-3SG.A>3SG.OBJ
 ‘Our herd will stamp your herd flat.’ (Dunn 1999: 189)

Bobaljik & Branigan (2006) locate the prefix in C and the suffix in T. The suffix is thus closer to the stem than the prefix. The suffix expresses properties of both arguments, while the prefix expresses the properties of only one, giving rise to the structure [f_1 [[V] f_1, f_2]]], contradicting the proposed distribution of PSEE. (14) shows how does this structure is derived. Bobaljik & Branigan (2006) assume that T agrees with both the subject and the object, both of which move to TP, and C only agrees with the most local argument, the subject.

- (14) [_{CP} C [_{TP} SBJ OBJ [_{T'} T ... SBJ ... ØBJ]]]

This analysis differs from the copying mechanism Grofulević & Müller (2023: 21) discuss for Itelmen, but the derivation sketched in (14) does not result in the spell-out of a single set of features (the SBJ’s ϕ -features) in two places either: the two markers are rather the result of two Agree relations operating cyclically. Because the languages are so closely related, it is not clear which analysis is on the right track and while neither pattern is a problem for (2), the nature of Agree relations is crucial to determine whether certain patterns are in fact extended exponence.

4. We Can Work it Out: Discussion

Three considerations need to be taken into account to determine whether a pattern is a true counterexample or not: (i) the domain of application; (ii) consider the whole paradigm to see if there is underspecification; (iii) the

nature of Agree (which is specific to agreement only potentially). Importantly, these considerations are not only relevant when investigating counterexamples, but also the patterns that seem to fit with the proposed distribution.

To illustrate this more concretely, consider the agreement paradigm of De'Kwana (Carib). De'Kwana has an active alignment split, and marks in intransitives whether the verb agrees with the external argument (EA), on the right of Table 3, or the internal argument (IA), at the bottom of Table 3. In transitive clauses the choice of agreement depends on the interaction of the features. For example, when there is a 3.IA, the features of the EA always are expressed (see the last two columns). All affixes are prefixes.

EA / IA	1	12	13	2	3	INTR.EA
1	–	–	–	mən-	w-	w-
12	–	–	–	–	k-	k-
13	–	–	–	nña:-mən-	nña:n-	(nña:)-n-
2	kə	–	nña:-kə-	–	kə/m-	m-
3	∅	k-	nña:-∅	ə(d)-	n-/∅	n-
INTR.IA	∅/(y-)	k(i)-	(nña:)-∅	ə(d)-	n-	

Table 3: De'Kwana (Hall 1984, 1988: 151, 287, 327).

Of specific interest are the combinations of a first person acting on a second person, and vice versa. In these cases the marker is a new morpheme: Thus 1.EA+2.IA is not a combination of *w+əd*, but *mən*. There is a doubling of first person features in case of 1PL.EA+2.IA, since both *mən* and the marker that also appears in the intransitive, *nña:*, are used. This would constitute a counterexample to PSEE, since the more general marker is expressed further away from the stem than the more specific marker. However, this cannot be the full story, since this also happens when the features are on different arguments: 2.EA+1PL.IA: in this case there is partial multiple exponence of first person features again, and again the general marker is further away from the stem.

Are both cases counterexamples, is one of them, or is neither? This question arises because it is not clear what the hierarchical structure of the features in this language is, and whether both morphemes have the same status. If the structure is [EA[IA[V]]], then 2.EA+1PL.IA would not be a counterexample when one analyses the surface position of the IA morpheme as a type of

movement. But this would mean 1PL.EA+2.IA is still a counterexample. If in both cases *nña*: is a clitic and not due to an Agree operation, then neither case constitutes a pattern in favour or against the PSEE.

This then means that in order to make one pattern fit with the generalization, another part of the pattern is lost, or will constitute a counterexample. We have not gone carefully through all the patterns that fit with the generalization. However, at this point it seems that, even though cases such as Carib (and the Chukotko-Kamchatkan languages) might be lost as evidence in favor of the hypothesis, more patterns exist that fit with the proposed distribution of PSEE than those that are counterexamples.

5. The End

We tested the predictions of Grofulović & Müller's (2023) proposed distribution of partially superfluous extended exponence in (2). We looked at a set of 13 languages from 7 language families that have been argued in previous literature to instantiate cases of extended exponence, and we focused on the interaction of subject and object agreement. We arrive at a preliminary conclusion suggesting that patterns of partially superfluous extended exponence in the realm of subject/object verb agreement fit with the hypothesis proposed by Grofulović & Müller (2023).

However, we would like to end on a note of caution. The expected patterns do not seem to be as widely attested as might be initially thought. This raises several questions we conclude with. It is possible that investigating subject/object–verb agreement does not highlight the right type of features to study. However, if there is a general mechanism of creating extended exponence (as proposed by for example Grofulović & Müller 2023), it should not matter which features do or do not show extended exponence. It might be worthwhile to investigate clearly restricted cases of specific features to determine if there are any correlations to be found for which cases extended exponence exist more readily. Even though it thus still has to be seen whether there should be a mechanism that allows for (a)symmetries in extended exponence, it is clear that the proposal made by Grofulović & Müller (2023) and Müller (2007) leads to finding interesting new patterns.

Abbreviations

1 = first person, 2 = second person, 3 = third person, A = agent-like argument of a canonical transitive verb, ABS = absolutive, ALT = alternative, CAUS = causative, DAT = dative, DET = determiner, DM = Distributed Morphology, DU = dual, EA = external argument, EP = epenthetic vowel, ERG = ergative, EXCL = exclusive, IA = internal argument, INCL = inclusive, INT = intentional mood, INTR = intransitive, INTS = intensifier, IPFV = imperfective, LOC = locative, NEG = negative, NMLZ = nominalization, NON = non-x, OBJ = object, OT = Optimality Theory, P = patient-like argument of a canonical transitive verb, PFV = perfective, PL = plural, POSS = possessive, PRT = preterite, PSEE = partially superfluous extended exponence, PST = past, PURP = purposive, SAP = speech act participant, SBJ = subject, SG = singular.

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An Agree analysis of the morphological aspect in Slavic

Petr Biskup

Abstract

The literature on Slavic aspect uses the notion of “derivational history” (ascribed to Karcevski 1927) to connect derivationally verbs that have a related meaning but differ in the morphological aspect and in the presence of various aspectual morphemes. This article shows that this concept can be modeled in terms of a bottom-up morphosyntactic derivation of the minimalist approach. It proposes to derive the cyclic morphological aspect behavior of Slavic verbs with the operation Agree, in connection with minimality based on dominance relations in the verbal head. The analysis has the consequence that aspectual markers like prefixes, the imperfectivizing suffix and the semelfactive suffix are not exponents of the aspectual head; they only license the presence of the corresponding aspectual operator in the aspectual phrase. The proposal also argues for severing the verbalizing head from the head introducing the external argument.

1. Derivational histories

Morphological aspect is marked by various prefixes and suffixes in Slavic¹ and the important fact is that the morphological aspect value can be “overwritten” by the next morpheme added during the verb formation process. This is a consequence of the fact that the aspectual interpretation, i.e. the place where the morphological aspect value is interpreted, is dissociated from aspectual markers. This article proposes to derive the cyclic aspectual behavior of Slavic predicates with the operation Agree. There are some Agree type approaches to Slavic aspect; see e.g. Svenonius (2004), Borer (2005), Arsenijević (2007), Biskup (2019); but they do not offer an Agree analysis of all aspectual markers (in connection with derivational histories). There are also approaches arguing against the Agree analysis; see Tatevosov (2020).

The typical derivational history of Slavic predicates looks like the Slovak example in (1) (see also e.g. Vinogradov 1952, Forsyth 1970, Švedova 1980,

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¹I will call them aspectual markers.

Sekaninová 1980, Grzegorzczkova et al. 1984, Smith 1991, Karlík et al. 1995, Pashov 1999, Nicolova 2008, Łaziński 2020). Unprefixed verbs are imperfective in the vast majority, as demonstrated in (1a).² When they are prefixed, they become perfective; see example (1b).³ When the secondary imperfective suffix is attached, the verbs become imperfective again, as shown in (1c). When the verb becomes even bigger and another prefix is adjoined, the predicate is perfectivized, as illustrated in example (1d).

- | | | | | |
|-----|----|--|----|---|
| (1) | a. | kry-t' ^{IPF}
cover-INF
'to cover'
'to be covering' | b. | za-kry-t' ^{PF}
behind-cover-INF
'to cover' |
| | c. | za-krý-va-t' ^{IPF}
behind-cover-SI-INF
'to cover'
'to be covering' | d. | po-za-krý-va-t' ^{PF}
DIST-behind-cover-SI-INF
'to cover one after another' |

This cyclic behavior first shows that the morphological aspect value can change with the added aspectual morphology. Second, it demonstrates that the aspect value is determined by the last attached aspectual morpheme (let us call it *Morphological Aspect Generalization, MAG*). This was already observed e.g. by Karcevski (1927) and Isačenko (1962). Particular Slavic languages then differ with respect to which prefixes allow secondary imperfectivization (i.e., attach before the secondary imperfective suffix); how many superlexical prefixes can stack; and how the particular prefixes are ordered. These differences, however, are in accord with the MAG generalization, as demonstrated below.

²See also footnote 5. The following abbreviations are used: ACC = accusative, COMP = completive, CUM = cumulative, DAT = dative, DEL = delimitative, DIST = distributive, EXC = excessive, GEN = genitive, HAB = habitual, INF = infinitive, IPF = imperfective, LP = lexical prefix, NOM = nominative, PART = participle, PF = perfective, REP = repetitive, SEML = semelfactive, SI = secondary imperfective, SP = superlexical prefix, TH = theme (vowel). Lexical (internal) prefixes are glossed with the English prepositional meaning and superlexical (external) prefixes with the abbreviated aktionsart meaning in small capital letters. This is, however, not to say that the verbal prefix always bears the specific prepositional meaning.

³An exceptional behavior can be observed in case of prefixes borrowed from other language, like Latin and Old Church Slavonic, and in case of imperfective prefixed verbs originating from Old Church Slavonic like *závisiet* 'to depend', *podliehat* 'to be subject to' (cf. also e.g. the Russian *zaviset* 'to depend', *podležat* 'to be subject to').

For instance, Bulgarian allows massive stacking in contrast to e.g. Russian and Czech. According to Istratkova (2004), it allows up to seven superlexical prefixes. Such cases are rare but four prefixes can be found easily; consider (2).⁴ The example shows that every prefixation produces a perfective verb and if the secondary imperfective suffix *-va-* is added on top of the prefixes, the verb becomes imperfective.⁵ Thus, this behavior is in line with MAG.

- (2)
- a. raz-dam^{PF}
from-give
'distribute'
 - b. pre-raz-dam^{PF}
REP-from-give
'redistribute'
 - c. po-pre-raz-dam^{PF}
DEL-REP-from-give
'redistribute a little'
 - d. iz-po-pre-raz-dam^{PF}
COMP-DIST/DEL-REP-from-give
'redistribute completely little by little'
 - e. iz-po-pre-raz-da-va-m^{IPF}
COMP-DIST/DEL-REP-from-give-SI-1.SG
'redistribute completely little by little' (Istratkova 2004: 390)

The following derivational history shows that the Russian delimitative *po-* 'on' adjoins to the imperfective stem. It cannot attach before the secondary imperfective morpheme since the form **po-ot-kry-t'* is ungrammatical.

- (3)
- | | |
|--|---|
| <ul style="list-style-type: none"> a. kry-t'^{IPF}
cover-INF
'to cover'
'to be covering' c. ot-kry-va-t'^{IPF}
away-cover-SI-INF
'to open'
'to be opening' | <ul style="list-style-type: none"> b. ot-kry-t'^{PF}
away-cover-INF
'to open' d. po-ot-kry-va-t'^{PF}
DEF-away-cover-SI-INF
'to open for a while' |
|--|---|

⁴The translations are taken from Istratkova (2004: 309); glosses are of my own.

⁵The unprefixed verb *dam* 'give' is perfective, as is in other Slavic languages. There are approximately fifty unprefixed verbs in Bulgarian that are perfective (Pashov 1999, Nicolova 2008).

In contrast, the Czech delimitative *po-* adjoins to the perfective verb, as in (4c), before attaching the secondary imperfective morpheme, as illustrated in example (4d). Such variations are standardly analyzed in terms of selectional restrictions and in terms of different positions in clausal hierarchy; see e.g. Jabłońska (2007) and Tatevosov (2008, 2015). Specifically, whereas the Russian delimitative *po-* selects imperfective stems, in Czech the delimitative *po-* does not have such a restriction.

- (4) a. krý-t^{IPF}
 cover-INF
 ‘to cover’
 ‘to be covering’
- b. od-krý-t^{PF}
 away-cover-INF
 ‘to uncover’
- c. po-od-krý-t^{PF}
 DEL-away-cover-INF
 ‘to uncover a little/for a while’
- d. po-od-krý-va-t^{IPF}
 DEL-away-cover-SI-INF
 ‘to uncover a little/for a while’
 ‘to be uncovering a little/for a while’

Since the verb in (3d) is perfective and the predicate in (4d) imperfective, the examples again show that the morphological aspect value is determined by the last attached morpheme. In fact, *poodkrývat* is biaspectual because if it has the distributive meaning ‘to uncover one after another’, it is perfective.⁶ This, however, does not tell against the MAG generalization because the derivational history of the perfective, distributive *poodkrývat* is then as shown in example (5). That is, first the imperfectivizing suffix is attached and only after it, the distributive *po-* is adjoined. This is in line with Zinova & Filip (2015), who argue that morphologically complex biaspectual verbs are structurally ambiguous.

⁶This biaspectuality differs from biaspectuality of verbs that are new in the language system (like loan words) and do not have the aspectual value established yet.

- | | | |
|-----|--|---|
| (5) | a. krý-t ^{IPF}
cover-INF
‘to cover’
‘to be covering’ | b. od-krý-t ^{PF}
away-cover-INF
‘to uncover’ |
| | c. od-krý-va-t ^{IPF}
away-cover-SI-INF
‘to uncover’
‘to be uncovering’ | d. po-od-krý-va-t ^{PF}
DIST-away-cover-SI-INF
‘to uncover one after another’ |

To demonstrate that the form *poodkrývat* is indeed bisapectual, consider the following examples, containing two standard perfectivity/imperfectivity diagnostics (see e.g. Filip 1999), the present tense test and the future auxiliary test. The delimitative *poodkrývat* in the present tense has the progressive interpretation, as shown in (6a). This is also confirmed by the compatibility of the verb with the adverbial *zrovna ted’* ‘right now’. From this, one concludes that *poodkrývat* with the delimitative meaning is imperfective. At the same time, the singular object excludes the possibility that that the prefix *po-* in the verb *poodkrývat* is distributive. Example (6b), with the future auxiliary *bude* ‘will’ and the delimitative interpretation of *poodkrývat*, confirms that the verb is imperfective.

- | | |
|-----|--|
| (6) | a. (Zrovna ted’) moderátor soutěžícímu pomalu poodkrývá
right now host.NOM contestant.DAT slowly uncovers
cíp slavného obrazu.
corner famous.GEN painting.GEN
‘(Right now) the host is slowly uncovering a corner of the famous
painting for the contestant.’ |
| | b. Moderór bude soutěžícímu cíp slavného
host.NOM will contestant.DAT corner famous.GEN
obrazu poodkrývat pomalu.
painting.GEN uncover.INF slowly
‘The host will slowly uncover a corner of the famous painting for
the contestant.’ |

Let us now consider the distributive *poodkrývat*. In contrast to the delimitative *poodkrývat* with the progressive interpretation, the present tense of the distributive *poodkrývat* brings about the future interpretation, as demonstrated in (7a). This is also supported by the fact that the predicate is compatible with

the adverbial *za pět minut* ‘in five minutes’. Given this, the conclusion is that the distributive verb is perfective. This in turn means that generally *poodkrývat* is biaspectual.

- (7) a. Podle plánu kurátor (za pět minut) poodkrývá
 according.to plan curator.NOM in five minutes will.uncover
 obrazy (jeden po druhém).
 paintings.ACC one after another
 ‘According to plan, the curator will uncover paintings (one after another) in five minutes.’
- b. Kurátor bude podle plánu poodkrývat
 curator.NOM will according.to plan to.uncover
 obrazy (jeden po druhém).
 paintings.ACC one after another
 ‘According to plan, the curator will uncover paintings a little (one after another).’

At first glance, it looks strange that the distributive interpretation is also possible with the future auxiliary, as shown in (7b). A closer look at the sentence however reveals that the verb *poodkrývat* has the delimitative meaning. That is, the paintings will be uncovered only to a certain extent. The distributive interpretation then is facilitated by the plural form of the object.⁷

To sum up, both derivational histories of *poodkrývat* – (4) and (5) – start with the imperfective *krýt* ‘to cover’; go through the perfective *odkrýt* ‘to uncover’; but they differ in the third (c) and the fourth (d) step. While in the derivational history of the delimitative *poodkrývat* in (4), the delimitative *po-* attaches before (is structurally lower than) the secondary imperfective suffix, in the derivational history of the distributive *poodkrývat* in (5), the distributive *po-* attaches after (is structurally higher than) the secondary imperfective suffix.

As to differences in the ordering of prefixes, distributive *po-* ‘on’ is the highest prefix in the prefixal hierarchy of Russian and Polish (see Tatevosov 2008 and Wiland 2012). In Polish, the completive *do* ‘to’ can only occur below

⁷The prefix *po-* can also have a surface spatial meaning with *krýt*; consider *po-krýt* ‘to cover, to spread over’. Since spatial prefixes like this *po-* are considered to be lexical, the prediction is that the verb can be imperfectivized by the secondary imperfective suffix. This prediction is borne out since *po-krý-va-t* ‘to (be) cover(ing), to (be) spread(ing) over’ is grammatical. It also follows that the spatial *od-* ‘away’ – being merged in a low position – cannot attach to this secondary imperfective verb: **od-po-krý-va-t*.

any instance of the superlexical prefix *po-*, as shown by example (8), in which the distributive or delimitative *po-* is outside the completive *do-*.

- (8) *po-do-kańczać robotę*
 DIST/DEL-COMP-finish work
 ‘to finish one’s work’ (Wiland 2012: 315)

In contrast, in Bulgarian, the completive (terminative) *do-* is higher than the distributive *po-* in the prefixal hierarchy, as argued by Istratkova (2004) and Markova (2011), and as demonstrated in (9), with the completive *do-* occurring further away from the root than the prefix *po-*.

- (9) *do-iz-po-raz-pre-pro-dam*
 COMP-COMP-DIST-EXC-REP-through-give
 ‘finish re-selling everything to the end’ (Istratkova 2004: 309)

Such differences again do not tell against the MAG (and the analysis below) because the verbs under discussion are perfectivized by the last prefix – by the distributive/delimitative *po-* in (8) and by the completive *do-* in (9)– regardless of the exact form of the prefixal hierarchy.⁸

2. Assumptions, minimality and the verbal structure

I adopt a morphosyntactic minimalist approach, in which the value of the morphological aspect is determined in the head of the aspectual phrase. The perfective value corresponds to the inclusion of the event time in the reference time (the INCLUDES operator) and the imperfective value corresponds to the inclusion of the reference time in the event time at the semantic interface (the INCLUDED operator; see e.g. Paslawska & von Stechow 2003). There is only one aspectual head responsible for interpretation and this head has an aspect feature. Following Müller (2010) and similar conventions in Roberts & Roussou (2002), Sternefeld (2006) and Heck & Müller (2007), I assume that there are two types of features, structure-building features triggering Merge operations, with bullets: [**•F•**], and probe features triggering Agree operations, with asterisks: [***F***]. Given this, the aspectual head has an aspect

⁸I remain agnostic as to which approach to the prefixal hierarchy is the most appropriate. There are several possibilities, e.g. Cinque’s (1999) approach, like in Markova (2011), a ternary distinction, as in Tatevosov (2008), and the nanosyntactic approach, as in Wiland (2012).

probe feature [**Asp**].⁹ I keep the derivational system as minimal as possible and assume that the operation Agree only proceeds in the downward direction and that there is no m-command. Since prefixes – both lexical and superlexical – have a perfectivizing effect, as demonstrated by the examples in the preceding section, I assume that they bear a perfective aspect feature [*Asp:pf*].¹⁰

In contrast, the secondary imperfective suffix has an imperfective aspect feature [*Asp:ipf*], given that it imperfectivizes the verbal stem, as shown in examples (1)–(5). Also this affix is not just agreement morphology since it has other semantic effects as well. The imperfectivizing effect of the imperfective feature – licensing the INCLUDED operator in the aspectual head – can go hand in hand e.g. with the partitive-homogenizing or eventizing meaning of the suffix itself; see discussion in Łazorczyk (2010) and Tatevosov (2015), respectively. Assuming the correspondence between the time of the attachment of a morpheme and its structural position (recall the MAG generalization, according to which the morphological aspect value is determined by the last attached aspectual morpheme), aspectual properties of Slavic predicates can be derived by minimality. That is, the morphological aspect value is determined by the element that is structurally closest to the aspectual head. Given that lexical prefixes are structurally lower than superlexical prefixes (see Babko-Malaya 2003, Svenonius 2004, Slabakova 2005, Richardson 2007, Markova 2011; and also examples (1)–(5); but see also Žaucer 2009 and Zinova 2016 for criticism of the lexical-superlexical distinction), the hierarchy relevant to the operation Agree, with appropriate aspect features, looks like (10). *SP* stands for a superlexical prefix, which can be iterated, *SI* for the secondary imperfective suffix and *LP* for a lexical prefix.¹¹

⁹The bullet features would be involved e.g. in selectional properties of particular prefixes. They could partially derive differences in the ordering of prefixes.

¹⁰The perfective feature of prefixes (triggering the INCLUDES interpretation of the morphological aspect in *Asp*) is related to prefixal lexical aspect properties. It is known that Slavic prefixes – besides their spatial meaning and the perfectivizing effect – bring about resultativity, telicity and quantificational meanings (for some recent proposal with respect to this relation, see e.g. Biskup 2019). In approaches assuming (un)interpretability of features, the perfective and imperfective features on aspectual markers would be interpretable. This would neutralize counter-arguments to the Agree-based analysis laid out by Tatevosov (2020).

¹¹The distinction between lexical and superlexical prefixes is not crucial to the analysis proposed. The analysis can derive the morphological aspect interpretation correctly irrespective of whether we choose the lexical-superlexical distinction, like Svenonius (2004), the tripartite distinction, as in Markova (2011), or any other more elaborated classification.

(10) [Asp*_{Asp*} [SP_{Asp:pf} [SI_{Asp:ipf} [SP_{Asp:pf} [LP_{Asp:pf}]]]]]

Building on the long-standing tradition of taking the secondary imperfective suffix to be an exponent of the imperfective aspect, formal approaches standardly treat the imperfective suffix as an exponent of the aspectual head Asp (e.g. Dimitrova-Vulchanova 1999, Pereltsvaig 2004, Ramchand 2004, Gehrke 2008). However, since there is no m-command Agree in the system proposed, the secondary imperfective marker cannot represent the aspectual head. If it were the case, we could not derive perfective predicates with superlexical prefixes merged higher than the imperfectivizing suffix, like in examples (1d), (3d) and (5d).

In addition, the derivational system would need a mechanism for overwriting of the imperfective value of the secondary imperfective aspectual head. The mechanism would be necessary in the strict derivational system also if the imperfectivizing suffix were lower and some superlexical prefixes higher than the aspectual head. Further, if the higher superlexical prefixes were further away from the aspectual head than the imperfectivizing suffix, the aspect value of the aspectual head could not be determined by minimality. Thus, all relevant aspectual affixes are lower than the aspectual head, as illustrated in (10).

Taking the empirical perspective now, there are data showing that the imperfective interpretation is dissociated from the secondary imperfective exponent. Romanova (2004), Tatevosov (2015) and Mueller-Reichau (2020) argue that the imperfectivizing suffix attaches inside the verbal domain in Russian. Using a scope argument similar to the one in Tatevosov (2015), I show below that the Czech cumulative *na-* also argues for the imperfectivizing suffix placed below the projection with the agentive argument. Specifically, the perfective form in (11a) is derived by attaching the cumulative *na-* to the verb with the imperfectivizing suffix in (11b), not by attaching the prefix to the verb without it, as demonstrated by the ungrammatical result in (11c).¹²¹³

¹²The “imperfective” selectional property of the cumulative *na-* could be based on the fact that the prefix encodes an extensive measure function that applies to non-quantized predicates, as proposed by Filip (2000, 2005).

¹³The imperfective form *s-bír-a-t* in (11b) is derived from the perfective *se-br-a-t* (contained in the ungrammatical **na-se-br-a-t*^{PF} in (11c)) by the secondary imperfective suffix *-a-*, which induces the lengthening of the root vowel ($\emptyset \rightarrow \acute{i}$, following the Proto Indo-European vowel-gradation; see e.g. Nandris 1069), in contrast to the theme vowel *-á-* in the simplex *br-á-t*^{IPF} ‘to take’, which itself is shortened by prefixation because of the templatic requirement, like in the grammatical *se-br-a-t*^{PF}, a part of **na-se-br-a-t*^{PF} in (11c).

- (11) a. *na-s-bír-a-t*^{PF} *něco* / *jablka* / **jablko*
 CUM-with-take-SI-INF something / apples / apple
 ‘to pick amount of something/apples/*apple’
- b. *s-bír-a-t*^{IPF}
 with-take-SI-INF
 ‘to pick’
 ‘to be picking’
- c. **na-se-br-a-t*^{PF}
 CUM-with-take-TH-INF

Furthermore, the prefix *na-* quantifies over the object, as shown in (12a) by the contrast between the ungrammatical status of the quantized, singular object *jablko* ‘apple’ and the grammatical status of the plural, non-quantized object and the pronoun *něco* ‘something’, which can also have the non-quantized interpretation. In contrast, the prefix does not quantify over an agentive subject, as shown in example (12), where the bare plural subject and the singular, quantized object induce ungrammaticality.¹⁴ Taken the two pieces together, this means that superlexical prefixes like the Czech cumulative *na-* attach below the head introducing the agent and above the imperfectivizing suffix. Then, given that the aspectual interpretation and the aspectual phase is usually taken to occur above the verbal projection (e.g. Babko-Malaya 2003, Borer 2005, Filip 2005, Błaszczak & Klimek-Jankowska 2012, Gribanova 2015), the conclusion is that the aspectual (here the imperfective) interpretation is dissociated from the imperfectivizing suffix.¹⁵

- (12) **Sousedi* *nasbírali* *jablko*.
 neighbor.NOM.PL picked.PL apple.SG

Given the fact that categorizing heads merge immediately above the $\sqrt{\text{root}}$ and given the presence of the imperfectivizing suffix and superlexicals like the cumulative *na-* below the head introducing the agent, it follows that the agentive head cannot be the verbalizing *v*. If correct, then we have another argument for severing *v* from the external argument introducing head

¹⁴The cumulative *na-* can however quantify over unaccusative subjects, as shown e.g. for Russian by Romanova (2004) and Schoorlemmer (1995). This does not pose a problem since such subjects merge in the structural position of the object.

¹⁵There are also empirical arguments for severing perfectivity from prefixes; see Tatevosov (2011).

(concretely, the Voice head); see e.g. Pylkkänen (2002), Collins (2005) and Harley (2013a). Furthermore, since theme vowels provide information about the syntactic category and determine the conjugation class in Slavic and since they are closer to the $\sqrt{\text{root}}$ than the secondary imperfective suffix, as shown in (13a) and (13b), they can be treated as the verbalizing head v .¹⁶ The semelfactive suffix, like *-nu-* in (13c) and (13d), can also be treated as a verbalizing theme.¹⁷ However, in contrast to the other themes, it has a perfectivizing effect, as shown in (13c) and (13d). Hence, it bears a perfective aspect feature.

- (13) a. *prze-rab-i-a-ć*
 REP-do-TH-SI-INF
 ‘to redo’
 ‘to be redoing’ (Polish)
- b. *do-hr-á-va-t*
 COMP-play-TH-SI-INF
 ‘to finish playing’
 ‘to be finishing playing’ (Czech)
- c. *krik-nu-t*^{PF}
 shout-SEML-INF
 ‘to shout out’ (Russian)
- d. *vy-křik-nu-t*^{PF}
 out-shout-SEML-INF
 ‘to give a shout’ (Slovak)

To sum up, the relevant piece of the verbal structure with appropriate aspect features looks like (14).

- (14) [_{AspP} Asp*Asp* [_{VoiceP} Agent [_{Voice} [_{SPP} SP_{Asp:pf} [_{SIP} SI_{Asp:ipf} [_{SPP} SP_{Asp:pf} [_{vP} v (SEML_{Asp:pf}) [_{\sqrt{P}} $\sqrt{\text{ }}$ [_{PP} LP_{Asp:pf}]]]]]]]]]]]

SPP is just an abbreviation for a superlexical prefix phrase. Since I follow the

¹⁶But see Matushansky (2009) for the claim that in Russian theme vowels do not behave identically; e.g. one type of the theme *-e-* is a verbalizing element and attaches before the imperfectivizing suffix, whereas the second theme *-e-* is not a verbal head and disappears in imperfectivized forms.

¹⁷The semelfactive suffix is incompatible with the imperfectivizing suffix in North Slavic but in some varieties of Serbo-Croatian, the two markers can co-occur. Then, the semelfactive suffix is inside the imperfectivizing suffix, as predicted.

standard approach, in which morphemes are heads structurally, superlexical prefixes head their own projections and consequently, the phrase SPP can be iterated. The higher SPP stands for phrases projected by superlexical prefixes like the Czech cumulative *na-* in (11), and the lower SPP represents phrases projected by superlexicals like the completive *do-* in (13b). LP stands for a lexical prefix, which merges in the complement of the verb or the verbal root (Ramchand 2004, Svenonius 2004, Gehrke 2008, Biskup 2019: see).¹⁸ Since the exact status of the verbal complement is not important for the analysis, I assume for simplicity that the lexical prefix is a preposition projecting a PP, as shown in (14). As discussed in section 1, languages vary with respect to stacking – i.e. how many times the phrases headed by superlexical prefixes (SPPs) are iterated – and the fact where particular superlexical prefixes are located – whether above or below the imperfectivizing projection SIP – and the fact in which order they occur, i.e. what selectional requirements are present in the particular language.¹⁹

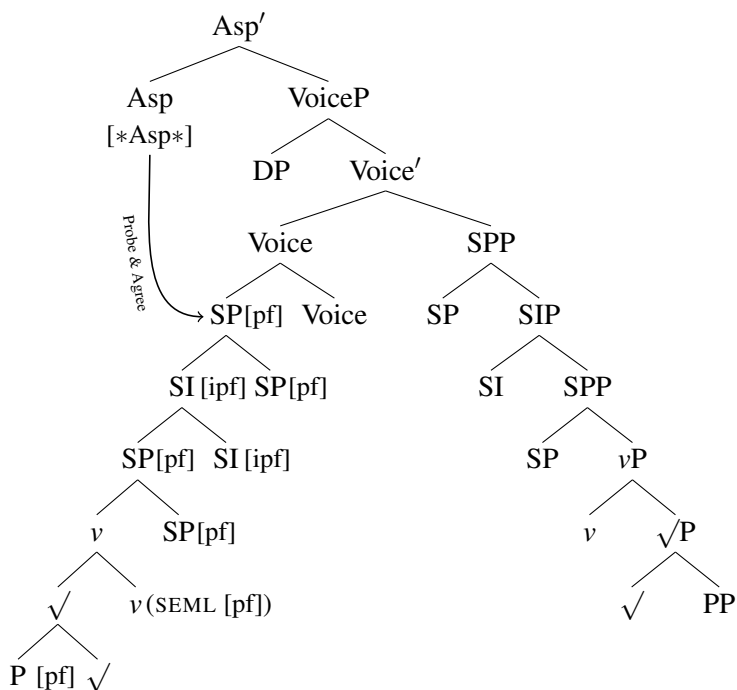
3. Deriving the aspect value: Head movement and dominance

Since I adopt a syntactic approach to morphology and employ head movement, we receive the derivation in (15), when the head Asp merges with its complement; see Gribanova (2013, 2015) for arguments that in Russian, the verb is composed via head movement to the aspectual head. This proposal also has the following advantage: If the projection introducing the external argument (i.e. VoiceP) is a phase and if head movement is used, there will be no problem for the probing aspectual head with respect to the Phase Impenetrability Condition (Chomsky 2001), in contrast to approaches that would leave the particular morphemes inside the phasal complement. Hence, when the aspect feature of Asp probes, the complex verbal head is already in the head Voice and therefore it is accessible for the operation Agree, as illustrated below.

(15)

¹⁸Given that there is only one structural complement position, it follows that there can be only one lexical prefix attached to a verb (but see also Žaucer 2009 for prefixed verbs containing coordinated constructions).

¹⁹An analysis of this variance is outside the scope of this paper.



The head movement operation will derive the desired relations if minimality is based on the dominance relation. The head to which the moving element adjoins projects – including its aspect feature, as shown above – i.e., it dominates the adjoined head; therefore it is closer to the c-commanding, probing aspectual head. Consequently, the aspect feature of the highest dominating head values the aspect feature of the aspectual head. It should be obvious now how this proposal derives the pattern from section 1, according to which the aspectual interpretation is determined by the last attached aspectual morpheme.

Specifically, in cases like the distributive *po-za-kry'-va-t'*^{PF} ‘to cover one after another’ in the Slovak example (1d), the highest head with an aspect feature (concretely, the perfective one) is the distributive *po-*, which spells out the higher superlexical head SP in (14) and (15). This head dominates all the other heads with an aspect feature in the complex Voice head in (15), hence the verb is perfective. Nothing changes on the aspect value in case of stacking of higher superlexical prefixes because they always have the perfective aspect feature. Simply, the highest one values the aspect feature of the aspectual head.

If there is no (higher) superlexical prefix in the verb, like in *za-krý-va-t*^{IPF} ‘to (be) cover(ing)’ in example (1c), the superlexical head (SP) is missing in the Voice head and the closest head relevant to the probing aspectual head is the secondary imperfective head (SI). Its imperfective feature determines the morphological aspect value of the aspectual head, deriving an imperfective predicate. The same result is obtained in cases where the imperfectivizing suffix co-occurs with a lower superlexical prefix (SP) – like the delimitative *po-* in *po-od-krý-va-t*^{IPF} ‘to (be) uncover(ing) a little/for a while’ in the Czech example (4d) – since the secondary imperfective suffix (SI), with its imperfective feature, dominates all other heads having an aspect feature. In the same way, an imperfective verb is derived if there are more superlexical heads (SP) dominated by the secondary imperfective suffix (SI), as in *iz-po-pre-raz-da-va-m*^{IPF} ‘redistribute completely little by little’ in the Bulgarian example (2e).

In verbs containing only a lexical prefix, like the Slovak *za-kry-t*^{IPF} ‘to cover’ in (1b), superlexical projections and the imperfectivizing projection are missing. Hence, the closest element in the head Voice in (15) having an aspect feature is the preposition P. Its value then determines the perfective aspect of the verb. Given that lexical prefixes perfectivize simplex verbs (which are mostly imperfective) and merge in the verbal complement – so it is the root that projects in the complex verbal head when it merges with P – the root cannot have an imperfective feature.²⁰ If it were the case, we would derive lexically prefixed imperfective verbs without the imperfectivizing suffix, contrary to the facts.

Hence, the morphological aspect value of simplex verbs like *kry-t*^{IPF} ‘to (be) cover(ing)’ in example (1a) will be derived by a default mechanism.²¹ Since the operation Agree can fail (Preminger 2011, 2014) and languages employ default values (like in the realm of case, where nominative is used as the default value in certain configurations), I assume that if the aspectual head does not find an aspect feature in its c-command domain, it receives the imperfective aspect value when it is sent to the interfaces. This is in accordance with the standard approach to Slavic aspect, which takes imperfectivity to be the default aspect value.

²⁰Only the root of the exceptional perfective simplex verbs like *dam* ‘give’ (see footnote 5) has an aspectual feature, the perfective one.

²¹Alternatively, one could assume that the root bears an imperfective aspect feature and that lexical prefixes merge structurally higher than the root (see Richardson 2007: 61–62).

In semelfactive predicates like the Russian unprefixated *krik-nu-t*^{PF} in (13c), the semelfactive suffix, projecting *v*, is the only element with an aspect (perfective) feature. Hence, the aspect value of the verb is perfective. If the semelfactive suffix co-occurs with a prefix, the predicate will be perfective, too. While in the case of a lexical prefix, like in the Slovak *vy-krik-nu-t*^{PF} in (13d), the aspect feature of Asp will be valued by the perfective feature of the semelfactive *v* head, in the case of a superlexical prefix, the aspect head will be valued by the perfective feature of the superlexical feature.

Slovak and Czech also productively form imperfective verbs by means of the habitual suffix, which attaches to primary or derived/secondary imperfective predicates; see (16a) and (16b), respectively. The examples show that the habitual marker occurs between the secondary imperfective suffix and the tense/infinitival suffix. In addition, interpretational properties of example (16c) show that the habitual operator scopes over negation, whose projection is standardly taken to occur higher than the aspectual projection.

- (16) a. čít-a-va-t^{PF}
 read-TH-HAB-INF
 ‘to tend to read’ (Slovak)
- b. vy-jíd-á-va-t^{IPF}
 out-eat-SI-HAB-INF
 ‘to tend to clear one’s plate’ (Czech)
- c. Ne-brá-va-l s sebou žádné knihy.
 NEG-take-HAB-PART with self none books
 *‘He did not tend to take any books with him.’ (Czech)

Thus, if it is correct that the habitual marker *-va-* in cases like (16a)–(16c) spells out the habitual head, which is higher than Asp, then it cannot participate in the valuation of the aspect feature of Asp. However, since the habitual marker does not change the morphological aspect value of the base predicate, it does not pose a problem for the current analysis.

As to linearization, head movement derives the correct ordering for all morphemes except superlexical prefixes. The derivation in (15) incorrectly predicts them to occur either between the theme vowel and the imperfectivizing suffix – for the low superlexical prefix – or between the imperfectivizing suffix and the infinitival ending – for the high superlexical prefix – as shown in (17)

for the Czech verb *po-od-krý-va-t*.²² Recall that this verb is either imperfective (4) or perfective (5), depending on whether *po-* is delimitative (i.e., a lower SP) or distributive (a higher SP), respectively. Example (17a) shows the incorrect, predicted order for the delimitative *po-* and example (17b) for the distributive *po-*.

- (17) a. *od-krý-Ø-**po**-va-t
 away-cover-TH-DEL-SI-INF
 intended: ‘to uncover a little/for a while’
 ‘to be uncovering a little/for a while’

There are at least three ways how to cope with this issue. The first option is to parametrize head movement and allow head adjunction to the right in the case of superlexical prefixes, with the assumption that syntax fully determines linearization. The second possibility is to assume that syntax derives only hierarchical structure; that linearization happens at the morphology-syntax interface and that morphemes themselves specify whether they are linearized to the left or the right (see Harley 2013b for Affix-Specific Linearization). In this case, prefixes would be specified for the linearization to the left in contrast to the other morphemes. The third possibility is to retain the standard head movement to the left and ascribe (superlexical) prefixes specific morphophonological properties that will force them to linearize to the left; see e.g. Caha & Ziková (2016) for discussion of the proclitic character of short verbal prefixes in Czech. Since the linearization issue is not crucial to deriving the morphological aspect value, I leave the final decision for future research.

4. Conclusions

Slavic languages display a cyclic morphological aspect pattern, in which the aspectual value of predicates can change with the added aspectual morphology and in which the aspectual interpretation is determined by the last attached aspectual morpheme (dubbed as derivational history). I have proposed to derive this aspectual behavior with the operation Agree, using minimality based on dominance relations in the verbal head composed by head movement. Under the current analysis, the last aspectual morpheme is the highest head in the complex verbal head that bears an aspect feature and is accessible to

²²The theme suffix – syntactically *v-* is null in this verb.

the aspectual head. Thus, aspectual markers like prefixes, the semelfactive suffix and the imperfectivizing suffix do not spell out the aspectual head; they only license the presence of the corresponding aspectual operator in the aspectual head. The habitual aspectual marker does not spell out the aspectual head, too, but given that it merges higher than the aspectual head, it does not participate in the aspectual Agree operation. It has been shown that certain morphologically complex verbs are biaspectual since they contain a homophonous prefix that can merge in distinct structural positions, either above or below the secondary imperfective suffix. This means that the verb can be derived in two different ways; it has two derivational histories.

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Strength in the nominal domain

Imke Driemel*

Abstract

Phenomena which suggest that morphology feeds syntax, such as complementizer trace effects or the correlations discussed under the Rich Agreement Hypothesis, clash with the popular current view that spell-out happens post-syntactically. A solution offered in a recent presentation by Müller (2022) is to derive these interactions as a consequence of the intrinsic weight a linguistic object is assigned to, which then influences its activity in different modules of grammar. In the spirit of Squishy Grammar (Ross 1973), Müller develops a model within the framework of Gradient Harmonic Grammar (Smolensky & Goldrick 2016), which derives such interactions keeping the late insertion hypothesis intact. As most of the presentation focuses on clausal phenomena, this paper explores in how far similar predictions can be made for the nominal domain. I will discuss to what extent the rationale implies whether noun phrase internal movement is due to head movement or phrasal movement.

1. Strength in Grammar

Recently, Müller (2022) proposed that morphological realization correlates with the strength of a syntactic object. Based on a number of observations that imply an interaction of morphology and syntactic movement, Müller argues for an Optimality-based framework, i.e. Gradient Harmonic Grammar (Smolensky & Legendre 2006, Smolensky & Goldrick 2016), where functional categories are assigned abstract *weights*, which on the one hand determine whether syntactic operations can apply, and on the other influence their degree of morphological realization. Leaving most of the technical details aside, we will first summarize a case study involving head movement (section 1.1), where the presence of movement correlates with rich morphological output.

*Eine kleine Fußnote kann vermutlich nicht ausdrücken, wieviel ich von Gereon gelernt habe in den fast fünf Jahren, die ich in Leipzig verbringen durfte. Deshalb belasse ich es einfach bei den Gedanken, die mir zu seinem letzten Vortrag gekommen sind und die in diesem Papier niedergeschrieben sind. Danke für alles, Gereon!

We then move on to present his view on phrasal movement (section 1.2), where overt morphological realization of a head seems to block movement, more concretely the extraction of constituents out of the phrase the head projects.

1.1. The Rich Agreement Hypothesis

A close connection between morphology and syntax can be observed with V-to-T movement, as it seems to be conditioned by rich subject agreement morphology on the verb across languages (Pollock 1989, Holmberg & Platzack 1995, among many others). For instance, V-to-T movement is required in Icelandic (1), but prohibited in Danish (2).

(1) *V-to-T movement in Icelandic*

- a. *að Anna T oft [_{VP} [_{V-V} borðar] [_{VP} t tómatu]]
 that Anna often eats tomatoes
 ‘that Anna often eats tomatoes’
- b. að Anna [_T [_{V-V-T} borðar]] oft [_{VP} t_{V-V} [_{VP} t tómatu]]
 that Anna eats often tomatoes
 ‘that Anna often eats tomatoes’

(2) *No V-to-T movement in Danish*

- a. at Anna T ofte [_{VP} [_{V-V} spiser] [_{VP} t tomater]]
 that Anna often eats tomatoes
 ‘that Anna often eats tomatoes’
- b. *at Anna [_T [_{V-V-T} spiser]] ofte [_{VP} t_{V-V} [_{VP} t tomater]]
 that Anna eats often tomatoes
 ‘that Anna often eats tomatoes’

Accordingly, the Icelandic conjugation paradigm displays rich variation, whereas the paradigm for Danish shows almost no morphological distinctions, exemplified with the inflection paradigms in (3) and (4).

(3) Icelandic *borða* ‘eat’

	present	past
1SG	borða	borðaði
2SG	borðar	borðaðir
3SG	borðar	borðaði
1PL	borðum	borðaðum
2PL	borðið	borðaðuð
3PL	borða	borðaðu

(4) Danish *spise* ‘eat’

	present	past
1SG	spiser	spiste
2SG	spiser	spiste
3SG	spiser	spiste
1PL	spiser	spiste
2PL	spiser	spiste
3PL	spiser	spiste

The implication that morphology drives syntax is at odds with current views of generative syntax, which often include a post-syntactic module of inflectional morphology, e.g. as in Distributed Morphology (Halle & Marantz 1993). At the point in the derivation where it is decided whether V-to-T movement takes place, the relevant morphological information is not yet available. However, it is not impossible to model the data with a late insertion model, e.g. by the assumption that rich morphology in Icelandic is simply a reflection of the number of functional projections which in turn trigger V-to-T movement, whereas inflectional heads in Danish are bundled leading to poor morphological output (Bobaljik & Thráinsson 1998, Bobaljik 2002). But the link between syntax and morphology can be modeled more directly, as Müller (2022) argues, by the assumption that T is strong in Icelandic resulting in head movement and rich morphology, while T is weak in Danish not triggering head movement and leading to comparatively poor agreement morphology. The proposal is implemented in Gradient Harmonic grammar (Smolensky & Goldrick 2016), an offshoot of Harmonic Grammar (Smolensky & Legendre 2006), where the competition between output structures is not only conditioned by weighted constraints but also by the interaction with weights assigned to linguistic objects contained in the structures. Essentially, movement and realizational constraints are sensitive towards the strength of the objects they talk about, as is schematically demonstrated in (5) where T is assigned a numerical weight of [0.7] and in (6) where the weight of T is at [0.4].

(5) *Strong T in Icelandic*

- a. að Anna T^[0.7]_{-ar} oft [_{vP} [_{V-V} borð] [_{VP} t tómatu]]
- b. /-ar/ ↔ [±α, ±β, ±γ]

(6) *Weak T in Danish*

- a. at Anna T^[0.4]_{-er} ofte [_{vP} [_{V-V} spis] [_{VP} t tomater]]
- b. /-er/ ↔ [±α]

Movement is feature-triggered and causes a violation if features are not discharged. In contrast, an economy constraint blocks movement which favours the competing *in situ* structure. Due to the nature of Gradient Harmonic Grammar, a movement operation can be more costly or less costly depending on the strength of the head responsible for the movement. In (5a), but not in (6a), T is strong enough to perform better than the competing structure that leaves the verb *in situ*. In the same vein, a realizational constraint can favor one output over another depending on the number of features, and thus strength, an exponent realizes. The fewer features are encoded by an exponent, the more likely syncretisms arise, which derives the poor morphology in Danish (6b) compared to Icelandic (5b). One advantage of such an approach is that it potentially captures other interactions between morphology and syntax beyond the structures discussed under the Rich Agreement Hypothesis, as we will show in the next section.

1.2. Complementizer trace effects

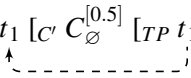
Another classic interaction between overt exponence and syntactic movement concerns extraction out of a finite clauses. As is shown in (7), *wh*-phrases (in subject position) can in principle be extracted out of finite clauses, but only if the complementizer is not spelled out (Perlmutter 1968).

- (7) a. Who₁ do you think [_{CP} t₁ [_C ∅] t₁ saw Emma] ?
 b. *Who₁ do you think [_{CP} t₁ [_C that] t₁ saw Emma] ?

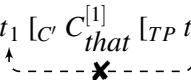
Müller (2022) follows up on a suggestion by Chomsky (2013) and argues that the extraction asymmetry in (7) can be explained by the strength of the C head

across which the *wh*-subject has to move in order to escape the CP due to the PIC (Chomsky 2001). As in the previous case study, movement is feature triggered, in this case by [$\bullet_{WH}\bullet$] on C,¹ but since constraints are violable, features need not be discharged necessarily. An economy constraint is also in place, which is violated if movement takes place. The crucial assumption is that C heads in English can be distinguished by strength, where a weak C head is not strong enough to be spelled out morphologically and does not give rise to a strong violation if a phrase moves across it, as is sketched in (8). In contrast, a strong C head causes strong violations for extraction and is ultimately also spelled out in post-syntax, see (9).

(8) *Weak C in English*

- a. Who₁ do you think [_{CP} t₁ [_C C^[0.5] [_{TP} t₁ saw Emma]]] ?
 b. /∅/ ↔ []
- 

(9) *Strong C in English*

- a. Who₁ do you think [_{CP} t₁ [_C C^[1] [_{TP} t₁ saw Emma]]] ?
 b. /that/ ↔ [C]
- 

Note that strength on the morphological side has a different impact in this case. Whereas in the previous section the strength of the T head determined the richness of an entire morphological paradigm, the strength of the C head in (7) is related to *iconicity*. Thus, the notion of strength can lead to a direct mapping between function and form, in the sense that if the C head is assigned little weight, chances are that the head will not be morphologically realized at all.

There is another difference worth pointing out between the two phenomena. Although not explicitly discussed by Müller (2022), I believe that the model makes different predictions regarding head movement vs. phrasal movement. In the case of head movement, the presence of the syntactic operation correlates with rich morphology. In contrast, for phrasal movement to take place it matters that the head which needs to be crossed receives comparatively poor morphology, if not zero spell-out. In the next section, we will investigate this prediction regarding noun phrase internal movement.

¹More concretely, matrix C comes with [$\bullet_{WH}\bullet$] and intermediate movement steps are caused by duplicates of criterial features on phase heads (Abels 2012). Müller (2022) adopts a more restrictive version of the PIC according to which all phrases constitute phases, see Müller (2011) for discussion.

2. Extensions to the nominal domain

In this section, I present two small case studies exploring the status of noun phrase internal movement in Italian and Bangla.

2.1. Italian

One of the most prominently discussed arguments for head movement in the nominal domain is the word order alternation observed with modified proper names in Italian. Data and analysis are shown in (10). Italian displays an overt definite determiner with modified proper names (10a). The determiner, however, can also remain unpronounced but only if the proper name precedes the possessive adjective, see (10b) and (10c).

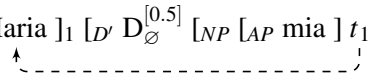
- (10) *N-to-D movement in Italian* (cf. Longobardi 1994)
- a. [DP [D la] [NP [AP mia] [N Maria]]]
 DEF my Maria
- b. *[DP [D ∅] [NP [AP mia] [N Maria]]]
 DEF my Maria
- c. [DP [N-D Maria]₁ [NP [AP mia] t₁]]
 Maria my
 ‘my Maria’

Longobardi (1994) argues that the D position has to be occupied overtly, either by merging *la* as in (10a) or by N-to-D movement as in (10c). The fact that N and D are in complementary distribution in pre-adjectival position is explained by head movement as an instance of *substitution*; see also Rizzi & Roberts (1989) and Riemsdijk (1998) for the same argument in the verbal domain. Given that the status of substitution is not uncontroversial (Salzmann 2020) and has mostly been abandoned in more recent work (Harley 2013), let us then attempt to explain the Italian pattern under the strength-based approach.

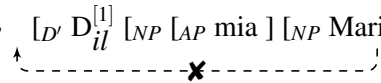
Following the intuitions in section 1.1, a head movement account would make the wrong prediction for the Italian data. In analogy to V-to-T movement, we would predict that raising N to D requires strength on behalf of D, yet in such a case the determiner is not spelled out (10c). The determiner is only overtly realized if there is no N-to-D movement (10a), which is also unexpected. Instead, what the interaction of morphology and syntax seems to

suggest is that the Italian data can be derived via phrasal movement, similarly to the complementizer trace effect in section 1.2. The strength-based rationale is illustrated in (11) and (12). First, we have to reanalyze the adjectival modifier as an adjunct, attaching to the NP *Maria*. Second, D attracts NP into its specifier via some feature. This movement step incurs a weaker violation, if it takes place across a weak D head (11a) compared to a structure where NP stays *in situ*. If the D head is strong, the movement step will be fatal compared to the *in situ* structure (12a).² Finally, morphology mirrors the strength of the D heads, see (11b) and (12b).

(11) *Weak D in Italian*

- a. $[DP [NP \text{ Maria }]_1 [D' D_{\emptyset}^{[0.5]} [NP [AP \text{ mia }] t_1]]]$

- b. /∅/ ↔ []

(12) *Strong D in Italian*

- a. $[DP [D' D_{il}^{[1]} [NP [AP \text{ mia }] [NP \text{ Maria }]]]]$

- b. /il/ ↔ [D]

It is worth pointing out that the argument against head movement aligns with the view in Georgi & Müller (2010), who specifically argue against the N-to-D movement analysis shown in (10). Instead of the analysis sketched in this paper, however, they pursue a reprojection approach, shown in (13). They propose that the possessor and the determiner enter the derivation via Merge features [**•A•**] and [**•D•**] on N creating a multiple specifier structure. The derivation results in an NP-over-DP structure since the determiner is merged as a specifier of NP, see (13a). In the case where the proper name precedes the possessor, N comes with an additional probe feature [***D***] which can only be discharged if N raises to a position where it c-commands DP, thereby reprojecting its category label (13b).

²The movement step in (11a) does not obey *anti-locality* (Abels 2012). This is not harmful insofar as the movement constraint is always violated if any kind of movement takes place. What matters is the strength of the violation, which is in turn is determined by the strength of the heads that are being crossed.

- (13) *Reprojection in Italian* (Georgi & Müller 2010)
- a. $[_{NP} [_{DP} \text{la}] [_{N'} [_{AP} \text{mia}] [_{N} \text{Maria}_{[\bullet_A \bullet \leftarrow \bullet_D \bullet]}]]]]$
- b. $[_{NP} [_{N} \text{Maria}_{[\bullet_A \bullet \leftarrow \bullet_D \bullet \leftarrow *D^*]}]_1 [_{NP} [_{DP} \emptyset] [_{N'} [_{AP} \text{mia}] t_1]]]$

Besides a technical solution in footnote 24 (Georgi & Müller 2010: 19), no connection is made between the morphological realization of the D head and the presence of the probe feature on N. The problem seems to lie in the fact that D is not the head of the noun phrase, thus its strength is not decisive over whether it can act as a barrier or not. If there is a re-analysis in terms of strength, it is presumably not an obvious one. Possibly, one way to model the contrast is to assign more strength to N in (13b) given that it comes with an additional probe feature. Indeed, Müller (2022) relates subject-object asymmetries to different strengths of the moved items themselves elsewhere in the presentation, though the reasoning is not based on number of features.

2.2. Bangla

In Bangla, an Indo-Aryan language spoken in Bangladesh and India, word order changes within the nominal domain seem to always be accompanied by semantic effects, akin to object movement in the clausal domain. As is shown in (14), nouns following their classifiers constitute the unmarked order creating indefinite readings, while nouns preceding their classifiers receive a specific (Bhattacharya 1999) or definite interpretation (Chacón 2011, Dayal 2012, Syed & Simpson 2017).

- (14) *Numeral phrases in Bangla* (Chacón 2011)
- a. $\text{du}=\text{to}$ kham
two=CL envelope
'two envelopes'
- b. kham $\text{du}=\text{to}$
envelope two=CL
'the two envelopes'

Most accounts attribute N-CI orders in Bangla to NP-movement checking a semantic feature that is introduced by a silent D head, rather than N-to-D movement. Support for this account comes from the observation that modified nouns undergo the same transformation which implies phrasal status of the moved noun, see (15).

- (15) *Modified numeral phrases in Bangla* (Chacón 2011)
- a. du=ʈo lɔmba kham
two=CL long envelope
'two long envelopes'
- b. lɔmba kham du=ʈo
long envelope two=CL
'the two long envelopes'

The indefinite reading which arises with the base order in (14a) can be made to follow from the absence of a DP-projection. Such accounts are given e.g., by Dobrovie-Sorin (1997), van Geenhoven (1998), McNally (1998), who derive indefinite readings by property-denoting arguments and predicates with build-in existential quantifiers. Indeed, indefinites also come with the classifier structure and NP raising is prohibited (16b). The absence of NP raising can be accounted for by the structure in (16c), that is via the lack of a DP shell.³

- (16) *Indefinites in Bangla* (Dayal 2012)
- a. ek=ʈa boi
one=CL book
'a/one book'
- b. *boi ek=ʈa
book one=CL
- c. [#P [# ek] [CIP [Cɪ ʈa] [NP boi]]]

As for (14b), the structure in (17) suggests itself, in line with the analysis for Italian in (11). The D head introduces the definite reading, presumably a maximality operator (e.g., *ɪ*), but its strength level does not lead to morphological

³In (16c), the classifier first combines with the noun instead of the numeral. An alternative view which is often entertained, e.g., for Korean (Ko 2014, Kim & Melchin 2018) and Japanese (Saito et al. 2008), is that the classifier forms a constituent with the numeral first before it combines with the noun. Bangla, however, seems to pass several diagnostics for a classifier-for-noun language, i.e., a language where the classifier turns the noun into a set of atoms, see discussion in Little et al. (2022). For example, not every noun requires a classifier, which is expected since there could be a subset nouns which do not require atomization. Chacón (2011: section 2.3) discusses certain “measure words” like *tin mas* ‘three months’ or *car paf* ‘four sides’ which never appear with classifiers. Additionally, classifiers show up in environments without numerals, as they are compatible with quantifiers: *sɔb=ʈa doi* ‘all curd’; *kichu=ʈa doi* ‘some curd’ (see Bhattacharya (1999: section 4)). Again, this is predicted since not only numerals may require atomized objects.

- c. $[_{DP} [_{D'} D_{ei}^{[1]} [_{\#P} [_{NP} \text{boi}]_1 [_{\#} [_{\#} \text{du}] [_{CIP} t_1 [_{CI'} [_{CI} [\text{o}] t_1]]]]]]$
-

This is, however, not the complete picture. There is an alternative structure involving a demonstrative determiner which is also acceptable, see (20). With nothing else being said, it is unclear why this variant is not the optimal candidate.

- (20) *ei du=to boi*
 DEM two=CL book
 ‘these two books’ (Bhattacharya 1999)

According to Dayal (2012), the alternation between (20) and (19a) correlates with a semantic difference, as is shown in (21). Whereas the Dem-N-Cl order involves maximality and pointing, the Dem-Cl-N order only involves pointing.

- (21) *Context: There is a bunch of bananas on the table.* (Dayal 2012)
- a. *ei pātʃ=ta kala*
 DEM five=CL banana
 ‘these five bananas’ (pointing at five of the bananas)
- b. *ei kala pātʃ=ta*
 DEM banana five=CL
 ‘these five bananas’ (pointing at all five bananas)

Whatever is responsible for the lack of maximality in (21a)/(20) must be reflected in the underlying structure, thereby allowing the other word order in the presence of the demonstrative. Of course, an alternative theory could take demonstrative *ei* to be a separate head, possibly projected over DP, which introduces deixis in the semantics (Bhattacharya 1999, Syed & Simpson 2017). In this case, Bangla would simply not display a strong D head.

3. Conclusion

In this contribution, I investigated potential evidence for a strength-based analysis of syntactic objects in the nominal domain, following up on Müller’s (2022) recently developed Gradient Harmonic Grammar approach which is mostly based on clausal phenomena. While there are some promising interactions between morphology and syntax found for the noun phrase, they

presuppose the DP-hypothesis (Abney 1987). This is in and of itself an interesting result, though it is incompatible with the view defended in Georgi & Müller (2010) who argue for an NP-over-DP view more generally.

One aspect, we have not touched upon are the possible repercussions syntactic strength could have for semantic interpretation. Ross (1973) originally observed that syntactic constituents with little semantic input like expletives and idiom chunks can undergo passivization but not left dislocation in English. Accordingly, Müller (2022) develops an account modeling the extraction possibilities out of VP idioms in German depending on the level of semantic opacity. In this regard, one might wonder if semantic strength also plays a role in the nominal domain. Indeed, Longobardi (1994: 650 ff.) argues that the silent D head in Italian receives an expletive interpretation. But since a proper name refers to an object which is intrinsically unique even in the presence of an overt D head in Italian, there does not seem to be an interaction between the spell-out of a head and its semantics. For Bangla, we note that the silent D head specifically introduces a maximality operator since its presence triggers definite interpretations. Hence, the opposite correlation is observed. Based on the two case studies, we can conclude that at least when it comes to the strength of movement-triggering heads, no interaction with their semantic interpretations can be found.

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Improper edge features and extraposition

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Abstract

The basic goal of this paper is to present the insights from Müller (1995) concerning extraposition in a new guise. Müller (1995) focuses on the distinction between leftward and rightward movement and proposes an account that relies on concepts such as improper movement and barriers. In view of the fact that in particular the notion of the barrier has vanished from current syntactic theory, this paper aims to bring together the original empirical insights and tools from more recent syntactic models. To this end, basic ideas of phase theory (as implemented in Müller (2010, 2011)) are used and slightly modified in such a way that the observed movement patterns can be derived. The basic assumption is that not all types of edge features can be inserted on all phase heads alike, which implies that intermediate movement steps to certain phase edges might be categorically blocked for particular movement types. So we end up with a theory of improper edge feature insertion, which can block extraction in the cases at hand just as barriers and improper movement steps could back in the 1990s.

1. Key Features of Extraposition

Extraposition means that a constituent occurs to the right of its canonical position; this is illustrated in (1b), where the complement clause of the noun *claim* has been extraposed (as opposed to (1a)).

- (1) a. The claim [_{CP} that the world was round] was made by the Greeks.
b. The claim t_1 was made by the Greeks [_{CP} that the world was round]₁. (cf. Roberts 1997: 191)

As suggested by the notation in (1b), it is often assumed that extraposition comes about via rightward movement, and this is also the starting point

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of Müller's (1995) analysis.¹ In a nutshell, Müller (1995) proposes that extraposition involves right-adjunction to IP,² and this enables us to derive the specific properties of extraposition that constructions involving leftward movement do not share, since the differences follow straightforwardly from the theory of improper movement. In the following subsections we will briefly have a look at three of these properties; in section 2, we will turn to Müller's (1995) account of these facts, before we discuss an alternative, phase-based implementation in section 3. Section 4 concludes the paper.

1.1. The Right Roof Constraint

A first restriction on rightward movement that has already been observed by Ross (1967) concerns its clause-boundedness, which has been subsumed under the so-called Right Roof Constraint.

- (2) *Right Roof Constraint (RRC):*
Rightward movement is always clause-bounded.

This is exemplified in (3), which shows that the extraposed CP cannot be adjoined to a TP embedding the clause in which the former has been base-generated. By contrast, it is well-known that, for example, *wh*-movement, an instance of leftward movement targeting SpecC, can cross clause boundaries with ease (see (4)).³

¹In general, we can distinguish between three basic types of approaches to extraposition plus mixed approaches (see also Müller 1995: 221 for an overview): (i) there are movement-based analyses (see, for instance, Bierwisch 1963, Baltin 1981 et seq., Müller 1995, Buring & Hartmann 1997, Fischer 2018), (ii) base-generation approaches (see, for instance, Koster 1978, Culicover & Rochemont 1990, Haider 1997), (iii) proposals treating extraposition as a PF-phenomenon (see, for instance, Truckenbrodt 1995, Göbbel 2007), and (iv) mixed approaches that assume in particular that extraposed arguments undergo movement, while extraposed adjuncts are base-generated in the respective position (see, for instance, Fox & Nissenbaum 1999, Kiss 2005, Hunter & Frank 2014; in fact, the latter only addresses adjunct extraposition). Since I want to remain agnostic regarding the latter idea, I will stick to examples involving argument extraposition (although Müller 1995 does not make this distinction).

²In the following, I will use the notation TP.

³The same holds for German as the translated version in (i) shows:

- (i) Was_j hast du gesagt [_{CP} dachte Sue [_{CP} hätten die Griechen t₁ bewiesen]]?
 what have you said thought Sue would have the Greeks proven
 'What did you say Sue thought the Greeks had proven?'

(3) *Long extraposition:*

*[_{TP} The proof that [_{TP} the claim t_1 was made by the Greeks] was given in 1492 [_{CP} that the world was round]₁].

(cf. Roberts 1997: 191)

(4) *Long wh-movement:*

What₁ did you say [_{CP} Sue thought [_{CP} the Greeks had proven t_1]]?

The sentences in (5a) and (5b) illustrate that the RRC also holds in German; while (5a) involves extraposition within the clause boundary, (5b) shows the attempt to move the extraposed CP into a higher clause – as a result, the RRC is violated and the sentence is correctly predicted to be ungrammatical.⁴

(5) *Extraposition: (a) RRC respected; (b) RRC violated*

a. Gereon hat immer zugegeben, [_{CP} dass [_{DP} der Versuch t_1] Gereon has always admitted that the attempt scheitern muss, [_{CP} mit dem Rad im Berufsverkehr Bahn fail must with the bike in.the rush.hour.traffic train zu fahren]₁], wenn er guter Laune war. to ride when he good.GEN mood was ‘When he was in a good mood, Gereon has always admitted that the attempt must fail to take ones bike on the train during rush hour.’

b. *Gereon hat immer zugegeben, [_{CP} dass [_{DP} der Versuch t_1] Gereon has always admitted that the attempt scheitern muss], wenn er guter Laune war, [_{CP} mit dem fail must when he good.GEN mood was with the Rad im Berufsverkehr Bahn zu fahren]₁. bike in.the rush.hour.traffic train to ride

(cf. Müller 1995: 214, (3), for a similar example)

Similarly, topicalization is not clause-bounded; see, for instance, (ii):

(ii) [_{DP} Die Kuhweide]₁ [_{CP} dachte Gereon [_{CP} t_1 gehört zum Wanderweg]].
the cow pasture thought Gereon is part of the hiking.trail
‘Gereon thought that the cow pasture is part of the hiking trail.’

⁴The following examples are all based on data from Müller (1995) with the same underlying syntactic structure; the original data is referred to below the respective examples.

1.2. Island insensitivity

In view of the RRC, rightward movement seems to be more restricted than leftward movement at first sight;⁵ however, we can observe that there are, on the other hand, also restrictions on leftward movement to which rightward movement does not seem to be sensitive. This is shown in the following examples, which involve movement out of islands: in (6), a CP is moved out of a (complex) subject DP; in (7), a CP is moved out of a complex object DP. As is well-known since Ross (1967), this leads to a violation of the Subject Condition (in (6b)) and/or the Complex NP Constraint (in (6b)/(7b)) in the case of leftward movement (here topicalization, (6b), and scrambling, (7b)); by contrast, the extraposition examples in (6a)/(7a) are grammatical despite the intervening islands.⁶

(6) *Movement of a CP out of a (complex) subject DP:*⁷
 (a) *extraposition; (b) topicalization*

- a. Gereon hat [_{DP} die Tatsache t₁] interessiert, [_{CP} dass man Gereon.ACC has the fact.NOM interested that one in den Yorkshire Wolds gut wandern kann]₁.
 in the Yorkshire Wolds well hike can
 ‘Gereon was interested in the fact that the Yorkshire Wolds are a good place for hiking.’

⁵There are, of course, also certain types of leftward movement that cannot cross clause boundaries (like DP-movement or scrambling in German, see (i)); however, the restriction does not hold for leftward movement in general.

- (i) *dass niemand [_{VP} Süßigkeiten]₁ [_{VP} glaubt, [_{CP} dass er t₁ mag]]
 that nobody sweets thinks that he likes
 ‘that nobody thinks that he likes sweets’
 (cf. Müller 1995: 223, (18a), for a similar example (with VP-notation instead of vP))

In fact, Müller’s (1995) account can capture these more fine-grained differences between different types of leftward movement as well (see section 2 for details).

⁶Regarding leftward movement, Müller (1995) takes into account *wh*-movement, topicalization, and scrambling and discusses the observed patterns considering a larger number of island configurations; in the interest of space, I will not address all types of movement in all contexts.

⁷Note that example (5a) from above (which is grammatical) also involves extraposition out of a (complex) subject DP.

- b. *_{[CP Dass man in den Yorkshire Wolds gut wandern kann]₁},
 that one in the Yorkshire Wolds well hike can
 hat Gereon _[DP die Tatsache t₁] interessiert.
 has Gereon the fact interested
 (cf. Müller 1995: 217, (10), for a similar example)

(7) *Movement of a CP out of a complex object DP:*

(a) *extraposition; (b) scrambling*

- a. Ich habe _[DP die Vermutung t₁] geäußert, <sub>[CP dass das Fahrrad
 I have the assumption uttered that the bike
 sehr leicht ist]₁.
 very light is
 ‘I guessed that the bike was very light.’</sub>
- b. *_{dass [CP dass das Fahrrad sehr leicht ist]₁} ich <sub>[DP die
 that that the bike very light is I the
 Vermutung t₁]</sub> geäußert habe.
 assumption uttered have
 intended: ‘... that I guessed that the bike was very light.’
 (cf. Müller 1995: 219, (15), for an ex. with adjunct extraction)

1.3. Cataphoric pronouns

Finally, it can be observed that sentential pronouns must occur to the left of their associated CP, i.e. these pronouns are obligatorily cataphoric, as the difference between (8a) vs. (8b)/(8c) shows.

(8) *Obligatoriness of cataphoricity of sentential pronouns:*

(a) *extraposition; (b) topicalization; (c) wh-movement*

- a. Gereon hat (es) bedauert, <sub>[CP dass kein Lied von ELO gespielt
 Gereon has (it) regretted that no song by ELO played
 wurde].
 was
 ‘Gereon regretted that they did not play an ELO song.’</sub>
- b. _[CP Dass kein Lied von ELO gespielt wurde] hat Gereon (*es)
 that no song by ELO played was has Gereon (it)
 bedauert.
 regretted

- c. Was hat Gereon (*es) bedauert?
 what has Gereon (it) regretted
 ‘What did Gereon regret?’

(cf. Müller 1995: 230, (31), for a similar (a)/(b)-example)

2. Müller (1995): The Principle of Unambiguous Binding

The central principle on which Müller’s (1995) account of the observed facts relies is the Principle of Unambiguous Binding (PUB), see (9).

(9) *Principle of Unambiguous Binding (PUB):*

- a. A variable that is α -bound must be β -free in the domain of the head of its chain (where α and β refer to different types of positions).

(Müller & Sternefeld 1993: 461, Müller 1995: 223)

- b. *Types of positions:*

SpecC, SpecT, left-adjunction to XP, right-adjunction to XP

In a nutshell, this means that after the first movement step to an A' -position (which turns the trace into a variable), only positions of the same type may be targeted, following the classification in (9b).⁸

2.1. Clause-boundedness

Since locality theory typically only allows extraction across a clause boundary if SpecC is used as an escape hatch, the PUB can now easily derive the data in (3) and (4):⁹ long (successive-cyclic) *wh*-movement is perfectly fine since only SpecC positions are used as landing sites, i.e. the PUB is respected (see (10a)); by contrast, movement to SpecC cannot be followed by any instance of

⁸(9b) is based on the assumption that *wh*-movement and topicalization target SpecC, DP-movement targets SpecT, scrambling involves left-adjunction (in the verbal domain), and extraposition right-adjunction (to IP/TP).

⁹The locality theory on which Müller (1995) is based is the barriers framework, and that SpecC is an obligatory escape hatch is motivated as follows: "assuming, for instance, Sportiche’s (1989: 44) approach, CP is a barrier for anything included in C' " (Müller 1995: 215). But note that also in more recent models (like phase theory) SpecC is typically taken to be a relevant landing site for successive-cyclic movement.

right-adjunction – this would violate the PUB, hence it is correctly predicted that extraposition (which involves right-adjunction to TP) is clause-bounded.

- (10) *Movement across a clause boundary:*
 (a) *wh-movement; (b) extraposition*
- a. $[\text{CP } \alpha_1 \dots [\text{CP } t'_1 [\text{C}' \dots t_1]]] \rightarrow \text{PUB respected}$
landing sites: SpecC, SpecC
- b. $*[\text{TP } [\text{TP } \dots [\text{CP } t'_1 [\text{C}' \dots t_1]]] \alpha_1] \rightarrow \text{PUB violated}$
landing sites: SpecC, right-adjunction (to TP)

2.2. Islands

The PUB account of the other two properties is based on the observation that in both cases the problem boils down to the difficulty that an NP barrier has to be overcome. In fact, Müller (1995) analyzes a lot of island data, involving PP and CP extraction from subject NPs and extraction from different types of object NPs (including the extraction of genitive NPs out of NP); what they all seem to have in common is that the moved constituent must move across an NP boundary. Following standard assumptions of the barriers framework, this is problematic since NP forms a barrier and thus disallows extraction; however, one way of circumventing barriers has typically been adjoining to them – and as Müller convincingly argues, NP barriers can be circumvented by right-adjoining to them. This means that a constituent could get out of the discussed islands by first right-adjoining to the respective NP barrier; but, crucially, following the PUB, this may only be followed by movement targeting another right-adjoined position, as is the case with extraposition (see (11a)). Subsequent leftward movement, by contrast, inevitably violates the PUB (see (11b)).

- (11) *Movement out of an island with an NP boundary:*
 (a) *extraposition; (b) leftward movement*
- a. $[\text{TP } [\text{TP } \dots [\text{NP } [\text{NP} \dots t_1] t'_1]] \alpha_1] \rightarrow \text{PUB respected}$
landing sites: right-adjunction (to NP), right-adjunction (to TP)
- b. $*[\text{XP } \alpha_1 \dots [\text{NP } [\text{NP} \dots t_1] t'_1]] \rightarrow \text{PUB violated}$
landing sites: right-adjunction (to NP), a position to the left

2.3. Cataphoric sentential pronouns

As far as sentential pronouns are concerned, Müller (1995) follows Bennis (1986), Vikner (1995) a.o. and assumes that these are NP arguments which take the associated clause as their complement, which is then moved to another position. Again, this means that the CP has to get out of the NP in a first movement step; and in a barrier-based theory this means that the first instance of movement has to be right-adjunction to NP to circumvent the NP barrier. Hence, it is again correctly predicted that this only works in the context of extraposition, where the subsequent movement step occurs to the right, namely to another right-adjoined position, whereas subsequent leftward movement is ruled out by the PUB.

(12) *Cataphoric sentential pronouns:*

(a) *extraposition; (b) leftward movement*

- a. [TP [TP ... [NP [NP es t₁] ... t'₁]] α_1] → PUB respected
landing sites: right-adjunction (to NP), right-adjunction (to TP)
- b. *[XP α_1 ... [NP [NP es t₁] ... t'₁]] → PUB violated
landing sites: right-adjunction (to NP), a position to the left

3. From Improper Movement to Improper Edge Feature Insertion

Interestingly, the account of the above-mentioned differences between leftward and rightward movement (i.e. extraposition) is based on the central observation that a constituent cannot move out of CPs or NPs without further ado.

Since Müller's (1995) implementation, almost three decades have passed and meanwhile, locality theory has abandoned the concept of barriers. However, recent syntactic theory still considers CPs and DPs (= the modern version of the NP) to be problematic for extraction; after all, they are commonly considered to be phases,¹⁰ and in order to overcome these without violating the Phase Impenetrability Condition (PIC), constituents have to move successive-cyclically via the phase edges that intervene between their base and target

¹⁰For CPs (and vPs) this has been claimed from the very beginning (see Chomsky 2000, 2001); DPs have not immediately been in the center of discussion, but in subsequent work they have often been considered to be phases as well (see, for instance, McCloskey 2000, Heck & Zimmermann 2004, Svenonius 2004). Moreover, in proposals that assume that every phrase is a phase, DPs are of course also phases (see, for instance, Müller 2004, 2010, Fischer 2004). In the following, it will be assumed that CPs, vPs, and DPs are phases.

position.¹¹ As a result, the analysis of our example involving long *wh*-movement (repeated from (4)) now looks as follows:

- (13) *Wh-movement via phase edges:*
 [CP What₁ did you [_{vP} t₁^{''''} say [CP t₁^{''''} Sue [_{vP} t₁^{'''} thought [CP t₁^{''} the Greeks had [_{vP} t₁['] proven t₁]]]]]]]?]

3.1. Intermediate landing sites

Strikingly, derivations like (13) standardly involve movement from SpecC back to Specv, which suggests that in the phase model the old notion of improper movement no longer seems to be in the focus of discussion (let alone the more fine-grained system on which the PUB relies) – at least, if we assume that Specv qualifies as A- and SpecC as A'-position.¹² In fact, Chomsky (2000) briefly addresses this issue, and although he argues that derivations like (13) would not raise a problem, he admits that "[o]n some assumptions [...] [this movement] passing through [Specv] is improper movement" (Chomsky 2000: 145, fn. 53).¹³

In any case, a full-fledged theory of improper movement does not seem to exist in the phase model, and one might ask whether there should not be some

¹¹I will adopt the following version of the PIC:

- (i) *Phase Impenetrability Condition (PIC):*
 The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations. (Chomsky 2000: 108)

¹²The standard concept of improper movement simply forbids movement from an A'- to an A-position and does not distinguish in addition between different types of A'-positions (unlike the PUB). Since A-positions are traditionally defined as "any position capable of bearing a grammatical function" (Roberts 1997: 148), we would expect Specv to be an A-position while SpecC is not; as a result, movement from SpecC to Specv should be improper.

¹³Roughly speaking, Chomsky argues that the types of features that a phase head bears are responsible for the nature of the projected Spec position: if a head does not bear ϕ -features (as in the case of C), its specifiers are automatically A'-positions since only a head with ϕ -features can project A-specifiers; in the case of v, it is more complicated since different Specv positions are not necessarily of the same type. As v bears ϕ -features, its specifiers qualify as A-positions as long as these ϕ -features have not yet been deleted. However, Chomsky argues that "these would have been deleted phase-internally" (Chomsky 2000: 110) already before specifiers serving as intermediate landings sites would be projected, which would then turn them into A'-positions.

reinterpretation of these old restrictions on successive-cyclic movement – i.e., improper movement might have to be redefined in the light of phase theory.

3.2. Triggers for successive-cyclic movement

Another issue that arises in view of the derivation in (13) is the question of what triggers successive-cyclic movement. Given the minimalist doctrine that movement is generally feature-driven, a standard answer has been that so-called edge features (EFs) (or, in other terms, a generalized type of EPP-feature; see also Chomsky 2000) can be inserted more or less freely on phase heads to trigger movement to the respective phase edges.¹⁴ While the concrete nature of these EFs is often neglected in the literature, Müller (2010, 2011) assumes that they are of the same type as the respective target feature – i.e., the intermediate movement steps of long *wh*-movement, for instance, are triggered by *wh*-EFs.¹⁵

3.3. Improper edge features

If we follow this idea that EFs are specified differently for different movement types, we can relate different movement restrictions to these underlying relativized EF specifications. Generally speaking, we get the following scenario: in order to extract a constituent α out of phase πP using movement type X , we first have to insert an X -EF on the phase head π to trigger movement of α to the phase edge; only then can the constituent be subsequently X -moved out of πP without violating the PIC. However, assume that not all types of phase heads are compatible with all types of EFs; if there are restrictions on

¹⁴Following Chomsky (2000, 2001, 2008)), they can be inserted "if [this] ha[s] an effect on outcome" (Chomsky 2000: 109; Chomsky 2001: 34); see Müller (2010, 2011) for a more extensive discussion of what exactly this means.

¹⁵This is the implementation (and notation) I will adopt in the following. An alternative would be to assume that successive-cyclic movement to phase edges is triggered by the need of the moving constituent itself to ultimately have certain features checked (as suggested, for instance, in Bošković 2007); in particular, analyses that rely on upward Agree as a standard licensing configuration often adopt this view (see, for instance, Zeijlstra 2012 with respect to successive-cyclic *wh*-movement or Fischer 2018, Fischer & Høyem 2021, 2022, Brodahl et al. 2023 in the context of control). A predecessor along this line has moreover been the principle Phase Balance; see Heck & Müller (2000, 2003), Müller (2004), Fischer (2004) a.o.

this compatibility, we predict that not all types of movement can overcome all kinds of phase boundaries, and extractability will be relativized.¹⁶

- (14) a. *If X-EF is compatible with phase head π :*
 $[\pi_P \alpha_{[X]} \pi_{[X-EF]} \dots t_\alpha]$
 → subsequent extraction of α out of π_P will respect the PIC
- b. *If X-EF is not compatible with phase head π :*
 $[\pi_P \pi \dots \alpha_{[X]}]$
 → subsequent extraction of α out of π_P will violate the PIC

3.3.1. No rightward movement via CP edges

In the phase model, clause-boundedness boils down to the impossibility of moving out of a CP phase. Following our line of reasoning, this might come about due to the fact that the relevant EF cannot be inserted on the C head. Since *wh*-movement is not clause-bounded, we can conclude that *wh*-EFs are compatible with C (and *v*); as a result, *wh*-movement can target these phase edges as intermediate landing sites and long *wh*-movement is expected to be grammatical (see also (13)).

By contrast, extraposition cannot cross clause boundaries; so whichever feature triggers extraposition (for the sake of simplicity, I will just call it [Ex]), the respective EF does not seem to be compatible with the phase head C. As a result, the corresponding constituent cannot move to the phase's edge and will be stuck inside the CP, since extraction would otherwise yield a violation of the PIC.¹⁷

¹⁶That standard phase theory might not leave enough room for the variation that can be observed regarding different movement patterns has also been noted by Keine (2016, 2019). His approach in terms of selective opacity takes the view that the search domain of different probes might vary in size (cf. his notion of horizons) – i.e. "[s]elective opacity requires that a given position be accessible to some operations but not to others" (Keine 2019: 34). With respect to phase theory, he criticizes that "elements at the edge of a phase are accessible to *all* operations; elements in its domain are accessible to *none*" (Keine 2019: 34). The approach developed in this paper, by contrast, sticks to these basic assumptions of phase theory and does not relativize the search domain (nor phases as such), but rather limits the access to the phase edges, which implies that a relevant precondition for extraction might not be met in all cases alike.

¹⁷I will remain agnostic regarding the question of what the concrete intermediate landing sites are in the case of extraposition; whether this must be a specifier position or might alternatively be an adjoined position (which would be closer to Müller's 1995 original proposal) is not relevant at this point as long as the extraposed phrase moves via all intervening phase edges. In

3.3.2. *No leftward movement via DP edges*

On the other hand, we have seen that extraposition is not sensitive to islands that involve a DP boundary – i.e., DP phases do not block extraposition. This indicates that the feature [Ex] is compatible with D-heads, which means that the constituents we want to extrapose can use the edge of DP as an intermediate landing site. This is again different from leftward movement; as Müller (1995) shows in detail, *wh*-movement, topicalization, and also scrambling are blocked by islands that involve DP boundaries (see (6b), (7b), (8b), (8c)). Again, this scenario is predicted if we assume that these types of edge features are not compatible with phase heads of type D; as a result, intermediate movement to the phase's edge is blocked and subsequent extraction would violate the PIC.

In fact, this analysis also accounts for the cataphoricity of sentential pronouns if we follow Müller's (1995) assumption that the sentential pronoun and its associate clause start out as one big DP out of which the CP is then extracted – this implies that the moving CP has to get out of the DP phase in a first step, which involves the insertion of corresponding edge features on the D-head. However, if it is only possible to insert *Ex*-EFs on D (and neither *wh*-EFs nor *top*-EFs nor Σ -EFs), we correctly predict that only extraposition can occur.¹⁸ And since this involves rightward movement, the sentential pronoun surfaces obligatorily as a cataphoric pronoun.

4. Conclusion

In this paper, I tried to reconcile phase theory with earlier insights concerning the difference between leftward and rightward movement which were based on a strict version of improper movement (namely the Principle of Unambiguous Binding) and the barriers framework (see Müller 1995). Generally speaking, it is suggested that edge feature insertion, the underlying trigger for intermediate movement, should be relativized. The basic idea is that not all types of EFs can be inserted on all types of phase heads alike; as a result, it follows directly that extraction out of phases is blocked if movement to the corresponding

fact, different types of EFs might provide different types of escape hatches at the phase's edge; note, however, that (Chomsky 2000: 144, fn. 48) argues that "movement to the edge will be to a Spec position" due to applicable restrictions on adjunction.

¹⁸I follow Müller's (2010, 2011) notation and assume that the feature triggering scrambling is called [Σ].

phase edge is not possible – movement out of such a phase would result in a violation of the PIC.

Empirically, this paper set out to capture the data that have already been discussed in Müller 1995: this comprises German (and English) examples that involve extraposition (which is treated as an instance of rightward movement) as well as *wh*-movement, topicalization, and scrambling (which all involve leftward movement). While extraposition (and scrambling in German) are clause-bounded, this does not hold for topicalization and *wh*-movement. This means that extraction out of CPs is only blocked in the former constructions, which suggests that EF-insertion on C is illicit in the case of extraposition and scrambling, but not in the case of topicalization and *wh*-movement. By contrast, all discussed instances of leftward movement were blocked if extraction out of a DP was involved; this suggests that EF-insertion on D is only possible in the case of extraposition, which accounts for the fact that extraposition seems to be insensitive to all kinds of island constraints. In addition, it explains why sentential pronouns are obligatorily cataphoric.

As far as the vP phase is concerned, we can conclude that long movement (out of CPs) automatically involves movement via Specv as well; hence, *top*- and *wh*-EFs are expected to be compatible with the v-head. Since scrambling ultimately targets the vP domain, I suggest that the feature [Σ] is generally compatible with v (i.e. also as EF), and with respect to extraposition, we can assume that the edge of the vP phase can also be used as an escape hatch in these cases since extraposed material is standardly moved out of the vP into the TP domain.¹⁹ As a result, we would thus get the pattern given in (15)

¹⁹In fact, Baltin (1981) argues that not all instances of extraposition target the TP domain; instead, he suggests that constituents that are moved out of an object can only adjoin in the verbal domain, and only material that is moved out of a subject can be adjoined in the TP domain; see (i), which shows that "extraposed object-modifiers are obligatorily *included*" in VP-fronted fragments (see Hunter & Frank 2014: 247).

- (i) John said that he would call [people t_1] up [who are from Boston]₁, and ...
 a. *... [_{VP} call people up] he did who are from Boston.
 b. ... [_{VP} call people up who are from Boston] he did.

(cf. Hunter & Frank 2014: 229, 247)

But since adjunct extraposition (here in the form of a relative clause) is not taken into account in this paper, I will not discuss these data any further and neither the question of whether Baltin's locality restriction extends to argument extraposition or not.

concerning the compatibility of the four types of EFs that we have discussed and the three phase heads C, D, and v.

(15) *Compatibility of EFs and phase heads (in German)*

EF type	compatible phase heads	clause boundaries can be crossed	DP boundaries can be crossed
[wh]	C, v (not D)	✓	*
[top]	C, v (not D)	✓	*
[Σ]	v (not C, D)	*	*
[Ex]	D, v (not C)	*	✓

That this fits the empirical observations from the previous sections is summarized in (16) and (17), in which the respective examples supporting our predictions are listed.

(16) *Extractability out of CP*

extraposition	<i>wh</i> -mvt.	topic.	scrambling
(3), (5b): *	(4), fn. 3, (i): ✓	fn. 3, (ii): ✓	fn. 5, (i): *

(17) *Extractability out of DP*

extraposition	<i>wh</i> -mvt.	topic.	scrambling
(5a), (6a), (7a), (8a): ✓	(8c): *	(6b), (8b): *	(7b): *

If this analysis is on the right track, improper movement no longer relies on the distinction between particular types of positions (an assumption that might already have been called into doubt by Chomsky 2000, where not all positions of the same category (like Specv) are treated alike). Instead, improper movement boils down to the question of which types of features are compatible with which phase heads, and as a result, improper derivations can simply be ruled out by standard locality constraints like the PIC.

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Obligatory adjuncts by partial structure-removal

Michael Frazier

Abstract

A class of English verbs selects a sister phrase
That otherwise seems rather like a Spec.
The same regard for underlying symmetry
That permits operations that can trim a tree
(See Müller 2017 or Heck
'16), suggests they may not ever need to raise
To start as arguments but end adjoined.
(For this, *de-label* is the term I've coined.)

It's possible to represent this lexically
In properties of the selecting head;
This seems to miss the generalization
That arguments detach for scope interpretation
From phrases that, without, are in the red:
"To maximize OP-Scope, de-label flexibly."
Though cross-linguistic predictions aren't a breeze,
That seems to look alright for Japanese.

1. Introduction

While the nature of the argument/adjunct distinction has been a perennial object of linguistic attention, attention to XPs with mixed argument- and adjunct-properties has been intermittent in the history of generative syntax. This short paper is a contribution to that intermittency, focusing on one class of argument/adjunct ambiguities: those in which an XP that is adjunct-like in its (sub)category and external syntactic behavior nonetheless appears to be subject to syntactic selection, the grammatical relation *par excellence*. These *obligatory adjuncts* are problematic for many accounts of the argument/adjunct distinction, which largely tie the external syntactic properties of adjuncts to their having been introduced into the structure by a mechanism other than selection-motivated Merge.

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For example, manner/means-adjuncts in certain Accomplishment passives ((1), Grimshaw & Vikner (1993)) exhibit an obligatoriness that suggests that they participate in selection (initiated low or immediately in the structure), but under e.g. ellipsis or movement tests (initiated higher in the structure) they behave more like adjuncts.

- (1) This house was built/designed/constructed *(by a French architect/recently/poorly/...)

Likewise, the instrumental phrases with some classes of manner-verbs ((2), Klima (1961)) look and behave like adjuncts in most ways, but are not omissible, again looking like local selection.

- (2) Steve pelted Anna *(with acorns/ferociously/...).

I presuppose here that a syntactic account of (at least some) obligatory adjuncts is desirable without attempting to dispostively distinguish these from pragmatically obligatory adjuncts (Goldberg & Ackerman 2001).¹ That is, I assume that ‘obligatoriness is a matter of the grammar’ (Sailor & Schütze 2013) and that at least some of the attested cases of obligatory adjuncts are not part of the proper scope of the pragmatic analysis.

By focusing mainly on elements that appear selected by a root predicate,

¹Pragmatic analyses of some of these constructions (especially Goldberg & Ackerman (2001)) posit that the adjunct requirement is not a matter of syntactic selection, but instead due to an informativity requirement: roughly, that a predication is infelicitious when the predicate contributes no information beyond that entailed by the subject. An account of this kind, however, succeeds more at explaining the content of selected adjuncts than their external distribution. To briefly address the pragmatic argument: the requirement that a predicate must contribute additional information beyond that contributed by the subject does not explain why entirely uninformative XPs suffice to satisfy the requirement for the syntactic presence of such an element in these examples. That is, if the apparently selected character of these XPs were illusory, and really due only to a requirement that the predicate contribute something non-obvious to the speaker’s utterance, it is unexpected that (i.a,c) should be better than (i.b,d).

- (i) a. This house was designed in some manner.
 b. *This house was designed.
 c. Steve pelted Anna with things.
 d. *Steve pelted Anna.

If the apparent obligatoriness is indeed actual obligatoriness due to selection, this follows straightforwardly.

I hope to minimize this analytic hazard. In addition, I do not address here cases of apparently obligatory adjuncts in the nominal domain, as these seem structurally less amenable to an account in terms of selection and consequently more amenable to a pragmatic analysis.

The central contention of this paper is that the resources of the core grammar already provide most of what is needed to allow this (particular) mix of argument- and adjunct-properties: we do not require long-distance selection or idiomatized constructions, but rather a suitable independently-motivated (though somewhat unorthodox) deconstruction of the elementary syntactic operations allows XPs that exhibit the relevant *transient argumenthood* with nothing special added. This also serves as an exercise in reductive theory construction, in so far as the argument/adjunct distinction is to be exploded into the constellation of simpler properties or building blocks that add up to it.

1.1. Selected adjuncts

The chief unusual property of obligatory adjuncts is their apparent susceptibility to selection; in their external syntax, they behave largely like other adjuncts. Their selectional distribution is not entirely usual either, however. In English, they typically have a rather restricted class of selectors: certain Accomplishment predicates in the passive voice, some middles, and a residue of apparently lexically-listed verbs which require a normally adjunct-like element (3).

- (3) a. The monument was constructed *(magnificently/by exploited labourers/in 1452/...).
- b. This bread butters *(easily/smoothly/with great difficulty/...).
- c. John behaved *(well/poorly/like a jerk/...).

What is curious is, first, that this occurrence requirement holds of normally unselected elements, sometimes morphologically marked in a way that is typically restricted to adjoined positions (e.g. with adverbial *-ly* in English), and second, that in many cases a range of typically adjunct-like elements (typically Manner- and Means-PPs and AdvPs, sometimes temporal PP) can satisfy the requirement.

Except for their obligatoriness, these XPs typically behave like adjuncts in their external syntax. For example, they are treated like adjuncts by pseudoclefting (Klima 1961), not like arguments.

- (4) a. What Steve did with acorns was pelt Anna.
 b. What Steve did on Tuesday was pelt Anna.
 c. *What Steve did to Anna was give a book.

Likewise, they behave like adjuncts under ellipsis, being either included in the ellipsis or stranded outside it with approximately equal acceptability, even in backwards ellipsis contexts where a pseudogapping analysis is excluded (5).

- (5) a. Steve pelted Anna with acorns before John did (with pinecones).
 b. Although John didn't (with acorns), Steven pelted Anna with pinecones.
 c. This villa was designed by a French architect and that one was (by a Norwegian).
 d. This villa may have been by a French architect, but that one was definitely designed by a Norwegian.

Obligatory adjuncts also do not show signs of having obligatorily moved. A low adjunct like 'again' can trap the binding possibilities of an anaphor inside an obligatory adjunct to refer to its closest antecedent, apparently an instance of minimality, whereas the same obligatory adjunct, when ordered outside 'again', can take either the lower or higher antecedent, as in (6). This suggests that, in the neutral word order, the obligatory adjunct does not form a chain from which it can C-command any position of the subject DP.

- (6) a. Susan_i pelted Anna_j with her_(i,j) own acorns.
 b. Susan_i pelted Anna_j with her_(*i,j) own acorns again.
 c. Susan_i pelted Anna_j again with her_(i,j) own acorns.

Similarly, when an obligatory adjunct occurs outside a (properly optional) low adjunct like 'again', it has the possibility to reconstruct yielding a scope ambiguity, which does not occur when the obligatory adjunct appears closer to the verb than 'again'. In (7), for example, the (b) example admits of both a surface-scope reading where only the *re*-designing event must have been effected by a professional architect as well as an inverse-scope reading where both designing events were by a professional architect, while the (a) example, with the obligatory adjunct closer to the verb, admits only its surface-scope reading.

- (7) a. The building was designed by a professional architect again.

- b. The building was designed again by a professional architect.

In contrast, with properly optional adjuncts, both orderings of the *by*-adjunct and ‘again’ admit both scopal possibilities.

- (8) a. The building was destroyed by a professional demolitionist again.
b. The building was destroyed again by a professional demolitionist.

The correct analysis of adjunct-like expressions that nonetheless appear to be subject to syntactic selection, such as these, is therefore somewhat unclear. Here I propose that they are exactly what they seem to be: selected like any other argument via checking of a category-feature at their base or first-Merge position, but adjoined at subsequent stages of the derivation.

2. Analysis

The properties we have seen above can be summarised as follows: so-called obligatory adjuncts appear to be selected, a property of their base or first-Merge position, but behave otherwise like adjuncts, which are typically understood to have their distinctive properties, especially being ambiguously inside or outside of another maximal projection from the point of view of operations initiated higher in the tree, in virtue of being outside the calculus of selection.

2.1. Transient argumenthood

The proposal here is that what is distinctive about obligatory adjuncts is very much what appears it to be: they originate as arguments but end up as adjuncts, without obligatorily undergoing syntactic movement. That is, they exhibit *transient argumenthood*.

The core property of an argument is being selected, and these XPs show this argument-like property, suggesting that at reach their base position in the syntactic structure in the normal argument-like way, by satisfying the selection feature of a selecting head. Subsequently to this, they are ‘demoted’ to adjunct status, and consequently behave like adjuncts from the point of view of operations triggered later in the derivation.

The question now is how this combination of properties can be generated by the operations available to the grammar. A grammatical account of selected adjuncts should explain their formal obligatoriness in the range of syntactic

contexts in which they appear, abstracting away from the pragmatics of their interpretation or felicity across discursive contexts.

2.2. Structure-removal

One way to alter structural configurations without movement is via tree-pruning, in which some grammatical operation eliminates syntactic structure from later stages of the derivation. In this subsection I sketch an analysis of obligatory adjuncts in terms of structure removal. The discussion herein will be framed using the *Remove* version of structure-removal (Müller (2015), Müller (2017), etc.), which has the attractive property of complementarity with Merge; that is, it behaves like Merge in reverse, subject to the same general derivational constraints. The core idea of the Remove proposal is that the inventory of basic syntactic operations contains, in addition to Merge which builds structure, an additional operation Remove which destroys structure, which has in common with Merge its properties of binarity, structure-dependence, feature-drivenness, and cyclicity, restricting it to largely apply at the root—though naturally by reducing the size of the tree rather than extending it.

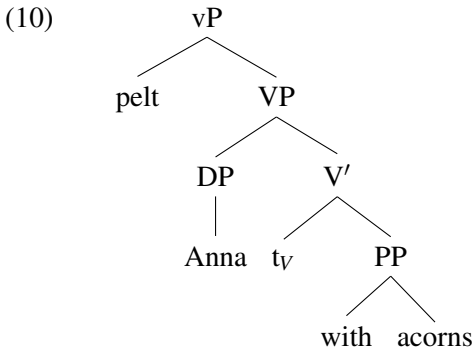
If UG affords such a structure-*destroying* operation that obeys, like Merge, Strict Cyclicity, this will force it to apply basically just at the root, though it can have different derivational results depending upon whether it applies to an X^{min} or an X^{max} . In the former case the Strict Cyclicity of the operation may appear rather less clear, as in (9) from Zyman (2020), in which the C head *though* bears a featuring attracting a DP to its Specifier in addition to a $[-D-]$ Remove feature stripping the D (and with it, the DP projection) from the moved constituent. In cases like this, however, all the operations are still triggered by the single currently active head, and thus can comply with a suitably formulated definition of Strict Cyclicity. (For details, see Müller (2017)).

- (9) a. Good doctor though she is . . .
 b. *Though she is good doctor . . .

In the course of this discussion we will find that complete structure-removal, whether of an XP or a head, does not quite have the properties needed for obligatory adjuncts, before turning to the core proposal of this squib, that the structure-removal involved in the derivation of obligatory adjuncts is only partial.

There I analyse these constructions by combining the Remove proposal with Hornstein & Nunes (2008), Hornstein (2009) *et seq.*'s Decomposed Merge, which breaks down the elementary syntactic operation of Merge further to accommodate adjunction into the overall system (without the addition of e.g. pair-merge). If Merge has a structure-destroying counterpart Remove, and if Merge itself decomposes into two even simpler operations, general considerations of symmetry suggest an analogous decomposition may apply to Remove. The combination yields the encouraging side-effect that argumenthood of an XP can, in a few circumstances, be derivationally temporary, without entailing that the XP in question ever leaves the derivational workspace.

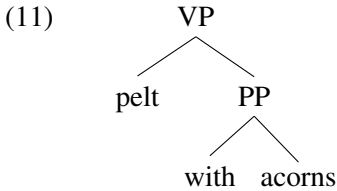
The basic pattern exhibited by obligatory adjuncts, that they appear subject to syntactic selection but otherwise behave like adjoined modifiers, resembles the so-called 'short life-cycle effects' documented in (Müller (2015), Müller (2017)), in that there is evidence of more structure earlier in the derivation (or equivalently in this case, lower in the syntactic tree), than there is at higher/later points. I assume that the vP-level structure of a sentence like (2) is as in (10).²



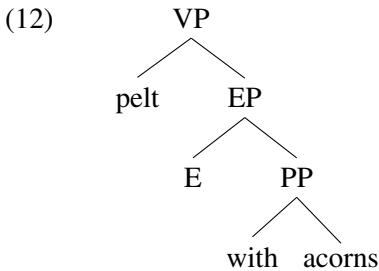
Obligatory adjuncts like in (2) cannot be derived in a structure of this kind via removal of an entire projection, since this would result in no observable remnant of the selected XP. If at the point in the derivation when the VP in (11) has been constructed, Remove were to apply to the *means*-PP *with*

²This discussion focuses on examples of the 'pelt' class of obligatory adjuncts, as this class most clearly seems to involve selection by the root predicate (though this is not without complications, cf. 'The rain pelted the sidewalk.')

acorns, we would expect no reflex of this PP's presence in the derivation on the morphophonological side.³

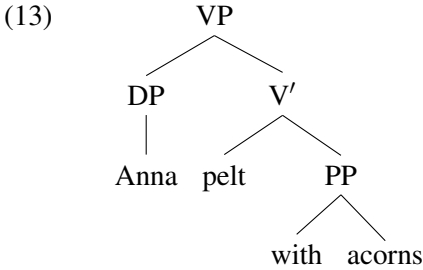


Instead, these examples can be better analysed as resulting from removal of a ‘dummy’ head and its projection after satisfaction of the selectional feature of the selecting head. That is, if V carries, rather than a selection feature for P_{Means} , a selection feature for some other category E which in turn selects P_{Means} , then head-Remove of E will leave the *means*-PP intact to be reattached.

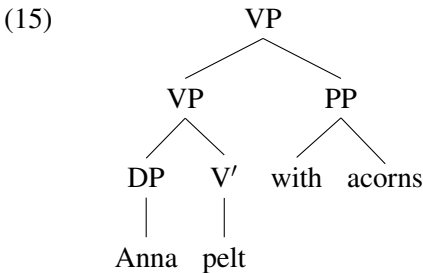
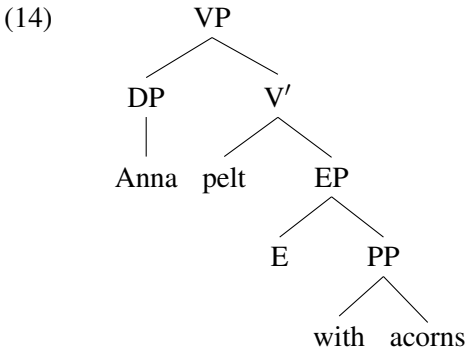


After removal of the head E in (12) and reattachment of the PP, the structure will be as in (11). On approaches to the argument/adjunct distinction that, fairly standardly, attribute the distinctive properties of adjuncts to their being simultaneously the sister and daughter of a non-distinct category, however, this will not suffice, because the next operation of Merge will yield the structure in (13), in which the obligatory adjunct is unfortunately restored to its prior status as the complement of V.

³The same result would obtain if we posited an otherwise empty projection (call it EP) uniquely dominating that PP; XP-Remove will not leave the appropriate residue if applied this low in the tree.



Instead we must critically order the selection and removal features on V, such that the addition of the specifier precedes the removal of the initial complement, i.e. $[E][D][-E-]$, so that the derivation proceeds to (14) before the removal step, after which the structure is (15).



This analysis accomplishes the core desideratum of generating transient argumenthood: the selected adjunct originates inside a selected projection (Comp,V) and its adjunct-like properties are the result of its subsequent position as both the sister and daughter of VP.

It is unclear, however, what the removed element E would be: perhaps an

empty N or D head, though these are not categories that typically host the range of XPs associated with obligatory adjuncts of this kind. More seriously, then, it has the theoretically undesirable property of introducing a syntactically-active category-feature that is not otherwise present in the language's vocabulary, and which never surfaces overtly.

Removal of such a structural shell may however be both more and less than is needed: the analytical desideratum just is that the selected adjunct should originate as an argument but be an adjunct thereafter, without, as shown in (6)-(8), obligatorily undergoing movement.

2.3. Decomposed *Remove*

The *Remove* proposal posits an operation complementary to *Merge*, serving to remove structure composed at a previous derivational step. This, by its own lights, naturalises the behaviour of the *Merge* operation by assimilating it to other cognitive operations which generally coexist with their own complementary operations (Müller 2015).

In contrast, the *Decomposed Merge* proposal treats *Merge*, which standard Minimalist approaches treat as a (or the) basic operation of the grammar, as instead a derived operation, obtaining as a result of two more basic operations applying sequentially. Both of these proposals are broadly in keeping with the fundamental Minimalist metatheoretical goals of simplifying and naturalising the operations of the grammar.

The basis of the *Decomposed Merge* hypothesis is that *Merge* is not a single operation, but a pair of operations *Concatenate* and *Label* that (typically) apply in series. *Concatenate* produces an non-hierarchically concatenated object (which Hornstein identifies with an adjunction structure) which, if subsequently *Labeled*, is able to contribute to larger hierarchical structures ((16)). If the concatenated structure does not undergo *Label*, the labeled sub-parts are still acceptable targets of further structure-building cycles, but the unincorporated adjunct will 'hang off' of the fully hierarchical structure.

- (16) a. $\text{Concatenate}(\alpha, \beta) \rightarrow \alpha\hat{\beta}$
 b. $\text{Label}(\alpha\hat{\beta}) \rightarrow [\alpha \alpha, \beta]$

The appeal of this proposal is that it derives endocentricity from the elementary operations of the grammar while still allowing adjunction structures to comply with Inclusiveness (see Hornstein & Nunes (2008) for details) without losing

the generalisation that they appear variably maximal and non-maximal under operations like ellipsis triggered by higher heads, by treating (some) adjoined constituents as attached to (concatenated into) the larger structure but not labeled, and thus invisible from the point of further operations.

If both the Decomposed Merge hypothesis and the Remove hypothesis are basically correct, it is to be expected that the Remove operation also decomposes into a pair of operations which, in the normal case, apply in series. Hereafter I refer to these operations as *Dis-catenate* and *De-label*.

- (17) a. **De-label:** delete the label from a labeled syntactic object
 b. **Discatenate:** delete structural material from a syntactic object

In this proposal, both Merge and Remove consisting of (in the general case) two serial operations, the one structure-related (building or destroying structure) and the latter label-related (adding or removing a label). In normal Merge, Concatenate applies and then Label, yielding a hierarchical structure larger than its input and bearing a label derived from the most prominently headed constituent of the concatenates (or in some other endocentric fashion). In Remove, De-label applies and then Dis-catenate, removing the targeted structure from future steps of the derivation and yielding ‘short life-cycle effects’. The table below summarises the decomposed operations in Bare Phrase-Structure terms, though nothing that follows rules out more traditional conception of phrase structure.

	Input	Output
Concatenate	α, β	$\{\alpha, \beta\}$
Label	$\{\alpha, \beta\}$	$\{x, \{\alpha, \beta\}\}$ ⁴
Discatenate	$\{\alpha, \beta\}$	α, β
De-Label	$\{x, \{\alpha, \beta\}\}$	$\{\alpha, \beta\}$

In spite of this underlying symmetry, the derivational possibilities of the structure-building and structure-destroying operations differ when they apply out of their typical order.

⁴Where $x \subset \{\alpha, \beta\}$

If Label applies to an already-Labeled structure, the result is vacuous, provided the labeling algorithm (whatever it may be in its details) is deterministic and endocentric. In principle, there is nothing to prevent Label from applying arbitrarily many times, but such derivations will be indistinguishable from those where Label applies only once per Concatenate.⁵

The generalisation in regard to the operations of Decomposed Merge is that, first, applying Label to a just-Labeled structure is vacuous and, second, applying Concatenate to a just-Concatenated structure produces a structure that is syntactically (though not phonologically) indistinguishable from its input, in that it exhibits the same headedness but includes an additional, structurally unincorporated adjunct. Thus in the course of general structure-building operations, Label will be fed by Concatenate and not *vice-versa*. Because applying *Label* to an already Labelled structure is vacuous, and applying *Concatenate* to an un-Labelled structure just yields another adjunct, if the structure-building operations apply outside of their typical order, no particularly unusual derivations result.

The corresponding structure-destroying operations, however, can interleave somewhat more freely. Applying Delabel to a structure without subsequently Discatenating the Delabeled constituent effectively converts an argument, or other syntactically-integrated element, into an adjunct.

Such a derivation would be vacuous unless another operation intervened, but provided that first-Merge is always driven by the need to check a selectional feature, there will always be such an intervening operation; in which case, the Delabeled constituent is predicted to behave like an argument to everything below it in the tree, but like an adjunct to everything above (analogous to “short life-cycle effects” from full Remove, Müller (2017)).

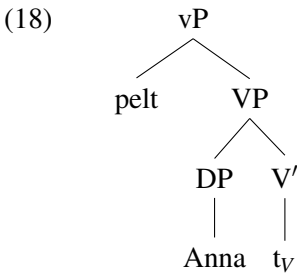
A *Decomposed Remove* analysis can therefore straightforwardly derive these and related cases of argument-adjunct asymmetry without any additional basic operations other than those which Merge and Remove decompose into. The simplest way to do this is to posit that heads that select typical adjunct ‘types’ like Adv, P_{Manner} , etc., come with a corresponding Delabel feature.

⁵The old constraint against vacuous transformations (Chomsky 1973) may be invoked here to rule out such unboundedly-long derivations, if such a justification is needed.

2.4. Example derivation with partial structure-removal

Assume that the base-generated structure of the VP hosting the obligatory adjunct is as given above in (11). Assume further that, ordered after the [P_{manner}] feature instantiating its selectional requirement for a PP of the appropriate subtype, the head V contains also a Delabel feature [$^{\wedge}P_{manner}^{\wedge}$], though we will question the latter assumption shortly. This [$^{\wedge}P_{manner}^{\wedge}$] feature serves to remove the label of the XP immediately containing the most local instance of P_{manner} to the head that bears [$^{\wedge}P_{manner}^{\wedge}$] (that is, the VP) and convert the already-constructed structure into an unlabelled concatenation of the V *pelt* and the manner-PP.

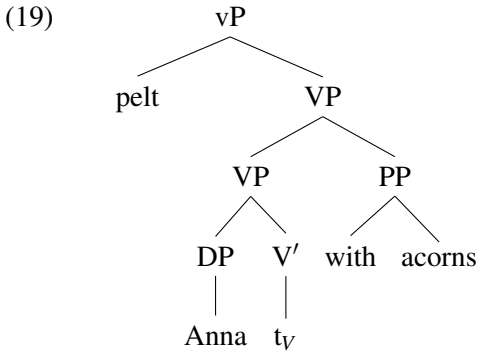
Because further elements remain in the numeration with selectional dependencies to V, namely v which selects it and attracts it via head-movement, and the object DP *Anna* which it will select, V will undergo these further structure-building operations until the vP in (18) is constructed. At the same time, the PP will remain in the workspace (since it has not been Disconcatenated), no longer integrated into the larger structure but having satisfied the selectional feature of V.



Now the lower phase will undergo Spellout. I assume for exposition that unLabeled or Delabeled elements Concatenated to the structure subject to Spellout are integrated into the traditional Chomsky-adjoined position as a Last-Resort operation at the completion of the phase, but nothing hinges on this. If they remain merely Concatenated to the Spelled-out structure, a suitable linearisation algorithm at the PF interface may be designed to handle them; such an algorithm is likely required anyway on Decomposed-Merge proposal to handle unLabeled concatenates at the uppermost phase.

Assuming, however, that Last-Resort structural integration does occur at the phasal level, the resulting structure (including the un-Spelled-out phase head)

will be as in (19): the PP is absent from its selected position, and will for the purposes of operations higher in the tree look like any other adjunct, but it has left no movement trace and thus no possibility of reconstruction.



2.5. The origin of the demotion requirement

The simplest way to implement the apparent requirement that selected XPs of adjunct-like types must rapidly undergo Delabel would be via a lexical generalisation (rather like a Stump-type rule of referral (Stump 1993), though outside the morphological domain), such that when selectional features for Adv, P_{manner}, etc. are present on a head in the lexical inventory, they are mandatorily accompanied by a later-acting Delabel feature converting the selected adverbial into an adjunct before the derivation proceeds further, as sketched above. A lexical generalisation of this kind is not plainly unlearnable, but as a theory of why obligatory adjuncts behave as they do, it is somewhat unsatisfying: a lexicon could in principle be much less coherently organised than this. A more explanatory account might seek to locate *why* elements of this kind must be ‘demoted’ to adjuncts shortly after being selected.

I would like to suggest the following: what is ‘off’ about adverbials in selected positions is that they are interpreted as functions over an event variable (pace Hornstein & Pietroski (2009)), as modifiers to the event referred to by the chain of heads composing the clausal spine and initially introduced into the derivation quite low, by *v* or possibly V. When the verb’s feature structure subcategorises for an element of this type, it introduces into the derivation an element whose structural position as a verbal complement is not a good fit.

Demotion to adjunct itself looks, from this perspective, like a rescue or

last-resort operation, to handle an XP that must be both subject to selection and in a position normally outside selection. Rescue operations of this kind are natural signals of optimisation processes, and it is therefore natural to treat them in Optimality-Theoretic terms. Here I suggest a possible avenue in which to do so and an encouraging prediction, but for reasons of space do not present a worked-out ranking or tableaux.

If a relatively high-ranked constraint that prefers operators in non-complement positions, or more generally prefers their C-command domain to match their interpretation scope, is active throughout the derivation, then in a local optimisation model like that in (Heck & Müller 2003), V may be able to Delabel its complement without a dedicated [$\wedge P_{manner}$] feature. That is, it may be something like Op-Spec (Grimshaw 1997) or Op-Scope (Bakovic 1995), that motivates the Delabeling, if this constraint ranks higher than the constraint(s) mitigating against non-feature-driven structure-removal⁶. The contexts in which demoting something to an adjunct will be the optimal next step are fairly limited: basically just those in which an element that should be interpreted as a verbal modifier occurs in an argument position, and in which movement would not be a better repair option.

If this hunch is on the right track, it leads to the prediction that adjunct-like elements in selected positions will more freely be permitted in languages in which Op-Scope is ranked lower; a natural place to look is *wh*-in-situ languages. And indeed, in Japanese, elements of the category Adv (marked here by the suffix *-ku*) are selected quite routinely.

- (20) *ooki-ku naru*
 large-ly become
 ‘become large’

While a constraint of the Op-Scope type is certainly not low-ranked enough in Japanese to be inactive, due to the complicated scope facts around scrambling in this language, its largely *wh*-in-situ character is evidence that such constraints are relatively less prominent. In other work (Frazier *in prep.*) I expand on these predictions, as well as giving a more full account of the derivational properties of the decomposed-operations approach to structure-removal.

⁶Possibly simply a generalised version of the Feature Condition in (Heck & Müller 2003).

3. Conclusion

So-called obligatory adjuncts are among the most readily apparent cases in widely-studied languages where the argument/adjunct dichotomy shows evidence of being derived rather than primitive. By decomposing the apparently primitive grammatical operations, and provided the usual monotonicity of these operations is a result of convergence considerations and not a basic property of the operations themselves, we can assimilate these cases to the normal mechanisms of selection and adjunctive modification needed for the rest of the grammar.

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Zum Abbau der Endung *-em*

Peter Gallmann

1. Einleitung

Der Beitrag befasst sich mit einem Thema, mit dem sich auch Gereon Müller schon mehrfach beschäftigt hat: mit den grammatischen Merkmalen, die die Flexionsmorphologie der Adjektive und der ähnlich flektierten Determinierer im Deutschen bestimmen. Im Zentrum des Beitrags steht der Abbau der Endung *-em* und ihr Ersatz durch *-en*. Zur Erklärung wird ein relativ einfaches System vorgeschlagen, das auch auf Sprachwandelphänomene angewandt werden kann. Seine Besonderheit ist die Annahme unspezifischer Kontrastmarker, die von unterschiedlichen Merkmalen bzw. Merkmalkombinationen eingefordert werden können.

2. Zum Abbau starker Kasusendungen

Bestimmte starke Flexionsendungen der Adjektive und der adjektivartig flektierten Determinierer werden abgebaut, insbesondere die Dativendung *-em* und die Genitivendung *-es*. Aufschlussreich ist vor allem der Abbau der Endung *-em*. Hinter dieser Entwicklung stecken mehrere, teilweise überlappende und sich gegenseitig verstärkende Faktoren:

- Syntaktischer Faktor: die Tendenz zur Monoflexion
- Phonologischer Faktor: die Tendenz zur Neutralisierung von Nasalkonsonanten im Auslaut
- Morphologischer Faktor: die Präferenzen bei der Komplettierung des defektiven starken Endungsinventars

Strict Cycling: A Festschrift for Gereon Müller, 125–136

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser (eds.)

STRICT CYCLING, Universität Leipzig 2024

Bemerkung zur Notation der Beispiele: Gut nachgewiesene Nonstandardformen werden mit dem Zeichen ° markiert. Fragezeichen ??? stehen bei Formen, die auch im Nonstandard kaum zu finden sind.

3. Syntaktischer Faktor: Tendenz zur Monoflexion

Wie schon in zahlreichen Arbeiten aufgezeigt (u.a. Nübling 2011, Sahel 2022), besteht seit dem Frühneuhochdeutschen eine Tendenz, spezifische Kasusmerkmale in komplexen Nominalphrasen an nur noch einer einzigen Wortform anzuzeigen. Wenn hier oft von einer Tendenz zur Monoflexion gesprochen wird, dann ist nicht gemeint, dass die übrigen Wortformen der Nominalphrase überhaupt keine Flexive mehr aufweisen, sondern nur, dass dort gegebenenfalls relativ unspezifische Kontrastmarker erscheinen (siehe dazu nachstehend mehr). Die Verteilung von spezifischen und unspezifischen Flexiven innerhalb der Nominalphrase werden von den syntaktischen Regeln der sogenannten Nominalgruppenflexion bestimmt (siehe dazu eingehender Dudengrammatik 2022).

Gut untersucht ist die Tendenz zur Monoflexion bei der Abfolge mehrerer attributiver Adjektive. Aus den Grundregeln der Nominalgruppenflexion folgt, dass nach einem Adjektiv mit starker Endung auch die folgenden Adjektive eine starke Endung tragen (Parallelflexion). Das ist auch bei der starken Endung *-em* oft tatsächlich der Fall. Daneben findet man aber sehr oft auch Wechselflexion *-em /-en*, interpretierbar als Abfolge von spezifischer (starker) und unspezifischer (schwacher) Endung. Besonders aufschlussreich ist die Korpusuntersuchung von Münzberg & Hansen (2020). Diese Untersuchung ergab, dass einerseits die Tendenz zur Wechselflexion etwas größer ist, wenn die Adjektive einander nicht nebengeordnet sind. Andererseits tritt Wechselflexion aber in durchaus ansehnlicher Frequenz auch bei eindeutiger Reihung auf, sodass Bemühungen, hier strikte Regeln anzusetzen, als unangemessen abzulehnen sind. Typische Belege für Wechselflexion bei Reihungen:

- (1) a. Bei **starkem** und °**anhaltenden** Druck auf den Spinalnerv kann es zu neurologischen Ausfallserscheinungen kommen.
(<https://www.uniklinik-ulm.de/neurochirurgie/wirbelsaeulenchirurgie.html>; Mai 2023)
- b. Die Suppe selbst ist ebenfalls von **deutlichem**, aber nicht °**plumpen** Charakter.
(<http://burghausen-evangelisch.mws6.de/> . . . ; Mai 2023)

Ein ähnliches Phänomen findet sich bei untergeordneten, kongruierenden Nominalphrasen, etwa bei pseudopartitiven Attributen sowie bei Attributen mit *als*. Stichproben der Dudenredaktion zeigten, dass die *n*-Formen bei solchen Attributen in höherer Frequenz auftreten als bei Dativphrasen in anderer Funktion (Dudengrammatik 2022: 421). Beispiele:

- (2) a. Das Granulat ergibt mit [einem Glas [°kalten oder °warmen Wasser]] eine milchartig aussehende Suspension.
(<https://www.bio-apo.com/product/acetolyt-granulat.300197.html>; Mai 2023)
- b. Mit [ihm [als °guten Hirten]] können sie zuversichtlich in die Zukunft gehen.
([http://burghausen-evangelisch.mws6.de/...](http://burghausen-evangelisch.mws6.de/); Mai 2023)

Bei alledem ist zu beachten, dass die Aufgabe der Parallelflexion fast nur die Endung *-em* betrifft. Bei der Endung *-er* (Genitiv/Dativ Singular Femininum; Genitiv Plural) haben sich entsprechende Tendenzen, die vor allem für das 17. und 18. Jahrhundert gut belegt sind, nicht durchgesetzt – die Entwicklung ging im Gegenteil zurück zur Parallelflexion (Sahel 2022: 21). Heute findet sich Wechselflexion noch am ehesten bei Nominalisierungen. Beispiele, in (3a) Dativ Singular Femininum, in (3b) Genitiv Plural:

- (3) a. Dänische Bahn muss deutscher °Reisenden Schadenersatz zahlen
(Wiesbadener Kurier (Überschrift), via Dudengrammatik 2016: 970)
- b. Eine Kulturreise nach Italien war ein Sketch, der die Mentalität deutscher Reisenden auf die Schippe nahm.
([https://www.insuedthueringen.de/...](https://www.insuedthueringen.de/); Okt. 2023)

Im Nominativ tritt Wechselflexion so gut wie nicht auf. Konstruierte Beispiele (Nominativ Singular Maskulinum und Neutrum):

- (4) a. Deutscher ^{???}Reisende von Heimweh ergriffen
- b. Ein [halbes Glas [^{???}kalte oder ^{???}warme Wasser]] reicht für eine milchartig aussehende Suspension.

Deutung: Die Tendenz zur Monoflexion *ist* ein Faktor, der beim Ersatz von *-em* durch *-en* eine wichtige Rolle spielt. Dass dieser Faktor aber in Nominalphrasen im Genitiv/Dativ mit der Endung *-er* nur marginal, in Nominalphrasen im Nominativ so gut wie gar nicht wirkt, lässt vermuten, dass sich die Wechselflexion nur dann durchsetzt, wenn sie von anderen Faktoren

unterstützt wird. Solche Faktoren gibt es tatsächlich, wie im Folgenden gezeigt wird.

4. Phonologischer Faktor: Neutralisierung von Nasalkonsonanten

Es gibt offenbar eine generelle Tendenz zur Neutralisierung von nasalen Konsonanten im Auslaut, vor allem bei unbetonten Silben, wobei die genaue Natur des "Einheitsnasals" von Sprache zu Sprache schwankt. Beispiele in Auswahl:

- (5) a. Deutsch, Altgriechisch, Spanisch, Japanisch: → [n]
 b. Chinesisch (Mandarin): → [ŋ]
 c. Portugiesisch: → [m] oder Nasalisierung des vorangehenden Vokals
 d. Französisch (historisch): → Nasalisierung des vorangehenden Vokals

Die Tendenz des Deutschen, bei unbetonten Wortausgängen und Flexiven finales *-m* durch *-n* zu ersetzen, besteht schon lange. Vgl. historische Entwicklungen wie *Besen* (ahd. *besame*, engl. *besom*), *Boden* (ahd. *bodam*), *bin* (ahd. *bim*) sowie die ursprünglichen *m*-Endungen im Dativ Plural (heute *-n*, idg. **-mis*). Die Tendenz ist aber nicht ausnahmslos. Unter dem Einfluss der Schemakonstanz kann *-em* auch erhalten bleiben, vgl. *Atem* (wegen: *atmen*). Außerdem hat bis jetzt auch die Dativendung *-em* einigermaßen überlebt (vielleicht, weil ursprünglich geminiert). Teilweiser Ersatz durch *-en* und damit Varianz *-em/-en* ist aber schon sehr früh belegt und damit nichts Neues (Moulin-Fankhänel 2000, Nübling 2011).

Der Ersatz von *-em* durch *-en* wird im gesprochenen Deutsch durch die Realisierung dieser Endungen als silbische Nasalkonsonanten zusätzlich gefördert. Hier kommt es oft zu Assimilationen an den vorangehenden Konsonanten (Kleiner & Knöbel 2016: 37). So ist es standardsprachlich anerkannt, die mit ⟨en⟩ geschriebene Endung nach Labialen als [ŋ] oder [ɱ] zu realisieren. In den folgenden Beispielen stehen die geschriebenen Formen in Winkelklammern:

- (6) a. ⟨lieben⟩ → [li:bŋ] oder [li:bɱ]
 b. ⟨liebem⟩ → [li:bɱ]

Dies kann zu einer Reanalyse führen, in der [ɱ] auch in Fällen, wo es

eigentlich auf ⟨em⟩ bezogen werden müsste, einheitlich als Realisierung von ⟨en⟩ interpretiert wird. Das Ergebnis ist eine neue 1:1-Relation:

(7) [li:b̩m̩] ↔ ⟨lieben⟩

Durch Übertragung auf andere Kontexte kommt es zu weiteren Neutralisierungen, vgl. etwa:

(8) a. Ausgangslage: ⟨klugen⟩, ⟨klugem⟩ → [klu:g̩ŋ]
 b. Reanalyse: [klu:g̩ŋ] ↔ ⟨klugen⟩

Im Ergebnis werden auslautendes silbisches [m̩], [ŋ] und [ŋ] als allophonische Varianten aufgefasst und in der Schreibung – ganz im Einklang mit den Phonem-Graphem-Regeln des Deutschen – einheitlich als ⟨en⟩ realisiert. Typische Beispiele:

(9) a. Der Strand besteht aus °feinen, °schwarzen Lavasand.
 (<http://www.myreisen.de/reisemagazin-urlaub/534/?>; Febr. 2014)
 b. Hanussen – sein Blick in die Zukunft gibt °jeden eine Chance
 (<https://www.amazon.de/Hanussen-Blick-Zukunft-Chance-deinem/dp/...>; Mai 2023)

In geschriebener Sprache stoßen solche Formen allerdings auf den Widerstand der traditionellen „Sprachpflege“. Häufig werden dann solche *n*-Formen als Akkusativformen und damit als Fehler im Gebrauch der Kasus fehlinterpretiert.

Mit dem phonologischen Wandel ist eine morphologische Reanalyse verbunden: ⟨en⟩ wird nicht etwa als eigenständige Endung, die zufälligerweise mit der schwachen Endung ⟨en⟩ homonym ist, aufgefasst, sondern mit dieser Endung identifiziert. Warum das so ohne Weiteres möglich ist, wird nachstehend gezeigt.

5. Morphologischer Faktor: synchrone Präferenzen im Flexionssystem

Die genannte morphologische Reanalyse lässt sich am besten verstehen, wenn man zuerst einen synchronen Blick auf das Flexionssystem im Bereich Adjektiv und Determinierer wirft. Hier wird traditionell zwischen einem starken und einem schwachen Paradigma unterschieden. Die Wahl zwischen diesen Paradigmen ist nicht lexikalisch, sondern syntaktisch gesteuert, und

zwar über die Regeln der Nominalgruppenflexion (zu den Einzelheiten siehe Dudengrammatik 2022: 412-420). Es handelt sich also nicht um Flexionsklassen, wie sie in vielen flektierenden Sprachen, etwa im Latein, zu finden sind. Vielmehr leisten die Endungen der beiden Paradigmen Unterschiedliches.

- Für bestimmte Positionen innerhalb der Nominalphrase verlangen die Regeln der Nominalgruppenflexion starke Endungen. Solche Endungen sind Träger *spezifischer* Merkmale aus den Kategorienklassen Kasus, Numerus und Genus. Dies gilt sowohl für Determinierer als auch für Adjektive.¹
- Für die übrigen Positionen innerhalb der Nominalphrase kommen nur die schwachen Endungen infrage. Es handelt sich um *unspezifische* Kontrastmarker im Sinne von Carstairs-McCarthy (2008). Betroffen sind hauptsächlich Adjektive.²

Wie auch Gereon Müller (2002, 2020) gezeigt hat, ist das Inventar an starken, spezifischen Endungen defektiv, siehe dazu Tabelle (10). Zu den einzelnen Kategorien siehe die Anmerkungen unter der Tabelle. Zur Auffüllung der Lücken siehe anschließend.

(10)

	Neutrum	Maskulinum	Femininum	Plural
	∅	+ mask	+ fem	+ mask, + fem
∅ Nom.	-es₁	-er₁	-e₁	
+ Akk.				
+ Dat.	-em		-er₂	-en₁
+ Gen.			-er₃	

Anmerkungen:

- Der Vorschlag kommt nicht ganz ohne die Annahme homonymer Endungen aus, darum die Unterscheidung mit Indizes. Das gilt hier auch für Dativ und Genitiv des Femininums, weil bei einigen Pronomen differenziert wird: *der* ≠ *derer*; *ihr* ≠ *ihrer*. Dieses Detail spielt im Folgenden aber keine Rolle.

¹Zur Möglichkeit endungsloser Determinierer und Adjektive und zur Unterscheidung von Endungslosigkeit und Merkmallosigkeit siehe Gallmann (2016).

²Dazu gehört auch der adjektivische Gebrauch von Lexemen, die sonst als Determinierer auftreten; vgl. zum Beispiel: *der eine* Vorschlag, *das eine* Buch (Gallmann 2017). Zu ähnlichen Erscheinungen bei Nomen siehe Dudengrammatik (2022: 423-427): Unterlassung der Kasusflexion.

- Wie bei Wunderlich (2003) wird von Oppositionen des Typs Default vs. markiert ausgegangen. Neutrum und Nominativ sind Defaultkategorien, in der Tabelle mit \emptyset gekennzeichnet. Beim Nominativ ist das unstrittig, beim Neutrum ist das Verhältnis zum Maskulinum weniger klar. Die markierten Kategorien sind mit einem Pluszeichen gekennzeichnet.
- Numerus und Genus bilden im Deutschen eine gemeinsame "gemischte" Kategorienklasse, also wie bei Gereon Müller (2002, 2020). Im Unterschied zu seinem Ansatz wird hier Neutrum als unmarkiert, Plural als markierte Kombination [+ maskulin, + feminin] dekomponiert.
- Zur Unterscheidung von $-e_1$ und $-e_2$ bzw. $-en_1$ und $-en_2$ siehe gleich anschließend.
- Im Genitiv Neutrum/Maskulinum erscheint bei einigen Determinierern noch die hier ausgeblendete Endung $-es_2$; siehe dazu (15).
- Auf eine Dekomposition der Kasus wird hier verzichtet; siehe aber Fußnote 3.

Das schwache Flexionsparadigma der Adjektive besteht aus nur gerade zwei unspezifischen Kontrastmarkern:

- Marker I: Die Endung $-e_2$ kontrastiert mit dem bloßen, endungslosen Stamm. Sie zeigt nur gerade an, dass überhaupt ein Merkmalsträger der NP vorliegt (vgl. ähnlich Carstairs-McCarthy 2008). Auf diesen Marker wird im Folgenden nicht weiter eingegangen.
- Marker II: Die Endung $-en_2$ kontrastiert mit dem Marker I und wird von bestimmten Merkmalen und Merkmalkombinationen der NP ausgelöst, nämlich: [+ Gen], [+ Dat], [+ mask, + fem], [+ mask, + Akk]. Die genaue Merkmalkonfiguration spielt keine Rolle, es zählt nur, dass die aufgelisteten Merkmale oder Merkmalkombinationen mit dabei sind. Auffällig ist die Merkmalkombination [+ mask, + Akk]. Man kann darin eine rein formale Variante von differenzieller Objektmarkierung sehen (Bossong 1998).³

³Ein alternativer Ansatz ist möglich, wenn man die Kasus wie bei Wunderlich (2003) dekomponiert, im Genitiv also abweichend von Gereon Müller (2020): Nom = [], Akk = [+a], Dat = [+a, +b], Gen = [+a, +c]. Man kann dann die folgende Regel ansetzen: Der Kontrastmarker $-en$ tritt immer dann auf, wenn die NP zwei oder mehr markierte Merkmale aufweist, ausgenommen [+ fem, + Akk]. Zu einer sprachkritischen Analyse der genannten Ausnahme siehe Krifka (2009).

Wie in Tabelle (10) gezeigt, ist das Paradigma der starken, spezifischen Endungen defektiv. Die Lücken dieses Paradigmas werden durch "Ersatzendungen" gefüllt. Dabei bestehen die folgenden Optionen:

1. Überspezifizierte (bzw. fehlspezifizierte) Endungen sind ausgeschlossen.
2. Unterspezifikation kann hingegen in Kauf genommen werden.
3. Außerdem stehen die unspezifischen (schwachen) Konstrastmarker zur Disposition.

Dieser Ansatz steht grundsätzlich in der Tradition von Bierwisch (1967), Wunderlich (1997) und zahlreichen verwandten, auch von Gereon Müller (2020) diskutierten Vorschlägen. Die Besonderheit des vorliegenden Ansatzes ist der dritte Punkt: die Annahme unspezifischer Marker und deren Einbezug in den syntaktischen Kontext, in dem eigentlich spezifische Flexive erwartet werden. Die unspezifischen Marker sind also nicht auf bestimmte Positionen innerhalb der NP beschränkt, sondern können im Prinzip an jeder Position innerhalb der NP auftreten. Die Grenzen zwischen dem starken und dem schwachen Paradigma sind folglich weniger scharf, als gewöhnlich angenommen wird.

In der Position, in der eigentlich Wortformen mit spezifischen Endungen erwartet werden, steht daher das folgende Endungsinventar zur Verfügung (es werden nur die markierten Kategorien genannt):

- (11)
- a. -en₁ [+ mask, + fem, + Dat]
 - b. -er₃ [+ fem, + Gen]
 - c. -er₂ [+ fem, + Dat]
 - d. -em [+ Dat] (im Abbau)
 - e. -es₂ [+ Gen] (nur noch bei einigen Determinierern; siehe (15))
 - f. -e₁ [+ fem]
 - g. -er₁ [+ mask]
 - h. -es₁ []
 - i. -en₂ unspezifischer Marker II
 - j. -e₂ unspezifischer Marker I

Die Wahl der Endungen wird durch die folgende Hierarchie bestimmt:⁴

⁴Die Einzelheiten sind gut mit klassischen OT-Tableaux darstellbar; im vorliegenden Beitrag wird darauf verzichtet.

(12) Fem » Gen/Dat » Kontrast II » Rest

Dies führt zunächst zum folgenden System; die Ausrufezeichen stehen beim ersatzweise eintretenden Kontrastmarker II:

(13)

	Neutrum	Maskulinum	Femininum	Plural
	∅	+ mask	+ fem	+ mask, + fem
∅	-es ₁	-er	-e ₁	← -e ₁
Akk.	↑ -es ₁	!!! -en ₂	↑ -e ₁	← -e ₁
Dat.	-em	← -em	-er ₂	-en ₁
Gen.	!!! -en ₂	!!! -en ₂	-er ₃	← -er ₃

Anmerkungen:

- Das starke, spezifische Paradigma enthielt ursprünglich eine eigenständige Endung für die Merkmalkombination [+ mask, + Akk]. Diese ist auf dem Weg zum heutigen System reanalysiert worden. Synchron handelt es sich bei -en um den Kontrastmarker II.
- Zum Kontrastmarker II im Genitiv siehe auch nachstehend.

6. Morphologischer Faktor: Auswirkung auf Sprachwandel

Mit der vorangehend skizzierten Analyse lassen sich auch bestimmte Sprachwandelphänomene erklären, insbesondere den Ersatz der Dativendung -em und der Genitivendung -es durch -en.

Zunächst zum Abbau der Genitivendung -es (genau: -es₂) bei Adjektiven: Dieser Abbau hängt mit der oben angesprochenen Tendenz zur Monoflexion zusammen. Für die Sichtbarkeit des Genitivs reicht das Genitiv-s am Nomen. Die Hierarchie (12) sagt richtig voraus, dass bei Streichung der spezifischen Genitivendung -es (vgl. (11e)) der unspezifische Marker II, also -en, einspringt. Das Resultat ist das Paradigma (13). Die Entwicklung zu diesem Paradigma war bei Adjektiven und adjektivisch gebrauchten Partizipien tatsächlich schon vor 1900 so gut wie abgeschlossen (Sahel 2022):

- (14) a. trockenes Fußes → trocken**e**n Fußes
 b. sehendes Aug**e**s → sehend**e**n Aug**e**s

Bei den Determinierern verschwindet -es ebenfalls zusehends (Dudengram-

matik 2022: 734). Es kommt daher zu Varianz, und zwar mit unterschiedlicher Akzeptanz. Zur Kritik an den Präferenzen vieler traditioneller Grammatiken siehe Stenschke (2007).

- (15) a. am Ersten jeden/jedes Monats; Menschen jeden/jedes Alters
 b. am Ersten °diesen/dieses Monats; Menschen °meinen/meines Alters

Dasselbe Ergebnis zeigt sich beim Abbau von *-em*: Wenn diese Endung aus dem Inventar (11) eliminiert wird, kommt der unspezifische Marker II *-en* zum Zug. Das ist hier besonders günstig, denn der oben behandelte phonologische Faktor führt zur genau gleichen Form: *-em* → *-en*. Der phonologische Wandel führt also nicht zu einer neuen spezifischen Endung *en₃*, das Resultat lässt sich vielmehr im Einklang mit der morphologischen Hierarchie (12) viel einfacher so interpretieren, dass der unspezifische Marker II vorliegt, also *-en₂*. Beim zweiten treibenden Faktor, dem Abbau der Parallelflexion, kann sowieso angenommen werden, dass es sich bei *-en* um diesen Marker handelt.

Sofern sich der Wandel gegen den Widerstand der "Sprachpflege" durchsetzt, steht für Positionen, an denen starke Endungen erwartet werden, das folgende Inventar von spezifischen und unspezifischen Endungen zur Verfügung:

(16)

	Neutrum	Maskulinum	Femininum	Plural
	∅	+ mask	+ fem	+ mask, + fem
∅	-es	-er	-e	← -e
Akk.	↑ -es	!!! -en	↑ -e	← -e
Dat.	!!! -en	!!! -en	-er	-en
Gen.	!!! -en	!!! -en	-er	← -er

7. Fazit und Ausblick

Der Wandel *-em* → *-en* wird von zwei Faktoren ausgelöst: der Tendenz zur Monoflexion und der Tendenz zur Neutralisierung von Nasalkonsonanten im Auslaut. Diese Entwicklung wird durch einen dritten Faktor gefördert, nämlich das bestehende morphologische System des Deutschen. Der Wandel löst dabei keinen wesentlichen Umbau des Flexionssystems aus, das System erweist sich vielmehr auch mit einer Endung weniger als insgesamt sehr stabil.

In diesem Beitrag ist mit einem besonderen Typus von Flexiven gearbeitet worden, mit unspezifischen Kontrastmarkern in Anlehnung an Carstairs-McCarthy (2008). Die Frage stellt sich, ob mit so etwas auch in anderen Bereichen zu rechnen ist. Kandidaten finden sich im Deutschen bei der Flexion von Nomen und Verb. Zu prüfen ist zum Beispiel aber auch das Flexiv -s im Englischen.

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Unterspezifikation in der althochdeutschen und mittelhochdeutschen Adjektivflexion

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1. Einleitung

Wie bekannt weist die neuhochdeutsche Adjektivflexion zahlreiche Synkretismen auf, bei denen unterschiedliche Flexionsmerkmale auf dieselbe Weise markiert werden. So werden in der schwachen Adjektivflexion für alle Flexionsformen nur zwei Marker oder Endungen verwendet, *e* und *en*. Eine gängige Methode, solche Synkretismen zu beschreiben und zu analysieren, ist die Unterspezifikation. Der Grundgedanke findet sich schon bei Bierwisch (1967), der annimmt, dass bei Synkretismen Flexionsformen natürliche Klassen bilden und diese natürlichen Klassen wie in der Phonologie mit Hilfe der Merkmale, die sie teilen, erfasst werden können. Man kann dann zum Beispiel, wenn alle Formen im Plural denselben Marker *e* teilen, wie in (1) eine Regel für diesen Marker formulieren, in der nur das Numerusmerkmal [pl] verwendet wird. Diese Regel ist dann in dem Sinne unterspezifiziert, dass nur Numerus spezifiziert ist, aber nicht Genus und Kasus.

(1) [pl] → *e*

Müller (2002), der einen Überblick über einige Ausarbeitungen dieses Grundgedankens in verschiedenen Theorien gibt, führt vor, wie sich mit solchen unterspezifizierten Flexionsregeln nicht nur die Standardsprache beschreiben lässt, sondern auch dialektale Variation. Seine Analyse des ‚Rheinischen Akkusativs‘ im Mannheimerischen (*Ich habe auch ein schöner Ball* statt standardsprachlich *Ich habe auch einen schönen Ball*) zeigt, dass ‚ein geringfügiger Umbau des Regelsystems [genügt], durch Regelstreichung bzw.

*In Erinnerung an die gemeinsamen Ausfahrten ins Leipziger Umland, mit und ohne Familien, und mit Dank an Anke Himmelreich für hilfreiche Kommentare.

minimale Regelmodifikation“ (Müller 2002:360). Ich will daran anknüpfen und im Folgenden eine andere Art von Variation auf vergleichbare Art und Weise analysieren, und zwar den diachronen Wandel in der deutschen Adjektivflexion.

2. Adjektivflexion im Althochdeutschen

Nehmen wir als Ausgangspunkt die folgende Darstellung der starken althochdeutschen Adjektivflexion:¹

	nonpl			pl		
	mask	neut	fem	mask	neut	fem
nom	<i>er</i>	<i>az</i>	<i>iu</i>	<i>e</i>	<i>iu</i>	<i>o</i>
gen	<i>es</i>	<i>es</i>	<i>era</i>	<i>ero</i>	<i>ero</i>	<i>ero</i>
dat	<i>emo</i>	<i>emo</i>	<i>eru</i>	<i>em</i>	<i>em</i>	<i>em</i>
akk	<i>an</i>	<i>az</i>	<i>a</i>	<i>e</i>	<i>iu</i>	<i>o</i>

Tabelle 1: Starke althochdeutsche Adjektivflexion (Bergmann & Ruge 2019:215)

Wenn man die vier Kasus in zwei Klassen aufteilt, Nominativ und Akkusativ einerseits und Genitiv und Dativ andererseits und das Paradigma entsprechend umsortiert, kann man auch schon im Althochdeutschen einige Synkretismusfelder ausmachen (s. Klein & Wegera 2018:181). So fallen in den beiden obliquen Kasus Dativ und Genitiv die Formen im Singular im Maskulinum und Neutrum und im Plural in allen drei Genera zusammen und in den beiden nicht-obliquen Kasus Nominativ und Akkusativ die Formen im Singular im Neutrum und im Plural in allen drei Genera, siehe Tabelle 2.

Vergleicht man die Tabelle in Klein & Wegera (2018:181) mit Tabelle 2, ergibt sich ein Unterschied beim Marker *iu*, der im Singular im Nominativ Femininum und im Plural im Nominativ und Akkusativ Neutrum auftritt. Klein & Wegera (2018:181) fassen diese Formen zu einem Feld zusammen, hier bilden sie zwei Felder. Müller (2002:335) diskutiert das Problem, das hinter diesem Unterschied steckt, ausführlicher und unterscheidet zwei Typen von Synkretismen, systematische und nichtsystematische, zufällige. Die Frage

¹Ich verwende hier, die Regeln unten vorwegnehmend, für den Singular nicht [sg] als Merkmal, sondern [nonpl] und ignoriere die sogenannte nominal-starke Adjektivflexion.

	nonpl			pl		
	mask	neut	fem	mask	neut	fem
nom	<i>er</i>	<i>az</i>	<i>iu</i>	<i>e</i>	<i>iu</i>	<i>o</i>
akk	<i>an</i>	<i>az</i>	<i>a</i>	<i>e</i>	<i>iu</i>	<i>o</i>
dat	<i>emo</i>	<i>emo</i>	<i>eru</i>	<i>em</i>	<i>em</i>	<i>em</i>
gen	<i>es</i>	<i>es</i>	<i>era</i>	<i>ero</i>	<i>ero</i>	<i>ero</i>

Tabelle 2: Starke althochdeutsche Adjektivflexion, umsortiert

ist dann, ob der Synkretismus bei *iu* ein systematischer ist (das wäre die Position von Klein & Wegera), der durch Regeln abzuleiten ist, oder ein nicht-systematischer, der für die Regeln nicht von Bedeutung ist. Ich gehe hier von einem nicht-systematischen, zufälligen Synkretismus aus, aber das wäre natürlich noch genauer zu rechtfertigen.

Wie lässt sich das Paradigma in Tabelle 2 mit Hilfe von unterspezifizierten Flexionsregeln herleiten? Ich verwende wie Müller (2002) und viele andere Regeln, die Flexionsmerkmalen einen Marker zuweisen; man kann die Regeln auch als Realisierungsregeln verstehen, die angeben, wie die Flexionsmerkmale realisiert werden. Die Flexionsmerkmale können vollspezifiziert sein, also nach Kasus, Genus und Numerus, aber auch unterspezifiziert. Je nach Theorie unterscheiden sich die Klassen, zu denen die Flexionsmerkmale zusammengefasst werden; ich folge hier Blevins (1995) und mache einen Unterschied zwischen den nicht-obliquen und obliquen Kasus, aber keinen Unterschied zwischen den nicht-regierten und regierten Kasus. Nominativ und Akkusativ teilen dementsprechend das Merkmal [nonobl] und Dativ und Genitiv das Merkmal [obl].

(2) Die Regeln für die starke althochdeutsche Adjektivflexion:

[mask, nonobl, nom, nonpl] → <i>er</i>	R1
[mask, nonobl, akk, nonpl] → <i>an</i>	R2
[fem, nonobl, nom, nonpl] → <i>iu</i>	R3
[fem, nonobl, akk, nonpl] → <i>a</i>	R4
[fem, obl, dat, nonpl] → <i>eru</i>	R5
[fem, obl, gen, nonpl] → <i>era</i>	R6
[nonfem, obl, dat, nonpl] → <i>emo</i>	R7
[nonfem, obl, gen, nonpl] → <i>es</i>	R8
[neut, nonobl, nonpl] → <i>az</i>	R9
[mask, nonobl, pl] → <i>e</i>	R10
[neut, nonobl, pl] → <i>iu</i>	R11
[fem, nonobl, pl] → <i>o</i>	R12
[obl, dat, pl] → <i>em</i>	R13
[obl, gen, pl] → <i>ero</i>	R14

Wendet man diese Regeln an, erhält man das folgende Resultat, in dem wie gewünscht die systematischen Synkretismen durch eine Regel abgeleitet werden und nicht durch mehrere.

	nonpl			pl		
	mask	neut	fem	mask	neut	fem
nom	<i>er</i> ¹	<i>az</i> ⁹	<i>iu</i> ³	<i>e</i> ¹⁰	<i>iu</i> ¹¹	<i>o</i> ¹²
akk	<i>an</i> ²		<i>a</i> ⁴			
dat	<i>emo</i> ⁷		<i>eru</i> ⁵	<i>em</i> ¹³		
gen	<i>es</i> ⁸		<i>era</i> ⁶	<i>ero</i> ¹⁴		

Tabelle 3: Starke althochdeutsche Adjektivflexion, hergeleitet

Ich habe hier nur sehr wenig zur wichtigen Frage der Regelordnung in (2) zu sagen. Oft wird für die Regelordnung ein Prinzip angesetzt, nach dem, sehr informell gefasst, spezifischere Regeln Vorrang vor weniger spezifischen Regeln haben (vgl. zu den verschiedenartigen Ausformulierungen dieses Prinzips ausführlicher Müller 2002, neben vielen anderen). Diese sehr informelle Fassung des Prinzip genügt, um R1–R6 von R7–R14 zu unterscheiden und R1–R6 vor R7–R14 zu ordnen, lässt aber die Ordnung in diesen beiden Gruppen offen.

3. Vom Althochdeutschen zum Mittelhochdeutschen

Wichtiger ist mir hier die Frage, wie man den Übergang von der althochdeutschen zur mittelhochdeutschen Adjektivflexion modellieren kann. Albright & Fuß (2012:273) unterscheiden zwischen zwei Wegen, die im Sprachwandel zu Synkretismen führen können und von denen einer auf phonologischem Wandel beruht: „On the one hand, forms that were formerly distinct may fall together due to phonological changes. For example, in many Germanic languages, inflectional syncretism resulted from phonological erosion affecting unstressed final syllables.“ Das lässt sich auch am Übergang von der althochdeutschen zur mittelhochdeutschen Adjektivflexion demonstrieren. In (3) sind die Regeln, bei denen der Marker seine phonologische Form verändert hat, mit ‚\$‘ markiert. So wird jetzt unter anderem mit R4, R10 und R12 ein und derselbe Marker *e* realisiert.

- (3) *Resultat des phonologisches Wandels:*
- | | |
|--|-------|
| [mask, nonobl, nom, nonpl] → <i>er</i> | R1 |
| [mask, nonobl, akk, nonpl] → <i>en</i> | R2\$ |
| [fem, nonobl, nom, nonpl] → <i>iu</i> | R3 |
| [fem, nonobl, akk, nonpl] → <i>e</i> | R4\$ |
| [fem, obl, dat, nonpl] → <i>er</i> | R5\$ |
| [fem, obl, gen, nonpl] → <i>er</i> | R6\$ |
| [nonfem, obl, dat, nonpl] → <i>em</i> | R7\$ |
| [nonfem, obl, gen, nonpl] → <i>es</i> | R8 |
| [neut, nonobl, nonpl] → <i>ez</i> | R9\$ |
| [mask, nonobl, pl] → <i>e</i> | R10 |
| [neut, nonobl, pl] → <i>iu</i> | R11 |
| [fem, nonobl, pl] → <i>e</i> | R12\$ |
| [obl, dat, pl] → <i>en</i> | R13\$ |
| [obl, gen, pl] → <i>er</i> | R14\$ |

Wie lassen sich nun die drei Regeln R4, R10 und R12 auf eine Regel reduzieren? Sauerland (1996:25) führt für den Erwerb unterspezifizierter Regeln einen Algorithmus ein, nach dem der Lerner aus all den verschiedenen Merkmalspezifikationen für den Marker eine Schnittmenge bildet. Für R4, R10

und R12 kommt dieser Algorithmus zu folgendem Ergebnis, wobei ‚m‘ die Regeln markiert, die im Mittelhochdeutschen hinzukommen.²

(4)	[fem, nonobl, akk, nonpl] → e	R4\$
	[mask, nonobl, pl] → e	R10\$
	[fem, nonobl, pl] → e	R12\$
	<hr/>	
	[nonobl] → e	R15m

Entsprechend lassen sich dann auch die drei Regeln R5, R6 und R14 auf eine Regel reduzieren:

(5)	[fem, obl, dat, nonpl] → er	R5\$
	[fem, obl, gen, nonpl] → er	R6\$
	[obl, gen, pl] → er	R14\$
	<hr/>	
	[obl] → er	R16m

Der Effekt ist, dass wir nun die Regeln R4–R6, R10, R12 und R14 durch die beiden stark unterspezifizierten Regeln R15m und R16m ersetzen können.

(6) *Die Regeln für die starke mittelhochdeutsche Adjektivflexion:*

	[mask, nonobl, nom, nonpl] → er	R1
	[mask, nonobl, akk, nonpl] → en	R2
	[fem, nonobl, nom, nonpl] → iu	R3
	[nonfem, obl, dat, nonpl] → em	R7
	[nonfem, obl, gen, nonpl] → es	R8
	[neut, nonobl, nonpl] → ez	R9
	[neut, nonobl, pl] → iu	R11
	[obl, dat, pl] → en	R13
	[nonobl] → e	R15m
	[obl] → er	R16m

Wenden wir wie oben diese Regeln an, erhalten wir das folgende Resultat für die starke mittelhochdeutsche Adjektivflexion.³

²Es wäre natürlich noch zu prüfen, ob auch die Regeln in (2) mit diesem Algorithmus abgeleitet werden können.

³Diese Einteilung des Paradigmas der starken mittelhochdeutschen Adjektivflexion findet sich in ähnlicher Form in Klein & Wegera (2018:182). Sie fassen allerdings *iu* und nicht *e* zu einem Feld zusammen.

	nonpl			pl		
	mask	neut	fem	mask	fem	neut
nom	<i>er</i> ¹	<i>ez</i> ⁹	<i>iu</i> ³	<i>e</i> ^{15m}		<i>iu</i> ¹¹
akk	<i>en</i> ²					
dat	<i>em</i> ⁷		<i>er</i> ^{16m}	<i>en</i> ¹³		
gen	<i>es</i> ⁸					

Tabelle 4: Starke mittelhochdeutsche Adjektivflexion, hergeleitet

Man beachte, dass *er* im Nominativ Maskulinum Singular als unsystematischer Synkretismus gedeutet wird, anders als *er* im Dativ und Genitiv.

4. Vom Mittelhochdeutschen zum Neuhochdeutschen

Ich übergehe im Folgenden das Frühneuhochdeutsche und führe nur vor, wie sich aus dem Paradigma der starken mittelhochdeutschen Adjektivflexion das Paradigma der starken neuhochdeutschen Adjektivflexion herleiten lässt. Das Verfahren ist dasselbe wie im vorangehenden Abschnitt beim Wandel vom Althochdeutschen zum Mittelhochdeutschen. Die Schwächung der Vokale in den unbetonten Silben setzt sich fort, unter anderem wird *iu* im Femininum Singular und im Neutrum Plural zu *e*, das heißt zu Schwa.

(7) *Resultat des phonologischen Wandels:*

- [mask, nonobl, nom, nonpl] → *er* R1
- [mask, nonobl, akk, nonpl] → *en* R2
- [fem, nonobl, nom, nonpl] → *e* R3\$
- [nonfem, obl, dat, nonpl] → *em* R7
- [nonfem, obl, gen, nonpl] → *es* R8
- [neut, nonobl, nonpl] → *es* R9\$
- [neut, nonobl, pl] → *e* R11\$
- [obl, dat, pl] → *en* R13
- [nonobl] → *e* R15m
- [obl] → *er* R16m

Damit fallen die drei Regeln R3, R11 und R15m zusammen, sie lassen sich auf die Regel R15m reduzieren. Der Effekt ist, dass man für die Herleitung des

neuhochdeutschen Paradigma zwei Regeln weniger benötigt, weil R3 und R11 entfallen.

- (8) [fem, nonobl, nom, nonpl] → *e* R3
 [neut, nonobl, pl] → *e* R11
 [nonobl] → *e* R15m

 [nonobl] → *e* R15m
- (9) *Die Regeln für die starke neuhochdeutsche Adjektivflexion:*
 [mask, nonobl, nom, nonpl] → *er* R1
 [mask, nonobl, akk, nonpl] → *en* R2
 [nonfem, obl, dat, nonpl] → *em* R7
 [nonfem, obl, gen, nonpl] → *es* R8
 [neut, nonobl, nonpl] → *es* R9
 [obl, dat, pl] → *en* R13
 [nonobl] → *e* R15m
 [obl] → *er* R16m

	nonpl			pl		
	mask	neut	fem	mask	neut	fem
nom	<i>er</i> ¹	<i>es</i> ⁹		<i>e</i> ^{15m}		
akk	<i>en</i> ²					
dat	<i>em</i> ⁷		<i>er</i> ^{16m}	<i>en</i> ¹³		
gen	<i>es</i> ⁸					

Tabelle 5: Starke neuhochdeutsche Adjektivflexion, hergeleitet

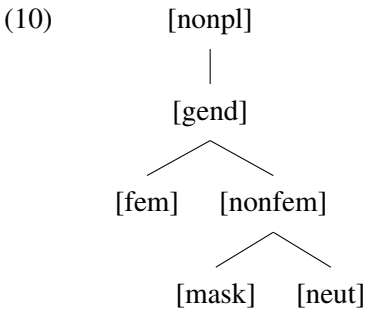
Mit (9) ist man bei der Anzahl der Regeln angekommen, die in vielen Theorien der starken neuhochdeutschen Adjektivflexion angesetzt werden, die Unterspezifikation als Mechanismus nutzen. Die Anzahl ließe sich noch reduzieren, dafür benötigt man aber weitere mächtige Mechanismen wie Negation und Disjunktion, s. dazu ausführlicher Müller (2002:344ff.).

5. Noch eine weitere Art von Regel?

Der gravierende Unterschied zwischen der starken mittelhochdeutschen und der starken neuhochdeutschen Adjektivflexion besteht darin, dass das Genus im

Neuhochdeutschen im Plural irrelevant ist, weil die drei Genera in allen Kasus dieselbe Form haben. In den Darstellungen der starken neuhochdeutschen Adjektivflexion wird deshalb gewöhnlich auf die Differenzierung der drei Genera im Plural verzichtet.

Dieser Unterschied ist in dem Wandel von den Regeln in (6) zu den Regeln in (9) auf den ersten Blick nicht zu erkennen, weshalb sich die Frage stellt, ob man möglicherweise neben solchen Realisierungsregeln wie in (6) und (9) noch eine andere Art von Regel benötigt, die diesen Unterschied erfasst. Schon Bierwisch (1967:254f.) diskutiert diese Frage und überlegt, ob die Realisierungsregeln durch eine Neutralisierungsregel ergänzt werden sollten, mit der das Genus im Plural neutralisiert wird. Solche Neutralisierungsregeln können je nach Theorie unterschiedlich formuliert werden, Blevins (1995:141) zum Beispiel nutzt dafür die folgende Hierarchie, in der die drei Genusmerkmale vom Merkmal [nonpl] abhängen:



Bierwisch (1967:255) kommt zu dem Ergebnis, dass man auf Neutralisierungsregeln verzichten kann, wenn man die Regeln unterspezifiziert, und das gilt auch für die Regeln in (9) oben. Der Grund dafür ist, dass die mittelhochdeutsche Regel R11 als die einzige Regel, in der ein Genusmerkmal mit dem Merkmal [pl] kombiniert ist, im Neuhochdeutschen weggefallen ist. Die einzige Regel in (9), in der das Merkmal [pl] auftritt, ist R13, und in R13 ist das Genus nicht spezifiziert.

Man kann allerdings solche Hierarchien wie in (10) nutzen, um die Realisierungsregeln durch das Streichen redundanter Merkmale zu vereinfachen. Solche Redundanzen gibt es nicht nur beim Genus, sondern auch beim Kasus, denn die beiden Kasus Nominativ und Akkusativ teilen das Merkmal [nonobl]

und die beiden Kasus Dativ und Genitiv das Merkmal [obl]. Streicht man die redundanten Merkmale in (9), erhält man folgendes Ergebnis:

(11)	[mask, nom] → <i>er</i>	R1
	[mask, akk] → <i>en</i>	R2
	[nonfem, dat] → <i>em</i>	R7
	[nonfem, gen] → <i>es</i>	R8
	[neut, nonobl] → <i>es</i>	R9
	[dat, pl] → <i>en</i>	R13
	[nonobl] → <i>e</i>	R15m
	[obl] → <i>er</i>	R16m

Die Hierarchie in (10) verhindert dann, dass zum Beispiel die Regel R1 auch auf die Formen im Maskulinum Nominativ Plural angewendet werden kann.

6. Zum Schluss

Eine adäquate Theorie für die deutsche Adjektivflexion sollte nicht nur dialektale Variation, sondern auch diachrone Variation, Sprachwandel beschreiben können. Ich hoffe, im Anschluss an Müller (2002) gezeigt zu haben, dass Unterspezifikation, egal in welcher formalen Ausformulierung, ein geeigneter Mechanismus ist, um insbesondere die unterschiedlichen Synkretismen im Althochdeutschen, Mittelhochdeutschen und Neuhochdeutschen zu erfassen. Dass dabei die Regelstreichungen bzw. Regelmodifikationen nicht so minimal ausgefallen sind wie beim ‚Rheinischen Akkusativ‘, war vielleicht auch zu erwarten.

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Fiorentino antiagreement does not support a skipping derivation for subject extraction: Suñer 1992 revisited

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Abstract

We provide novel empirical evidence that supports the view advocated in Suñer (1992) according to which antiagreement in Fiorentino (also attested in Trentino) cannot be taken as evidence for the hypothesis that long subject extraction in these languages proceeds from a low postverbal position (the so-called skipping derivation). As Suñer argues, default agreement rather reflects interpretative properties of the subject. This goes against the initial view proposed in Rizzi (1982), Brandi & Cordin (1981, 1989), which is still the dominant view in the literature. The basic observation is that antiagreement is not tied to a postverbal pre-extraction site and that it has a much wider distribution than previously thought. The generalization that emerges covers all instances of antiagreement, including the classic subject extraction cases, while the traditional view would need a different explanation for the non- \bar{A} -extraction-related contexts.

1. Introduction

It is well-known that subject extraction, in particular (but not only) across clause-boundaries, requires morphosyntactic repair strategies in many languages in the sense that the usual derivation that is available for object extraction leads to ungrammaticality for subject movement. The *that*-trace effect is a famous example (Perlmutter 1968, 1971, Bresnan 1977). (1) illustrates the effect for English *wh*-movement: While a long object question can be formed across the overt embedding complementizer *that*, long subject extraction is unacceptable if *that* is pronounced.

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Strict Cycling: A Festschrift for Gereon Müller, 149–178

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- (1) The *that*-trace effect in English (Perlmutter 1968: 214):¹
- a. What did he say that Laura hid ___? *long DO question*
- b. *Who did he say that ___ hid the rutabaga? *long SU question*

Documented repairs applied in subject extraction contexts include (i) the use of an alternative morphophonological form (e.g., the zero form) of the embedding complementizer, (ii) the use of a resumptive pronoun in the embedded subject position, (iii) pied-piping of the embedded clause, (iv) default subject-verb-agreement in the embedded clause (also called antiagreement, see Ouhalla 1993), and (v) extraction of the embedded subject from a postverbal position rather than from SpecTP (see Rizzi & Shlonsky 2004). Various hypotheses about the reason behind the restriction on subject extraction have been proposed, see Pesetsky (2017) for an overview. We will not engage in the discussion of the cause of the effect. We will rather concentrate on repair strategy (v), related to strategy (iv) as we will see, whereby long subject movement skips the derived subject position SpecTP in the embedded clause and moves directly from its low vP-internal base-position to SpecCP. The idea is developed in Rizzi (1982) (see also Chomsky 1981, Jaeggli 1982), who investigates the reasons behind cross-linguistic variation in subject extraction restrictions: (Standard) Italian lacks the equivalent of the English *that*-trace effect (an observation going back to Perlmutter 1971), see the well-formed long subject question in (2a). Rizzi proposes that this is because subject extraction in Italian proceeds as schematically represented in (2b) (Rizzi 1982: 145,147):

- (2) a. Chi credi che verrà?
 who think.2SG C come.FUT.3SG
 Lit.: 'Who do you believe that will come?'
- b. Chi_i credi [_{CP} che [_{TP} *pro* verrà _{*i*}]]?

Italian, being a “null subject language”, allows for (certain) subjects to appear in their vP-internal, post-verbal position; SpecTP is occupied by a silent *pro*

¹Note that Brandi & Cordin (1981, 1989) provide only superficial glosses while they are entirely absent in Suñer (1992). Thus, the glosses in this paper are our own, based on those in B&C's work and the translations and surrounding descriptions of the examples. List of glosses: 1/2/3 = 1st/2nd/3rd person; C = complementizer; CL= clitic; DAT = dative; DEF = definite article; F = feminine; FUT = future; M = masculine; NEG = negation; PL = plural; PRTC = participle; SG = singular; SUBJ = subjunctive.

in this construction. Long subject extraction can thus take place from this postverbal position, skipping SpecTP (with *pro* in it) entirely. This avoids the problematic *that*-trace configuration where an embedding complementizer is adjacent to a trace in SpecTP. English is not a null subject language and hence, subjects always have to move to SpecTP to satisfy T's EPP-property (unless an expletive is available). An Italian-style skipping derivation along the lines of (2b) is thus not possible in English, and the *that*-trace effect emerges.

Two major empirical Italian-internal arguments for the derivation in (2b) have been provided in the literature: Rizzi (1982) discusses *ne*-cliticization (see also Burzio 1986); later Brandi & Cordin (1981, 1989) added antiagreement (abbreviated as AAE in what follows) in the two Northern Italian dialects Trentino and Fiorentino. The present paper is concerned with the status of the AAE as empirical support for Rizzi's (1982) derivation. AAE traditionally refers to a reduction of subject-doubling morphology (such as verb agreement) under \bar{A} -extraction of the subject (see Ouhalla 1993, and Baier 2018 for qualifications). The effect is illustrated for Fiorentino in (3). While preverbal subject DPs in a declarative sentence trigger phi-agreement on the finite verb and the subject clitic, short and long *wh*-extraction of the subject result in a default 3sg masculine form of the (embedded) finite verb and the subject clitic (see (3) from Brandi & Cordin 1989: 124–125).

- (3) a. Quante ragazze gli è venuto
 how.many girls CL.3SG.M be.SUBJ.3SG come.PRTC.SG.M
 con te?
 with you
 'How many girls have come with you?'
 b. Quante ragazze tu chredi che e' sia
 how.many girls you think.2SG C CL.3SG.M be.SUBJ.3SG
 venuto con te?
 come.PRTC.SG.M with you
 'How many girls do you think have come with you?'

The crucial argument for extraction of the *wh*-subject in (3) from a low postverbal position comes from the observation that the same 3sg default morphology appears on the verb and the subject clitic in Fiorentino (and Trentino) when the subject is in postverbal position in a declarative sentence, see (4) (Brandi & Cordin 1989: 121):

- (4) Gli è venuto delle ragazze
 CL.3SG.M be.3SG come.PRTC.SG.M of.the.3PL.F girls
 ‘Some girls have come.’

This morphological parallel between postverbal, non- \bar{A} -extracted subjects and \bar{A} -extracted subjects in Fiorentino and Trentino is still widely considered to be crucial empirical evidence for the claim that \bar{A} -movement – at least in (varieties of) Italian – must take place from a vP-internal position and does not go through SpecTP (see Rizzi 1990).

Suñer (1992) critically reviews Rizzi’s (1982) and Brandi & Cordin’s (1989) claim that the AAE data from the Northern Italian varieties provide evidence for the hypothesis that subject extraction proceeds from a vP-internal, postverbal position. She argues that once a wider range of data is considered, the analysis is not tenable because the AAE is not tied to a postverbal pre-extraction position and is rather related to the interpretation of the subject: A subject that is presupposed or fully referential triggers full agreement, while a subject that is non-specific or not presupposed is only compatible with the reduced 3sg-morphology. This characterization also covers the classic AAE-instances under subject extraction (see (3)): *wh*-subjects like ‘how many X’ are less referential, and post-verbal subjects are focused and thus not presupposed. Suñer’s (1992) empirical arguments against a connection between AAE morphology and the extraction site of an \bar{A} -moved subject have largely been ignored in the subsequent literature on the topic, and Rizzi’s original account is still the standard one, with the Fiorentino and Trentino data frequently cited as primary evidence for the skipping derivation in (2b).

In this paper, we will provide further data from Fiorenino that strengthen Suñer’s interpretation-based approach and that argue against the classic view that AAE in this Northern Italian variety is crucially related to the syntactic position of the subject (pre- vs. postverbal). This in turn implies, as Suñer had already pointed out, that the AAE data from Fiorentino do not provide an argument for Rizzi’s (1982) skipping derivation. We want to emphasize right from the beginning that the new data do not falsify the skipping analysis for Italian. They simply show that the AAE does not constitute empirical evidence *for* a skipping derivation. We thus need to look for other evidence to verify or falsify Rizzi’s analysis.

This paper is structured as follows: Section 2 provides basic facts about agreement in Fiorentino, and introduces the common assumptions about the

syntax of agreement and the lack thereof with postverbal and \bar{A} -extracted subjects. We summarize Suñer's (1992) arguments against the conclusions previously drawn from these basic facts and provide an overview of the reception of Suñer's contribution in Section 3. Section 4 contains the novel empirical evidence we collected that supports Suñer's major point. In Section 5 we discuss the Fiorentino pattern from a wider cross-linguistic perspective and show that it instantiates a common pattern, which is likely to hold in other languages with the AAE as well.

2. Fiorentino (anti)agreement and postverbal subjects

In this section we summarize some basic facts about the morphosyntax of agreement and the structure of sentences with a postverbal subject in the Northern Italian variety Fiorentino, as described and analyzed in Brandi & Cordin (1981, 1989), Rizzi (1986), Safir (1986), Suñer (1992).² Fiorentino has basic SVO order in neutral declarative sentences and exhibits subject pro-drop. The subject of a sentence is indexed by agreement on the finite verb as well as by a clitic that immediately precedes this verb and follows the subject (if the latter is overt). Both doubling devices reflect person, number, and – for the 3rd person – also gender of the subject. (5) provides a few simple example sentences; (5a–c) each contain a pro-dropped subject, while (5d) has an overt subject (here a proper name, but it could also be a tonic pronoun or any DP, see Brandi & Cordin 1989: 112f.).

- (5) a. Tu parl-i
CL.2SG speak-2SG
'You speak.'
- b. Gl' è partito
CL.3SG.M be.3SG left
'He has left.'
- c. E parl-a
CL.3SG.M speak-3SG
'He speaks.'
- d. La Maria la parl-a
DEF.F.SG Maria CL.3SG.F speak-3SG
'Maria speaks.'

²The facts reported here by and large also hold for Trentino, the other Northern Italian variety discussed in Brandi & Cordin (1981, 1989). We will not address Trentino in this paper, however.

The full paradigm of the clitics and the agreement suffixes is given in (6). The clitics are obligatory in a finite clause, except for the 1sg clitic, which is optional (represented by the brackets in (6)). The 3sg masculine clitic exhibits allomorphy (Suñer 1992: 644, fn.5): it surfaces as *gli* when it precedes an /s/-initial consonant cluster, as the reduced form *gl* when it precedes a vowel, and as *e* elsewhere. The 3sg masculine form of the pronoun is also used in sentences with an impersonal verb (see (7)) and in impersonal passives (Brandi & Cordin 1989: 137, fn.7, Suñer 1992: 644).

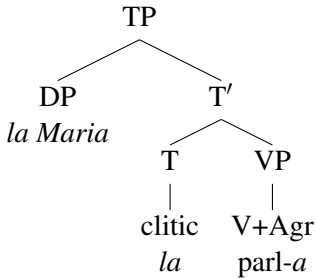
- (6) Fiorentino subject clitics and phi-agreement morphology
(Brandi & Cordin 1989: 113, Suñer 1992: 643, fn.4):

subject phi-features	clitic	agreement suffix
1sg	(e)	-o
2sg	tu	-i
3sg masc	e/gli/gl'	-a
3sg fem	la	-a
1pl	si	-a
2pl	vu	-ate
3pl masc	e	-ano
3pl fem	le	-ano

- (7) E' bisogna che Mario e' parta oggi
be.3SG necessary that Mario CL.3SG.M leaves today
'It is necessary that Mario leaves today.'

Rizzi (1986) and Brandi & Cordin (1989) analyze both the verbal suffixes and the clitics as morphological doubling devices that originate in INFL (now T) under agreement with the DP in SpecINFL (now SpecTP) (see Safir 1986 for a different view). The features on INFL are realized by the clitic; a copy of the phi-features on INFL attaches to the finite verb (by some kind of affix hopping) and is realized by agreement suffixes there. The (updated) version of this analysis is represented in (8) for example (5d) (based on Rizzi 1986: ex. (5), p. 393).

(8) Structure with subject DP + clitic + V-agreement:



Rizzi (1986) and Brandi & Cordin (1989) argue against an alternative view according to which the clitic is a pronoun in SpecINFL and thus the proper argument of the verb; an overt subject DP as in (5d) would then just be a left-dislocated topic. What argues against lexical subject DPs being topics in sentences such as (5d) are the following observations: The subject DP can be quantified (but topics cannot, see Rizzi 1986), we do not get the typical intonational contour of dislocation in these cases, and in Fiorentino left-dislocated topics are followed by a topic marker, but the subject in, e.g., (5d), is not. The arguments against treating the clitic as a pronominal argument in SpecTP include the following facts: The clitic is not accentuated (unlike tonic pronouns), no lexical material can intervene between the clitic and the finite verb (only other clitics can), the clitic has to be repeated in verbal coordination, and only subject clitics (but not object clitics) show word order flexibility with respect to the negation clitic (which is assumed to originate in the T-domain as well).

With the basic analysis of the subject doubling devices (clitic and agreement) in place for preverbal subjects (see (8)), let us now turn to sentences with postverbal subjects and the question why they cannot feature full agreement morphology. Fiorentino, like Standard Italian, allows not only unaccusative subjects but also unergative and transitive subjects to appear postverbally (Suñer 1992: 643). Postverbal subjects tend to be focused; sentences containing them can be answers to subject questions (new information focus) or express contrast (see, e.g., Brandi & Cordin 1989: p. 137, fn.6). Crucially, Fiorentino (unlike Standard Italian) requires the default form, viz., 3sg masculine, of the clitic and the agreement suffix in clauses with postverbal subjects, full

phi-agreement is ungrammatical, see (9a, b) with an unergative verb, and (9c, d) with an unaccusative verb (Brandi & Cordin 1989: 121f.).³

- (9) Postverbal subjects require default agreement:
- a. **Gli ha** telefonato delle ragazze
CL.3SG.M have.3SG called of.the girls
 - b. ***Le hanno** telefonato delle ragazze
CL.3PL.F have.3PL called of.the girls
'Some girls have telephoned.'
 - c. **Gli è** venuto delle ragazze
CL.3SG.M be.3SG come.SG.M of.the girls
 - d. ***Le son** venute delle ragazze
CL.3PL.F be.3SG come.PL.F of.the girls
'Some girls have come.'

The question is why full agreement is blocked when subjects appear postverbally. Rizzi (1982, 1986) and Brandi & Cordin (1989) propose the following: A postverbal subject DP as in (9a, c) does not move to SpecTP but remains inside the VP; its exact position is debated, but it is often assumed to be right-adjoined to VP (following Kayne 1981, Belletti & Rizzi 1981, Rizzi 1986, Belletti 1988).⁴ SpecT is occupied by an empty *pro* in this case; this element is inherently 3sg masc, see (10). *Pro* and the subject DP are co-indexed, which leads to the transmission of the theta-role from *pro* to the postverbal subject DP. Since the clitic and the agreement suffix result from agreement between T and the element in SpecTP (see (8)), the VP-internal lexical subject DP cannot be the goal of phi-agreement. Instead, we find that the clitic and the agreement morphology reflect the features of *pro* in SpecTP, viz., 3sg masculine.

- (10) [TP *pro*_i [T' T ... [VP [VP V ...] DP_i]]]

Brandi & Cordin (1989: 137f., fn.8) provide evidence for the assumption that postverbal subjects are in a low clause-internal position and not right-dislocated

³In the case of unaccusative verbs that take the *be*-auxiliary in the perfect we also observe default agreement on the past participle. With preverbal subjects, the participle agrees in gender and number with the subject, but with postverbal ones, it always takes the 3sg masculine form, see (9c) vs. (9d).

⁴Belletti (2001, 2004) argues that subject focalization involves movement of the thematic subject to a low, predicate-internal focal position.

based on their interaction with negation. Whereas focused postverbal subjects of the kind in (4) are interpreted in the scope of the clause-mate negation (see (11a)) in Fiorentino, right-dislocated subjects are not (see (11b), where correcting only the verbal complex without the subject is not possible).⁵

- (11) a. E unn' ha telefonato le' tu sorelle, ma le' mi cugine
 not have telephoned the your sisters, but the my cousins
 'Your sisters have not telephoned, but my cousins have.'
- b. *E unn' ha telefonato le' tu sorelle, ma l' enno
 not have telephoned the your sisters, but CL.3PL.F be.3PL
 venute di persona
 come.PL.F in person
 'Your sisters have not telephoned, but they have come personally.'

With this analysis of the lack of agreement with postverbal subjects in mind, the crucial observation that Brandi & Cordin (1981, 1989) brought into the discussion is that Fiorentino exhibits the same default 3sg masculine agreement morphology (= antiagreement) when the subject undergoes \bar{A} -movement. In fact, this does not only hold for subject questions, as shown in (3), but also for (restrictive) subject relatives (see (12)) and subject topicalization (see (13)). Moreover, antiagreement is not restricted to local extraction, but also surfaces in embedded clauses under long subject extraction in all three constructions (not illustrated here).

- (12) Subject relative clause, restrictive:
- a. le ragazze che gl' ha parlato ieri alia
 the girls that CL.3SG.M have.3SG spoken yesterday at.the
 riunione
 gathering
- b. *le ragazze che l' hanno parlato ieri alia
 the girls that CL.3PL.F have.3PL spoken yesterday at.the
 riunione
 gathering
 'the girls that spoke yesterday at the gathering'

⁵Rizzi (1982: 121, ex. (14)) shows that a postverbal NPI subject like *nessuno* 'nobody' is licensed by preverbal sentential negation in Standard Italian.

(13) Subject topicalization, contrastive:

- a. La Maria, gl' ha parlato alia riunione, no
 the Mary, CL.3SG.M have.3SG spoken at.the gathering, not
 la Carla
 the Carla
- b. *La Maria, l' ha parlato alia riunione, no
 the Mary, CL.3SG.F have.3SG spoken at.the gathering, not
 la Carla
 the Carla
 'Mary, she spoke at the gathering, not Carla.'

It is this morphological parallel between subject extraction and postverbal subjects, i.e., the obligatory AAE, that Brandi & Cordin (1981, 1989), and following them Rizzi (1990), took to be empirical support for the skipping derivation where the \bar{A} -subject is extracted from the postverbal position.

3. Suñer's (1992) reanalysis

3.1. An interpretation-based account

Suñer (1992) argues against the view that the use of full vs. default 3sg agreement on finite verbs in the Northern Italian vernaculars is related to the position of the subject DP (postverbal/VP-internal position vs. preverbal/SpecTP position). Her claim is based on the empirical observation that there are contexts in which full agreement is found with postverbal subjects, and that the AAE is more wide-spread and not just found with \bar{A} -extracted subjects. Instead, Suñer proposes that the contexts in which the AAE arises – including the famous subject \bar{A} -extraction cases – form a natural class that is related to the interpretation of the subject: specific or presupposed subjects trigger full agreement while subjects that are non-specific and “unknown or newly introduced in the discourse” (p. 641) require default agreement. In what follows, we summarize her empirical findings and arguments.⁶

⁶Suñer (1992), following Jaeggli (1984) and May (1985), also provides a conceptual argument against the skipping derivation: the at the time standard ECP-based account of the ban on subject extraction could account for the need of a repair (here, antiagreement) for long subject extraction, but it could not explain why short subject extraction requires a repair, too. The

First, Suñer (1992) points out that a subject in postverbal position does not always result in the default form of the agreement suffix and the clitic. For example, local person subjects trigger full agreement, whether in preverbal or in postverbal position. The (main text) examples in Rizzi's and Brandi and Cordin's work all involve 3rd person subjects, however.

- (14) No AAE with local person postverbal subjects (Suñer 1992: 652):⁷
- a. e parl-o io
CL.1SG speak-1SG I
'I speak.'
 - b. tu parli te
CL.2SG speak-2SG you.SG
'You(sg) speak.'
 - c. vu parl-ate voin
CL.2PL speak-2PL you.PL
'You(pl) speak.'

Moreover, even 3rd person postverbal subjects trigger full agreement in case a different XP undergoes \bar{A} -extraction (Suñer 1992: 655)

- (15) No AAE with postverbal subjects + non-subject extraction:
- a. *Ichhè ha-ella/*-egli mangiato la Maria?*
what has-she/-it eaten DEF Maria
'What has Maria eaten?'
 - b. *Quando è-ella/*-egli arrivata/*arrivato la Maria?*
when is-she/-it arrived.F.SG/arrived.M.SG DEF Maria
'When has Maria arrived?'

This clearly shows that there is no 1:1 link between the position of the subject (pre- vs. postverbal) and its (dis)ability to trigger full agreement. Suñer's (1992) explanation for the facts relates to the interpretation of the subjects: Local person functions deictically, so "their referent is well-established" and they are

proposals from the literature all lead to a non-uniform analysis as they treat short subject extraction differently from long subject extraction.

⁷With 1pl subjects generally, the clitic takes the form of the impersonal/reflexive *si* and the verb appears in 3sg. Suñer relates this to the impersonal *si* construction in Standard Italian, which can be understood as referring to 1pl on pragmatic grounds. The difference is that Fiorentino uses the regular 1pl tonic pronoun *noi* showing that this underlying 'we' reading is grammatically encoded in some sense.

presupposed in the context. As for the cases of *wh*-non-subject extraction with postverbal (3rd person) subjects, it is the *wh*-non-subject that is focused and the postverbal subject is thus (better) known in the discourse. Being known and presupposed leads to full agreement in her interpretation-based analysis.

The second argument Suñer discusses relates to the type of \bar{A} -extraction. While subject questions, restricted relative clauses and topicalization trigger antiagreement in Fiorentino (see (3), (12), and (13) above), subject clefts and subject relativization in appositive relative clauses do not, see (16) (Suñer 1992: 653, 670); the same holds for the corresponding long subject dependencies.

(16) No AAE in subject *it*-clefts and in appositive subject relatives:

- a. *gl' è la Maria che la / *gl m' ha*
it is DEF Maria that CL.3SG.F CL.3SG.M CL.1SG.DAT has
sciupato tutti i libri
damaged all the books
 'It is Maria who has damaged all my books.'
- b. *La Matia, che l' / *gl ha preso quattro in*
DEF Maria that CL.3SG.F CL.3SG.M has received four in
matematica ...
math
 'Maria, who received a 4 in math, ...'

This is surprising if all of these constructions involve \bar{A} -movement of the subject. Why should its movement from the preverbal position be blocked only in certain \bar{A} -dependencies but not in others? According to Suñer (1992), the split between the \bar{A} -constructions can be explained by taking into account interpretative aspects: The *wh*-clause in *it*-clefts has been argued to be presupposed (see Prince 1978), "the hearer knows or is able to deduce the information that they encode" (Suñer 1992: 654). Appositive relative clauses also do not add new information but "rather make explicit shared information" (*ibid.*).

Interestingly, the facts that Suñer puts forward against Brandi & Cordin's / Rizzi's original analysis were already mentioned in Brandi & Cordin (1981, 1989) and also cited in Jaeggli (1984). Brandi & Cordin (1989) only present them in footnotes and give them little attention regarding the overall analysis of the AAE. For example, Brandi & Cordin (1989: 138, fn. 9) provide data with fully-agreeing postverbal local person subjects. They speculate that this agreement is caused by a person feature transmission from postverbal subjects

to *pro*, which can then trigger person agreement on the clitic and the verb. It remains unexplained, however, (a) why we still see number agreement with local person postverbal subjects but not with 3rd person ones, and (b) why antiagreement is excluded (at least as an option) with local person subjects. Brandi & Cordin (1989: p.139f., fn. 12) also note the absence of default agreement in *it*-clefts and in appositive relative clauses. They hypothesize that these dependencies do not involve \bar{A} -movement but base-generation (and resumption), hence the absence of the AAE. They do not provide independent evidence for their claim, however. Regarding full agreement with postverbal subjects under \bar{A} -extraction of a non-subject, Brandi & Cordin (1981: 64f.) suggest that the post-verbal subjects in these constructions are right-dislocated, unlike the non-agreeing postverbal subjects in sentences such as (5d), which are VP-internal. Suñer (1992: 656) shows that this reanalysis is not tenable because the postverbal subjects in these constructions also fall in the scope of clause-mate negation, just like VP-internal postverbal subjects, and unlike properly right-dislocated phrases (recall the contrast in (11)).

- (17) a. *Ichhè unn' ha-ella mangiato la Maria?*
 what NEG has-she eaten DEF Maria
 'What hasn't Maria eaten?'
 b. can be continued with:
ma la Carla si
 but DEF Carla yes
 '... but Carla has'

Moreover, Suñer shows that her interpretation-based account makes predictions about other contexts in which the AAE should (not) arise. These are borne out, and the contexts are hard to explain in an approach in which the only relevant factor for the (non-)occurrence of full agreement is the position of the extractee. First, since lexical partitives and D-linked *wh*-phrases involve selection from a contextually salient set of elements, they are expected to trigger full agreement on the clitic and the agreement suffix in Fiorentino, which is indeed the case, see (18) and (19). While Suñer (1992) does not make it clear whether full agreement in (18) is just an option (alongside antiagreement) or obligatory, the fact that it is possible is surprising under Brandi & Cordin's (1989) account.

(18) No AAE with lexical partitive subjects (Suñer 1992: 660):

Quante de quelle ragazze l' hanno parlato con te?
 how.many of these girls CL.3PL.F have.3PL spoken with you
 'How many (of the girls) have spoken with you'

(19) No AAE with D-linked wh-phrases (Suñer 1992: 661):

a. Quale de quelle ragazze l'/*gl' ha cantato
 which of these girls CL.3PL.F/CL.3SG.M have.3SG sung
 ni' coro?
 in choir

b. Quale ragazza l'/*gl' ha cantato ni' coro?
 which girl CL.3SG.F/CL.3SG.M have.3SG sung in choir
 'Which of the girls sang in the choir? / Which girl sang in the choir?'

The equivalents of question words like 'who', 'what' and 'how many'-phrases, as used in the original Brandi & Cordin (1981, 1989) examples, are, however, not D-linked (non-specific in Suñer's terms) and thus trigger the use of AAE-default forms of the clitic and the agreement suffix. For the account that relates the AAE to the pre-extraction position of the subject relative to the verb, it is not expected that D-linking should play a role as it would suggest that D-linked and non-D-linked subjects occupy different pre-extraction sites.

Second, impersonal *se/si*-sentences in Italian are "used to predicate something about an unspecified group of human beings" (Suñer 1992: 663). As such, they should be compatible with default agreement morphology, which is borne out (Suñer 1992: 664, *e* is an epenthetic vowel in (20)):

(20) *Icché si fa-e-gli?*
 what SI do.3SG-V-CL.3SG.M
 'What is one doing?'

Finally, Suñer (1992: 667f.) notes that quantified subjects ('everybody', 'nobody'), which are non-referential, sometimes co-occur with the non-agreeing default 3sg morphology (as expected under her interpretation-based account), but sometimes also exhibit full agreement. To explain the occurrences with full agreement, she hypothesizes that these expressions can be interpreted as partitives by the speakers ('each of them /none of them').

3.2. Reception of Suñer (1992)

Suñer (1992) discusses a broad array of data from Fiorentino and Trentino that undermines the 1-to-1 link between default agreement and the extraction position of the subject, and proposes an independent, interpretation-based generalization. Even if her analysis turned out to be incorrect, the status of Northern Italian AAE as an argument in favour of Rizzi's skipping derivation is untenable in light of the data. Curiously enough though, Rizzi's/Brandi & Cordin's approach in terms of extraction from a low subject position has become the widely accepted standard among linguists working on the topic. Subsequent work largely took skipping as a given and attempted to explain why movement from SpecTP is blocked. Various proposals have been put forward, including ones based on Aoun & Li's (1990, 1993) \bar{A} -disjointness requirement (Ouhalla 1993), antilocality (Cheng 2006, Erlewine 2020, Schneider-Zioga 2007), or Criterial Freezing (Rizzi 2006, Shlonsky 2014, Diercks 2009, 2010). What the subsequent literature on the AAE and related phenomena has in common is that Suñer's work and also the data in Brandi & Cordin's footnotes is only marginally acknowledged, if at all (see, e.g. Ouhalla 1993, Erlewine 2020, Pesetsky 2021). In the few cases where they are mentioned more prominently, only a subset of Suñer's challenging facts is discussed (see, e.g., Campos 1997, Mereu 1999), but not necessarily explained; other facts are still ignored. Baier (2018), for example, mentions the local person data and the fact that postverbal subjects fully agree with the verb when a different XP undergoes \bar{A} -movement. In his analysis, antiagreement is the result of postsyntactic impoverishment of a probe that has undergone phi-agree with an \bar{A} -goal (viz., a goal that bears an \bar{A} -feature such as [focus]). The absence of antiagreement with postverbal subjects in the presence of a different \bar{A} -moved XP follows nicely because it is the XP that bears the \bar{A} -feature in this context, not the postverbal subject. The local person exception, however, receives a different account; it is basically due to a stipulation: impoverishment only applies in the presence of [-participant] (= 3rd) person features copied from the goal. This approach also leaves unexplained other observations that Suñer's explanation was able to capture uniformly in addition to the local person data.

To sum up, while Suñer (1992) points out that the skipping analysis has a number of problems when faced with the full range of data from Fiorentino/Trentino and proposes an explanation for the observed lack of full agreement that covers all data points, her work has not been widely received. If

acknowledged, it is usually for specific data points while her main insight and critique of the skipping derivation is left unmentioned. In the following section we provide additional evidence for Suñer's account in the hope of contributing to a broader recognition of her work showing that these Northern Italian dialect data do not provide an argument in favour of the skipping derivation.

4. Additional evidence for Suñer's (1992) account of the AAE

We presented 7 native speakers of the Fiorentino dialect with sentences with varying agreement (full vs. reduced) and varying subject position (pre- vs. postverbal) in contexts that were designed to facilitate either a specific/presupposed reading or a non-specific/non-presupposed reading. They were asked to pick the sentence that in their view best continued the context. We expected the speakers to choose a sentence with full agreement in the former contexts and a sentence with default agreement in the latter. In what follows, we present the results of this very basic study arguing that they support Suñer's approach. We will adopt the following notational conventions: Sentences that were chosen by at most 1 speaker will be marked by an asterisk '*'. Sentences selected by the largest subset of speakers will remain unmarked. A '%' sign signals that a sentence was selected by more than 1 speaker but not by the largest subset of speakers. A general thing to note is that our speakers consistently rejected sentences in which the verb itself shows default agreement, independent of the position of the subject. Only the preverbal subject clitic varies between the form that fully agrees with the subject's phi-features and the default 3rd singular masculine *gli*.⁸ We will address this in section 5. Overall, we further found no indication that postverbal (3rd person) subjects trigger reduced agreement. To the extent that speakers chose sentences with postverbal (3rd person) subjects, they more often picked one that had full phi-agreement.

4.1. D-linked wh-phrases

First, we were able to generally replicate the AAE with wh-phrases as documented in the literature (modulo the default 3rd singular inflection on the

⁸This mismatch between verbal agreement markers and subject clitics already challenges the original analysis of Rizzi (1982), where both originate in T (cf. section 2) and should therefore not be able to mismatch.

verb). In a question with a *wh*-subject such as *quante ragazze* ‘how many girls’ in (21), 4 speakers preferred the unagreeing sentence in (21b). Only 2 speakers opted for the agreeing version in (21a). One speaker allowed all three options, that is, even the sentence in (21c) with an unagreeing verb form.

- (21) Context: Marco owns several bars in the city centre. One Friday morning, he visits one of his bars and finds it in a very chaotic and deranged state, apparently a private party has taken place. He asks one of the few guests who are still there what happened. The guy tells him that some girls threw a party last night. Marco asks:
- a. %*Quante ragazze le han festeggiato?*
 how.many girls CL.3PL.F have.3PL party.PRTC
 ‘How many girls have had a party?’
 - b. *Quante ragazze gli han festeggiato?*
 how.many girls CL.3SG.M have.3PL party.PRTC
 - c. #*Quante ragazze gli ha festeggiato?*
 how.many girls CL.3SG.M have.3SG party.PRTC

With D-linked *wh*-subjects, however, a similarly clear preference for AAE versions of the *wh*-questions emerged in the context in (22), which figures the *wh*-subject *quali ragazze* ‘which girls’. The same 4 speakers that chose the unagreeing question in (21) also opted for an unagreeing version in (22), two preferring (22b) and two even (22c). The same two speakers who went with the fully agreeing form in (21) also chose the fully agreeing sentence (22a). The remaining speaker allowed more than one option, namely (22a) and (22b).

- (22) Context: Marco owns several bars in the city centre. One Friday morning, he visits one of his bars and finds it in a very chaotic and deranged state, apparently a private party has taken place. He asks one of the few guests who are still there what happened. The guy tells him that some girls threw a party last night. Marco asks:
- a. *Quali ragazze le han festeggiato?*
 which girls CL.3PL.F have.3PL party.PRTC
 ‘Which girls have had a party?’
 - b. *Quali ragazze gli han festeggiato?*
 which girls CL.3SG.M have.3PL party.PRTC

- c. %Quali ragazze gli ha festeggiato?
 which girls CL.3SG.M have.3SG party.PRTC

It is possible, however, that in this specific context, speakers interpreted ‘which girls’ as non-D-linked, not as referring to a subset of a presupposed set of girls. Instead, they might have interpreted the subject as ‘what girls’, i.e. as the bar owner wondering that there was a group of girls in the first place.

Only in the respective singular version of this context, which is given in (23), did the number of fully agreeing responses increase a bit. Three speakers preferred the fully agreeing (23a) while three other speakers opted for the unagreeing (23b). One speaker allowed both.

(23) Context: Marco owns several bars in the city centre. One Friday morning, he visits one of his bars and finds it in a very chaotic and deranged state, apparently a private party has taken place. He asks one of the few guests who are still there what happened. The guy tells him a girl threw a party last night. Marco asks:

- a. Quale ragazza la ha festeggiato?
 which girl CL.3SG.F have.3SG party.PRTC
 ‘Which girl has had a party?’
- b. Quale ragazza gli ha festeggiato?
 which girl CL.3SG.M have.3SG party.PRTC

Again, the provisions pertaining to the previous context also hold here. Generally, the responses show that our speakers exhibit the AAE in (at least local) subject extractions.

4.2. Idioms

A clear piece of support for Suñer’s approach comes from the behaviour of idiomatic subjects, which are inherently non-referential/non-specific. Independent of the position of the subject, these therefore are expected to exhibit reduced agreement under Suñer’s approach. Under the standard account, however, we would expect them to show position-dependent behaviour, i.e., full agreement in preverbal and reduced agreement in postverbal position. We presented our speakers with two idiomatic subject constructions. The first is provided in (24). Our speakers overwhelmingly preferred the unagreeing version

(24b), which was chosen by 5 of them. Only one speaker opted for the fully agreeing (24a), while another speaker allowed both the a. and the b. option.

(24) Context: Rodolfo has a difficult decision to make. Should he take an offer for a well-paid job in Singapore or should he stay at his old job in Florence? He cannot bring himself to make a decision. The next day, he tells his friend Carlo that he has made a decision. Another friend, Luca, hears about this and asks Carlo: “How come he’s able to choose now?” Carlo replies:

- a. %La notte la ha portato consiglio a
DEF.F.SG night CL.3SG.F have.SG bring.PRTC advice to
Rodolfo.
R.
‘Rodolfo has slept over it.’
- b. La notte gli ha portato consiglio a
DEF.F.SG night CL.3SG.M have.SG bring.PRTC advice to
Rodolfo.
R.
- c. #La ha portato la notte consiglio a Rodolfo.
- d. #Gli ha portato la notte consiglio a Rodolfo.

With a different subject idiom, a similar picture emerges. In (25), 3 speakers preferred unagreeing (25d) and 2 speakers opted for unagreeing (25b). One speaker allowed both unagreeing options. Only one speaker chose the fully agreeing (25a) option.

(25) Context: Luca and his friend Cosimo went to a bar yesterday night. They ended up in a fight which resulted in a few lacerations, bruises and a black eye for Cosimo. When some of their friends come to pick them up from the hospital, they ask how it all happened. Luca replies: “Well, at first some of the other guests started to insult us. Then they came over and spilled our beer. Afterwards they even started jostling us. And then ...”

- a. #La mosca la è saltata al naso
DEF.F.SG fly CL.3SG.F be.3SG jump.PRTC at.DEF.M.SG nose
di/a Cosimo.
of C.
‘Cosimo lost his temper.’

- b. La mosca gli è saltato al naso
 DEF.F.SG fly CL.3SG.M be.3SG jump.PRTC at.DEF.M.SG nose
 di/a Cosimo.
 of C.
- c. #La è saltata la mosca al naso di/a Cosimo.
- d. Gli è saltata la mosca al naso di/a Cosimo.

This response pattern is puzzling under the standard approach but entirely expected under Suñer's interpretative account of the AAE.

4.3. Quantified nominals

Another type of subject we tested are quantified nominals. We included four different quantifiers: *ogni* 'every', *tutte* 'all', *poche* 'few', and *nessuna* 'no(body)'. We found that the distributive universal *ogni* and the negative existential *nessuna* both gave rise to a majority of unagreeing responses. Thus, in the context (26), 4 speakers preferred the unagreeing (26b) while 3 speakers opted for fully agreeing (26a). One speaker chose both.

(26) Context: For market research purposes, Enzo recently conducted a survey on women's eating preferences. Each woman was asked to choose a dish from a list. He was expecting that at least some of the participants' responses would converge on one dish. However, when a colleague asks him how it went he just shrugs his shoulders and replies:

- a. %Ogni donna la ha scelto un piatto diverso.
 every woman CL.3SG.F have.3SG select.PRTC a dish different
 'Every woman selected a different dish.'
- b. Ogni donna gli ha scelto un piatto diverso.
 every woman CL.3SG.M have.3SG select.PRTC a dish different
- c. #La ha scelto ogni donna un piatto diverso.
- d. #Gli ha scelto ogni donna un piatto diverso.

For the context with the negative indefinite *nessuna ragazza* in (27), only 5 speakers provided judgements. 3 of them opted for the unagreeing (27b) and one for the fully agreeing (27a). One speaker equally allowed both options.

(27) Context: Usually, the dancefloor at the hottest night club in town is full of dancing people. However, last night was different.

- a. %Nessuna ragazza la ha ballato.
no girl CL.3SG.F have.3SG dance.PRTC
'No girl has danced.'
- b. Nessuna ragazza gli ha ballato.
no girl CL.3SG.M have.3SG dance.PRTC
- c. #La ha ballato nessuna ragazza.
- d. #Gli ha ballato nessuna ragazza.

In contrast, with the quantifiers *poche* 'few' and *tutte* 'all', which incidentally also take plural restrictors (as opposed to the singular ones of *ogni* and *nessuna*), more speakers chose an agreeing version of the sentence. Thus, for the *tutte* context in (28), 4 speakers preferred fully agreeing (28a) and 2 speakers opted for unagreeing (28b). One speaker allowed both.

(28) Context: Gabriella recently went to the annual performance of the local music school. When she tells her friend Luna about this she asks whether the girls who've just started music school and only had a few singing lessons had to perform individually. Gabriella replies:

- a. No. Tutte le ragazze le han cantato
no all DEF.F.PL girls CL.3PL.F have.3PL sing.PRTC
insieme come un coro.
together like a choir
'No. All the girls sang together like a choir.'
- b. %No. Tutte le ragazze gli han cantato
no all DEF.F.PL girls CL.3SG.M have.3PL sing.PRTC
insieme come un coro.
together like a choir
- c. #No. Le han cantato tutte le ragazze insieme come un coro.
- d. #No. Gli han cantato tutte le ragazze insieme come un coro.

In the *poche* context in (29), 2 speakers preferred the fully agreeing (29a) and 2 further speakers the fully agreeing (29c). Another 2 speakers chose unagreeing (29d) while one speaker allowed all four options.

(29) Context: Usually, the dancefloor at the hottest night club in town is full of dancing people. However, last night was different.

- a. Poche ragazze le han ballato.
few girls CL.3PL.F have.3PL dance.PRTC
'Few girls danced.'
- b. #Poche ragazze gli han ballato.
few girls CL.3SG.M have.3PL dance.PRTC
- c. Le han ballato poche ragazze.
- d. Gli han ballato poche ragazze.

The observed preference for unagreement with *ogni* and *nessuna* again supports Suñer's account of the AAE in terms of referentiality. In addition, the fact that the non-distributive universal quantifier *tutte* predominantly triggers full agreement lends even further, though indirect, support. As has been reported by Baker (1996), Baker & Kramer (2018), Cinque (1990), Safir (2017) in languages with a referentiality-based split in argument marking morphology, this morphology may double non-distributive but not distributive universal quantifiers. The different behaviour of argument marking subject-clitics in Fiorentino for the two types of universal quantifiers therefore can be taken to indicate that it is a language that shows a referentiality-based split as well.

4.4. Definites

We also tested definite subjects in different contexts of definiteness. As definite noun phrases are typically referential, we would expect them to trigger full agreement. This is indeed what we found. In the familiarity context (30), 4 speakers preferred fully agreeing (30a), one speaker fully agreeing (30c). Only two speakers chose unagreeing (30b).

(30) Context: At the club, Giovanni has met two girls and three guys. The guys just drank wine. But...

- a. Le ragazze le han ballato.
DEF.F.PL girls CL.3PL.F have.3PL dance.PRTC
'The girls danced.'
- b. #Le ragazze gli han ballato.
DEF.F.PL girls CL.3SG.M have.3PL dance.PRTC
- c. #Le han ballato le ragazze.
- d. #Gli han ballato le ragazze.

In a context where the subject refers to an entity that is unique in the larger sit-

uation, 4 speakers preferred the fully agreeing preverbal subject sentence (31a) while 3 speakers opted for the fully agreeing postverbal subject sentence (31c).

(31) Context: A priest arrives at the convent of nuns in order to celebrate the holy mass and take confessions. A nun informs him:

- a. La badessa la confesserà per prima.
DEF.F.SG abbess CL.3SG.F confess.FUT.3SG for first
'The abbess will confess first.'
- b. #La badessa gli confesserà per prima.
DEF.F.SG abbess CL.3SG.M confess.FUT.3SG for first
- c. %La confesserà la badessa per prima.
- d. #Gli confesserà la badessa per prima.

In a global uniqueness context such as (32), only one speaker chose the sentence in (32b) with reduced agreement whereas the 6 other speakers preferred the fully agreeing version in (32a).

(32) Context: A grandmother is telling her grandchildren a story. She begins: "It was a bright night..."

- a. La luna la splendeva in cielo.
DEF.F.SG moon CL.3SG.F shine.PST.3SG in sky
'The moon was shining in the sky.'
- b. #La luna gli splendeva in cielo.
DEF.F.SG moon CL.3SG.M shine.PST.3SG in sky
- c. #La splendeva la luna in cielo.
- d. #Gli splendeva la luna in cielo.

As definite subjects generally are specific/presupposed, under Suñer's approach it is not surprising that they occur with fully agreeing subject clitics, even in cases where the subject is in postverbal position, such as (31c), which was selected by 3 of 7 speakers. Under the skipping derivation, the last point in particular poses a challenge because while there is potentially an analysis for the fact that local person subjects trigger full agreement even in postverbal position (e.g., Baier 2018), the very observation of 3rd person postverbal subjects with full agreement is incompatible with it.

4.5. Interim summary and conclusions

To summarize, we were generally able to verify Suñer's empirical claims with respect to reduced agreement with *wh*-subjects as well as full agreement with postverbal 3rd person DP-subjects with 7 native speakers. Moreover, additional data from typically non-referential idiomatic subjects as well as quantified subjects further support her account as these were judged to trigger reduced agreement by a majority of our speakers. In particular the split between reduced agreement with the distributive universal *ogni* and full agreement with its non-distributive counterpart *tutte*, which is typical of languages with referentiality-based argument marking, is indicative of the fact that an interpretative account of Fiorentino such as Suñer's is on the right track. In the following section, we will show that such a referentiality-oriented system of argument marking is far from uncommon in the world's languages and that it is therefore not extraordinary for Fiorentino to exhibit such a system.

5. Fiorentino in a cross-linguistic perspective

We conclude from the above observations that the antiagreement effect in Fiorentino, contrary to widely held beliefs, does not provide support for a skipping analysis of subject extraction along the lines of Rizzi (1982), Brandi & Cordin (1981, 1989). This does not necessarily mean that the skipping derivation is wrong, it simply does not receive support from antiagreement. The facts rather support Suñer's (1992) interpretation-based account of the AAE according to which the referentiality of the subject is the decisive factor.

Considering the cross-linguistic picture, Suñer's (1992) perspective on the Fiorentino subject clitic pattern is not extraordinary at all. It is well-known that fully matching argument doubling morphology in the form of pronominal or clitic elements often requires the argument to be referential or specific. If the argument is non-referential/non-specific, doubling morphology is either absent or appears in a reduced/default form. For instance, clitic doubling is often not possible for non-referential and non-specific DPs (Suñer 1988, Dobrovie-Sorin 1990, Franks & Rudin 2005, Kramer 2014, Yuan 2021). Likewise, resumptive pronouns in several languages induce a referential or specific interpretation of their antecedent (Doron 1982, Sharvit 1999, Bianchi 2004, 2011, Sichel 2014). It is therefore not unfounded to claim for Fiorentino that the choice between fully agreeing and reduced subject clitics is conditioned by

interpretational properties of the subject. Moreover, similar patterns where the form (agreeing/non-agreeing) or the presence/absence of subject clitics depends on information-structural and referential properties of the subject have been described for several other Northern Italian varieties (see, e.g., Poletto & Tortora 2016, Poletto 2000, D’Alessandro & Frasson 2023 and references cited there). It has also been observed that referentiality/specificity can have a crucial role in the syntax of extraction, too. For example, D-linked wh-phrases in English can violate Superiority (Pesetsky 1987) and ameliorate certain island violations (Maling & Zaenen 1982, Cinque 1990, Rizzi 1990, Kiss 1993). It also affects reconstruction (Heycock 1995) and French participial agreement (Obenauer 1994). With this background in mind, the Fiorentino pattern exhibiting a dependence of subject doubling morphology on interpretational properties of the subject as argued by Suñer would be far from a unusual.

The fact that our speakers quite consistently rejected reduced agreement on the auxiliary/verb also receives a straightforward explanation under Suñer’s approach. While pronominal elements such as clitics may be sensitive to the referential properties of corresponding arguments (Baker & Kramer 2018, Fominyam & Georgi 2021) bona fide agreement is not (see among others Corbett 2006, Kramer 2014). If the occurrence of reduced clitic forms in Fiorentino is conditioned by referentiality instead of by \bar{A} -extraction, then it is entirely expected that proper verbal agreement affixes remain unaffected. What is more, some inter-speaker variation between reduced and fully agreeing clitics may then be attributed to different degrees of grammaticalization of the subject clitics as proper agreement markers.

Given that antiagreement in Fiorentino does not simply reflect the position of the subject (pre- vs. postverbal) and has a much wider distribution than just subject extraction contexts, it is worth reconsidering other languages that have been claimed to exhibit a classic antiagreement effect (in the sense that \bar{A} -arguments trigger reduced agreement or agreement drop, see Ouhalla 1993 on Turkish, Berber, and Celtic). In fact, in at least some of these languages antiagreement also surfaces in other, non-subject- \bar{A} -extraction contexts, and often, semantic/pragmatic factors play a crucial role for the occurrence of the effect there as well. For example, Cagri (2005), Göksel & Kerslake (2005), Szarvas (2021) show that antiagreement in Turkish relative clauses is not just attested in subject relative clauses, but also, e.g., in locative relatives, and that the specificity of the subject inside the relative clause is also crucial for the choice between full and reduced agreement. Subject “agreement” in varieties

of Berber has been argued to be a pronominal clitic (e.g., Guerssel 1995), and that the AAE arises because this type of pronoun cannot function as a bound variable (Elouazizi & Wiltschko 2006). That antiagreement in Celtic languages is of a different kind has long been noted (e.g., in Borsley 2009, Baier 2018) – and the reason is actually the same that Suñer brought forward for Fiorentino and Trentino: the AAE in these languages has a much wider distribution than just subject \bar{A} -extraction contexts. In Celtic languages, agreement morphology is in complementary distribution with overt DP arguments in general.

Beyond the classic antiagreement languages, we find similar patterns. For example, while \bar{A} -extraction of subjects in Awing leads to an obligatory absence of the subject marker, it also has to be dropped if the subject is idiomatic, non-D-linked, generic, non-specific, non-ostensively used, or a non-referential quantifier (Fominyam & Georgi 2021). Similarly, object agreement in Tundra Nenets has to be dropped with *wh*-objects and focussed objects, which is analyzed by Baier (2018) as an antiagreement effect and exploited as an argument for his theory of the AAE as \bar{A} -triggered impoverishment. Crucially, this agreement is also obligatorily absent with non-specific indefinite (so-called predestinative) objects, indefinite or negative object pronouns, vague quantities and cardinal numerals larger than two (Nikolaeva 2014: 201–213; not discussed in Baier 2018). All of these examples show us that it is important to consider whether antiagreement as found under (subject) \bar{A} -extraction also arises in other contexts in a given language, and to investigate whether there is a broader generalization that can capture *all* occurrences rather than just the \bar{A} -extraction related ones. In the end, antiagreement may turn out not be a uniform phenomenon; only detailed studies of individual languages with the effect will allow us to provide an answer.

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On split-absolutive

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Abstract

Ergative languages have been claimed to fall into one of the following two classes. Those where absolutive case on the direct object and on the intransitive subject is assigned by the same functional head. And those where absolutive case on the direct object and absolutive case on the intransitive subject have different sources (called split-absolutive in Legate 2006). In this article, I defend the position that the arguments put forward in the literature for the existence of split-absolutive are inconclusive, with the exception of the analysis proposed by Goddard (1982) for certain Pama-Nyungan languages. Outside of Pama-Nyungan, I contend, a uniform analysis of absolutive case assignment remains tenable.

1. Background and goal

Legate (2006, 2008) claims that the class of languages that show ergative alignment on the surface divides into two syntactically different subclasses. Languages that are genuinely ergative (absolutive case for intransitive subjects and direct objects, and ergative case for transitive subjects). And languages that are syntactically tripartite (nominative case for intransitive subjects, ergative for transitive subjects, and accusative for direct objects) where nominative and accusative are realized syncretically in the morphology, thus giving the illusionary impression of an ergative alignment involving absolutive case.^{1,2} The very same idea can already be found in Goddard (1982). Furthermore,

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¹While Legate (2006) calls this split-absolutive (“absolutive” case being split between T and v), Legate (2008) refers to it as ABS=DEF (DEF stands for default), in contrast to genuinely ergative systems, which are ABS=NOM in Legate’s (2008) terms.

²Interestingly, Müller & Thomas (2017) argue that, syntactically, tripartite systems are an illusion created by morphology on the basis of genuinely ergative (or accusative) systems.

similar proposals have been made by Aldridge (2004, 2006, 2008) and by Coon et al. (2014), with slightly different assumptions.^{3,4}

A consequence of the split-absolutive hypothesis is that languages with superficially ergative alignment can show significant syntactic differences that go back to different syntactic case systems. This raises the question in how far generalizations that pertain to (morphological) ergativity in general (see Trask 1979: 385) can be accounted for.⁵ In contrast, a theory where absolutive case is assigned by the same head across (morphologically) ergative languages (e.g., Campana 1992, Murasugi 1992, Jelinek 1993, Bittner & Hale 1996a,b, Ura 2000, Müller 2009) may have better chances to comply with this task.

In this article, I review arguments that have been put forward in the literature for the existence of split-absolutive. The upshot will be that they are all inconclusive, with the notable exception of the analysis proposed in Goddard (1982) for certain Pama-Nyungan languages.⁶ I conclude that for ergative languages outside of Pama-Nyungan (and at least for Warlpiri, also a member of the Pama-Nyungan family), a uniform analysis of absolutive assignment remains possible, and, for reasons of simplicity, is to be preferred.

2. Legate's (2006, 2008) arguments

2.1. The default nature of absolutive

The first argument (which can be found in Legate 2006, 2008) comprises two subarguments, both pertaining to the idea that absolutive case behaves as the default case in various environments of the grammar. Legate (2008) formulates this idea in the framework of Distributed Morphology (Halle & Marantz 1993), where morphological realization applies in a post-syntactic fashion ("vocabulary insertion") allowing for a radically underspecified exponent to realize a syntactic node with complex featural content (making use of the Elsewhere Condition, Kiparsky 1973). The absolutive case exponent is then

³Unfortunately, Aldridge (2004) was not accessible to me. My information about this work is based on what I found in Aldridge (2006, 2008) and in other references.

⁴In contrast to Legate (2006, 2008), Aldridge (2004, 2006, 2008) assumes that the direct object is assigned abstract absolutive case by *v*. Coon et al. (2014) remain mostly uncommitted as to whether *v* assigns absolutive or accusative to the direct object.

⁵Note that Trask (1979) puts forward a dichotomy of ergative languages, too; see Polinsky (2016) for yet another proposal.

⁶Goddard's (1982) arguments are taken up by Legate (2008: §3).

assumed to be such a radically underspecified item, which can be inserted in any syntactic node bearing case features if no other case exponent fits.

One subargument may be summarized by the following quote (Legate 2008: 59): “My approach to ABS=DEF [split-absolutive, F.H.] languages is that the intransitive subject and the transitive object bear the same morphological case only because the languages lack nominative case morphology and accusative case morphology. Here, I present the case paradigms from Warlpiri, Niuean, Enga, and Hindi illustrating these lacunae.” While it is true that a split-absolutive analysis is compatible with the paradigms given by Legate (2008: 59–60) because it postulates syncretism, an analysis in terms of genuinely ergative alignment (without split-absolutive) of these languages is equally compatible with the absence of nominative and accusative case markers in each of these languages, simply because these cases are not assumed to be present in the syntax in the first place. Hence, this can hardly be an argument in favor of split-absolutive (as opposed to genuinely ergative alignment).

The other subargument makes reference to the observation that in the hypothesized split-absolutive languages nominals that occupy case-less positions in the syntax surface with absolutive case (the contexts discussed in Legate 2008 involve hanging topics). The observation is supposed to indicate the default nature of the absolutive, which the analysis postulates. While this makes sense, it is also true that nothing, in principle, prevents assuming a radically underspecified absolutive case exponent in a theory that employs genuinely ergative alignment, i.e., a theory that maintains that absolutive, as an abstract syntactic case, is assigned by T to intransitive subjects and objects alike. Thus, the argument is inconclusive.

2.2. Multiple absolutives

First person pronouns in Warlpiri that are transitive subjects optionally bear absolutive (instead of ergative) even if there is a third person object, also bearing absolutive. As Legate (2006) points out, this looks as if an analysis that provides two different sources for absolutive is required for independent reasons. More precisely, Legate’s (2006) proposal is that ergative case is not assigned by *v* if the subject bears first person. Consequently, absolutive case on T may be assigned to the subject. Absolutive on the direct object (more precisely: accusative, morphologically realized as absolutive) is assigned by *v*.

A possible re-interpretation is that ergative is always assigned by a transitive *v*, but in the context of a first person subject an impoverishment rule (as they are common in Distributed Morphology) applies to the syntactic ergative case. As a consequence, the exponent for ergative cannot be inserted in the morphology, and the default absolutive case exponent takes over instead (cf. Keine 2007 on Hindi). As mentioned in section 2.1, there is nothing that prevents a theory of genuinely ergative alignment without split-absolutive from making use of such morphological technology. In a sense, this puts Legate's analysis on its head: ergative alignment is faithful to the syntax of abstract case while person-based splits involve morphological syncretism.

Legate (2008: 67-70) generalizes the above argument from Legate (2006) to Enga, Niuean, and Hindi. As far as I can tell, this does not pose any substantial problem for a theory without split-absolutive.⁷

2.3. Dative objects and agreement

The following argument is, again, due to Legate (2006). It is based on the observation that dative-marked objects in Warlpiri show the same agreement behavior as direct objects. According to Legate (2006), this follows if both receive case from the same head, as under the split-absolutive analysis, where absolutive on the object is assigned by *v* (as is dative, by assumption). It does not follow under a theory where case on the direct object and the dative-marked object is assigned by different heads (e.g. if absolutive comes from T).

Note, however, that agreement in Warlpiri involves accusative-alignment (e.g., Legate 2003, 2006) and therefore does not seem to be intimately tied to case assignment.⁸ Therefore, it is not unexpected that co-arguments that get assigned case by different heads (T and *v*, respectively) do not necessarily differ in their agreement behavior (as long as they agree with the same head).

2.4. Case-agreement interaction

Here, Legate (2008: 70-74) discusses the interaction of case and agreement against the background of her theory. There are two main observations. In

⁷Some cases may involve the lack of an appropriate case exponent for lexical reasons, thus leading to the insertion of the default absolutive exponent without impoverishment.

⁸Agreement in Warlpiri is often assumed to involve bound pronouns, i.e., clitics (e.g., Goddard 1982: 179, Jelinek 1984: 43-45). Legate (2008: 71) treats it on a par with canonical agreement. I abstract away from this here.

Niuean, an ergative subject may not trigger agreement, only an absolutive subject may. This can be straightforwardly accounted for by assuming that agreement is sensitive to (syntactic) case: only some languages allow for agreement with ergative marked nominals (Bobaljik 2008; cf. Moravcsik 1974). Moreover, Legate (2008: 73) claims that an absolutive marked object may not trigger agreement in Niuean.⁹ She assumes that the ergative subject in Niuean counts as a defective intervener, preventing probing beyond it. This assumption also works for an analysis without split-absolutive.^{10,11}

Then again, as Legate (2008) notes as well, agreement in Hindi poses a complication for an analysis in terms of split-absolutive. Namely, in this language, agreement with an absolutive object is possible (under particular circumstances), just as with an absolutive marked subject. Under a genuinely ergative analysis, not much more has to be said. Under an analysis in terms of split-absolutive, one must assume that Hindi allows for agreement with accusative marked nominals, too (presupposing that there is no defective intervention of Hindi ergative subjects).¹²

2.5. Non-finite clauses

I turn to an argument that is based on the idea that languages with split-absolutive should show a behavior different from genuinely ergative languages

⁹See also the number agreement facts in Tagalog discussed in Aldridge (2006).

¹⁰An alternative explanation under the split-absolutive analysis could be that agreement in Niuean does not target accusative case-marked nominals either (recall that direct objects in split-absolutive languages are assumed to bear abstract accusative case).

¹¹In fact, there is a potential complication for an analysis of Niuean agreement assuming genuinely ergative alignment (which Legate 2008 does not mention). Namely, given that absolutive case marking of the direct object by T across an ergative subject must be possible in such a theory, the question arises why agreement with an absolutive object across an ergative subject is not possible. Technical solutions to this problem are conceivable. Here, I merely note that object agreement in Niuean appears not to be entirely impossible. As Legate (2008: 71, footnote 30) mentions: “The agreement facts in Niuean are complicated by the existence of lexical exceptions; Seiter (1980:61-65) reports [...] a small class of verbs that allow agreement with O”. Number agreement in Tagalog, as discussed in Aldridge (2006), may be more problematic in this context, though.

¹²Another complication, not addressed by Legate (2008), is why the absolutive elsewhere exponent in Hindi may show up on syntactically accusative-marked direct objects given that Hindi possesses the exponent *-ko*, which is sometimes analyzed as a (more specific) accusative case marker (e.g., Mohanan 1994, Butt & King 2004). All things equal, *-ko* should block the absolutive marker on direct objects in those contexts where *-ko* can show up in principle.

when it comes to non-finite constructions (Legate 2008: 62-67).¹³ The underlying assumption is that non-finite T is not a case assigner. This allows to run the following test. In a split-absolutive language the object of a non-finite transitive verb should be able to show up in the absolutive while the subject of a non-finite intransitive verb should not. In contrast, in a genuinely ergative language, absolutive arguments should be unavailable altogether in infinitives.

The following examples from Warlpiri illustrate this logic (Legate 2008: 62-63). While it is possible to realize the object (*miyi* ‘food’) of an embedded non-finite transitive clause in the absolutive (1b), it is impossible to have an overt absolutive subject (*kurdu* ‘child’) in a non-finite intransitive clause (1a). (The overt subject of a non-finite transitive clause may bear ergative or dative, as shown in (1b).)¹⁴

- (1) a. *Ngarrka-patu-rlu ka-lu-jana puluku
 man-PAUC-ERG PRES.IMP-3PL.SUBJ-3PL.OBJ bullock.ABS
 turnu-ma-ni [kurdu parnka-nja-rlarni].
 group-CAUSE-NPST child.ABS run-INF-OBV.C
 ‘The men are mustering cattle while the children are running.’
- b. Ngarrka-patu-rlu ka-lu-jana puluku
 man-PAUC-ERG PRES.IMP-3PL.SUBJ-3PL.OBJ bullock.ABS
 turnu-ma-ni [karnta-patu-rlu /-ku miyi
 group-CAUSE-NPST woman-PAUC-ERG -DAT food.ABS
 purra-nja-puru].
 cook-INF-TEMP.C
 ‘The men are mustering cattle while the women are cooking the food.’

Therefore, Warlpiri is a split-absolutive language. According to Legate (2008: 66), this contrasts with a genuinely ergative language such as Georgian. There, the direct object of a transitive non-finite verb cannot show up in the absolutive (but bears genitive, just as the subject of a non-finite intransitive verb).

In sections §2.5.1 and §2.5.2, I will first point out some weaknesses in the way that this test is applied in Legate (2006, 2008). I will then reapply the test

¹³This argument is particularly important as it also figures prominently in Aldridge (2004, 2006, 2008) and Coon et al. (2014); cf. also Bobaljik (1993), and the assessments in Deal (2015), Müller & Thomas (2017).

¹⁴Note that the examples in (1) involve different complementizer affixes, namely *-rlarni* and *-puru*, respectively. This is an important detail, glossed over by Legate (2008); see section 2.5.3 for some discussion.

under more appropriate conditions (section §2.5.3), showing that it gives at best inconclusive results.

2.5.1. *Overt absolutes, nominalization, and PRO*

According to Legate (2008: 64), the test cannot be applied to Niuean as it is unclear whether there are non-finite clauses in Niuean to begin with. Potentially relevant here are subjunctive clauses (e.g., Seiter 1980).¹⁵ In fact, the subject of an intransitive subjunctive clause in Niuean can be realized overtly as absolutive. Legate (2008: 64) takes this as a reason to exclude Niuean from the test: “Regardless of how this issue [i.e. the question whether subjunctive clauses in Niuean are non-finite clauses in the relevant sense, F.H.] is resolved, the clauses cannot be used to test the prediction in Niuean, since all cases are available.” This conclusion is surprising. After all, presupposing that subjunctives in Niuean count as non-finite in the relevant sense, the overt realization of a subject as absolutive in an intransitive subjunctive suggests that the precondition of the test, namely the assumption that non-finite T cannot assign case, must be wrong.¹⁶ Consequently, subjunctives in Niuean, if they are relevant, indicate that an analysis of Niuean as split-absolutive is not warranted (although, theoretically still possible).

In two further case study languages discussed by Legate (2008), namely Warlpiri and Hindi, the non-finite structures discussed involve nominalization. Now, there is an additional factor that may influence case marking on the arguments of a nominalization, namely the capacity of the nominalizer (or another functional head associated with the nominalization) to assign case.

Thus, Legate (2008: 62) points out that subjects of noun phrases in Warlpiri are assigned dative case. Against this background, it is perhaps not surprising that the subject of the non-finite (transitive) nominalized clause in (1b) may also bear dative case (Legate 2008: 63). Similarly, Legate (2008: 65) notes for Hindi that subjects of noun phrases bear genitive case. Accordingly, genitive also shows up on subjects of non-finite nominalized clauses in Hindi.¹⁷

However, to conclude from this that there is no absolutive case available in the syntax of nominalized clauses in Warlpiri and Hindi would be premature.

¹⁵This points to a general methodological weakness of the test. Namely, it is a priori unclear which constructions are supposed to count as non-finite in the sense of the test and which not.

¹⁶A conclusion also reached on more general considerations in §2.5.3 below.

¹⁷Probably, something similar can be said for objects of nominalized verbs in Georgian.

One may imagine different resolution scenarios in which both absolutive and dative/genitive are assigned within the nominalized clause (by T and the nominalizer, respectively) but only the dative/genitive gets realized on the surface. For instance, one may assume that the dative/genitive wins out because the absolutive has a null realization (Baker & Vinokurova 2010: 639), that only the case that is highest on a given case hierarchy is realized (McCreight 1988: chapter 3, citing Babby 1984), or that the case that is assigned last is realized (Béjar & Massam 1999: 72).

An environment in which the interference of a case assigning nominalizer is neutralized, and which therefore would serve as a better environment in which to apply the test, are non-finite non-nominalized structures with a controlled PRO in subject position (or nominalizations where the nominalizing head does not enforce the realization of a certain case). Legate (2008), however, addresses such environments in a rather eclectic way. In fact, they only play a role in her discussion of Enga. Consider (2), from Legate (2008: 64):

- (2) akáli; dokó-mé [PRO_i dokosáa dokó kánj-a-nya]
 man DET-ERG doctor DET.ABS see-INF-DESID
 más-í-á.
 think-PAST-3SG
 ‘The man wanted to see the doctor.’

Indeed, (2) looks like a good candidate for a control-infinitive with non-overtly realized PRO-subject.¹⁸ In this context, Legate (2008: 64) writes: “Like Warlpiri, Enga exhibits a distinction between the licensing of absolutive on S and the licensing of absolutive on O in nonfinite clauses. Absolutive is available for O in nonfinite clauses [...] To express an overt S, a finite complement clause must be used in place of the infinitival.” Apparently, the mere fact that the subject of an intransitive infinitive may not be overtly realized is taken by Legate (2008) as an argument that there is no absolutive case assigned in the syntax.¹⁹ The possibility that PRO may bear case is simply not taken into account.

¹⁸Li & Lang (1979: 317), the source of Legate (2008) for Enga, use the former notion of Equi-NP-deletion for the construction. There is no evidence for nominalization.

¹⁹In contrast, with respect to non-finite conjunctive participles in Hindi, Legate (2008: 65) notes: “Unfortunately, they exhibit obligatory subject control and so cannot be tested”. It remains unclear why (non-nominalized) control structures should be able to serve as a testing ground for the hypothesis of split-absolutive in Enga but not in Hindi.

Legate (2008) does not discuss why the presence of obligatorily controlled empty PRO in subject position of non-finite clauses should count as evidence for the idea that absolutive cannot be assigned to this position. One can only guess that the conclusion is based on the assumption that PRO is incompatible with case (Chomsky 1981).²⁰ At least, this is the logic explicitly applied by Aldridge (2008: 977, 987), who argues for an analysis of ergativity in some Austronesian languages that is very similar to the split-absolutive hypothesis. If PRO is incompatible with case, so the idea, then it can (and must) show up in positions without case, where overt subjects cannot be realized as they would violate the case filter (Vergnaud 1977). By assumption, this holds for the subject position of an intransitive non-finite clause, in particular.

2.5.2. *The case of PRO*

However, there is strong evidence that PRO does bear case. In particular, Landau (2004, 2006) argues at length that the idea that PRO is incompatible with case is hardly empirically tenable (see also McFadden 2004). The main argument takes the following shape. Nominal modifiers (adjectives, reflexives, floating quantifiers, classifiers, etc.) that show case agreement with the modified noun also show case agreement with PRO. This also holds if the controller of PRO bears a case different from the case with respect to which the modifier agrees.²¹ The conclusion is that PRO itself must bear case.

The first pertinent observations were made by Andrews (1971, 1976). Since then, the pattern has been shown to exist in other languages, too (see Fanselow 1991, Sigurðsson 1991, 2008, Landau 2004, 2006, and references therein; see also Müller 2024 for relevant discussion). (3) and (4), from Icelandic (Sigurðsson 1991: 331) and German (Fanselow 1991: 114), illustrate.

- (3) Strákarnir_i vonast til [að PRO_i vanta ekki alla í
 the boys.NOM hope for to PRO.ACC lack not all.ACC in
 skólann].
 the school
 ‘The boys hope not to be all absent from school.’

²⁰This does not seem to fit the fact that Legate (2008: 86) mentions in another context that there is evidence from Icelandic that PRO bears case (cf. section 2.5.2).

²¹This additional observation is important as it rules out an alternative analysis according to which the modifier shows long-distance case agreement with the controller of PRO.

- (4) Wir baten die Männer_i [PRO_i einer nach dem anderen
 we asked the.ACC men.ACC PRO.NOM one.NOM after the other
 durch die Sperre zu gehen.
 through the gate to go
 ‘We asked the men to pass the gate one after the other.’

In (3), the floating quantifier *alla* bears accusative. As the modifier cannot case agree with the matrix subject (*strákarnir* ‘the boys’ bears nominative), case agreement must be with the PRO-subject of the infinitive, which receives quirky accusative case by the embedded predicate. In (4), the modifier *einer* bears nominative while the controlling object (*die Männer* ‘the men’) bears accusative. The same logic applies, nominative agreement must be with PRO.

Obviously, if one assumes that PRO does not bear case, then it becomes very difficult to account for case agreement facts of the type in (3) and (4). Moreover, as Landau (2004) points out, a case-by-case distinction (in one language PRO bears case, in another it does not) is not satisfying either.²²

Hence, the mere assumption that the subject of an intransitive infinitive in Enga that involves obligatory control is PRO cannot be taken to provide an argument for the claim that the T-head of this infinitive cannot assign absolutive. In order to maintain this claim, one would have to show that PRO does not bear absolutive. As long as this has not been done, the argument from Enga for split-absolutive remains inconclusive.

2.5.3. Consequences for split-absolutive

While I am not able to present an argument here that the PRO-subject of an intransitive infinitive in Enga bears absolutive, thus showing that non-finite T must be able to assign case, there is evidence that this is what happens in various other ergative languages, among them two of the other case study languages discussed by Legate (2006, 2008), namely Warlpiri and Hindi.

Beginning with Warlpiri, recall the examples in (1) (repeated in (5)) that are supposed to show that non-finite intransitive nominalized clauses (“infinitives”) in Warlpiri cannot have absolutive marked subjects.

²²“It would seem rather odd to suggest that PRO and its governing Infl in these languages are different from their counterparts in other languages in their ability (or necessity) to bear/assign normal case. Rather, the null hypothesis should be that PRO is always case marked, and it is simply the relative rarity of case concord that prevents us from gleaning parallel evidence in other languages.” (Landau 2004: 865)

- (5) a. *Ngarrka-patu-rlu ka-lu-jana puluku
 man-PAUC-ERG PRES.IMP-3PL.SUBJ-3PL.OBJ bullock.ABS
 turnu-ma-ni [kurdu parnka-nja-rlarni].
 group-CAUSE-NPST child.ABS run-INF-OBV.C
 ‘The men are mustering cattle while the children are running.’
- b. Ngarrka-patu-rlu ka-lu-jana puluku
 man-PAUC-ERG PRES.IMP-3PL.SUBJ-3PL.OBJ bullock.ABS
 turnu-ma-ni [karnta-patu-rlu /-ku miyi
 group-CAUSE-NPST woman-PAUC-ERG -DAT food.ABS
 purra-nja-puru].
 cook-INF-TEMP.C
 ‘The men are mustering cattle while the women are cooking the food.’

Both infinitives in (5) involve non-finite complementizer suffixes. Warlpiri exhibits a whole range of such suffixes (see Simpson 1983: 478-519 for an overview), comprising the obviation complementizer suffixes *-karra*, *-kurra*, and *-rlarni*. These three signal, among other things, control of the PRO-subject of the infinitive by the subject, the object, or an adjunct of the matrix clause, respectively (Hale 1982; also Hale 1983, Simpson & Bresnan 1983). (1a) involves the complementizer *-rlarni*, which means that the embedded subject-position in (1a) may be filled by a PRO-subject. In addition to this, *-rlani* (exceptionally, i.e., in contrast to the other two suffixes) allows to realize the subject of the infinitive overtly with dative case.²³

Against this background, an important question not addressed by Legate (2008) is this: What would the case of PRO be if it showed up as the subject of the infinitive in (1a)? Here, Simpson’s (1983: 434-437) observation is relevant that Warlpiri shows the kind of case agreement between PRO-subjects and nominal modifiers (e.g., locatives, instrumentals, manner adverbials, and body parts) mentioned in §2.5.2 in the context of other languages. As Simpson (1983: 434) makes clear, such case agreement applies to ergative and absolutive PRO-subjects alike (also Simpson & Bresnan 1983: 56-57).

To illustrate, (6a,b) each show a locative modifier (*ngurra* ‘camp’ and *rdaku* ‘hole’, respectively) that agrees in case with the PRO-subject of the infinitive

²³Simpson (1983: 481, footnote 24) claims that this option is mainly used by older Warlpiri speakers (also Simpson & Bresnan 1983: 62). According to Legate (2008), ergative case is also possible. The possibility of *-rlani* to co-occur with overt subjects leads Legate (2003: 19-20) to treat it as a default complementizer.

(Simpson 1983: 435, 438). In both cases, the complementizer is *-kurra* since the controller of PRO is the object *ngarrka* ‘man’ of the matrix clause. While case agreement on the locative in (6a) is ergative (the infinitive is transitive), it is absolutive (unmarked) in (6b). Since there is case agreement with PRO, PRO must bear case in (6a,b), namely ergative and absolutive, respectively.

- (6) a. Karnta ka-rla wangka-mi ngarrka_i-ku [PRO_i
 woman.ABS PRES-DAT speak-NPST man-DAT
 ngurra-ngka-rlu jarnti-rinja-kurra-(ku)].
 camp-LOC-ERG trim-INF-OBV.C-(DAT)
 ‘The woman is speaking to the man while he is trimming it in camp.’
- b. Kurdu ka-rla karri-mi wirl ngarrka_i-ku [PRO_i
 child.ABS PRES-DAT sit-NPST big.ABS man-DAT
 rdaku-ngka nyina-nja-kurra-ku].
 hole-LOC sit-INF-OBV.C-DAT
 ‘The child is bigger than the man when he is sitting in the hole.’

What this suggests is that the T-head of the intransitive infinitive in (6b) is able to assign absolutive case, thus undermining the very assumption that the test for split-absolutive under discussion is based on.

To make the point even stronger, one may add that some complementizer suffixes (such as the admonitive *-kujaku* in (7)) allow for *overt* subjects in their infinitival complements, comprising subjects of intransitive predicates, i.e., absolutives (Simpson 1983: 493):

- (7) Wurdungu-jarri-yarla -lpa-rlipa [kurdu-kurdu
 silent.INCH-IRR -PAST-1INC child-child.ABS
 yakarra-pardi-nja-kujaku].
 awake-rise.INF-ADMON.C
 ‘Let’s be silent so the children don’t wake up.’

The same holds for infinitives employing the complementizer *-puru* (Simpson 1983: 496-497), which shows up in Legate’s example given in (1b).²⁴

²⁴Note that there is also the non-finite complementizer *-karra*, which never allows for overt subjects to show up in the infinitive, be they ergative or absolutive (Simpson 1983: 467). This suggests that it is not case that regulates the overtness of arguments in infinitives but something else (cf. Aldridge 2008).

To repeat, if a non-finite T-head is able to assign absolutive case to (intransitive) subjects, then the fact that absolutive also shows up on direct objects in Warlpiri infinitives cannot serve as an argument for absolutive being split (between T and v). A uniform analysis where absolutive is always assigned by T is possible (and actually to be preferred, for reasons of simplicity).

Besides Warlpiri, there are other ergative languages that allow for the overt realization of absolutive subjects in non-finite clauses. For instance, Aldridge (2006, 2008) notes that the subjects of apparent ECM-infinitives in Tagalog may be realized overtly. Notably, in contrast to ECMs in English, the subject of an ECM in Tagalog does not bear the case associated with the embedding verb but the case that would be expected to appear on the embedded subject if the non-finite predicate were finite (which, under Aldridge's assumptions, are ergative or absolutive, respectively). Aldridge (2008: 989) suggests (referring to Sigurðsson 1991) that absolutive is present even in non-finite clauses in Tagalog. But it is only overtly realized if an appropriate higher head is present to license it in some sense to be made precise (cf. the remark at the end of §2.5.3).

The phenomenon of “backward control” allows for another way to test whether non-finite T may assign absolutive case. Polinsky & Potsdam (2002) argue that particular predicates in Tsez allow for overt realization of the lower, “controlled” subject of a control-infinitive. In contrast, the higher, “controlling” argument remains phonetically empty (see also Polinsky 2016: 318-324). This is the opposite pattern of what is found with classical control, hence the notion of backward control. Crucially, the overtly realized subject inside the infinitive may be the absolutive marked argument of an intransitive predicate, thus suggesting that non-finite T may assign absolutive case.²⁵

It has been claimed that there are also accusative-aligning languages that allow for backward control in non-finite clauses (with the controlled subject being overtly realized as nominative). The Dravidian languages Telugu and Kannada are cases in point. In the following examples (Subbarao 2012b: 83-84), the non-finite subordinated clause is a conjunctive participle (headed by *-i* and *-u* in Telugu and Kannada, respectively). Conjunctive participle

²⁵Since non-finite clauses with absolutive subjects that are embedded under predicates allowing for backward control are ambiguous between a control and a raising analysis, Polinsky & Potsdam (2002) only give examples with ergative subjects. However, it becomes clear from the description that backward control should also be possible with absolutive subjects (see Polinsky & Potsdam 2002: 249, footnote 5, Polinsky 2000: 27, footnote 10).

clauses are often analyzed as control-structures (e.g., Davison 2008: 32-33, Subbarao 2012a). The empty controller in (8a,b) is indicated by Δ .²⁶

- (8) a. [kamala_i dhillī vacc-i] Δ_i padi ēḷḷu ayyindi
 Kamala.NOM Delhi come-CPM ten years happened(s)
 ‘It is ten years since Kamala came to Delhi.’
- b. [kamala_i dillī band-u] Δ_i hattu warṣa ayittu
 Kamala.NOM Delhi come-CPM ten years happened(s)
 ‘It is ten years since Kamala came to Delhi.’

With this in mind, I turn to Hindi, the last case study language of Legate (2008). Hindi does not allow for backward control (Subbarao 2012a, Subbarao & Arora 2009).²⁷ But it exhibits canonical forward control in various constructions, among them non-finite subordinate conjunctive participle clauses (Davison 2008: 32). Moreover, it allows for some rare cases of conjunctive participle clauses where the matrix subject is non-identical with the subject of the conjunctive participle clause (Davison 1981: 106, 122, footnote 5, Davison 2008: 32, footnote 2, Subbarao 2012b: 279). In such a case, exceptionally, the subject of the conjunctive participle clause is overtly realized, and it may be realized as absolutive, see (9).^{28,29}

- (9) a. [diwaar gir-kar] patthar gir gae
 wall.ABS fall-CPM stones fall go.PERF.PL
 ‘The wall having fallen, stones fell.’

²⁶Note that *kamala* in (8) cannot be the subject of the matrix clause as it would have to be marked with dative then (Subbarao 2012b: 84). Note also that while Subbarao & Arora (2009) claim that the conjunctive particle *-i* in Telugu is expected to assign nominative as it derives historically from a past-tense marker, they concede that this is not the case for the conjunctive participle in Dakkhini (an Indo-Aryan language heavily influenced by Telugu). Nevertheless, backward control is possible in Dakkhini, too.

²⁷I do not know whether Hindi shows case agreement with PRO.

²⁸Legate (2008: 65) notes that the conjunctive participle clause bears perfective aspect in Hindi, hence, it should involve ergative alignment.

²⁹Languages with accusative-alignment and overt (non-identical) subjects in infinitives also exist, see, e.g., Mensching (2000) on Romance. Mensching (2000: 23) notes that in most Romance languages the subject of the infinitive bears nominative case (which, in Mensching’s 2000 analysis, is assigned by non-finite T); see also Szabolcsi (2005) on overt nominative subjects in infinitives in Hungarian, and Szabolcsi (2009) for a crosslinguistic overview.

- b. [āth baj-kar] das minaṭ hue
 eight.ABS strike-CPM ten minutes happened
 ‘It is ten minutes after eight.’
 lit. ‘Eight having struck, ten minutes occurred.’

To summarize, none of the four case studies discussed in Legate (2008) provides a conclusive argument based on the hypothesis that non-finite T is unable to assign absolutive case.³⁰ The facts from Niuean are either irrelevant or speak against the hypothesis (depending on the status of subjunctive clauses in Niuean). Legate’s (2008) argument from Enga is based on the arguably wrong assumption that PRO does not bear case. And both Hindi and Warlpiri even show evidence in favor of non-finite T being able to assign absolutive case in form of overtly realized absolutive subjects in intransitive infinitives and/or absolutive case agreement with PRO. This means that an analysis of these languages in terms of split-absolutive is not enforced. A more traditional treatment, according to which T assigns absolutive to both intransitive subjects and direct objects is tenable, and to be preferred for reasons of simplicity.³¹

It is perhaps worth mentioning that the idea of split-absolutive opens up the possibility of there being “split-nominative” languages (see footnote 37), i.e., languages with tripartite alignment where nominative and ergative are syncretic. Assuming that non-finite T cannot assign case, one would expect such languages to allow for nominative subjects in transitive infinitives but not in intransitive infinitives.

Finally note that if non-finite T is able to assign case, then the difference between overt and non-overt realization of the subject of a non-finite clause must be conditioned by factors other than case (cf. footnote 24). Although I cannot discuss here what exactly these conditions are, they possibly relate to the presence of a sufficiently “strong” head in the vicinity of the overtly realized argument (cf. also the proposals presented in McFadden 2004 and Landau 2004, 2006). This may open up another possible avenue to investigate the concept of strength in syntax (see Müller 2019).

³⁰As far as I can tell, Aldridge (2004, 2006, 2008) does not offer any substantially new perspective on this discussion (but recall the caveat in footnote 3).

³¹To be clear, all this is not to say that a split-absolutive analysis of these languages has been shown to be impossible; the claim here is merely that the arguments for split-absolutive brought forward by Legate (2006, 2008) are not decisive.

3. Coon et al.'s (2014) argument

In their discussion of Mayan, Coon et al. (2014) adopt the idea of split-absolutive. In particular, they hypothesize that some Mayan languages are genuinely ergative (“high absolutive”) while others are split-absolutive (“low absolutive”). Coon et al. (2014: 194) call this the “absolutive parameter”.

Mayan languages are strictly head-marking. Transitive subjects of finite clauses trigger ergative agreement on the verb while intransitive subjects and direct objects of finite transitive verbs trigger absolutive agreement. Therefore, the following discussion requires a slight change in perspective. In particular, case enters the picture in a more indirect way by the assumption that agreement in Mayan is intimately connected to case (the assumption in Coon et al. 2014).

3.1. Non-finite clauses

The argument for split absolutive in Mayan put forward by Coon et al. (2014) is, in essence, the same as the one discussed in §2.5 above. On the assumption that non-finite clauses (nominalizations in Mayan) do not have a T head with case-assigning capacity, the split-absolutive hypothesis predicts that objects of low-absolutive languages should be able to participate in absolutive agreement in non-finite clauses (because they receive structural case from *v*) while objects of high-absolutive languages should not (as they depend on T for case). Subjects of intransitive non-finite clauses should not be able show absolutive agreement in either high-absolutive or low-absolutive languages (again, because they receive their case from T).

These predictions are borne out.³² (10a,b) illustrate the contrast between absolutive agreement with a direct object in finite clauses vs. the unavailability of such agreement in embedded non-finite clauses (under progressive aspect) in the high-absolutive language Q’anjob’al (Coon et al. 2014: 197).

- (10) a. Max hin-laq’ naq winaq.
 ASP 1ERG-hug CLF man
 ‘I hugged the man.’

³²The high-absolutive language Kaqchikel shows a exceptional pattern in non-finite clauses; see Imanishi (2020) for discussion.

- b. *Lanan [hin-laq' naq winaq].
 PROG 1ERG-hug CLF man
 'I am hugging the man.'
- c. Lanan [ha-way-i].
 PROG 2ERG-sleep-ITV
 'You are sleeping.'
- (11) a. Max-ach y-il-a'.
 ASP-2ABS 3ERG-see-TV
 'She saw you.'
- b. Max-ach oq'-i.
 ASP-2ABS cry-ITV
 'You cried.'

Note that in high absolutive languages, absolutive agreement shows up on T, marked by aspect (hence the notion “high”). As absolutive agreement with third person is null in Mayan, it is not perceivable in (10a,b) (cf. (11a,b), Coon et al. 2014: 190). (10c) shows that the subject of a non-finite intransitive predicate exceptionally triggers ergative agreement. Here, absolutive agreement is impossible. The analysis is that ergative case is assigned to the subject by the nominalizer that is assumed to be present in non-finite clauses in Mayan.³³

In contrast, as (12a) shows, absolutive agreement with the direct object of a non-finite transitive clause is possible in Chol, a low-absolutive language (Coon et al. 2014: 203). In low-absolutive languages, absolutive agreement shows up on the verbal root (hence the notion “low”). Finally, subjects of non-finite intransitive clauses again resort to ergative agreement (12b), as in high-absolutive languages.

- (12) a. Choñkol [k-mek'-ety].
 PROG 1ERG-hug-2ABS
 'I am hugging you.'
- b. Choñkol [k-ts'äm-el].
 PROG 1ERG-bathe-NML
 'I am bathing.'

³³Often, the nominalizer is not overtly realized in these languages. Note that ergative and genitive, the typical case assigned by nouns, are syncretic in Mayan.

Taking the arguments for non-finite T as a case assigner from section 2.5.3 serious, the question arises how the above observations may be interpreted. One possibility is that non-finite clauses in Mayan lack T entirely, which is what Coon et al. (2014: 195) seem to assume.

Alternatively, one may challenge the view that low-absolutive languages involve split-absolutive. Under this view, finite and non-finite clauses contain a T-head that may assign absolutive case in high-absolutive and low-absolutive languages. What requires an explanation, then, is a) the absence of absolutive agreement in non-finite intransitive clauses in Mayan generally, and b) the contrast between absolutive agreement with direct objects in non-finite transitive clauses in low-absolutive languages on the one hand and the impossibility thereof in high-absolutive languages on the other hand. In what follows, I argue that such an explanation is available. The upshot is that a split-absolutive analysis of low-absolutive languages in Mayan is not enforced.

3.2. Reconstructing split-absolutive in Mayan

The idea is based on the observation that in high-absolutive languages absolutive agreement must show up on T. Coon et al. (2014: 188) assume that in this case the agreement morpheme is a clitic. Suppose now that absolutive case assignment implies agreement with T (i.e., cliticization in a high-absolutive language). If T is null, as in non-finite structures, cliticization, which needs an overt host, is then impossible. Consequently, although non-finite T, in principle, has the capacity to assign case, effective case assignment leads to a crash of the derivation in non-finite clauses, for direct objects and intransitive subjects alike (due to failure of cliticization). On the other hand, if T does not assign absolutive, and if case is not assigned by another head, then the case filter will rule out these structures in high-absolutive languages. In particular, while a subject may get ergative from the nominalizer instead, an object may not, presumably due to locality.³⁴

³⁴The present proposal was anticipated by a reviewer of Coon et al. (2014). As a reaction, Coon et al. (2014: 196-197) point out that (10b) is ungrammatical although “there are no 3rd person absolutive morphemes in Mayan”. And if there is no absolutive agreement clitic for third person, then there cannot be any problem for cliticization, so their argument. However, the assumption that there is no exponent for third person absolutive agreement cannot be granted. Quite on the contrary, realizational morphological theories usually assume that there always is an elsewhere exponent, typically null, which is inserted if no other exponent is available. And

In contrast, low-absolutive languages do not require cliticization on T. There, the absolutive exponent shows up low, on the verbal root. Since absolutive agreement, and thus absolutive case assignment, do not depend on the overtness of T, they may both apply in non-finite clauses, too.³⁵

Summarizing, the analysis is quite simple. The two types of Mayan languages (high-absolutive and low-absolutive) have the same underlying system of case assignment. They merely differ on the surface with respect to a requirement on the realization of absolutive agreement. This leads to a difference in behavior in non-finite clauses, where T is null. Therefore, in order to derive the agreement patterns of Mayan non-finite clauses no reference to split-absolutive is necessary.

4. Goddard's (1982) argument

I now turn to what, in my view, is the only decisive argument in the literature for split-absolutive (see Legate 2008: 74-81; again, cf. also Müller 2024). Goddard (1982), who deals with various Pama-Nyungan languages, distinguishes systems with (overt) tripartite case marking and systems without. The former show a tripartite system at least for some subclass of nominals. In Diyari, for instance, derived duals, plural common nouns, and singular first and second pronouns, among others, form such subclasses, but not underived duals or singular common nouns (Goddard 1982: 170).

To illustrate, the non-derived dual *yula* in (13) is unmarked (nominative) although it shows up as the subject of a transitive verb. That abstract ergative is assigned to this position becomes obvious when a second person singular pronoun shows up there.³⁶ In other words, nominative and ergative are syncretic for non-derived duals.³⁷ Similarly, nominative and accusative are syncretic for the singular common noun *kiṅtala* 'dog' in (13). The abstract

the elsewhere exponent, if it stands for a clitic, imposes the same requirements on cliticization as any other clitic.

³⁵The lack of absolutive agreement with intransitive subjects of non-finite clauses in low-absolutive languages is a consequence of the capacity of the nominalizer to assign ergative, combined with some assumption about case resolution in a situation where more than one case is assigned, see section 2.5.1.

³⁶As the subject of an intransitive verb, the latter pronoun would surface as *yini* '2SG.NOM'.

³⁷Accordingly, one might say that Diyari exhibits split-nominative.

accusative emerges morphologically when a derived dual shows up in direct object position.

- (13) *yula /yundu* *kiṅtala /kiṅtala-wula-ṅa* *ṅanda-ṅa* *wara-yi*
 2DU 2SG.ERG dog dog-DU-ACC hit-PART AUX-PRES
 ‘You two/you (sg) hit the dog/two dogs.’

Moreover, Goddard (1982: 172-175) observes that assuming a tripartite system allows to formulate the rule of case agreement in Diyari in a maximally general manner. Diyari shows, for instance, case agreement between a (pronominal) determiner and the noun associated with it. Nevertheless, the common noun *putu* ‘thing’ in object position in (14) does not exhibit accusative case marking although the determiner *ṅiṅa* ‘3SG.NF.ACC’ does. The assumption that the noun bears abstract accusative, syncretic with unmarked nominative, allows to maintain the agreement rule in full generality.

- (14) *ṅulu* *pulaṅa* [*ṅiṅa* *putu*] *yiṅki-ṅa* *wara-yi*
 3SG.NF.ERG 3DU.ACC 3SG.NF.ACC thing give-PART AUX-PRES
 ‘He gave them that thing.’

Goddard (1982: 178-181) also discusses a language without overtly tripartite system, Yankunytjatjara. At first sight Yankunytjatjara exhibits a person based split ergative system: ergative alignment with common nouns vs. accusative alignment with pronouns. But again, facts from case agreement suggest an underlyingly tripartite system. For instance, phrases with inalienable possession, a construction that typically shows case agreement in the language, may involve an unmarked possessed common noun with an accusative marked pronominal possessor. Instead of analyzing the common noun as bearing absolutive, an analysis that takes it to bear accusative (syncretic with nominative) allows a uniform treatment of case agreement.³⁸

In face of these arguments, it seems to me that one can hardly deny that a tripartite analysis (involving split-absolutive and split nominative) for Pama-Nyungan languages (at least those discussed in detail by Goddard 1982 and Legate 2008: 74-81) is well motivated.

³⁸Goddard (1982: 179) also suggests that “it may be possible to adapt” this type of argument to Warlpiri agreement clitics (cf. footnote 8 above). However, he does not specify the details of this adaption. Neither does Legate (2008: 75, footnote 33), who takes up Goddard’s (1982) suggestion.

5. Conclusion

To conclude, the arguments put forward in the literature in favor of a split-absolutive analysis for various ergative languages (Warlpiri, Enga, Hindi, Niuean, and low-absolutive Mayan languages such as Chol) are not conclusive, the arguments for the Pama-Nyungan languages provided in Goddard (1982) and Legate (2008) being the exception. While I have not shown that an analysis of these languages in terms of split-absolutive is incompatible with the facts, I would like to contend that the burden of proof lies with those who claim that the split-absolutive analysis is correct. Denying this would mean that one should also be ready to accept the claim that, e.g., German is split-nominative, which has never been made to my knowledge, and for good reason. Thus, in the meanwhile I take it that a uniform analysis of ergative languages (with absolutive being assigned by T to both intransitive subjects and direct objects) is to be preferred. As Chomsky (2001: 2) puts it: “In the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances.”

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Russian nominal declension revisited

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1. Introduction

Directional syncretism is a type of syncretism where it seems that one member of the syncretic pair has taken over the form of the other member (Carstairs 1987, Stump 2001). There are two basic strategies in the literature to derive this phenomenon. In paradigm-based approaches of morphology it is generally handled by means of directional rules, most commonly implemented as rules of referral (Zwicky 1985), that for a given context instruct the system to use the form that it would output for another context (Stump 1993, 2001, Baerman 2004, Baerman et al. 2005). In syntacticocentric theories, like Distributed Morphology (DM, Halle & Marantz 1993, 1994), it is treated as the result of the manipulation of feature bundles. Commonly, this is achieved by impoverishment rules that delete features from a given feature bundle thereby leading to the insertion of a less-specific more underspecified exponent, as so-called ‘retreat to the general case’ (Bonet 1991, Noyer 1998, Bobaljik 2002). Directional rules are less restricted and therefore more powerful than standard impoverishment rules. They can effectively equate any two cells in a paradigm whereas standard impoverishment only deletes features. All else being equal, an approach that eschews these rules is therefore preferred because it is more restrictive (Noyer 1998, Bobaljik 2002). It has, however, been argued that cases of bidirectional syncretism, where there are two take-overs in opposite directions, cannot be handled by impoverishment and underspecification, and therefore require the power of directional rules (Stump 2001, Baerman 2004, Baerman et al. 2005, Spencer 2019).

*Many thanks to Gereon, who through his work on syncretism and inflection classes (I recall ICE-T being a hot topic back in 2007) sparked in me an enduring interest in morphological systems and whose various different approaches to the topic have shaped my thinking about morphology. Herzlichen Glückwunsch zum Geburtstag!

One much discussed instance of bidirectional syncretism is found in the Russian nominal declension, where the accusative takes the form of the nominative with inanimate nouns but borrows the form of the genitive with animates. In his DM analysis of Russian declension, Müller (2004a) indeed adopts rules of referral to account for this particular syncretism pattern, thereby lending support to these claims.

Recently, however, Hein & Murphy (2023a,b) have shown that bidirectional syncretisms can be handled by impoverishment, if one adopts a proposal by Noyer (1998). He suggests that impoverishment may trigger so-called redundancy rules which insert the unmarked value of the deleted feature if the latter has had the marked value. Crucially, they do not insert marked features, or re-insert unmarked features once deleted. This allows impoverishment to have two outcomes: deletion of a feature or change of a marked into an unmarked feature. As discussed by Hein & Murphy (2023a,b) this can capture bidirectional syncretisms while retaining at least some of the original restrictiveness of impoverishment. While directional rules can effect any feature change, impoverishment plus redundancy rules may only lead to a change towards a lesser marked feature combination.

In what follows, I will revisit the DM analysis of Russian presented in Müller (2004a,b) and apply Hein & Murphy's rationale to the bidirectional syncretisms showing that rules of referral are not required. This will allow for considerable changes in the analysis that avoid some controversial issues of the original analysis. In a second step, as Noyer-type feature-changing is required to capture bidirectional syncretisms in DM anyway, I will demonstrate that by exploiting it to the fullest it is possible to resolve all syncretisms and a modularity issue pertaining to the encoding of inflection class as morpho-syntactic features.

2. Müller's (2004a,b) DM analysis of the Russian declension

Russian nominal inflection shows a number of syncretisms both within and across inflection classes. For this reason it has early on and recurrently attracted the attention of researchers interested in this phenomenon (e.g. Jakobson 1962, Comrie 1991, Corbett & Fraser 1993, Stump 1993, 2001, Aronoff 1994, Halle 1994, Wiese 2004, Müller 2004a,b, Caha 2009, 2021). Focussing on the core system one can distinguish four inflection classes

(Karcevskij 1932, Timberlake 2004). Although these clearly correlate with gender, none of the two can be entirely predicted by the other (Privizentseva 2023). Generally, class I contains only masculine nouns, while class III contains only feminine nouns (abstracting away from the very few exceptions). All and only neuter nouns are found in class IV. Class II, though mainly made up of feminine nouns, also contains some masculines. One salient feature of Russian nominal inflection is the differential marking of the accusative in the plural and in class I singular. While it takes the form of the nominative for inanimates, it borrows the form of the genitive for nouns with animate referents (indicated by the arrows). This pattern constitutes an instance of convergent bidirectional syncretism (Stump 1993, 2001, Baerman 2004). In this paper, the inanimate form will always be presented first, i.e. on the left, and the animate form last, i.e. on the right. Abstracting away from regular morphophonological alternations (see Müller 2004a, §2) the inflectional suffixes and two representative stems for each inflection class are given in (1). Note that this representation diverges from the one in Müller (2004a,b): following McCreight & Chvany (1991), Johnston (1996), Caha (2009) I will use the term ‘prepositional’ instead of ‘locative’ for the case that appears after prepositions and place it between genitive and dative in the sequence of cases.

(1) *Russian nominal inflection*

	I	II	III	IV
	<i>zavod</i> ‘factory’	<i>komnat</i> ‘room’	<i>myš’j</i> ‘mouse’	<i>mest</i> ‘place’
	<i>žitel</i> ‘inhabitant’	<i>mužč’in</i> ‘man’	<i>doč’j</i> ‘daughter’	<i>sušč’estv</i> ‘creature’
Singular				
NOMINATIVE	-∅	-a	-∅	-o
ACCUSATIVE	-∅/-a	-u	-∅	-o
GENITIVE	-a	-i	-i	-a
PREPOSITIONAL	-e	-e	-i	-e
DATIVE	-u	-e	-i	-u
INSTRUMENTAL	-om	-oj	-ju	-om
Plural				
NOMINATIVE	-i	-i	-i	-a
ACCUSATIVE	-i/-ov	-i/-∅	-i/ov	-i/-∅
GENITIVE	-ov	-∅	-ov	-∅
PREPOSITIONAL	-ax	-ax	-ax	-ax
DATIVE	-am	-am	-am	-am
INSTRUMENTAL	-ami	-ami	-ami	-ami

In DM, syncretism is typically resolved by decomposing inflectional categories into smaller sub-features (Jakobson 1962, Bierwisch 1967) and underspecification of inflectional markers. Following Bierwisch (1967) and Wiese (1999, 2001), Müller (2004a,b) adopts three syntactically-based binary features, [\pm sub(ject)], [\pm gov(erned)] and [\pm obl(ique)], for the decomposition of Russian cases in (2). Müller (2004a,b) argues that the same approach is available for transparadigmatic (i.e. class) syncretism by decomposing inflection class features (also see Alexiadou & Müller 2008). He suggests the decomposition into the purely formal sub-features [$\pm\alpha$] and [$\pm\beta$] in (3).

(2) <i>Case decomposition</i>	(3) <i>Class decomposition</i>
NOM [+sub, -gov, -obl]	I [+ α , - β]
ACC [-sub, +gov, -obl]	II [- α , + β]
GEN [+sub, +gov, +obl]	III [- α , - β]
PREP [-sub, -gov, +obl]	IV [+ α , + β]
DAT [-sub, +gov, +obl]	
INS [+sub, -gov, +obl]	

With these decompositions in place, his vocabulary entries for the inflectional suffixes in the singular are given in (4).

(4) <i>VIs for the singular ordered by specificity</i> (Müller 2004b)
a. <i>-oj</i> \leftrightarrow [- α , + β , +sub -gov, +obl]
b. <i>-ju</i> \leftrightarrow [- α , - β , +sub -gov, +obl]
c. <i>-e₁</i> \leftrightarrow [- α , + β , -sub, +obl]
d. <i>-o</i> \leftrightarrow [+ α , + β , -obl]
e. <i>-om</i> \leftrightarrow [+ α , +sub, -gov, +obl]
f. <i>-e₂</i> \leftrightarrow [+ α , -sub, -gov, +obl]
g. <i>-\emptyset₁</i> \leftrightarrow [- β , -obl]
h. <i>-i₁</i> \leftrightarrow [- α , +obl]
i. <i>-u</i> \leftrightarrow [-sub, +gov]
j. <i>-a₁</i> \leftrightarrow []

Here, the specificity of markers cannot solely be determined by the number of features they realise. To see this, consider the markers *-\emptyset* and *-u* for instance. Both are specified for two features each and therefore equally specific. This leads to an indeterminacy in the accusative (singular) of classes I and III,

where both markers realize a subset of the features of the insertion context. In order to resolve this, Müller (2004a,b) has to supplement the Subset Principle by the hierarchy of feature classes in (5).

(5) *Hierarchy of feature classes*

INFLECTION CLASS \prec CASE

When two markers compete for insertion, this hierarchy effectively prefers the one that realises more features of a higher feature class independent of whether the other one realizes more features in total. Thus, if one marker realizes more inflection class features, e.g. $-\emptyset$ in (4g), but the other more case features, e.g. $-u$ in (4i), then the former will be preferred over the latter.

Turning to the plural, Müller provides the vocabulary entries in (6).

(6) *VIs for the plural ordered by specificity* (Müller 2004b)

- a. $-ov \leftrightarrow [+pl, -\beta, +sub, +gov, +obl]$
- b. $-\emptyset_2 \leftrightarrow [+pl, +\beta, +sub, +gov, +obl]$
- c. $-i_2 \leftrightarrow [+pl, \neg(+\alpha, +\beta), -obl]$
- d. $-ami \leftrightarrow [+pl, +sub, -gov, +obl]$
- e. $-am \leftrightarrow [+pl, -sub, +gov, +obl]$
- f. $-ax \leftrightarrow [+pl, -gov, +obl]$
- g. $-a_2 \leftrightarrow [+pl, -obl]$

As all of them are equipped with a $[+pl]$ feature, they are restricted to plural contexts and hence never compete with any of the markers in (4) in singular contexts (Müller 2004b: fn. 15). Therefore, none of the number syncretisms come out as systematic syncretism under this analysis (Müller 2004a: fn. 27). Müller (2004a: 198) tentatively links this to the difference between features that, like number, carry semantic information, and features like case and inflection class, which do not.

Note further that the entry for the marker $-i$ (6c) makes reference to the complement of class IV, which Müller (2004a,b) following Zwicky (1970) assumes to constitute a natural class itself.

At this point, the analysis derives the accusative in class I singular and in the plural of all classes as consistently being syncretic with the nominative ($-\emptyset$ in I.SG; $-i$ in I.PL, II.PL, III.PL; and $-a$ in IV.PL). In order to account for the bidirectional syncretism in the plural and in class I singular, i.e. the take-over

of the genitive forms *-a*, *-∅*, and *-ov* into the accusative with animate nouns, Müller (2004a) postulates the two rules of referral in (7) which state that in the context of an animate noun, the form I that the system determines for the accusative is replaced by the one that it outputs for the genitive.

(7) *Rules of referral* (Müller 2004a: 211, 216)

- a. $I_{[+\alpha, -\beta], [-\text{sub}, +\text{gov}, -\text{obl}]} \rightarrow I_{[+\alpha, -\beta], [+ \text{sub}, +\text{gov}, +\text{obl}]} / [+ \text{animate}]$
- b. $I_{[+\text{pl}], [-\text{sub}, +\text{gov}, -\text{obl}]} \rightarrow I_{[+\text{pl}], [+ \text{sub}, +\text{gov}, +\text{obl}]} / [+ \text{animate}]$

As already mentioned in section 1, the use of this type of rule undermines DM's virtue of being more restrictive than competing approaches. A slightly different take is presented in Müller (2004b) where, with reference to Noyer (1998), he proposes the two feature-changing rules in (8) which turn an underlying accusative feature combination into a genitive one.

(8) *Feature-changing rules* (Müller 2004b: 369)

- a. $[-\text{sub}, -\text{obl}] \rightarrow [+ \text{sub}, +\text{obl}] / [+ \alpha, -\beta, +\text{anim}]$
- b. $[-\text{sub}, -\text{obj}] \rightarrow [+ \text{sub}, +\text{obl}] / [+ \text{pl}, +\text{anim}]$

While this gives the impression of avoiding the use of rules of referral, this is not actually the case. In Noyer's original proposal, the feature-changing effect of impoverishment is restricted to be markedness-decreasing (also see Harbour 2003). For him, this follows from the fact that feature change is the result of impoverishment followed by application of persistent redundancy rules which can only supply the unmarked feature. As discussed in Hein & Murphy (2023a,b), it is this constraint that maintains at least some of the original restrictive virtue of impoverishment rules. In order to achieve the same result in an implementation as direct feature-changing (or re-write) rules, such as (8), one would have to impose a markedness restriction that requires features to only be changed into their less marked counterparts. The rules in (8), however, do not adhere to this restriction. As Hein & Murphy (2023a,b) argue, markedness of sub-features is determined contextually in relation to other sub-features in a feature bundle. This means that the combination of all subfeatures resulting from a feature change must constitute a less marked category in order to obey the abovementioned markedness restriction. Following work on the case hierarchy in Russian (Blake 2001, Caha 2009), nominative is

the most unmarked case, followed by the accusative. The genitive is in turn more marked than both nominative and accusative. Hence, the feature change effected by (8) is markedness-increasing because it turns an accusative into a genitive specification. As they are missing a markedness restriction, these rules are therefore equally powerful as, though perhaps conceptually different from, rules of referral like those in (7), which may effectively turn a cell in a paradigm into any other cell in that paradigm.

In the following, I will show how markedness-restricted feature-changing rules may account for the bidirectional syncretism in the Russian declension.

3. Restricted feature-change in the Russian declension

Before turning to the bidirectional syncretism, note that I adopt the decomposition of inflection classes proposed in Privizentseva (2023). In her work on semantic agreement in Russian, Privizentseva (2023) recently suggested that inflection classes in Russian arise through the interplay between the gender sub-feature $[\pm\text{fem}(\text{inine})]$, essentially replacing $[\pm\beta]$, and a formal class feature $[\pm\alpha]$ (10). Importantly, her decomposition provides the same natural classes as the one in Müller (2004a,b). The decomposition of cases I adopt is identical to the one in Müller's analysis.

Turning to the bidirectional syncretism in the plural first, recall that the accusative takes the form of the nominative for animate nouns, but that of the genitive for inanimates. These syncretisms hold independently of the actual exponents involved. It therefore constitutes a (convergent) bidirectional metasyncretism. As argued by Hein & Murphy (2023a,b), this type of syncretism is readily analysed under Noyer's view of feature-changing impoverishment. One marker has to be compatible with two cases while the other is restricted to a single case only. The latter then spreads into a neighbouring case in one environment, but not the other. This spreading is effected by changing the featural make-up of the context that is spread to (target) into that of the context that is spread from (source). Since feature-changing has to reduce markedness, in the Russian case the accusative specification on an inanimate noun has to be changed into a nominative one. As argued above, turning it into a genitive specification violates the markedness restriction. In turn, this means that the markers *-i* and *-a* appearing in the nominative have to be specified exclusively for nominative, i.e. they are not general non-oblique exponents (13k,n). The

genitive markers $-\emptyset$ and $-ov$ must then be compatible with both genitive and accusative (13m,p). The feature-changing rule can be formulated as in (9).

- (9) *Feature-changing rule* ACC.PL.INAN \rightarrow NOM.PL
 $[-\text{sub}, +\text{gov}] \rightarrow [+ \text{sub}, -\text{gov}] / [+ \text{pl}, -\text{obl}, -\text{anim}]$

Ideally, one would want to apply the same logic to the bidirectional syncretism in the singular of class I. This would mean that $-\emptyset$ is a pure nominative marker that spreads into the accusative whereas $-a$ is underspecified such that it fits both accusative and genitive. However, as we have already established based on the plural, $-a$ should be a pure nominative marker and $-\emptyset$ a genitive/accusative marker. If we underspecify both of them such that they are compatible with all three cases it becomes impossible to generate the two distributions in singular and plural.

This impasse can be resolved once a less-noted third pattern is taken into account. Stump (1993) identifies a further bidirectional syncretism, one that crosses number and case (though see Caha 2016 who argues against this being a non-accidental bidirectional syncretism). In class I, the genitive singular marker is $-a$ and the nominative plural marker is $-i$. Looking at classes II and III it seems that the genitive singular takes the form $-i$ of the nominative plural while the nominative plural borrows the form $-a$ associated with the genitive singular. This constitutes a pattern of divergent bidirectional syncretism.

- (10) *Bidirectional syncretism across number and case* (Stump 1993)

	II [- α +fem]	III [+ α +fem]	I [+ α -fem]	IV [- α -fem]
GEN.SG	-i	-i	-a	-a
NOM.PL	-i	-i	-i	-a

One way to account for this syncretism is by postulating a re-write rule that turns a genitive singular context into a nominative plural one (11).

- (11) *Feature-changing rule* GEN.SG \rightarrow NOM.PL
 $[+\text{gov}, +\text{obl}, -\text{pl}] \rightarrow [-\text{gov}, -\text{obl}, +\text{pl}] / [+ \text{sub}]$

On this view, $-a$ and $-i$ spread into the genitive singular from the nominative plural. This allows us to retain $-a$ as a pure nominative marker (underspecified

for number). I will turn to the absence of *-a* in the nominative singular and plural of class I momentarily. At this point, one might object that this change violates the markedness restriction because it involves turning a relatively less marked singular into a more marked plural configuration. Note, however, that at the same time, the change in case is markedness-reducing (from genitive to nominative). Since the changes in each dimension are in opposite directions with regard to markedness, it is a priori unclear whether the overall change is markedness-increasing or -decreasing. I would like to suggest that this indeterminacy is resolved by a hierarchy to the effect that the markedness reduction for case outweighs the markedness increase for number.¹

Since under this approach the *-a* exponent in the genitive singular is actually a nominative marker, the syncretism between genitive and accusative with animate singulars of class I is only apparent. Instead, we can derive the accusative singular form with an additional feature-changing rule that turns an accusative singular into a nominative singular context (12).

- (12) *Feature-changing rule* ACC.SG.I.ANIM → NOM.SG.I
 [−sub, +gov] → [+sub, −gov] / [−obl, −pl, +anim, +α, −fem]

The necessary specifications of the markers are then listed in (13).²

- (13) *VIs in order of specificity*
- a. *-oj* ↔ [−pl, +sub, −gov, +obl, −α, +fem]
 - b. *-ju* ↔ [−pl, +sub, −gov, +obl, +α, +fem]
 - c. *-a₁* ↔ [−pl, +sub, −gov, −obl, −α, +fem]
 - d. *-om* ↔ [−pl, +sub, −gov, +obl, −fem]

¹This is reminiscent of multidimensional scale effects in Hayu, where in case of conflict one scale outranks the other (Georgi 2019). Alternatively, one could invoke Richards' (2010) *Principle of Minimal Compliance* which has it that a violation of one constraint (e.g. DECREASE NUMBER-MARKEDNESS) is neutralized by fulfilling another (e.g. DECREASE CASE-MARKEDNESS). In contrast to the approach pursued in the main text, this option would also tolerate a feature change where markedness increases for case but decreases for number.

²The entry for *-o* in (13g) makes reference to [−masc(uline)] in addition to [−fem], thereby restricting *-o* to neuter nouns. As class IV contains all and only neuter nouns and *-o* is already restricted to that class by being specified for [−α, −fem], this seems redundant. However, it is necessary to resolve an indeterminacy between *-o* and *-a₂* in the nominative singular of that class. Alternatively, one could assume an impoverishment rule that deletes [±sub, ±gov] for non-oblique neuters. This rule receives some independent motivation from the fact that non-oblique cases are neutralised with neuters throughout the Indo-European languages.

e.	$-i_1$	\leftrightarrow	$[-\text{pl}, -\text{sub}, +\text{obl}, +\alpha, +\text{fem}]$
f.	$-e_1$	\leftrightarrow	$[-\text{pl}, -\text{sub}, +\text{obl}, -\alpha, +\text{fem}]$
g.	$-o$	\leftrightarrow	$[-\text{pl}, -\text{obl}, -\alpha, -\text{fem}, -\text{masc}]$
h.	$-ami$	\leftrightarrow	$[+\text{pl}, +\text{sub}, -\text{gov}, +\text{obl}]$
i.	$-ax$	\leftrightarrow	$[+\text{pl}, -\text{sub}, -\text{gov}, +\text{obl}]$
j.	$-am$	\leftrightarrow	$[+\text{pl}, -\text{sub}, +\text{gov}, +\text{obl}]$
k.	$-a_2$	\leftrightarrow	$[+\text{sub}, -\text{gov}, -\text{obl}, -\text{fem}]$
l.	$-e_2$	\leftrightarrow	$[-\text{sub}, -\text{gov}, +\text{obl}]$
m.	$-ov$	\leftrightarrow	$[+\text{pl}, +\text{gov}, +\alpha]$
n.	$-i_2$	\leftrightarrow	$[+\text{sub}, -\text{obl}, +\text{pl}]$
o.	$-u$	\leftrightarrow	$[-\text{pl}, +\text{gov}]$
p.	$-\emptyset$	\leftrightarrow	$[]$

In order to block $-a_2$ from appearing in the actual nominative of both numbers in class I, an additional impoverishment rule bleeds its insertion by deleting $[-\text{gov}]$ (14). This leads to the insertion of \emptyset in the singular and $-i_2$ in the plural. Since $-a_2$ does, however, appear in the nominative that is derived by the re-write rule in (11) (given in 14c) as well as in the one which is derived by the rule in (12) (given in 14d), this impoverishment rule (given in 14b) must apply before them in order to establish a counter-feeding relation. As $-a_2$ is blocked in the nominative that is derived by the rule for the plural bidirectional syncretism in (9) (given in 14a), rule (14b) must be fed by it. Now, we only need to ensure that $-u$ does not appear in the accusative singular of classes I (animate) and III. This is achieved by an impoverishment rule that deletes $[+\text{gov}]$ (14e). This rule has to apply after (12) (given in 14d) as it would otherwise bleed its application. That is, the two rules must stand in a counter-bleeding relation.

(14) *Impoverishment and feature-changing rules*

- a. $[-\text{sub}, +\text{gov}] \rightarrow [+\text{sub}, -\text{gov}] / [-\text{obl}, +\text{pl}, -\text{anim}]$
(ACC.PL \rightarrow NOM.PL with inanimates)
- b. $[-\text{gov}] \rightarrow \emptyset / [-\text{obl}, +\alpha]$ (blocks $-a_2$ in class I NOM)
- c. $[+\text{gov}, +\text{obl}, -\text{pl}] \rightarrow [-\text{gov}, -\text{obl}, +\text{pl}] / [+\text{sub}](\text{GEN.SG}\rightarrow\text{NOM.PL})$
- d. $[-\text{sub}, +\text{gov}] \rightarrow [+\text{sub}, -\text{gov}] / [-\text{obl}, -\text{pl}, +\text{anim}, +\alpha, -\text{fem}]$
(ACC.SG \rightarrow NOM.SG with class I animates)

e. [+gov] → ∅ / [-obl, +α, -pl] (blocks -u in class I & III ACC.SG)

The effect that the rules have on insertion is given in (15). Downarrows indicate a rule application and rightarrows Vocabulary Insertion.

(15) *Result of morphological rules and vocabulary insertion*

	II [-α +fem]	III [+α +fem]	I [+α -fem]	IV [-α -fem]
NOM [+s-g-o]	-a	[+s-g-o] ↓ (14b) [+s -o]⇒∅	[+s-g-o] ↓ (14b) [+s -o]⇒∅	-o
ACC [-s+g-o]	-u	[-s+g-o] ↓ (14e) [-s -o]⇒∅	[-s+g-o] ↓ (14e) [-s -o]⇒∅	[-s+g-o] ↓ (14d) [+s-g-o]⇒-a
GEN [+s+g+o]	[+s+g+o-pl] ↓ (14c) [+s-g-o+pl]⇒-i	[+s+g+o-pl] ↓ (14c) [+s-g-o+pl]⇒-i	[+s+g+o-pl] ↓ (14c) [+s-g-o+pl]⇒-a	[+s+g+o-pl] ↓ (14c) [+s-g-o+pl]⇒-a
PREP [-s-g+o]	-e	-i	-e	-e
DAT [-s+g+o]	-e	-i	-u	-u
INS [+s-g+o]	-oj	-ju	-om	-om
NOM [+s-g-o]	-i	[+s-g-o] ↓ (14b) [+s -o]⇒-i	[+s-g-o] ↓ (14b) [+s -o]⇒-i	-a
ACC [-s+g-o]	[-s+g-o] ↓ (14a) [+s-g-o]⇒-i	[-s+g-o] ↓ (14a) [+s-g-o] ↓ (14b) [+s -o]⇒-i	[-s+g-o] ↓ (14a) [+s-g-o] ↓ (14b) [+s -o]⇒-i	[-s+g-o] ↓ (14a) [+s-g-o]⇒-a
GEN [+s+g+o]	-∅	-ov	-ov	-∅
PREP [-s-g+o]	-ax	-ax	-ax	-ax
DAT [-s+g+o]	-am	-am	-am	-am
INS [+s-g+o]	-ami	-ami	-ami	-ami

Note that this analysis exhibits one fewer homophony than the one in Müller (2004a,b): there are two -a exponents, two -i exponents and two -e exponents but only one ∅ exponent. It adheres to the markedness restriction on feature-change suggested by Noyer (1998). Furthermore, it does not

make reference to complements of inflection classes, which I take to be a welcome result.³ In addition, it does not treat cross-number syncretism as *prima facie* non-systematic. This assumption was linked to the semantic import of number as opposed to case and inflection class. However, note that observations about the relative typological rarity of certain syncretisms within the semantically contentful categories of number and person have been explained by the underlying structure of these categories (e.g. Ackema & Neeleman 2013, Smith et al. 2019). This explanation only holds if at least some of the syncretisms across number and person are systematic, in line with the current analysis. The resolution of cross-number syncretisms comes at the cost of missing some trans-paradigmatic and cross-case syncretisms. That is, the *-a* in class II nominative singular is different from all other occurrences of *-a*, the *-i* in class III dative and prepositional is distinct from other occurrences of *-i*, and the same is true for *-e* in class II dative and prepositional. The latter, however, might actually be a welcome result. As mentioned by Privizentseva (2023), the *-e* in class II is underlyingly stressed while the other *-e*-markers are not. Assuming that such idiosyncratic stress-properties must be part of the lexical entry of an element, there must independently be two homophonous entries for *-e* in the lexicon. Lastly, the specificity of markers can be determined without reference to a hierarchy of feature classes. It is solely based on the number of features that they realize.

4. Restricted feature-change all the way through

Since the power of markedness-restricted feature-changing rules is empirically necessary to account for bidirectional syncretisms anyway (Hein & Murphy 2023a,b), in this section I will fully embrace them as a tool in the derivation of any syncretism.

As mentioned before, the current analysis does not resolve all syncretisms.

³As Müller (2004a: fn. 20) remarks, by deMorgan's law, they are equivalent to a disjunction ($[\neg(+\alpha, +\beta)] = [-\alpha] \vee [-\beta]$), which raise suspicion as they collapse two separate entries, one for each disjunct. Alternatively, maintaining the view that natural classes can only be defined by (sets of) sub-features, the specification of *-i* in (6c) is tantamount to adding a third feature $[\pm\gamma]$ to the decomposition which singles out a natural class of I, II and III to the exclusion of IV. This third sub-feature, however, is not justified by the four inflection classes. These issues might ultimately not be regarded as fatal, but they are reason enough to avoid negation in vocabulary entries if possible.

In particular, it was necessary to postulate two entries for *-a*, *-e* and *-i*. In the case of *-e*, it is interesting to note that it has the distribution of a unidirectional syncretism. Ignoring class III for the moment, *-e* seems to be a general prepositional case marker in the singular that spreads into the dative in class II. As we have already seen, *-a* in the genitive singular can be understood to be a nominative marker (as is evident from class II nominative singular and class IV nominative plural) that spreads into the genitive and is blocked from appearing (indicated by strikethrough) in the actual nominative singular of classes I and IV. In terms of markedness-restricted feature-change, this means that the relevant genitive contexts are turned into nominative contexts. Similarly, one can conceive of *-u* as an accusative marker (as observed in class II) that is blocked in classes I and IV but spreads into the dative in these classes before the blocking takes effect. In the current system, this entails that the relevant dative contexts are turned into accusative ones. This change crucially has to counterfeed whichever mechanism is responsible for the blocking of *-u* in the accusative. These take-overs are presented in (16).

(16) *Directional patterns of -a, -e, -i and -u*

	II [-α +fem]	III [+α +fem]	I [+α -fem]	IV [-α -fem]
NOM.PL	-i	-i	-i	-a
NOM	-a	-a ^{-∅}	-a ^{-∅}	-a ^{-∅}
ACC	-u	-u ^{-∅}	-u ^{-∅/-a}	-u ^{-∅}
GEN	-i	-i	-a	-a
PREP	-e	-i	-e	-e
DAT	-e	-i	-u	-u

Following this line of thought with regard to the distribution of *-i*, it seems like in class III a dative is turned into a prepositional context, which is in turn altered into a genitive one, and as assumed before, genitive singular contexts in all classes are turned into nominative plural ones. In such a system, *-i* can be a pure nominative (plural) marker that spreads into genitive, dative and prepositional singular in class III because these contexts are all rewritten to eventually become a nominative plural.

In fact, one can generalize this approach to all exponents such that each one is specified for that case which is the most unmarked one of all cases

in which the exponent appears in the paradigm. For all more marked cases that the marker appears in there is then a feature-changing rule that alters the underlying feature context such that the originally expected marker is bled and the observed marker is fed. This approach is very much in the spirit of Halle & Marantz's (2008) analysis of Polish declension, where each marker encodes a single case and a (traditional) impoverishment rule may bleed it. This then leads to the insertion of the elsewhere marker *-u* (retreat to the general case). None of the exponents directly realizes a class feature, rather class features on a noun are only employed to determine which impoverishments are triggered.⁴ Like in their approach, in the current analysis no vocabulary entry needs to make reference to the class feature $[\pm\alpha]$. It is only used to trigger impoverishment and feature-changing rules. The vocabulary entries for the suffixes are only specified for number, case and sometimes also gender (17).

(17) *VIs for Russian*

- a. *-o* ↔ [-pl, +sub, -gov, -obl, -masc, -fem]
- b. *-oj* ↔ [-pl, +sub, -gov, +obl, +fem]
- c. *-om* ↔ [-pl, +sub, -gov, +obl, -fem]
- d. *-ju* ↔ [-pl, +sub, -gov, +obl]
- e. *-ami* ↔ [+pl, +sub, -gov, +obl]
- f. *-ax* ↔ [+pl, -sub, -gov, +obl]
- g. *-am* ↔ [+pl, -sub, +gov, +obl]
- h. *-ov* ↔ [+pl, -sub, +gov, -obl]
- i. *-e* ↔ [-pl, -sub, -gov, +obl]
- j. *-u* ↔ [-pl, -sub, +gov, -obl]
- k. *-a* ↔ [-pl, +sub, -gov, -obl]
- l. *-i* ↔ [+pl, +sub, -obl]
- m. $-\emptyset$ ↔ []

The difference to Halle & Marantz's (2008) analysis lies in the fact that rule application does not necessarily lead to the insertion of the elsewhere exponent but may also result in the occurrence of a marker for a less marked case.

⁴Strictly speaking, for Halle & Marantz (2008) each impoverishment rule has its own triggering-feature. A noun in Polish may then bear several of these triggering-features, with some implicational relations holding over possible combinations thereof. Thus, a given noun's inflection class is not encoded by some class feature like $[\pm\alpha]$ but rather by the set of impoverishment-triggering features that this noun has.

Moreover, the rules in the current approach crucially interact in several ways. The feature-changing rules are given (18) in their order of application.

(18) *Impoverishment and feature-changing rules*

- a. $[-\text{sub}, +\text{gov}] \rightarrow [+ \text{sub}, -\text{gov}] / [+ \text{pl}, -\text{obl}, +\text{anim}]$
(ACC.PL \rightarrow NOM.PL with animates)
- b. $[-\text{gov}] \rightarrow \emptyset / [-\text{obl}, +\alpha]$ (blocks *-a* in class I & III NOM)
- c. $[-\text{sub}, +\text{gov}] \rightarrow [+ \text{sub}, -\text{gov}] / [-\text{pl}, -\text{obl}, -\text{anim}, +\alpha, -\text{fem}]$
(ACC.SG \rightarrow NOM.SG with class I inanimates)
- d. $[+\text{gov}] \rightarrow \emptyset / [-\text{pl}, -\text{obl}, +\alpha]$ (blocks *-u* in class I & III ACC.SG)
- e. $[-\text{sub}, +\text{gov}] \rightarrow [+ \text{sub}, -\text{gov}] / [-\text{pl}, -\text{obl}, -\text{fem}]$
(ACC.SG \rightarrow NOM.SG in class IV)
- f. $[+\text{obl}] \rightarrow [-\text{obl}] / [-\text{pl}, -\text{sub}, +\text{gov}, -\text{fem}]$
(DAT.SG \rightarrow ACC.SG in class I & IV)
- g. $[+\text{gov}] \rightarrow [-\text{gov}] / [-\text{pl}, -\text{sub}, +\text{obl}]$ (DAT.SG \rightarrow PREP.SG)
- h. $[-\text{sub}, -\text{gov}] \rightarrow [+ \text{sub}, +\text{gov}] / [-\text{pl}, +\text{obl}, +\alpha, +\text{fem}]$
(PREP.SG \rightarrow GEN.SG in class III)
- i. $[+\text{gov}, +\text{obl}, -\text{pl}] \rightarrow [-\text{gov}, -\text{obl}, +\text{pl}] / [+ \text{sub}]$
(GEN.SG \rightarrow NOM.PL)
- j. $[-\text{masc}] \rightarrow \emptyset / [+ \text{pl}, +\text{sub}, -\text{gov}, -\text{obl}, -\alpha, -\text{fem}]$
(blocks *-o* in class IV GEN.SG (derived NOM.SG))
- k. $[+\text{pl}] \rightarrow [-\text{pl}] / [+ \text{sub}, -\text{gov}, -\text{obl}, -\text{fem}]$
(blocks *-i* in class IV NOM.PL)
- l. $[+\text{sub}, +\text{obl}] \rightarrow [-\text{sub}, -\text{obl}] / [+ \text{pl}, +\text{gov}]$ (GEN.PL \rightarrow ACC.PL)
- m. $[+\text{gov}] \rightarrow \emptyset / [-\alpha, -\text{obl}, +\text{pl}]$
(blocks *-ov* in class II & IV ACC.PL)
- n. $[+\text{fem}] \rightarrow \emptyset / [+ \text{sub}, -\text{gov}, +\text{obl}, +\alpha]$
(blocks *-oj* in class III INS.SG)

The effects of these rules on insertion are visualized in (19) and (20).⁵

(19) *Effects of the rules in the singular*

	II [-α +fem]	III [+α +fem]	I [+α -fem]	IV [-α -fem]
NOM [+s-g-o]	-a	[+s-g-o] ↓ (18b) [+s -o]⇒-∅	[+s-g-o] ↓ (18b) [+s -o]⇒-∅	-o
ACC [-s+g-o]	-u	[-s+g-o] ↓ (18d) [-s -o]⇒-∅	[-s+g-o] ↓ (18d) [-s -o]⇒-∅	[-s+g-o] ↓ (18c) ↓ (18e) [+s-g-o]⇒-a
GEN [+s+g+o]	[+s+g+o-pl] ↓ (18i) [+s-g-o+pl]⇒-i	[+s+g+o-pl] ↓ (18i) [+s-g-o+pl]⇒-i	[+s+g+o-pl] ↓ (18i) [+s-g-o+pl] ↓ (18k) [+s-g-o-pl]⇒-a	[+s+g+o-pl-masc] ↓ (18i) [+s-g-o+pl-masc] ↓ (18j) [+s-g-o+pl] ↓ (18k) [+s-g-o-pl]⇒-a
PREP [-s-g+o]	-e	[-s-g+o-pl] ↓ (18h) [+s+g+o-pl] ↓ (18i) [+s-g-o+pl]⇒-i	-e	-e
DAT [-s+g+o]	[-s+g+o] ↓ (18g) [-s-g+o]⇒-e	[-s+g+o-pl] ↓ (18g) [-s-g+o-pl] ↓ (18h) [+s+g+o-pl] ↓ (18i) [+s-g-o+pl]⇒-i	[-s+g+o] ↓ (18f) [-s+g-o]⇒-u	[-s+g+o] ↓ (18f) [-s+g-o]⇒-u
INS [+s-g+o]	-oj	[+s-g+o+fem] ↓ (18n) [+s-g+o]⇒-ju	-om	-om

⁵The interactions are: (18a) feeds (18b). (18c) counterfeeds (18b). (18b) bleeds (18k) in class I. (18c) bleeds (18e) in class I. (18d) bleeds (18e) in class I. (18f) counterfeeds (18c). (18c) bleeds (18d) for animates. (18g) counterfeeds (18f) in class I & IV and feeds (18h) in class III. (18h) feeds (18i) in class III. (18i) counterfeeds (18b), and feeds (18j) in class IV & II and (18k) in class IV. (18l) counterfeeds (18a) and feeds (18m).

(20) *Effects of the rules in the plural*

		II [-α +fem]	III [+α +fem]	I [+α -fem]	IV [-α -fem]	
NOM [+s-g-o]	-i		[+s-g-o] ↓ (18b) [+s -o]⇒-i	[+s-g-o] ↓ (18b) [+s -o]⇒-i	[+s-g-o+pl-masc] ↓ (18j) [+s-g-o+pl] ↓ (18k) [+s-g-o-pl]⇒-a	
ACC [-s+g-o]	[-s+g-o] ↓ (18a) [+s-g-o]⇒-i	[-s+g-o] ↓ (18m) [+s-g-o]⇒-∅	[-s+g-o] ↓ (18a) [+s-g-o] ↓ (18b) [+s -o]⇒-i	-OV [-s+g-o] ↓ (18a) [+s-g-o] ↓ (18b) [+s -o]⇒-i	-OV [-s+g-o+pl+masc] ↓ (18a) [+s-g-o+pl+masc] ↓ (18j) [+s-g-o+pl] ↓ (18k) [+s-g-o-pl]⇒-a	[-s+g-o] ↓ (18m) [+s -o]⇒-∅
GEN [+s+g+o]	[+s+g+o] ↓ (18l) [-s+g-o] ↓ (18m) [-s -o]⇒-∅	[+s+g+o] ↓ (18l) [-s+g-o]⇒-OV	[+s+g+o] ↓ (18l) [-s+g-o]⇒-OV	[+s+g+o] ↓ (18l) [-s+g-o]⇒-OV	[+s+g+o] ↓ (18l) [-s+g-o] ↓ (18m) [-s -o]⇒-∅	
PREP [-s-g+o]	-ax	-ax	-ax	-ax	-ax	
DAT [-s+g+o]	-am	-am	-am	-am	-am	
INS [+s-g+o]	-ami	-ami	-ami	-ami	-ami	

This approach further shows some relatedness to accounts of inflection that make use of so-called ‘leading forms’ or ‘principal parts’ (e.g. Wurzel 1984, Blevins 2004, Finkel & Stump 2007, Stump & Finkel 2013, Müller 2011). Intriguingly, it might solve yet another issue created by encoding inflection classes as morphosyntactic features. As discussed in Müller (2004a: §4), features that are present in one module of grammar should also be legible in that module. In a post-syntactic approach to morphology, such as DM, they are present in the syntax. However, they never take part in any syntactic operations. For this reason, Müller (2004a) is forced to adopt a pre-syntactic view of morphology, where inflection class features serve the purpose of triggering the combination of noun stems with inflectional affixes whereafter they are deleted and hence not present (and not legible) in the syntactic component. The present approach allows to maintain a post-syntactic morphological component (as in Müller 2004b) since inflection class features play no role in the morphological process of vocabulary insertion itself. Under the view that impoverishment (and by extension also feature-changing rules) are syntactic operations (cf. Keine 2010, Bárány & Sheehan 2024), they can be viewed as purely syntactic

features triggering syntactic operations. This, of course, raises the expectation of possible interactions between feature changes and other syntactic operations, like Agree. For reasons of space, I will leave this issue open here.

5. Conclusion

The three bidirectional syncretism patterns in the Russian nominal declension previously seemed to require the full power of unrestricted directional rules, thereby undermining the more restrictive nature of DM in comparison to other frameworks. In this paper, I have proposed two analyses in terms of markedness-decreasing feature-change (Noyer 1998), which has been argued to retain at least some of the original restrictiveness of impoverishment (Hein & Murphy 2023a,b). These analyses both avoid two minor potentially controversial issues found in Müller (2004a,b), namely complements of natural classes and general non-systematicity of syncretism in semantically contentful categories. The one that makes exuberant use of feature-change further provides a potential solution to the issue of syntactic inertness of inflection class features. These benefits, as usual, come at a cost. Here, this takes the form of an increase in the number of feature-manipulating rules required to capture the inflectional system. While Müller's account makes do with two, the more conservative feature-change approach needs five of them. The profligate one further inflates that number to fourteen. It remains to be determined whether the gains are worth this cost.

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Disjunctions agree differently

Anke Himmelreich*

Abstract

In a recent cross-linguistic study, Himmelreich et al. (2024) found that conjunctions are more likely to show Resolved Agreement than disjunctions when agreeing with the finite verb as the subject. In this paper, I take this observation at face value and show that the asymmetry between conjoined and disjointed subjects can be derived by adopting the idea in Himmelreich & Hartmann (2023) that conjunctions can resolve for number, while disjunctions cannot. This ultimately leads to a higher number of configurations where disjuncts provide feature values for the verb than it is the case for conjuncts.

1. Introduction

This paper is meant to be an afterthought to a collection of recent research results on agreement with coordination, conducted at the Goethe University Frankfurt in the last few years (Himmelreich et al. 2021, Himmelreich & Hartmann 2023, Himmelreich et al. 2024). In our research, we have gathered a larger number of data from different languages regarding the agreement markers that can be found on verbs when they agree with a conjunction or disjunction. As in our previous studies, I will adopt the terminology proposed by Haspelmath (2004, 2007) and use the term *coordination* as a hypernym for conjunction and disjunction. Coordinations are syntactic constructions where two phrases of equal status are connected by a *coordinator* of the meaning “and” or “or”. I continue to refer to these parts generally as the *coordinands*,

*This work is inspired by my great time in Leipzig when I worked with Gereon as my supervisor and Leipzig was busy ordering grammatical operations. Working with Gereon as an undergrad student, a PhD candidate, and a postdoc for altogether 15 years has truly shaped my view of linguistics. Thank you Gereon for being a fantastic teacher. I would further like to thank Katharina Hartmann, Melissa Jeckel, and Johannes Mursell for collaborating with me on the projects that this paper builds on as well as Fabian Heck for helpful comments and suggestions. Any remaining errors are my own.

while I use the terms *conjunct* and *disjunct* when talking specifically about the parts of conjunctions or disjunctions respectively.

The topic of agreement with coordinations has received a large amount of attention in the past. Starting with empirical observations as early as in Koutsoudas (1968), Givón (1970, 1972), Vanek (1970), over the famous work done by Corbett (1983a,b) on agreement resolution as well as Aoun et al.'s (1994) discussion of *First Conjunct Agreement* in Arabic, various theories about the distribution of agreement variation have been proposed. I refer to Nevins & Weisser (2019) for an overview and references, particularly on theories of *Closest Conjunct Agreement*. But also agreement with disjunctions has already been investigated quite thoroughly. Some noteworthy studies include Peterson (1986), Sobin (1997), Flouraki & Kazana (2009), Smith et al. (2018), Fuß (2018), Felser & Jessen (2021), Marušič & Shen (2021), Foppolo & Staub (2020), Vogel (2023).

This paper is concerned with the distribution of two patterns we can find for agreement with coordinations: *Resolved Agreement* (RES) – the agreement with the entire coordination – and *Closest Coordinand Agreement* (CCA)¹ – the agreement with the coordinand which is linearly closest to the verb. The central empirical point of the discussion below is the finding in Himmelreich et al. (2024) that disjunctions are cross-linguistically significantly more likely to show the pattern of CCA than conjunctions (see a similar finding in Marušič & Shen 2021 for Slovenian specifically).

In this paper, I propose that the higher frequency of CCA with disjunctions can be derived from the assumption that disjunctions do resolve feature conflicts differently than conjunctions. Concretely, disjunctions do not form pluralities in contrast to conjunctions (see Schmitt 2013). The gist of the analysis is that disjunctions do not have a proper number feature. This affects verbal agreement: The verb can fully agree with conjunctions, but not with disjunctions and therefore targets the disjuncts in all cases. In configurations where agreement with the disjuncts is successful, we get CCA. As for conjunctions, the access to the conjuncts is more limited, given that a conjunction has a proper number feature and therefore provides all the features necessary for the verb.²

¹Closest Coordinand Agreement is used as a hypernym for the familiar *Closest Conjunct Agreement* in the case of conjunctions and *Closest Disjunct Agreement* in the case of disjunctions.

²This paper does not discuss to what extent language-specific differences in the syntax play a role for the agreement patterns. It is likely that different languages with flexible word orders

The paper is structured as follows: Section 2 summarizes the study of Himmelreich et al. (2024) and introduces the two patterns of agreement under discussion. Afterwards, in section 3, I develop an analysis based on the assumption that feature resolution works differently for disjunctions. Section 4 concludes.

2. Disjunctions agree differently

Himmelreich et al. (2021) collected data on verbal agreement with coordinated subjects from 27 languages in an online questionnaire with linguistically-informed native speakers.³ Altogether they collected 154 datapoints. Each datapoint consists of an agreement pattern for a specific combination of coordination type, agreement feature, and word order for a language. The datapoints can be understood as summaries of the patterns, which are generalized from the collected sentences and judgments in the database.

Based on this, Himmelreich et al. (2024) distinguish a number of different strategies how a verb can agree with a coordinated subject. By far, the two most common strategies that languages use according to their findings are Resolved Agreement (present in 91% of all data) and Closest Coordinand Agreement (present in 34% of all data). Closest Coordinand Agreement means that the verb agrees with the linearly closest part of a coordination. An example of this is given in (1) from European Spanish disjunction, where the verb *correr* ('run') can agree with the 3SG pronoun *él* or with the 2SG pronoun *tu*, depending on which one is closer to the verb.⁴

derive SV or VS orders differently. For example, in English, the subject moves to a preverbal position below the C head in matrix clauses, while in German – due to its V2 property – subjects have to move into the CP in order to precede the finite verb in C. Thus, specific details can vary between languages. The goal of this paper is to abstract away from such differences and to focus solely on the difference between conjoined and disjointed subjects, an issue orthogonal to the interaction of word order and agreement.

³All data are available on <https://www.multivaluation.de/database.php>

⁴In the language examples in this paper, the agreeing verbal form is in boldface. The agreement controller is underlined: If the coordinator is underlined, the example shows Resolved Agreement; if a coordinand is underlined, it shows CCA.

- (1) a. [Tu o él] **corre**.
 you.SG or he run.3SG
 ‘You or he runs.’
 (Himmelreich et al. 2021:Spanish (European), (90))
- b. **Corres** [tu o él].
 run.2SG you.SG or he
 ‘You or he runs.’
 (Himmelreich et al. 2021:Spanish (European), (113))

In contrast, Resolved Agreement means that the verb agrees with the entire coordination, the features of which are computed from the features of all coordinands. The most common example for this is plural agreement with a conjunction that consists of two singular conjuncts, as shown in (2) from German.

- (2) [Der Junge und der Mann] **rennen**.
 the.SG boy.SG and the.SG man.SG run.3PL
 ‘The boy and the man run.’
 (Himmelreich et al. 2021:German (Standard), (1))

Generally, the rules under which Resolved Agreement is computed, can be summarized as in (3) (Himmelreich et al. 2024:80, based on Corbett 1983b:177ff.).

- (3) *Feature resolution for coordinations*
- | | |
|---|------------|
| a. NUMBER: | b. PERSON: |
| SG + SG = DUAL/PL | 1 > 2 > 3 |
| SG + NON-SG = PL | c. GENDER: |
| NON-SG + NON-SG = PL <i>non-</i> | MASC > FEM |
| <i>sg</i> ∈ { <i>dual</i> , <i>pl</i> } | |

Number reflects the sum of the number of the coordinands (see also Harbour 2020), whereas person and gender resolve to the highest value given in the coordinands according to the hierarchies in (3b,c).

Himmelreich et al. (2024) compare the frequency of Resolved Agreement and Closest Coordinand Agreement in different constructions. Many of the datapoints in Himmelreich et al. (2021) show mixed patterns, which are due to inter- or intraspeaker variation or which are due to specific combinations of feature values requiring a certain pattern compared to other combinations.

But there are also cases where Resolved Agreement and Closest Coordinand Agreement occur across all feature combinations. Pure Resolved Agreement makes out 59% of all data, while pure Closest Coordinand Agreement amounts to 6.5% of all data. When comparing the distribution among coordination types, Himmelreich et al. (2024) found that, while less frequent in total, CCA has a statistically significantly higher tendency to occur with disjointed subjects than with conjoined subjects (see also Marušič & Shen 2021 for the same findings in Slovenian). This is shown in table 1.

	conjunction	disjunction
RES	58 (73.42%)	33 (44.00%)
CCA	3 (3.80%)	7 (9.33%)

Table 1: Frequencies of RES and CCA with conjunctions and with disjunctions

Table 1 shows that out of the 154 datapoints in Himmelreich et al. (2021), 58 show Resolved Agreement with a conjunction, which equals 73.42% of all 79 conjunction datapoints, but only 33 with a disjunction, which equals 44% of the 75 datapoints for disjunction. As for CCA, 3 conjunction datapoints show CCA, that is 3.8%, but 7 disjunction datapoints show CCA, which equals 9.33%.

To exemplify this tendency, compare the Spanish disjunction data in (1) with the conjunction data in (4). While CCA is possible with disjunctions (1), it is out with conjunctions (4), where only the Resolved Agreement 2PL is possible.⁵

- (4) a. [Tu y él] **corréis**/*corre.
 you.SG and he run.2PL/run.3SG
 ‘You and he runs.’
 (Himmelreich et al. 2021:Spanish (European), (43)/(42))
- b. **Corréis**/*corres [tu y él].
 run.2PL/run.2SG you and he

⁵Himmelreich et al. (2024) further found that word order is a statistically significant factor for agreement with coordinations: If the verb precedes the coordination, CCA occurs more frequently than Resolved Agreement. The third factor, Himmelreich et al. (2024) investigate is whether the type of ϕ -feature plays a role. They were not able to find a difference between number, person, and gender, when it comes to Resolved vs. Closest Coordinand Agreement.

‘You and he runs.’

(Himmelreich et al. 2021:Spanish (European), (67)/(65))

Looking at the data in Himmelreich et al. (2021) more closely, we can further observe that there are no languages that have pure Resolved Agreement with disjunctions, but CCA with conjunctions. Given this, we can formulate the generalization in (5).

(5) *Generalizations*

- a. Disjunctions show Closest Coordinand Agreement more frequently than conjunctions.
- b. If a language shows Resolved Agreement with disjunctions, it also shows Resolved Agreement with conjunctions.

In the rest of this paper, I would like to propose an analysis based on Himmelreich & Hartmann’s (2023) proposal that the difference between conjunctions and disjunctions with respect to agreement stems from the plural properties of conjunctions, which are absent in disjunctions.

3. Why disjunctions agree differently

3.1. A difference between conjunctions and disjunctions

Himmelreich & Hartmann (2023) found that disjoined subjects consisting of two singular noun phrases can either cause singular agreement or plural agreement on the finite verb in German, see (6b). This is different from simple conjunctions in German that are incompatible with singular agreement, see (6a).

(6) *German* (Himmelreich & Hartmann 2023:2, (1))

- a. *Conjunctions*
 - (i) [Das Regal und der Tisch] **werden** morgen
the shelf.SG and the table.SG will.be.PL tomorrow
geliefert.
delivered
‘The shelf and the tables will be delivered tomorrow.’

- (ii) [Das Regal und der Tisch] ***wird** morgen
the shelf.SG and the table.SG will.be.SG tomorrow
geliefert.
delivered
‘The shelf and the tables will be delivered tomorrow.’
- b. *Disjunctions*
- (i) [Das Regal oder der Tisch] **werden** morgen
the shelf.SG or the table.SG will.be.PL tomorrow
geliefert.
delivered
‘The shelf or the tables will be delivered tomorrow.’
- (ii) [Das Regal oder der Tisch] **wird** morgen
the shelf.SG or the table.SG will.be.SG tomorrow
geliefert.
delivered
‘The shelf or the tables will be delivered tomorrow.’

Himmelreich & Hartmann (2023) propose that the difference in agreement is not the result of a structural difference between conjunctions and disjunctions – for example phrasal coordination vs. coordination reduction – but that the difference has to do with the features on the coordinator. They show that a conjunctive *and* has the ability to form pluralities (see Schmitt 2013, Haslinger et al. 2019 among others), whereas disjunctions are not able to do this (Himmelreich & Hartmann 2023:18–21). But they propose that both conjunctions and disjunctions share the property to combine members of the same set of alternatives.

To represent these properties, Himmelreich & Hartmann (2023) suggest that there are two types of ϕ -feature sets, one representing the ϕ -features of the entities, called $\phi_{\text{ind(ividual)}}$ and one representing the alternatives, called $\phi_{\text{alt(ernative)}}$. ϕ_{ind} -features represent a plural entity if the number feature bears the value plural. It is a singular entity if the number feature is singular. ϕ_{alt} -features that contain a plural number feature represent sets of alternatives.

Following Himmelreich & Hartmann (2023), conjunctions have both ϕ_{ind} and ϕ_{alt} -feature sets, while disjunctions only have the ϕ_{alt} -set, which ultimately means that disjunctions cannot form a plural entity due to the lack of ϕ_{ind} . This difference is schematized in (7). Note that non-coordinated DPs (meaning the coordinands in (7)) are not assumed to represent alternatives.

(7) *Conjunctions vs. disjunctions* (based on Himmelreich & Hartmann 2023:27, (30))

- a. *Conjunction: Alternative number + individual number*
 $[DP_{[\phi_{ind}:PL]} \text{ and } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$
- b. *Disjunction: Alternative number + no individual number*
 $[DP_{[\phi_{ind}:PL]} \text{ or } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL]}$

In the following, I will build on this idea and develop an analysis that derives the higher frequency of CCA with disjunctions for languages with a simple binary number distinction.⁶

⁶There are only very few data for agreement with coordinations from languages that have more number values. For conjunctions, it seems fairly straightforward that the number feature represents the sum of the parts (e.g. two singulars conjoined equal a dual, and any other combination a plural, see Harbour 2020 for more details), but the picture is less clear for disjunctions.

Himmelreich et al. (2021) have data from Modern Standard Arabic – the only language in their database that has a dual – that show that number agreement for disjunctions behaves the same as for conjunctions, see (8).

- (8) a. [alwaladu w-arrajulu] **yarkudʕa:ni**.
 boy.SG and-man.SG run.3DU
 ‘The boy and the man run.’ (Himmelreich et al. 2021:Arabic (Modern Standard), (9))
- b. [alwaladu ʔaw arrajulu] **yarkudʕa:ni**.
 boy.SG or man.SG run.3DU
 ‘The boy or the man run.’ (Himmelreich et al. 2021:Arabic (Modern Standard), (17))

Himmelreich & Hartmann (2023), on the other hand, provide data from Slovenian that show that dual agreement with SG-SG disjunctions is more marked than for conjunctions.

- (9) a. [Grmovje ali drevo] **bo posajeno** / **?bosta posajeni**
 shrubs.N.SG or tree.N.SG will.SG planted.N.SG / will.DU planted.N.DU
 za hišo.
 behind house
 ‘A shrub or a tree will be planted behind the house.’ (Slovenian, Himmelreich & Hartmann 2023:35, (51))
- b. [Grmovje in drevo] ***bo posajeno** / **bosta posajeni**
 shrubs.N.SG and tree.N.SG will.SG planted.N.SG / will.DU planted.N.DU
 za hišo.
 behind house
 ‘A shrub and a tree will be planted behind the house.’ (Slovenian, Himmelreich & Hartmann 2023:35, (52))

3.2. Assumptions

The analysis developed below follows the main idea of Marušič et al. (2015), namely that ϕ -Agree is possible before or after linearization. The account is based on Arregi & Nevins's (2012) idea of a split Agree operation: Agree-Link applies in the syntax and creates dependencies between the probe and the goal. Agree-Copy applies post-syntactically before or after linearization and copies the feature values from the goal onto the probe. For us, the only relevant relationship is Agree-Copy, for which I use the term Agree simplifyingly. That means that all the relevant operations in this paper are post-syntactic operations.⁷

Furthermore, following Himmelreich & Hartmann (2023), I suggest that the verb targets both ϕ_{ind} and ϕ_{alt} in separate operations. This means that there is not only a binary distinction between the orders of operations, but that we can order the three relevant operations in six different ways, as listed in (10).

(10) *Orders*

- | | | | |
|----|---------------|-----------------|-----------------|
| a. | ALT-Agree | < IND-Agree | < linearization |
| b. | IND-Agree | < ALT-Agree | < linearization |
| c. | linearization | < ALT-Agree | < IND-Agree |
| d. | linearization | < IND-Agree | < ALT-Agree |
| e. | ALT-Agree | < linearization | < IND-Agree |
| f. | IND-Agree | < linearization | < ALT-Agree |

As for the feature values, I assume that number on ϕ_{alt} is predefined as [PL] (cf. Himmelreich & Hartmann 2023).⁸

Regarding the accessibility of features, I assume that, before linearization, both the features on the coordination phrase as well as the features on the coordinands are in principle accessible to the verb. However, features on the coordination phrase are structurally closer to the verbal probe than the features

Ultimately, more work on number agreement with disjunctions is needed to see whether number resolution is identical in disjunctions and conjunctions or whether there is a difference. I leave this issue to future research.

⁷Consequently, there is no direct interaction between (syntactic) word order related operations and agreement. See section 3.4 for a more detailed discussion of CCA and word order.

⁸To my knowledge, there are no data that show that person and gender resolve differently in disjunctions. I therefore assume that both features resolve under the same rules in (3) on ϕ_{ind} and ϕ_{alt} .

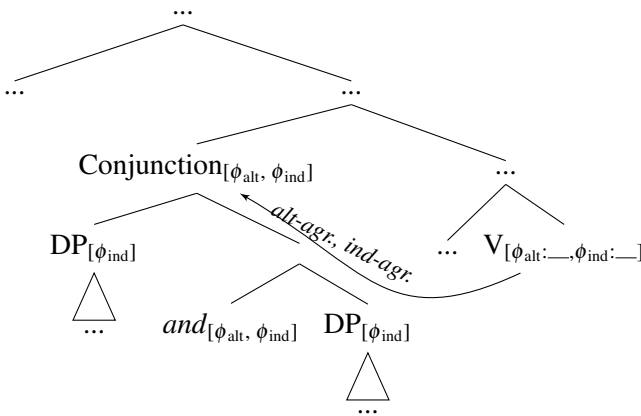
on the coordinands. That means that the A-over-A-principle (Chomsky 1964) holds.

Turning to the relative distance between the coordinands, I assume that they are equidistant to the verbal probe and discuss this assumption further below in section 3.4. After post-syntactic linearization, however, only the linearly closest ϕ -features are accessible to the verbal probe (see Marušič et al. 2015).

Finally, I assume that once the verbal probe has ϕ -feature values, it can only continue to collect matching ϕ -features. For example, when the verbal ϕ_{alt} -probe has already been valued by [PL], neither the ϕ_{alt} -probe nor the ϕ_{ind} -probe can receive a [SG] value.⁹

These assumptions derive an important difference between conjunctions and disjunctions. Before linearization, the verbal probe can only access the ϕ -features of the conjunction, since it provides the verbal probe with both ϕ_{ind} and ϕ_{alt} . In contrast, disjunctions do not have ϕ_{ind} , which is why the verbal probe can access the coordinands even before linearization. The difference is depicted in the abstract schemas in (11) and (12).¹⁰

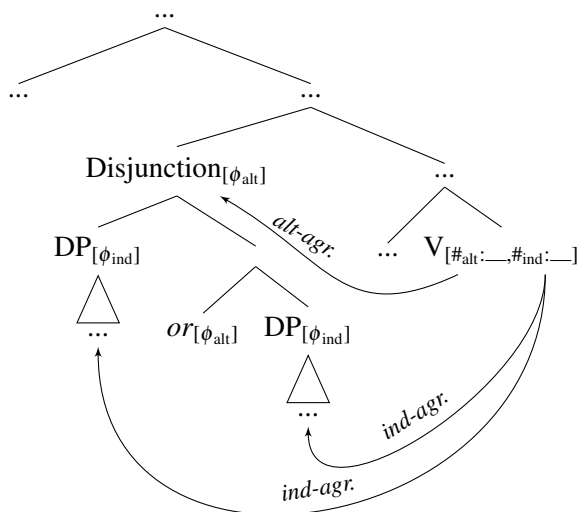
(11)



⁹This also means that there can be configurations where either of the two ϕ -feature sets remains unvalued. I assume that this does not lead to a crash (cf. Preminger 2010, 2011, 2014), but that the missing feature value is doubled from the valued probe by default. In the derivations in section 3.3, however, I will not indicate this default valuation to avoid confusion.

¹⁰The structures in (11) and (12) follow the idea of an asymmetric structure for coordinations, cf. Munn (1993), Johannessen (1996, 1998). Note further that the structural details of verbal agreement do not matter for the purposes of this paper. This is why an abstract head V is assumed as the verbal probe that carries the unvalued ϕ -features.

(12)



With this assumptions in place, we can derive the higher tendency for CCA with disjunctions.

3.3. Deriving the difference

In what follows, I demonstrate what happens under the six different orders of operations in (10). The derivations below distinguish two cases: (i) coordinations that consists of two singular DPs and (ii) coordinations that consist of a singular and a plural DP. Coordinations that only consist of plural phrases are trivial: They always result in plural agreement and do not allow for a distinction of Resolved Agreement and CCA. The ϕ -feature configurations for these two cases are given in (13).¹¹

- (13) a. *sg-sg-conjunction:*
 $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:SG]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$
 b. *sg-pl-conjunction:*
 $[DP_{[\phi_{ind}:SG]} \text{ and } DP_{[\phi_{ind}:PL]}]_{[\phi_{alt}:PL][\phi_{ind}:PL]}$

¹¹As mentioned in footnote 8, I assume that person and gender features resolve the same for ϕ_{ind} and ϕ_{alt} . I will therefore simplify the derivations and ignore person and gender.

- c. *sg-sg-disjunction*:
 $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
- d. *sg-pl-disjunction*:
 $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$

3.3.1. Agree before linearization

We start with the cases where both Agree operations apply before linearization. In the first order, ϕ_{alt} is valued before ϕ_{ind} . The step-by-step feature valuations for the four coordination cases under discussion are given in (14).

(14) ALT-Agree < IND-Agree < linearization (8a)

- a. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$ (*Agree with coordination*)
 2. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$ (*Agree with coordination*)
 3. Linearization
 Agreement Pattern: RES
- b. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$ (*Agree with coordination*)
 2. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$ (*Agree with coordination*)
 3. Linearization
 Agreement Pattern: RES
- c. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$ (*Agree with coordination*)
 2. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$ (**Agree with coordinand*)
 3. Linearization
 Agreement Pattern: RES
- d. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]}$ (*Agree with coordination*)
 2. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$ (*Agree with 2nd coordinand*)
 3. Linearization
 Agreement Pattern: RES

The first two derivations in (14a,b) show what happens with conjunctions. Here, the verbal probe targets only the features on the coordination phrase.

disjunctions is different, however: In the case of (15c), ϕ_{ind} receives a [SG] value, which is incompatible with the value [PL] from ϕ_{alt} . The result therefore must be agreement with the disjuncts and not Resolved Agreement. In the case of mismatching number features on the coordinands, it depends on which coordinand values ϕ_{ind} on the verbal probe. If it is [SG], we get the same result as in (15c); if it is [PL], we get Resolved Agreement on the surface.

At this point it is unclear, which disjunct provides the values for the verbal probe in (15c,d). In (15), linear order cannot be decisive, because linearization is the last operation to apply. In section 3.4, I discuss the choice between the coordinands for IND-Agree in more detail and follow a suggestion by Fuß (2024) how the values of the linearly closest coordinand are picked despite Agree applying before linearization.

3.3.2. Agree after linearization

The next case is comparatively simple: If both Agree operations apply after linearization as in (8c,d), only the ϕ_{ind} -features of the linearly closest coordinand are accessible to the verbal probe. The ϕ_{alt} -features cannot be accessed anymore and are thus not relevant for agreement. The result is the same for conjunctions and disjunctions: We get CCA in all cases. Note that if the closest coordinand supplies the value [PL] for the verbal ϕ_{ind} -probe, the agreement will be derivationally CCA, but be superficially identical to Resolved Agreement.

3.3.3. Split agreement

The last set of cases in (16) involves a split of the Agree operations: One applies before linearization, the other after.

(16) ALT-Agree < linearization < IND-Agree (8e)

- a. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
1. ALT-Agree $\rightarrow \text{V}_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{—}]}$ (*Agree with coordination*)
 2. Linearization
 3. IND-Agree $\rightarrow \text{V}_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{—}]}$ (**Agree with coordinand*)
-
- Agreement Pattern: RES

- b. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]} \text{ (Agree with coordination)}$
 2. Linearization
 3. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}/\text{PL}]} \text{ (%Agree with coordinand)}$
 Agreement Pattern: RES
- c. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]} \text{ (Agree with coordination)}$
 2. Linearization
 3. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]} \text{ (*Agree with coordinand)}$
 Agreement Pattern: RES
- d. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
 1. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}]} \text{ (Agree with coordination)}$
 2. Linearization
 3. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{---}/\text{PL}]} \text{ (%Agree with coordinand)}$
 Agreement Pattern: RES

When ALT-Agree applies before linearization, we get Resolved Agreement in all cases, since the first value on the verbal probe is [PL], which cannot be overwritten by a [SG] value. In (16b,d), a [PL] value on ϕ_{ind} coming from the closest coordinand is possible, but doesn't change the outcome.

The final possible order of the three operations is the opposite of the order in (16).

(17) IND-Agree < linearization < ALT-Agree (8f)

- a. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
 1. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{PL}]} \text{ (Agree with coordination)}$
 2. Linearization
 3. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{PL}]} \text{ (*Agree with coordination)}$
 Agreement Pattern: RES
- b. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ and } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}][\phi_{\text{ind}}:\text{PL}]}$
 1. IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{PL}]} \text{ (Agree with coordination)}$
 2. Linearization
 3. ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}][\phi_{\text{ind}}:\text{PL}]} \text{ (*Agree with coordination)}$
 Agreement Pattern: RES

- c. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{SG}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
 1.IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG}]}$ (*Agree with coordinand*)
 2.Linearization
 3.ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG}]}$ (**Agree with coordination*)
 Agreement Pattern: CCA
- d. $[\text{DP}_{[\phi_{\text{ind}}:\text{SG}]} \text{ or } \text{DP}_{[\phi_{\text{ind}}:\text{PL}]}]_{[\phi_{\text{alt}}:\text{PL}]}$
 1.IND-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG/PL}]}$ (*Agree with coordinand*)
 2.Linearization
 3.ALT-Agree $\rightarrow V_{[\phi_{\text{alt}}:\text{---}]}_{[\phi_{\text{ind}}:\text{SG/PL}]}$ (**Agree with coordination*)
 Agreement Pattern: CCA

In the case of (17), ALT-Agree applies after linearization. Since at this point, ϕ_{alt} on the coordination phrase cannot be accessed anymore, it doesn't interact with IND-Agree. Looking at the cases of conjunction in (17a,b), there are ϕ_{ind} -features on the coordination phrase, which therefore must value the ϕ_{ind} -probe on the verb. The result is Resolved Agreement. With disjunctions, it is different. The ϕ_{ind} -probe is valued by a coordinand and after linearization the ϕ_{alt} -features of the disjunction are no longer available.

A summary of the derivations so far is given in table 2. As shown in the table, any orders where IND-Agree applies first, conjunctions will show Resolved Agreement, whereas disjunctions show CCA. This means that disjunctions are overall more likely to show CCA than conjunctions, assuming that the orders are equally distributed among languages. Second, we can see that in all orders where disjunctions show Resolved Agreement, conjunctions also show Resolved Agreement. If we assume that the order of operations is language-specific, this would mean that no language could have CCA with conjunctions, but Resolved Agreement with disjunctions. Thus, the analysis derives both generalizations in (5).

3.4. First Coordinand Agreement and CCA before linearization

The analysis developed so far only touches upon the actual complexity of agreement with coordinations. More empirical work needs to be done to establish a reliable database and to see how much variation of agreement strategies there actually is. In the rest of this section, I would like to discuss one issue that is left open by the present theory: the difference between CCA

			SG-SG-conj	SG-SG-disj	SG-PL-conj	SG-PL-disj
ALT	< IND	< LIN	RES	RES	RES	RES
IND	< ALT	< LIN	RES	CCA	RES	RES/CCA
LIN	< ALT	< IND	CCA	CCA	CCA	CCA
LIN	< IND	< ALT	CCA	CCA	CCA	CCA
ALT	< LIN	< IND	RES	RES	RES	RES
IND	< LIN	< ALT	RES	CCA	RES	CCA

Table 2: Summary of the derivations

and First Coordinand Agreement (FCA, or Highest Coordinand Agreement as Marušič et al. 2015 call it). So far, the analysis is built on the idea that all coordinands are equidistant and possible goals for the verbal ϕ_{ind} -probe. Under this assumption it is unclear how IND-Agree before linearization actually ends up as CCA. One might rather expect a pattern of FCA for IND-Agree before linearization.

Empirically, true FCA is extremely rare in Himmelreich et al.'s (2021) dataset. As Marušič et al. (2015) note, true FCA can only be distinguished from CCA under an SV order. One case in Himmelreich et al.'s (2021) comes from North Levantine Arabic (18), where FCA is only possible with a 2SG-3SG-disjunction (18b) (a 3SG-2SG-disjunction doesn't allow it) and highly marked for conjunctions (18a).

- (18) a. [ʔnta w huwe] ʔam **t-erkud-u**/ʔʔt-erkud
you.MASC and he PROG 2.MASC-run-PL/2.MASC-run
‘You and he are running.’ (Himmelreich et al. 2021:Arabic (North Levantine), (25))
- b. [ʔnta ʔaw huwe] ʔam **t-erkud-u/t-erkud**
you.MASC or he PROG 2.MASC-run-PL/2.MASC-run
‘You or he are running.’ (Himmelreich et al. 2021:Arabic (North Levantine), (37))

Nevertheless, work by Marušič et al. (2015), Marušič & Shen (2021) on Slovenian gender agreement, work by Willer-Gold et al. (2016) on Bosnian-Croatian-Serbian gender agreement and also work by Fuß (2018), Fuß (2024) on German person-number agreement report FCA (or Highest Conjoint Agreement) as a robust pattern.

One obvious way to allow FCA in the account developed so far would be to redefine the distances of the coordinands to the verbal probe. The first coordinand c-commands the second coordinand in the structures in (11) and (12). Thus IND-Agree before linearization could be defined as targeting only the highest coordinand, thereby making FCA possible.

However, the analysis so far predicts that FCA should not be possible with conjunctions, as ϕ_{ind} on the coordination phrase blocks the access to ϕ_{ind} on the coordinands before linearization. This prediction is indeed confirmed by the Arabic data in (18), but derives neither the Slovenian data in Marušič et al. (2015), Marušič & Shen (2021) nor the German data in Fuß (2024). At this point, I leave this issue open for further research to see how robust true FCA in the world's languages is, particularly in the construction investigated in Himmelreich et al. (2021, 2024), which differs from the participial construction in Marušič et al. (2015), Marušič & Shen (2021).¹²

Ignoring the issue of FCA for now, the question is how CCA can technically be achieved in orders with early IND-Agree. For the analysis above, I assumed that the coordinands within the coordination phrase are equidistant to the verbal probe for the purposes of Agree. Thus, the verb could in principle ϕ_{ind} -agree with either coordinand. This would give rise to the four configurations in (19), of which (19b,c) do not follow the CCA pattern.

- (19) a. V [DP or DP]
 b. *V [DP or DP]
 c. * [DP or DP] V
 d. [DP or DP] V

Following the account in Fuß (2024), we could assume that the verbal probe cannot decide at this point (perhaps because of the equidistance of the coordinands) and must consequently take on the values of all coordinands. As long as the values match, this is not a problem, but should there be a mismatch, the derivation must be ruled out or a repair mechanism must set in. Fuß (2024:68ff.) suggests that the values are stored as ordered pairs, with the first value coming from the first coordinand, the second coming from

¹²Technically, it seems possible to extend the present analysis by the idea that feature resolution on the coordinator is an operation of its own (cf. Murphy & Puškar 2018) and can apply before or after Agree. If the resolution of the ϕ_{ind} -features on the conjunctive coordinator applies after IND-Agree, the conjunction does not have ϕ_{ind} -features at the point of Agree and should then behave like a disjunction, allowing agreement with a conjunct.

the last coordinand. The repair is a deletion process that applies very late after linearization and is thus sensitive to the linear order of the verb and the coordination. This analysis is compatible with the present account and could be used to derive CCA with pre-linearization Agree.

Note, however, that while the patterns in (19b,c) are not CCA, there are attested examples for them. (19c) corresponds to the FCA pattern and, as far as FCA is possible, it must not necessarily be ruled out in all languages. (19b) is extremely rare, but Fuß (2024) provides a corpus example for this from early stages of German and mentions that he found three such examples in total. The cited example is given in (20).

- (20) das [du vnd dein Maister] verfür̄t vnd verlait **wirst**
that you and your master seduced and misled become.2SG
'that you and your master are seduced and misled'
(Early New High German, Fuß 2024:66)

Thus, it might be possible that all configurations in (19) exist after all.

4. Conclusion

In this paper, I have tried to account for the differences between agreement with conjunctions and disjunctions. The main observation in Himmelreich et al. (2024) is that disjunctions have a higher tendency for Closest Coordinand Agreement than conjunctions. This is derived by the assumption that feature resolution works differently in disjunctions. Concretely, disjunctions lack a number feature that makes them a plurality. Because of this, the verb cannot fully agree with a disjunction and needs to access the ϕ -features of the disjuncts additionally. With conjunctions, the verb receives enough features from the coordination phrase and does not need to access the coordinands. Depending on the order in which the feature values are copied onto the verb, we get Resolved Agreement or CCA.

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Prosodic Spell-Out

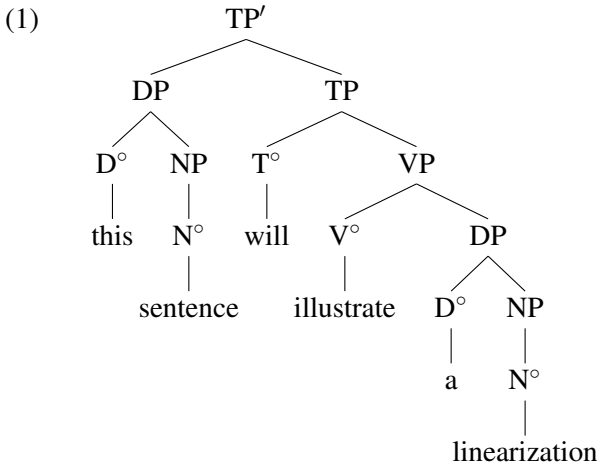
Kyle Johnson*

In many syntactic theories, the information that a syntax provides doesn't include how those structures are mapped onto strings. No syntactic theory that I am aware of determines the prosodic units that sentences have. I will adopt the view consonant with these two assumptions: syntactic representations need to be interpreted in order to get a representation that provides the melody it is associated with. The segmental and prosodic information that is associated with words makes a contribution to that melody by having that information concatenated into a contiguous string of words. The pitch, amplitude, and speed of that string is influenced by the prosodic structure read off the syntactic representation. I'll adopt the view in Kusmer (2020a,b) that the system which assigns words their linear position is also the system that assigns the resulting string its prosodic structure. In section one, I'll sketch how his system works, and illustrate its utility at capturing the dependence that word order has on prosody. Section two sketches the machinery I will adopt for modeling English prosody that is necessary for the solution in section three of the problem for Kusmer's system that ends section one.

1. Prosodic Linearization

Kusmer (2020a) argues that the best method of expressing how word order can be influenced by prosody is to build that influence directly into the procedure that linearizes the words in a syntactic representation—what I shall call the “linearization” of a phrase marker. Since Kayne (1994), linearizations are standardly expressed in terms of a set of precedence relations between the words of a phrase marker. Thus, for instance, the linearization of (1) ($=\mathcal{L}(1)$) is (2), which corresponds to the string *this sentence will illustrate a linearization*.

*The debt this paper owes to Leland Kusmer is, I hope, plain. Not as obvious, but just as important, are the many ways that Alessa Farinella has coached and improved my thinking about prosody.



- (2)
- | | | |
|----------------------|--------------------------|----------------------------|
| this < sentence | sentence < will | will < illustrate |
| this < will | sentence < illustrate | will < a |
| this < illustrate | sentence < a | will < linearization |
| this < a | sentence < linearization | |
| this < linearization | | illustrate < a |
| | a < linearization | illustrate < linearization |

Kusmer’s system involves a series of constraints that read off of a syntactic representation certain pieces of information and rank strings according to their compatibility to that information. The two central constraints in Kusmer’s system are (3) and (4). (Understand x to be the word dominated by X° , and y to be the word dominated by Y° .)

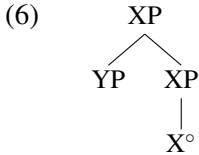
- (3) ANTISYMMETRY
 Assign one violation for each pair of nodes X° and Y° in P where:
- X° asymmetrically c-commands Y° , and
 - $y < x \in \mathcal{L}(P)$.
- (Kusmer 2020a: roughly (9): 10)

- (4) HEADFINALITY
 Assign one violation for each branching node XP in P dominating a pair of nodes X° and Y° such that:
- Y° is dominated by the in-law of XP ,
 - X° is not dominated by the in-law of XP , and
 - $x < y \in \mathcal{L}(P)$.

The notion “in-law” is defined in (5).

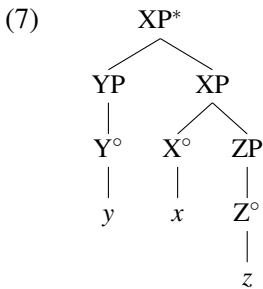
- (5) Let α and β be daughters of γ . If γ is an X-bar Projection of α , then β is the in-law of γ .

Schematically, YP is an in-law in:



HeadFinality favors putting the terminals in a X° and its projections after the terminals in its sisters. It favors linearizations in which the terminals dominated by that Specifier precede the terminals in the Specifier’s sister.

Consider how these constraints apply to (7).



The tableau in (8) indicates how HeadFinality applies, picking the set of precedence relations that corresponds to the string *yzx*.

(8)

	(7)	HEADFINALITY
a.	<i>yxz</i>	*XP
b.	<i>xyz</i>	*XP,*XP*
c.	<i>xzy</i>	*XP,*XP*
d.	<i>yzx</i>	
e.	<i>zyx</i>	*XP*
f.	<i>zxy</i>	*XP*

HEADFINALITY favors languages that are head final and Specifier first. By contrast, Kusmer's ANTISYMMETRY favors head initial languages, as can be seen by considering how it applies to (7); see (9).

(9)

(7)	ANTISYMMETRY
a. $\text{y}xz$	
b. xyz	
c. xzy	
d. yzx	$*z < x$
e. zyx	$*z < x$
f. zxy	$*z < x$

When HEADFINALITY outranks ANTISYMMETRY, the language will put Specifiers first and heads last, as (10) demonstrates.

(10)

(7)	HEADFINALITY	ANTISYMMETRY
a. yxz	$*!XP$	
b. xyz	$*!XP, *XP^*$	
c. xzy	$*!XP, *XP^*$	
d. yzx		$*z < x$
e. zyx	$*!XP^*$	$*z < x$
f. zxy	$*!XP^*$	$*z < x$

When ANTISYMMETRY outranks HEADFINALITY, the language will again put Specifiers first but it will put heads first too, as (11) shows.

(11)

(7)	ANTISYMMETRY	HEADFINALITY
a. yxz		$*XP$
b. xzy		$*XP, *!XP^*$
c. xyz		$*XP, *!XP^*$
d. yzx	$*!z < x$	
e. zyx	$*!z < x$	$*XP^*$
f. zxy	$*!z < x$	$*XP^*$

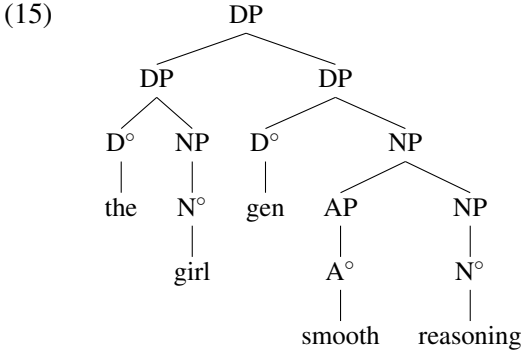
These two constraints, then, carve out the major word orders found cross-linguistically, once the effects of movement have been removed. Kusmer (2020a) shows how this system can be enriched with a set of related constraints to characterize languages that have different orderings for different kinds of phrases, while still constraining this variation so that trends like the Final-Over-Final Condition are captured.¹

Kusmer's argument that the procedure which linearizes a syntactic representation should be part of the same procedure that gives the string its prosody comes from examples in which the linear order of words is determined by prosodic conditions, rather than syntactic ones. For example, in Celtic languages, there is a well-studied case where object pronouns that are prosodically weak are not spoken in the position that strong object pronouns or other nominals are spoken. (See Chung & McCloskey (1987), Adger (2007), Duffield (1995), and Bennett et al. (2016).) In the Conamara dialect of Irish, for instance, Elfner (2012) shows that weak pronouns are not pronounced in the canonical position for direct objects, but instead find a position at the right edge of some prosodic phrase to be pronounced. This has the effect of causing these pronouns to be optionally linearized in a variety of positions that follow the canonical object position. Elfner (2012) argues that this effect derives from a feature of Conamara Irish prosody that disfavors putting prosodically weak terms at the beginning of a prosodic phrases. Because the canonical object position is at the beginning of a prosodic phrase in Irish, prosodically weak pronouns in this position create this disfavored prosody. A similar pattern emerges for the prosodically weak pro-forms that some prepositional phrases can have in Conamara Irish. They too are not pronounced at the beginning of certain prosodic phrases, but instead get linearized at the end of some prosodic phrase. Interestingly, not all terms that are prosodically weak in the same way as these pro-forms are susceptible to this effect in Conamara Irish. Weak determiners, for instance, are linearized at the beginning of the phrases they head, even when this makes them the first thing in a prosodic phrase. Kusmer argues that this is because the constraint that determines where heads are relative to their complements (i.e., ANTISYMMETRY) outranks the constraint that disfavors prosodic phrases that start with prosodically weak terms. Because it is a different constraint that determines where object pronouns (which are phrases) and prepositional phrases are linearized, it can be

¹See Sheehan et al. (2017) for the Final-over-Final Condition.

The union of these two sets gives us a linearization that conforms to the correct string: *the subject will usually follow the object*.

The same correct outcome arises in DPs, as (15) illustrates.

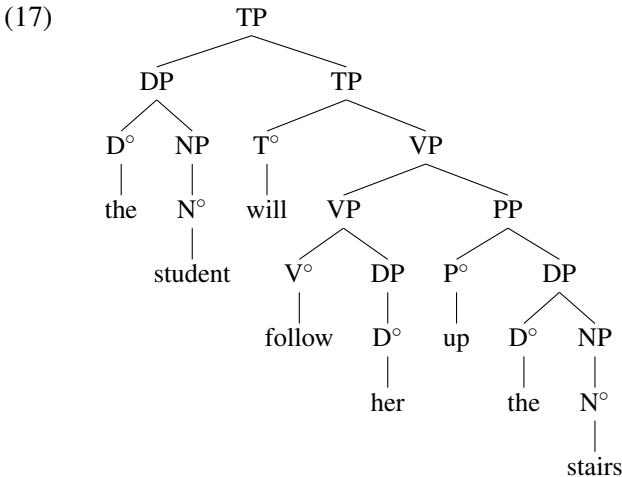


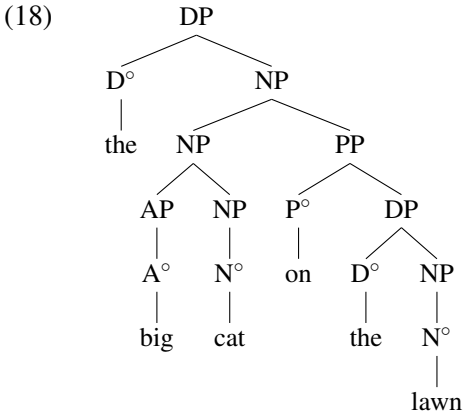
ANTISYMMETRY requires $\mathcal{L}(15)$ to include the ordered pair “the < girl”. HEADFINALITY will require it to include the ordered pairs in (16).

- (16) the < smooth girl < smooth smooth < reasoning
 the < reasoning girl < reasoning

The union of these two sets produces an ordering that is consistent with the correct string: *the girl's smooth reasoning*.

This system fails in cases such as (17) and (18) where “adjuncts” get linearized to the right of the words in the phrase that they are a sister to.





High-ranked ANTISYMMETRY requires \mathcal{L} to contain the ordered pairs shown below.

- (19) $\mathcal{L}(17) \supseteq$
- | | | | |
|---------------|---------------|-------------|--------------|
| the < student | will < follow | up < the | the < stairs |
| | will < her | up < stairs | |
| | will < up | | |
| | will < the | | |
| | will < stairs | | |

- (20) $\mathcal{L}(18) \supseteq$
- | | | |
|------------|-----------|------------|
| the < big | on < the | the < lawn |
| the < cat | on < lawn | |
| the < on | | |
| the < the | | |
| the < lawn | | |

HEADFINALITY is responsible for determining the rest of the ordered pairs in $\mathcal{L}(17)$ and $\mathcal{L}(18)$. HEADFINALITY is satisfied if (21) and (22) is holds.

- (21) $\mathcal{L}(17) \supseteq$
- | | | | |
|--------------|------------------|-----------------|--------------|
| the < will | student < will | up < follow | up < her |
| the < follow | student < follow | the < follow | the < her |
| the < her | student < her | stairs < follow | stairs < her |
| the < up | student < up | | |
| the < the | student < the | | |
| the < stairs | student < stairs | | |

- (22) $\mathcal{L}(18) \supseteq$
- | | | | |
|-----------|----------|-----------|------------|
| big < cat | on < big | the < big | lawn < big |
| | on < cat | the < cat | lawn < cat |

This produces the incorrect strings in (23).

- (23) a. $\mathcal{L}(17) = \textit{the student will up the stairs follow her}$
 b. $\mathcal{L}(18) = \textit{the on the lawn big cat}$

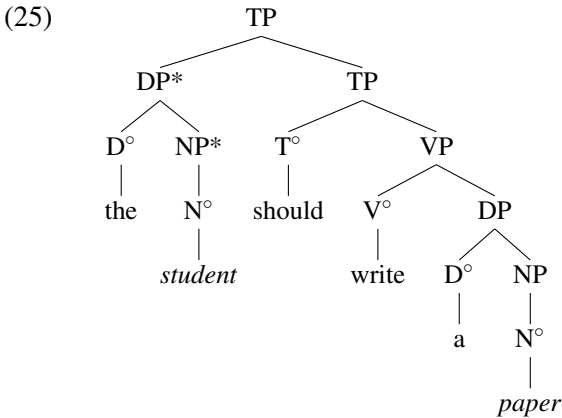
I want to sketch a prosody-based solution to this famous problem.

2. Prosodic Phrases and Stress

The solution leans on how English relates syntactic phrases to stress. Truckenbrodt (2006) suggests that English has a requirement that every syntactic phrase contain a word with greater stress than the others in that phrase. He calls that “phrasal stress.” A preliminary formulation of this requirement is in (24).

- (24) STRESSXP
 Assign one violation for each XP that doesn’t contain a word with phrasal stress.

Consider how this constraint evaluates (25).



The default prosody for this sentence puts phrasal stress on *student* and *paper*. This prevents STRESSXP from assigning any violations to this sentence, as every XP contains a stressed word. Phrasal stress on *student* allows DP* and NP* to satisfy STRESSXP, and phrasal stress on *paper* allows every other phrase in (25) to as well.

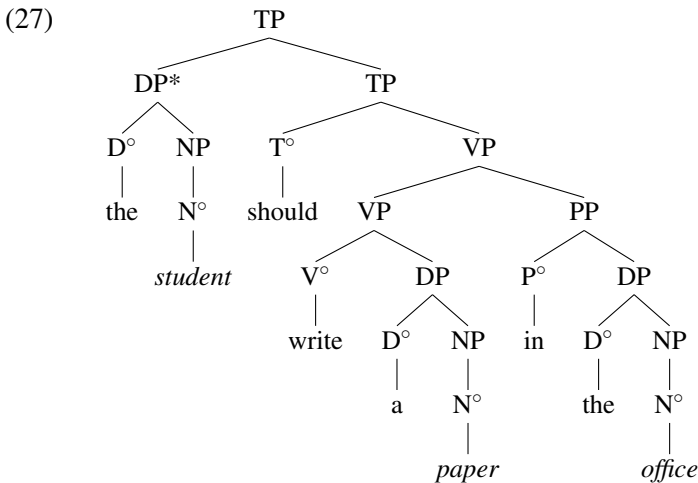
STRESSXP is not sufficient, however, because it is equally well satisfied if there is phrasal stress on any of the other words in (25), and this should be prevented. I suggest, then, that we also penalize stress with (26).

(26) NOSTRESS

Assign one violation for every word with phrasal stress that a sentence contains.

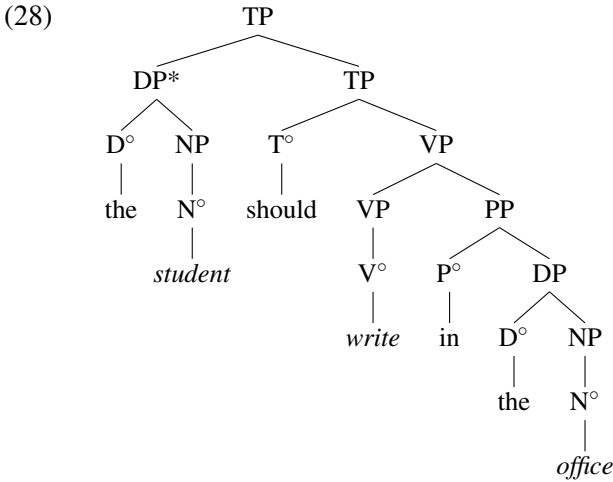
If STRESSXP outranks NOSTRESS, the result is that *student* and *paper* will have to be phrasal stressed in (25), but no other word can be. This is exactly what is desired.

Another illustration of how this system works is in (27).



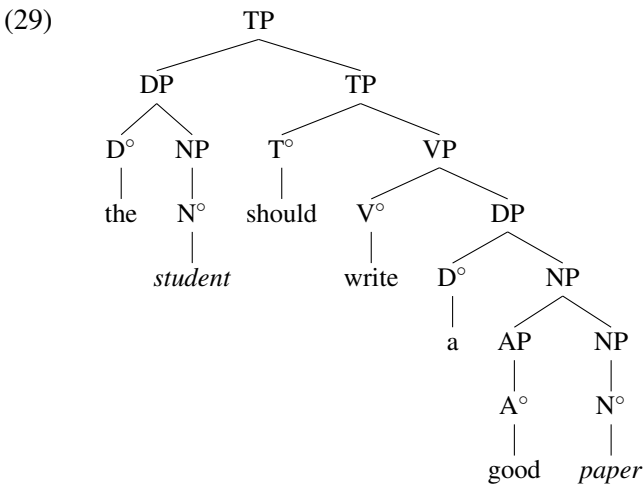
This has the same pattern of phrasal stress assignment, except that the additional presence of PP introduces phrases that cannot satisfy STRESSXP without introducing more phrasal stresses. The fewest numbers of additional phrasal stresses required to satisfy STRESSXP is one: placed on *office*.

It is instructive to compare (27) with (28), where the optional object is missing.



Because the object is missing in (28), phrasal stress must fall on *write* in order to allow VP to satisfy STRESSXP. The differing patterns of phrasal stress on (25), (27), and (28) indicate that it is indeed the presence of XPs that controls where phrasal stress is placed, just as Truckenbrodt's STRESSXP says.

Something goes awry with this system in (29), however.



The addition of the AP in (29) does not require additional phrasal stresses. Indeed, putting phrasal stress on *good* is not allowed, suggesting that NOS-

TRESS disallows it. There is something that causes STRESSXP to differentiate the PP adjunct in (27) from the AP adjunct in (29).

The difference between these examples that I will leverage is that the additional phrase in (29) contains just one word, whereas the one in (27) contains more than one word. The difference between strings of words that are minimal—contain just one word—and those that aren't—contain more than one word—is prosodically relevant. Individual words are mapped onto prosodic words, whereas strings of words that form syntactic units are mapped onto prosodic phrases. Let's follow Selkirk (2011) and express these as constraints.

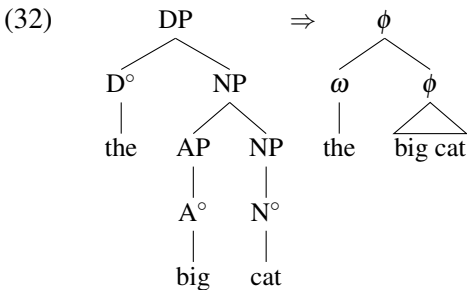
(30) MATCH ϕ

Assign one violation for every $d(XP)$ that doesn't make a prosodic phrase (ϕ). $d(XP)$ is the set which contains all and only the words dominated by XP .

(31) MATCH ω

Assign one violation for every X° whose exponent doesn't make a prosodic word (ω).

The formulation of MATCH ϕ follows Elfner (2012). It has the useful feature of controlling linearization as well as prosodification, on the natural assumption that a string of words must be contiguous to be a prosodic phrase. To see this, consider how MATCH ϕ evaluates (32).



If $\mathcal{L}(32)$ contains the ordered pairs in (33), it will violate MATCH ϕ , as there is no way of forming a prosodic phrase from it of just the words *big* and *cat*, i.e., $d(NP)$.

- (33) the < cat big < the
 big < cat

Instead, $\mathcal{L}(32)$ must contain the ordered pairs in (34) if NP is to satisfy MATCH ϕ .

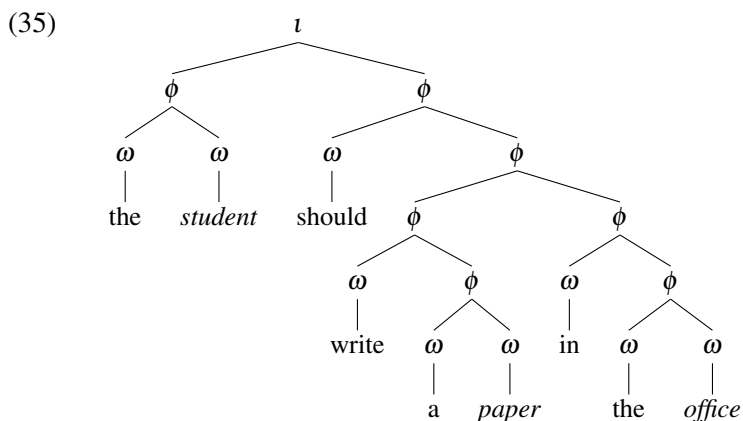
- (34) the < cat big < cat
 the < big

In what follows, I will silently rely on this feature of MATCH ϕ in determining linearizations.

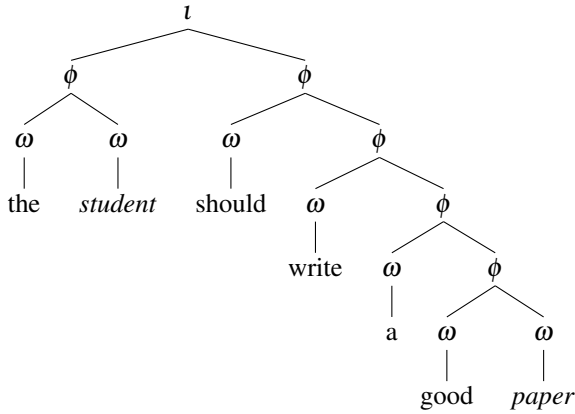
The sensitivity that MATCH ϕ and MATCH ω have to single-word versus multi-word phrases can be used to control where phrasal stress goes. Let's see how.

There is a tension between these two Match constraints that arises when a phrase consists of just one word. In these scenarios, the constraints require that the same string—the single word—be parsed as both a prosodic phrase and a prosodic word. These situations are resolved cross-linguistically in various ways. For our cases, let's consider first what happens when these scenarios are resolved by making single-word phrases prosodic words.

With these assumptions, the sentences in (27) and (29) get the prosodification indicated below.



(36)



(*t* marks intonational phrases—yet a third kind of prosodic unit. Intonational phrases won't play a role in this paper.)

I suggest using these representations to determine where stress is placed. I'll translate Truckenbrodt's proposal about the relationship between XPs and phrasal stress as instead a relationship between prosodic phrases and phrasal stress.

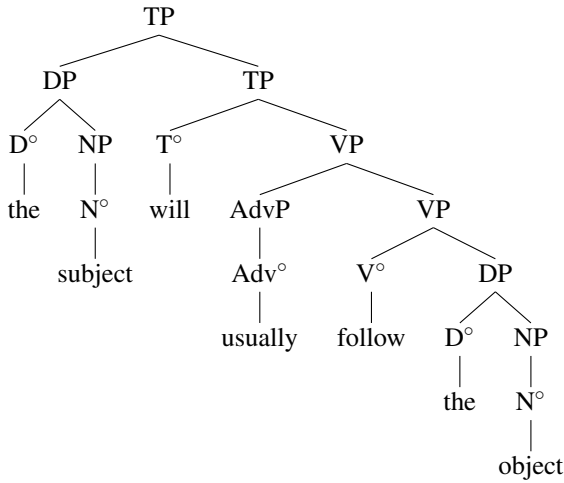
(37) STRESS ϕ

Assign one violation for each ϕ that doesn't contain a word with phrasal stress.

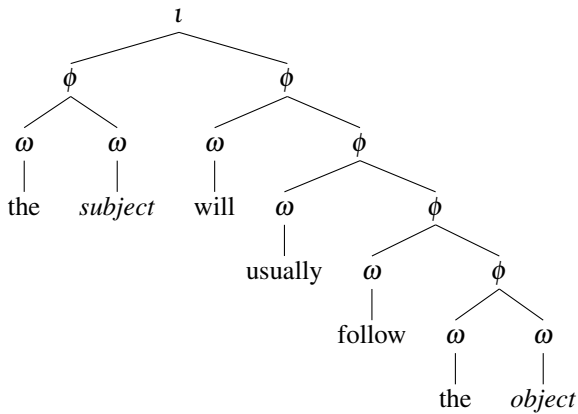
When combined with lower-ranked NOSTRESS, this (almost) produces the correct pattern of stress-placement for (27) and (29). The representations in (35) and (36) have no violations of STRESS ϕ , and minimize the violations of NOSTRESS.

These results have a parallel in situations involving adverbial modification of VPs. The example in (12), repeated here, will get the prosodic representation in (39).

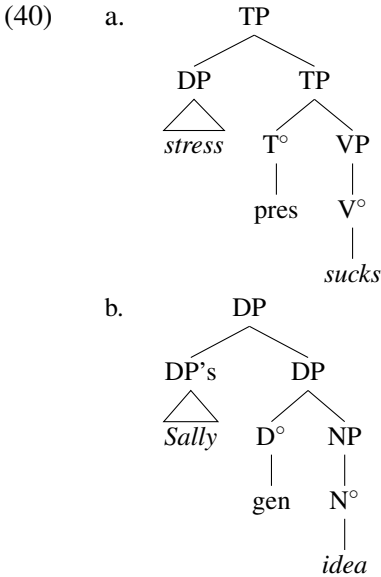
(38)



(39)

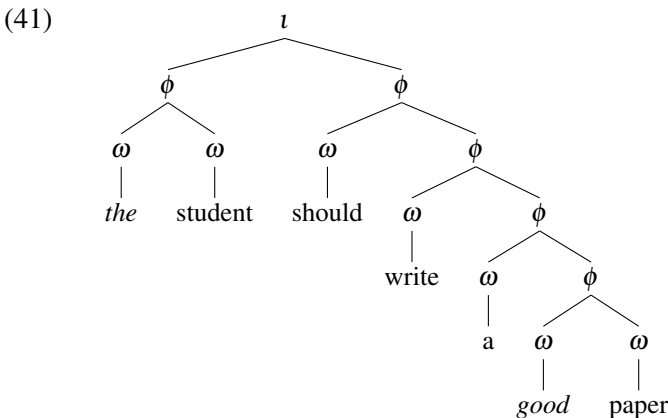


The proposal, then, is that the reason pre-verbal adverb phrases and prenominal adjective phrases are not subject to STRESS ϕ is because they are not parsed as prosodic phrases due to their single-word status. This is forced by letting the contest between MATCH ϕ and MATCH ω be won by MATCH ω . But interestingly, outside of this context, single-word phrases are normally subject to STRESS ϕ . Two examples are in (40).



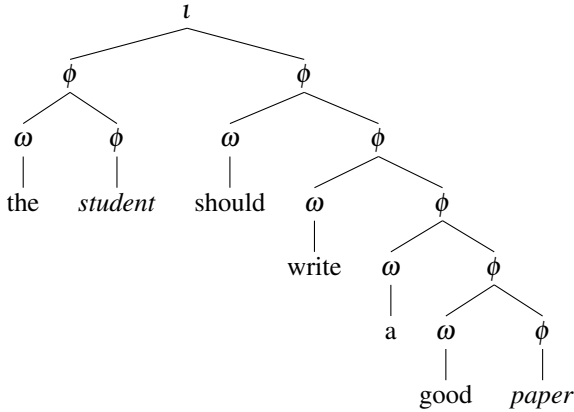
Phrasal stress is required on both of the words in each of these examples, and that follows from STRESS ϕ only if all the single-word phrases in these examples are parsed as prosodic phrases.

Furthermore, for STRESS ϕ to correctly put phrasal stress on *paper* and *student*, rather than *good* and *the*, in (29) requires that the NPs dominating these single words be parsed as prosodic phrases as well. Otherwise, STRESS ϕ could be satisfied by the prosodification in (36), as shown in (41).



The desired outcome follows from STRESS ϕ only if *paper* and *student* are parsed as prosodic phrases, as in (42), thereby making them subject to STRESS ϕ .

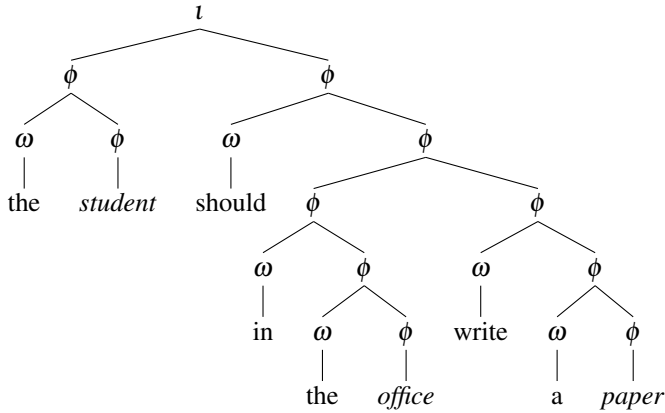
(42)



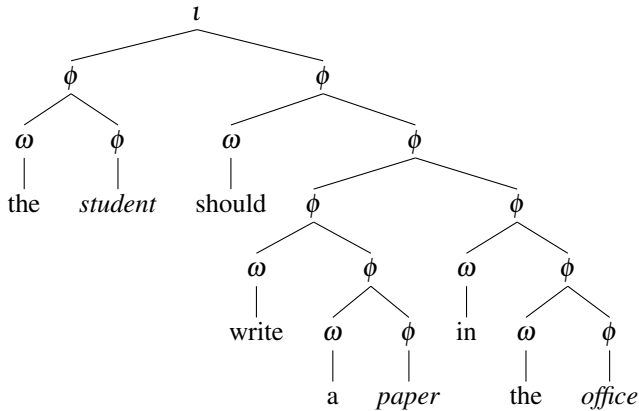
Our conclusion should be that in general MATCH ϕ wins in its contest with MATCH ω . There is something about the contexts in (27) and (12) that requires the single-word AdvP and AP to be parsed as prosodic words rather than prosodic phrases. Let's explore the idea that prosodic phrases in this position are disallowed in English, and that this is the reason HEADFINALITY is not obeyed here.

3. Prosodic Phrasing and Linear Order

Consider the string that HEADFINALITY predicts for the prosodified representation in (35), repeated here.

(43) the *student* should in the *office* write a *paper*

From the standpoint of prosody, this is same as the desired linearization, shown in (44).

(44) the *student* should write the *paper* in the *office*

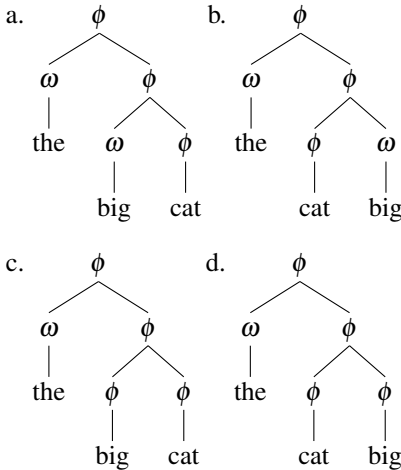
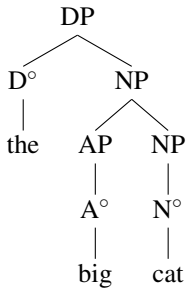
The information needed to distinguish these cases is syntactic. In particular, it resides in the notion of “in-law” that is used in Kusmer’s HEADFINALITY. An in-law is a phrase whose mother node is not its projection. HEADFINALITY favors linearizations where the words in an in-law precede the words in the in-law’s sister. That’s opposite to what is desired in the case of English adjuncts; its utility is in correctly positioning Specifiers and adjunct phrases that get parsed as prosodic words. I propose adding to HEADFINALITY, ALIGN INLAW.

(45) ALIGN INLAW

Assign one violation for each word that separates the right edge of the prosodic phrase of an in-law from the right edge of the prosodic phrase immediately dominating it.

This constraint favors (44) over (43). There are three violations of ALIGN INLAW in (43) that are absent in (44)—namely, violations that are incurred by each of the words that separates the right edge of *in the office* from the right edge of *in the office write a paper*. Examples like (46), by contrast, incur no violations of ALIGN INLAW because the adjunct AP is not parsed as a prosodic phrase.

(46)



Because adjuncts in this position are unique in being parsed as prosodic words, we should make ALIGN INLAW responsible for interrupting the otherwise general trend that single-word phrases are parsed as prosodic phrases in

English. We'll first need a way of modulating the contest between MATCH ϕ and MATCH ω when they both evaluate the same single-word expression. This is typically done with a constraint that disfavors single-word prosodic phrases, sometimes called "Binarity."²

- (47) BIN ϕ
 Assign one violation for every prosodic phrase that contains less than two words.

English instantiates the ranking of these constraints in (48).

- (48) ALIGN INLAW >> MATCH ϕ >> HEADFINALITY >> BIN ϕ

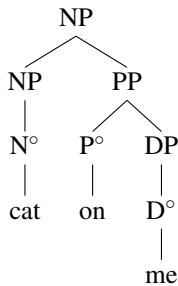
An illustration of how this system applies to (46) is given in the following tableau. (I only consider here outcomes that obey highest ranking ANTISYMMETRY, which requires that *the* precede *big* and *cat*.)

- (49)

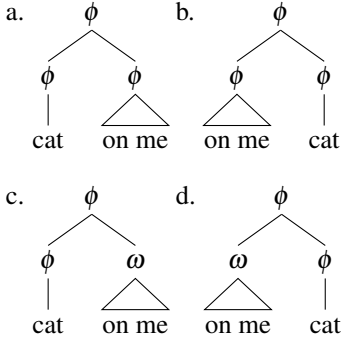
(46)	ALIGN IL	MATCH ϕ	HEADFIN	BIN ϕ
a. $\left[\begin{smallmatrix} \text{the} \\ \text{big} \\ \text{cat} \end{smallmatrix} \right]$		*AP		*NP
b. $\left[\begin{smallmatrix} \text{the} \\ \text{cat} \\ \text{big} \end{smallmatrix} \right]$		*AP	*!AP	*NP
c. $\left[\begin{smallmatrix} \text{the} \\ \text{big} \\ \text{cat} \end{smallmatrix} \right]$	*!AP			*AP,*NP
d. $\left[\begin{smallmatrix} \text{the} \\ \text{cat} \\ \text{big} \end{smallmatrix} \right]$		*AP	*!AP	*AP, *NP

A situation that involves an adjunct that doesn't violate BIN ϕ is illustrated by (50), with the tableau in (51). (I don't consider the way the system evaluates the contents of the PP.)

- (50)



²See, e.g., Inkelas & Zec (1990) Mester (1994), Selkirk (2000).

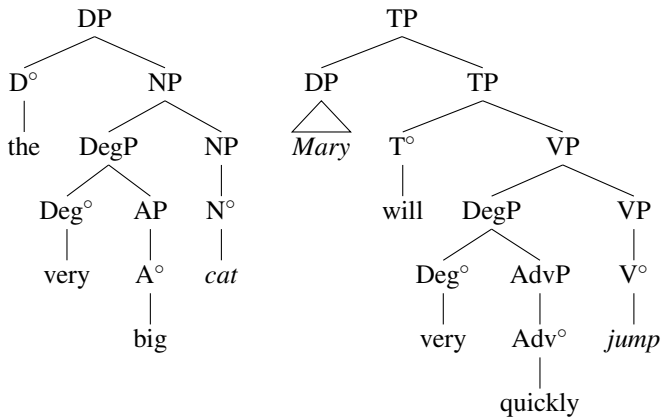


(51)

(50)	ALIGN IL	MATCH ϕ	HEADFIN	BIN ϕ
a. cat on me			*PP	*NP
b. on me cat	*!PP			*NP
c. cat on me		*!PP	*PP	*NP
d. on me cat		*!PP		*NP

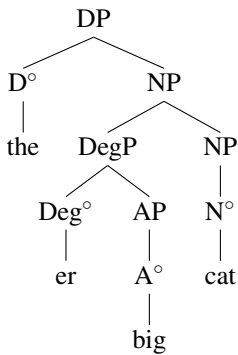
There are two problems for this proposal that I am aware of. One comes from letting the contest between MATCH ϕ and MATCH ω be determined by BIN ϕ alone. This predicts that it is only the difference between a one-word string and a multi-word string that determines whether an XP is susceptible to being parsed as a prosodic phrase or not. If prosodic phrases can be detected by whether or not they require a word with phrasal stress within them, then the Degree Phrases in (52) should be prosodic phrases.

(52)



As can be seen from where phrasal stress falls, these DegPs do not trigger STRESS ϕ violations when they fail to contain phrasal stress. This, as well as their linear position, would follow if they do not constitute prosodic phrases. I do not know how to derive this effect. The syntax does seem to require that the two words that make up *very big* and *very quickly* constitute phrases, in the way indicated. I note that the case involving the adjective *big* includes examples in which the morpheme in the Deg $^\circ$ position and the adjective that follows are parsed as single words, as in (53).

(53) the bigger cat



Perhaps there is some sense in which DegPs can be classed as words—even when they seem to have two of them—and therefore escape violating MATCH ϕ when they are not prosodic phrases.

The second problem concerns the phrases in Specifier position. As we've seen, these are always parsed as prosodic phrases—even when they violate BIN ϕ —and this correlates with the fact that they obey HEADFINALITY even when they violate ALIGN INLAW. In Kusmer's system, what makes a phrase in Specifier position special is that the words it contains are not c-commanded by the head. As a consequence, phrases in Specifier position are not subject to ANTISYMMETRY's requirement that the phrase's contents follow the head. It is only phrases in complement position that ANTISYMMETRY might apply to, as these are the only phrases whose content will be c-commanded by the head.

This way of distinguishing phrases in Specifier positions from phrases in complement positions makes the wrong cut when phrases in adjunct position are considered. We want these phrases to be subject to the conditions that govern complements—as we've just seen—but phrases in Specifier position to

be freed from those conditions. The cross-linguistic specialness of phrases in Specifier position with respect to their linearization is well-known. They are phrase initial in-laws, even when that is at odds with the normal position of in-laws. This paper aims to suggest that they are also prosodically special. In English, this is seen by their stubborn insistence on being prosodic phrases, even in conditions where other in-laws demote to prosodic words. We should look for a characterization of the specialness of Specifiers that takes into account the prosodic nature of that specialness as well.

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Form Copy and Wh-dependencies

Dalina Kallulli & Ian Roberts*

Abstract

Starting from the observation that resumption asymmetries with wh-phrases depend on the status of the latter as D-linked or non-D-linked, in this paper we propose that resumption is restricted to (sometimes concealed) relative clauses. We implement this idea in terms of Form Copy, as defined in Chomsky et al. (2023) for A-dependencies. The theoretical contribution of this paper is thus our extension of the scope of Form Copy to A'-dependencies.

1. Introduction

A well-known asymmetry in languages with clitic doubling concerns clitic doubling of (direct object) wh-phrases, which is only possible with so-called “D-linked” ones (Pesetsky 1987), as illustrated for Albanian in (1).¹

- (1) a. Çfarë (*e) solli Ana?
what CL.ACC.3S brought Ana
‘What did Anna bring?’
b. Cilin libër (e) solli Ana?
which.the.ACC book CL.ACC.3S brought Ana
‘Which book did Anna bring?’

The pattern in (1) is in fact more general in that it is replicated in languages that use other resumptive strategies (see Boeckx 2003). This is shown in (2), where the Hebrew resumptive pronoun occurs only with a D-linked wh-phrase:

- (2) a. *mi nifgaSta ito
who you.met with.him
‘Who did you meet with?’ (Hebrew, Sharvit 1999: 591)

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- b. eyze student nifgaSta ito
 which student you.met with.him
 ‘Which student did you meet with?’ (Hebrew, Sharvit 1999: 591)

In this paper, we propose, following Kallulli (2012), that resumption is restricted to (sometimes concealed) relative clauses. We implement this idea in terms of Form Copy (FC), as defined in Chomsky et al. (2023) for A-dependencies. The theoretical contribution of this paper is thus our extension of the scope of FC to A'-dependencies (see also Roberts 2024, on extending FC to heads and features of heads).

The paper is organised as follows: first, we present the theoretical preliminaries on Form Copy (Section 2). In Section 3, we give more data on resumption in *wh*-questions and the role of D-linking, drawing on work on Hebrew by Doron (1982) and Sharvit (1999). We then present a case study of Albanian, before looking at English in light of these proposals. Next, we present our analysis. The heart of the proposal is that resumption is restricted to (sometimes concealed) relative clauses (see Kallulli 2012), an idea which we here implement in terms of Form Copy, as defined in Chomsky et al. (2023). In this way, we extend the FC mechanism from A-dependencies, as discussed by Chomsky et al., to A'-dependencies. We also briefly consider further implications of these proposals before concluding.

2. Background on Form Copy

Chomsky et al. (2023: 24) define FC as follows:

- (3) Where X, Y are structurally identical, $FC(X, Y)$ interprets X, Y as copies, i.e. the inscriptions are interpreted in exactly the same way.

The authors go on to show that FC operates under conditions of c-command (X and Y must be in a c-command relation), minimality (enforced by Minimal Search) and internally to a given phase (enforced by the Phase Impenetrability Condition). For example, FC applies in the passive in (4):

- (4) [{ {many, people}, {were, {praised, {many, people}}}]

Here the two occurrences of {many, people} are copies by FC, since the first copy c-commands the second, there is no intervening copy, and, since passive

ν P is defective, they are in the same phase. FC is relevant at both interfaces: at the CI interface copies may be interpreted, accounting for reconstruction and other effects as has been known since Chomsky (1993); in (4), the lower copy determines the thematic role of {many, people}, in that this argument is interpreted as bearing the thematic role appropriate to the internal argument. At the SM interface, only one copy is interpreted; this is almost always the highest one, as in (4). Chomsky et al. further adopt the principle of Preservation, which dictates that Internal Merge can only target non-theta-positions (this is because inscriptions can only be interpreted in one way, and movement to a theta position changes interpretation). FC is active in the derivation of A-movement as we see in the passive in (4), and also in control relations (Chomsky et al. 2023: 34–36). Consider the example in (5):

(5) {{the, man}, {tried {to, {{the, man}, {read, {a, book}}}}}}

Here both occurrences of {the, man} are Externally Merged, as they have different theta-roles and, as we just seen, Preservation prevents movement to theta-positions and hence prevents a single argument from bearing more than one theta role. However, FC is independent of movement. Hence it can in principle apply here. The conditions on FC are all met, in that the higher occurrence of {the, man} c-commands the lower one, there is no intervener and, assuming that infinitival clauses (whether CP or TP) are not phasal, they are in the same phase. So, as Chomsky et al. (2023: 34–36) point out, FC applies without Internal Merge in control contexts, with the lower copy deleted. We thus have the following situation:

- (6) a. FC + IM \rightarrow lower copy is “trace”
 b. FC + EM \rightarrow lower copy is “PRO”

As Chomsky et al. (2023: 45) put it “[w]hat is traditionally referred to as ‘trace’ is the identity relation ensured by FC; while PRO is a separate instance of NP put into the copy relation via FC.” Let us now look at how FC interacts with Internal and External Merge in the A'-system, but first we need to say something more about resumption.

3. More on resumption

3.1. Doron (1982) vs. Sharvit (1999)

In her discussion of resumptive pronouns in Hebrew, Doron (1982) observes that when a trace in a relative clause is c-commanded by a quantified expression, the sentence is ambiguous between a ‘single-individual’ and a ‘multiple-individual’ reading, as illustrated in (7), but if the trace is filled by a resumptive pronoun, the only available reading is the single-individual reading (and as Sharvit 1999: 588 notes “the pronoun in the matrix VP is interpreted as a free variable”), as shown in (8):²

- (7) ha-iSa Se kol gever hizmin __ hodeta lo
 the-woman *Op* every man invited thanked to-him
 a. ‘The woman every man invited thanked him’
 b. ‘For every man *x*, the woman that *x* invited thanked *x*’
- (8) ha-iSa Se kol gever hizmin **ota** hodeta lo
 the-woman *Op* every man invited her thanked to-him
 ‘The woman every man invited thanked him (= *y*)’

Sharvit (1999) points out further interpretive differences between *wh*-questions with resumptive pronouns as opposed to those with *wh*-traces. For example, while the latter allow both functional readings and pair-list readings, the former only allow functional readings and disallow pair-list readings, as shown in (9) and (10):

- (9) ezyo iSa kol gever hizmin __
 which woman every man invited
 ‘Which woman did every man invite?’
 a. et Gila
 ACC Gila
 b. et im-o
 ACC mother-his

²As Sharvit (1999: 588) explains, “[u]nder the single-individual reading in ([7]a), the same woman is associated with all the men, and the pronoun in the matrix VP (namely, ‘him’) is interpreted as a free variable (referring to a particular individual). Under the multiple-individual in ([7]b), each man is paired with a different woman, and the pronoun in the matrix VP is interpreted as a variable bound by ‘every man’.”

- c. Yosi et Gila; Rami et Rina
 Yosi ACC Gila; Rami ACC Rina
- (10) ezyo iSa kol gever hizmin **ota**
 which woman every man invited her
 ‘Which woman did every man invite?’
- a. et Gila
 ACC Gila
- b. et im-o
 ACC mother-his
- c. *Yosi et Gila; Rami et Rina
 Yosi ACC Gila; Rami ACC Rina

However, Sharvit (1999) challenges Doron’s (1982) claim that there is a fundamental difference between traces and resumptive pronouns, since the interpretive contrasts presented above are not found in specificational sentences like (11):³

- (11) ha-iSa Se kol gever hizmin ___ / **ota** hayta iSt-o
 the-woman *Op* every man invited / her was wife-his
- a. The woman every man invited was his (he = y) wife.
- b. For every man *x*, the woman *x* invited was *x*’s wife

Sharvit (1999) argues that relative clauses in equative/specificational sentences correspond to natural functions, whereas in non-equative/predicational sentences they correspond to lists of arbitrary pairs; hence, although traces are licensed everywhere, resumptive pronouns are licensed only in equative sentences. Therefore “resumptive pronouns support natural function readings but not pair-list questions because natural functions (for whatever reason) are **permissible referents of pronouns**, but sets of arbitrary pairs are not” (Sharvit 1999: 602) [emphasis ours].⁴ Crucially, however, she acknowledges that “[w]e have not said anything about what makes a function ‘natural’, or why pronouns are sensitive to the natural function/pair-list distinction. **I do**

³Indeed Sharvit (1999: 595) states that “[a] pair-list answer is strongly disfavored, even if the second member of each pair happens to be, for example, the mother of the first member”.

⁴The pair-list reading is also a functional reading (of a different kind, Chierchia 1991), i.e. semantic type alone does not differentiate between ‘natural’ functions and sets of (possibly arbitrary) pairs; both are functions from individuals to individuals (type <e,e>).

not know the full answers to these questions. Intuitively, a natural function satisfies a salient function-definition schema.” (Sharvit 1999: 607) [emphasis ours].

To summarise, Sharvit’s analysis rests on the assumption that there is a semantic/pragmatic but not syntactic distinction between natural functions and pair-lists, which goes beyond semantic type denotation, and possibly beyond D-linking, while at the same time admitting the role of salience, which brings us back to D-linking.⁵

3.2. Kallulli (2012)

The central claim of Kallulli (2012) is that resumption is restricted to (sometimes concealed) relatives. More specifically, an example like (2) has the bi-clausal structure shown in (12), containing a null copular construction:⁶

- (12) [CP which woman_k \emptyset _{COP} [DP the one / such (woman_k)]_J [CP that every man invited her_j]]

This analysis straightforwardly derives the grammaticality contrast between (1)a and (1)b. The intuition behind this analysis fits also with other facts discussed in Sharvit (1999) concerning the distribution of different types of (roughly) distributive versus functional readings of relatives in specificational versus predicational contexts (e.g. as discussed above). In addition, this analysis can also account for other facts, such as the obviation of both weak crossover and Principle C effects in constructions with resumptive pronouns (see also Demirdache 1991, 1997, Shlonsky 1992, Safir 1986), as illustrated for Albanian in (13) and (14):

- (13) a. *Cil-in djalë_i pa nëna e tij_i?
 which-the.ACC boy saw.3S mother AGR his
 ‘*Which boy_i did his_i mother see?’ (Albanian)

⁵Sharvit (1999: 592) indeed states that resumptive pronouns “are contextually salient (or perhaps D-linked)”, and that “[a] resumptive pronoun requires a set of permissible values [...] as its discourse antecedent. Semantic type alone does not always distinguish between permissible and impermissible values.”

⁶Similar proposals (i.e., involving a bi-clausal structure) have been made by McCloskey (1990) and Demirdache (1991: 42ff.) for questions with resumptive pronouns in Irish and Arabic, respectively.

- b. Cil-in djalë_i e pa nëna e tij_i?
 which-the.ACC boy 3S.ACC.CL saw.3S mother AGR his
 ‘Which boy_i is such that his_i mother saw *(him_i)?’
- (14) a. *Cil-ën fotografi të Anës_i pa (ajo vetë)_i në
 which-the.ACC picture of Ana saw.3S she herself in
 gazetë?
 newspaper
 ‘*Which picture of Ana_i did she_i see in the newspaper?’
- b. Cil-ën fotografi të Anës_i e pa (ajo
 which-the.ACC picture of Ana 3S.ACC.CL saw.3S (she
 vetë)_i në gazetë?
 herself) in paper
 ‘Which picture of Ana_i is such that she_i (herself) saw it in the
 newspaper?’

Under this analysis, the grammaticality of the Albanian example in (13b) is unsurprising since the *wh*-phrase here c-commands the embedded subject *nëna e tij* ‘his mother’ from an A-position, therefore binding the pronoun *e tij* ‘his’ in it, as depicted in (15):⁷

- (15) [_{CP} cilin djalë_i është i tillë/ai (djalë)_i] [_{CP} që e_i pa
 which.ACC boy is such/he (boy) that 3S.ACC.CL saw
 nëna e tij_i *pro*]]
 mother AGR his *pro*

Likewise, the lack of Principle C effects in (14b) is straightforwardly accounted for, since under this analysis, the clitic doesn’t double the *wh*-phrase in the matrix clause but an (embedded) bound variable object *pro* (see Sportiche 2006).⁸ Further corroboration for this analysis involves the following facts.

⁷For convenience/brevity, we have glossed *ai* in (15) as ‘he’ but that is actually homomorphic with (masculine) ‘that’ (as in: *that boy*) in Albanian.

⁸A potential problem that arises from this analysis is how to account for accusative case on *cilin* ‘which’ in the relevant examples. In terms of the structure given in (15), *cilin djalë* ‘which boy’ is the subject of the concealed relative clause and so accusative case-marking is unexpected. This is an example of case-mismatch, since the head of the concealed relative shows the case corresponding to its function inside the relative clause. This instance follows directly from the idea that the relative clause and the resumptive *pro* direct-object (and therefore accusative-marked) argument in the main clause are related by Form Copy (see Section 4).

While the *wh*-phrase in (16a), where the clitic is absent, can appear in its putatively base (direct-object) position, the *wh*-phrase in (16b), where the clitic is present, cannot do so:

- (16) a. Ana solli cil-in libër?
 Ana.NOM brought which-the.ACC book
 ‘Ana brought which book?’
 b. *Ana e solli cil-in libër?
 Ana.NOM 3S.ACC.CL brought which-the.ACC book

Final evidence for the correctness of this analysis comes from interpretive differences between the clitic and non-clitic version of (1b), repeated here as (17):

- (17) a. Cil-in libër solli Ana?
 which-the.ACC book brought Ana.NOM
 ‘Which book did Ana bring?’
 b. Cil-in libër e solli Ana?
 which-the.ACC book 3S.ACC.CL brought Ana.NOM
 ‘Which is the book that Ana brought?’

In (17a) the 3Sg Accusative clitic *e* is absent while in (17b) it is present. Both of the examples presuppose that Ana brought a certain book (as predicted under the analysis of *wh*-phrases as definites, cf. Katz & Postal 1964, Kuroda 1969), but while this presupposition can be negated for (17a), it cannot for (17b), as shown in (18):

- (18) a. Cil-in libër solli Ana (në qoftë se solli
 which-the.ACC book brought Ana.NOM (in case that brought
 libër)?
 book)
 ‘Which book did Ana bring (if any)?’
 b. Cil-in libër e solli Ana (#në
 which-the.ACC book 3S.ACC.CL brought Ana.NOM (in
 qoftë se solli libër)?
 case that brought book)
 ‘Which book is such that Ana brought it (#if any)?’

Turning now to English, there are reasons to make the distinction between

resumptive *pro* and wh-trace here too. First, Cinque (1990) observes that parasitic gaps are restricted to DPs and, as is well-known, they alternate with resumptive pronouns:

- (19) a. This is a neighbourhood which you should work in before residing *(in).
 b. This is a neighbourhood which you should work in before residing in (it).

Although English doesn't generally allow for *pro* in direct-object position or otherwise other than in parasitic gap constructions, there are contexts that require a gap, (20a,b), which contrast with their close paraphrase, the so-called " 'unlyrical' such that" relative (as described by Quine 1960: 110), shown in (20c,d), which need an overt resumptive pronoun:

- (20) a. Which book is of the kind_{*i*} that you like (*it_{*i*})?
 b. Which book is the one_{*i*} that you like (*it_{*i*})?
 c. Which book is such that you like *(it) / *(that book)?
 d. *Which book is such that you read (the book)?

Here too we can posit a resumptive *pro* alternating with the overt resumptive pronoun, as Kallulli (2012) argues. This proposal can also explain the lack of weak-crossover effects in appositive relatives (see Safir 1986):

- (21) a. ?*A man_{*i*} who_{*i*} his_{*i*} wife loves t_{*i*} arrived early.
 b. John_{*i*}, who_{*i*} his_{*i*} wife loves t_{*i*}, arrived early.

(21b) has the structure in (22), with a concealed relative containing a resumptive pronoun (which may be *pro*):

- (22) John_{*i*}, who_{*i*} ~~∅ [DP such / the one]_{*i*}~~ that his_{*i*} wife loves him_{*i*}/*pro*_{*i*}, arrived early.

Further, the proposal can derive the lack of Principle C reconstruction effects with relatives, as in (23):

- (23) The picture of John_{*i*} which he_{*i*} saw in the paper is very flattering.

The contrast between relatives and analogous *wh*-questions in this respect as shown in (24) through (27) (examples from Sauerland 1998 and Safir 1999) is

now expected, given the structure in (28) we assume (still following Kallulli 2012).⁹ In other words, in the (a) sentences the *wh*-phrase neither ‘reconstructs’ in its putative external merging site, nor is it deleted at PF.¹⁰

- (24) a. The picture of John_i which he_i saw in the paper is very flattering.
b. *Which picture of John_i did he_i see in the paper?
- (25) a. The pictures of Marsden_i which he_i displays prominently are generally the attractive ones.
b. *Which pictures of Marsden_i does he_i display prominently?
- (26) a. I have a report on Bob’s_i division he_i won’t like.
b. *Which report on Bob’s_i division won’t he_i like?
- (27) a. In pictures of Al_i which he_i lent us, he_i is shaking hands with the President.
b. *Which pictures of Al_i did he_i lend us?
- (28) [_{CP} [_{DP} The picture_k of John_i [_{CP} which ∅ [_{DP} such / the one (picture_k)]_j [_{CP} that he_i saw it_j/*pro*_j in the paper]]] is very flattering].

However, the (b) examples in (24) through (27) become grammatical with emphatic pronouns such as emphatic *himself*, to which Kallulli ascribes the structure in (30).¹¹

- (29) a. Which picture of John_i did he_i himself see in the paper?
b. Which pictures of Marsden_i does he_i himself display prominently?
c. Which report on Bob’s_i division won’t he_i himself like?
d. Which pictures of Al_i did he_i himself lend us?

⁹Note the alternation between the elements *such* and the *one* in (28). For now, it is not important to distinguish between these two alternatives. What is important here is the existence of a concealed relative clause in the structure. Note also that depending on whether the concealed relative clause is a *such* that or its the *one* that alternative, the bound variable pronoun inside it will be either PF-deleted, or simply null (i.e. *pro*), but at any rate non-overt/phonologically empty.

¹⁰See Citko (2001) for the view that the *wh*-phrase in the (a) sentences in (24) through (27) does not reconstruct but is instead deleted at PF.

¹¹If what is deleted from the matrix C is a null copula, as shown in (ii), and if interrogative C requires PF-realisation (maybe because it contains an abstract affix, cf. Roberts 2023), then *do*-insertion is required. We remain neutral as to the precise mechanisms behind “*do*-support”.

- (30) [CP [DP Which picture_k of John_i] ∅ [DP such / the one (picture_k)]]
[CP that he_i himself did see it_j/pro_j in the paper]].

But why do emphatic wh-questions pattern with relative clauses while non-emphatic wh-questions don't? That is, what is it that licences the concealed relative clause strategy, why is it available for the (a) sentences in (24) through (27) (as well as for (30)) but not for the respective (b) sentences, since both involve D-linked wh-phrases? Here too we follow Kallulli (2012) in speculating that it is precisely the (concealed) bi-clausal structure of emphatic wh-questions that is responsible for their presuppositional structure, which as mentioned earlier (in the context of the discussion of the Albanian examples in (17) and (18)) and as replicated in (31) for English, is different from that of their non-emphatic counterparts, among other things.

- (31) a. Which book did Ana bring (if any)?
b. Which book is such that Ana brought it (#if any)?
c. Which book is of the kind that Ana brought (#if any)?
d. Which book is the one that Ana brought (#if any)?

Consequently, D-linked wh-phrases come in (at least) two blends, which is exactly how – following Kallulli – we have analysed D-linked wh-questions, namely as structurally mono-clausal versus bi-clausal ones. Thus, the implication of the claim that resumption is restricted to (sometimes concealed) relatives is only one way: resumption with D-linked wh-phrases entails a bi-clausal structure, but bi-clausality does not entail resumption/clitic doubling. This is in line with Sharvit's (1999: 595) observation that "satisfaction of the D-linking requirement alone does not suffice to license a resumptive pronoun". One ramification of this view is that also 'simple' wh-phrases should always have D-linked uses. Though this is sometimes disputed, the well-formedness of sentences like (32) corroborates such an analysis.

- (32) a. What is the thing that John likes?
b. What are the things John likes?
c. Who is the one that John likes?
d. Who are the ones that John likes?
e. What / who is it (that) John likes?

In this section, we have seen evidence from Albanian and English that in

certain cases the gap linked to a *wh*-phrase can be resumptive *pro* rather than a trace. We now return to the discussion of Form Copy to show how this mechanism can account for these observations.

4. Proposal: Extending Form Copy to A'-dependencies

Let us implement the bi-clausal concealed-relative analysis in terms of Form Copy. An example like (15) would have the form in (15') (here we give just the English morphemes from the gloss to (15)):

(15') [CP [DP which.ACC boy is such/he (boy)] [that 3S.ACC.CL saw [mother AGR his [DP which.ACC boy is such/he]]]

Here the higher copy of the *wh*-phrase is externally merged as the head of the hidden relative clause, hence there are no reconstruction effects, Principle C effects, weak crossover, etc. The lower copy is deleted and acts like *pro* (and can of course be spelled out as a resumptive pronoun). The higher *wh*-phrase is externally merged in a theta-position: subject of predication, which we take to be standard for the head of a relative clause (see *inter alia* Chomsky 1981).

Two of the three conditions for Form Copy are met: first, it is clear that the higher copy of the relative clause *c*-commands the lower one; second, there is no intervening element that could qualify as a closer copy to the higher relative clause, so the minimality requirement on Form Copy is met. However, the lower copy is in a different phase, *v*P, from the higher one. In order to maintain our analysis, this condition may have to be weakened; it is unclear to us whether both a minimality requirement and a co-phasehood requirement are required. In many cases (for example, superraising in the case of A-movement), these are redundant and so perhaps the co-phasehood requirement can be dropped.

Form Copy applies, making the two *wh*-phrases copies, and the lower copy is deleted. If there is overt resumption, we treat this as a partial copy. Therefore the connectivity, crossover and other effects associated with *wh*-movement do not hold here, as these are the result of *wh*-movement (Internal Merge).¹²

So for the A'-system we arrive at the position in (33):

¹²For an approach to resumption which is very similar in spirit, although framed in terms of different technical assumptions, see Shlonsky (1992), especially his Note 7, p. 453).

- (33) a. FC + IM → lower copy is “trace” (standard wh-movement)
 b. FC + EM → pro/RP (resumption)

Compare (6), from Section 1:

- (6) a. FC + IM → lower copy is “trace”
 b. FC + EM → lower copy is “PRO”

The parallels are clear, and the conclusions seem very natural from a theoretical perspective.

5. Summary and conclusions

Extending FC to the A'-system is a natural move, in fact an inevitable one given the overall goals of current work in the minimalist programme. Here we have pointed out some desirable empirical consequences of this move.¹³ For a further extension to Agree and head-movement, see Roberts (2024).

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¹³A further case where Form Copy may apply in the A'-system concerns partial wh-movement in languages like German, as studied by Gereon Müller in much of his work (see Müller 1995 et seq.).

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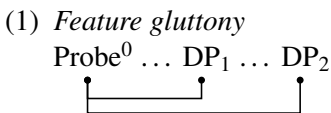
Feature gluttony in Senaya differential object marking

Stefan Keine*

1. Introduction

The Neo-Aramaic language Senaya exhibits a differential object marking (DOM) system that manifests in the verb agreement (Kalin 2014, 2018): specific objects must control agreement, resulting in ungrammaticality if they cannot do so. Kalin (2014, 2018) develops an insightful account of this DOM system in terms of *nominal licensing*. She proposes that specific DPs must be licensed through φ -Agree. If such φ -Agree is not established, ungrammaticality results.

In this paper, I propose a reanalysis of the Senaya DOM system that eschews nominal licensing. The core idea is that the restrictions on the distribution of certain nominals do not stem from special licensing needs that they are subject to, but instead find their source in the verbal φ -agreement probe, building on the *feature-gluttony* system of Coon & Keine (2021) (also see Coon et al. 2021, Hoover 2021, Keine et al. 2022, Keine & Mendia 2022, and Bhatia & Bhatt 2023). In a nutshell, in feature-gluttony configurations, a single φ -probe agrees with two DPs, as schematized in (1).



While this “one probe–two goals” configuration is not itself ungrammatical, it may give rise to irresolvably conflicting requirements for subsequent oper-

*Many thanks to Gereon for turning me into a syntactician. The first linguistics paper I wrote, under Gereon’s tutelage, grappled with differential object marking (Keine 2007), and so it is fitting for me to return to the phenomenon here, albeit in a very different domain and from a very different perspective.

ations, leading to ineffability. On this approach, ungrammaticality arises in Senaya whenever a single ϕ -probe has in its search space two DPs that are targeted by that probe. The result is a shift in perspective: instead of attributing the DOM restriction in Senaya to the presence of *too little* ϕ -Agree (two DPs need to be licensed but only one can be), the gluttony approach attributes the restriction to *too much* ϕ -Agree (a single ϕ -probe agrees with two DPs). In this paper, I will develop this line of analysis for Senaya and explore some of its consequences.

2. Differential object marking and aspect split in Senaya

Verbs in Senaya can in principle agree with both subject and object. There are up to two agreement markers in Senaya verbs, the so-called *S-suffix* and *L-suffix*. The availability of these suffixes differs across the imperfective and perfective aspect. The empirical presentation in this section is based on Kalin (2014, 2018).

2.1. Imperfectives

In the imperfective aspect, both the S-suffix and the L-suffix may occur. The subject (including the subject of an intransitive clause) controls the S-suffix; the object controls the L-suffix if it is specific. If the verb contains a past-tense marker, it appears between the two agreement suffixes, yielding the template in (2).

(2) V – S-suffix – past tense – (L-suffix)

(3) a. S-suffix: subject agreement

b. L-suffix: object agreement (if specific)

An example containing all the pieces in (2) is provided in (4).

(4) Molp -ā -wā -lan.
 teach.IMPERF -S.3SG.F -PST -L.1PL
 ‘She used to teach us.’

[Kalin 2018:117, ex. (7)]

As noted, object agreement appears only if the object is specific. If the object is nonspecific, the L-suffix is absent. This contrast is illustrated in (5).

(5) *Imperfective: objects agree if specific*

a. $\bar{A}na \ \bar{o} \ ks\bar{u}ta \ kasw \ \text{-an} \ \text{-}\bar{a}.$
 I that book write.IMPERF -S.1PL -L.3SG.F
 ‘I (will) write that book.’

b. $\bar{A}na \ (xa) \ ks\bar{u}ta \ kasw \ \text{-an}.$
 I a book.F write.IMPERF -S.1SG.F
 ‘I will write a book (e.g., someday, about something, I don’t know what).’

(Object is nonspecific, indefinite, inanimate, affected)’

[Kalin 2018:119, ex. (10b), (11a)]

2.2. Perfectives

In the perfective aspect, the L-suffix is controlled by the subject, and the S-suffix is altogether impossible, but otherwise the verbal template remains the same (6). As Kalin (2014, 2018) emphasizes, there is hence an agreement reversal here: subject agreement manifests as the S-suffix in the imperfective, but as the L-suffix in the perfective. The template is illustrated in (8).

(6) V – past tense – L-suffix

(7) a. S-suffix: *absent*

b. L-suffix: subject agreement

(8) $\bar{A}yet \ ks\bar{u} \ \text{-w}\bar{a} \ \text{-lox}.$
 you write.PERF -PST -L.2SG.M

‘You wrote (a long time ago).’

[Kalin 2018:118, ex. (9b)]

In addition to this difference in the verb agreement, the perfective also exhibits a restriction on object DPs. Nonspecific objects are permitted in the perfective and do not control agreement, whereas specific objects are impossible, regardless of whether they control verb agreement or not. This is demonstrated in (9).

(9) *Perfective: no object agreement, object must be nonspecific*

a. *Axnī ō ksūta ksū (-lā/-a) -lan (-lā/-a).
 we that book.F write.PERF (-L/S.3SG.F) -L.1PL (-L/S.3SG.F)
 ‘We wrote that book.’

b. Axnī xa ksūta ksū -lan.
 we a book write.PERF -L.1PL
 ‘We wrote a book (e.g., we have written many; not referring to a specific one).’ [Kalin 2018:120, ex. (12)]

Across the two aspects, there is hence a clear correlation between the (im)possibility of object agreement and the (im)possibility of specific objects: specific objects go hand in hand with verb agreement.

3. Nominal-licensing approach (Kalin 2014, 2018)

Kalin (2014, 2018) proposes an analysis of these facts in terms of nominal licensing (10): specific objects require licensing through ϕ -Agree (to value their Case feature), and ungrammaticality results if they cannot be licensed in this way.

(10) *Licensing requirement*

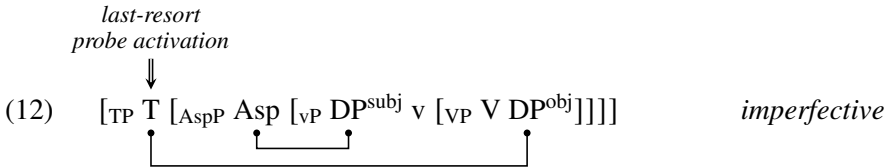
Specific DPs must be licensed through ϕ -Agree with a verbal head.

Space prevents me from presenting Kalin’s account in full; I refer the reader to Kalin (2014, 2018) for in-depth discussion. The structure for perfective transitive clauses is given in (11). By assumption, T is the only verbal head that hosts a ϕ -probe, which agrees with the subject (and is realized as the L-suffix). Because the object thus never agrees with a ϕ -probe, the licensing requirement (10) is violated if the object is specific. Specific objects are therefore banned from occurring in (11). By contrast, if the object is nonspecific, it is not subject to (10) and therefore permitted.

(11) [TP T [_{AspP} Asp [_{VP} DP^{subj} v [_{VP} V DP^{obj}]]]] *perfective*

Turning to the imperfective, Kalin’s (2014, 2018) clause structure is shown in (12). Here, the clause contains one primary ϕ -probe (on Asp) and one

secondary, inactive ϕ -probe (on T). The former is realized as the S-suffix; the latter as the L-suffix. Asp's ϕ -probe always agrees with the subject; T's ϕ -probe is activated in the imperfective only when it is necessary to license an object (i.e., if the object is specific), that is, as a last resort.



The reason for treating T's ϕ -probe as inactive by default and activated as a last resort is that there is no object agreement in the imperfective if the object is nonspecific (i.e., the counterpart of (5b) with object agreement is ungrammatical if the object is nonspecific, Kalin 2018:119). Thus, T does not agree with nonspecific objects in (12). To restrict Agree by T in this way, Kalin proposes the Licensing Economy Principle in (13).¹

(13) *Licensing Economy Principle*

A secondary licenser is activated iff the derivation will otherwise not converge. [Kalin 2018:139]

(13) mandates that the secondary licenser on T in (12) is activated only if the object is specific and hence in need of licensing. This limits object agreement to specific objects in the imperfective. Note that in order to account for the ban on specific objects in the perfective (11), it is necessary to assume that such clauses lack a potential secondary licenser.

This account is elegant and insightful, but at the same time computationally complex because (13) is a transderivational (or translocal) constraint (Müller 2000, 2011, Müller & Sternefeld 2001): a derivation in which the object-agreement probe is activated must be compared to one where it is not, with the former sanctioned only if the latter crashes. Thus, given a structure in which T's ϕ -probe has been activated, it is not possible to determine compliance with (13) by inspecting only the properties of this structure. Instead, the structure must be compared to its counterpart in which probe activation has not taken place. The structure with the activated probe is then in com-

¹See also Béjar & Rezac (2009) and Rezac (2011) for related proposals in other domains.

pliance with (13) only if the structure without the activated probe violates (10). Transderivational constraints are particularly complex because they require the construction and comparison of multiple syntactic structures and/or derivations, and they are therefore to be dispreferred on general grounds (see, e.g., Müller 2011). Furthermore, the account requires a stipulation that while T is by default inactive as a licenser in the imperfective, it is always active in the perfective (Kalin 2018:147).² In the next section, I will show that an account that does not employ transderivational constraints and last-resort probe activation becomes available if the burden of the analysis is shifted from nominal licensing to feature gluttony.

4. Feature-gluttony approach

This section develops an alternative account that does not appeal to a nominal-licensing requirement or last-resort probe activation. Instead, it attributes the ban on specific objects in the perfective to an illicit configuration in which a single \varnothing -probe agrees with two DPs.

4.1. Analysis of basic verb agreement

I will begin by considering the aspect split in the agreement system, following, in essence, many of the core structural assumptions of Kalin's (2014, 2018) account. As we saw, the imperfective exhibits a richer agreement system, comprising both agreement in the L-suffix and the S-suffix, than the perfective, which may only contain the L-suffix. The probe underlying the L-suffix is thus present in both aspects; I will simply locate it on an Agr head (the precise nature of the head is immaterial). To model the fact that the S-suffix is present only in the imperfective, I will adopt Laka's (2006), Coon's (2010, 2013), and Kalin & Urk's (2015) proposals that imperfective clauses contain more clause structure than perfective clauses. For the sake of concreteness, I will assume that imperfective clauses contain an additional Impf head (again, the precise nature of the difference is not material to the analysis), and that Impf hosts a probe that is realized as the S-suffix. The resulting clause structures are given in (14) for the perfective and in (15) for

²This is because T agrees with the subject in the perfective even if this subject is nonspecific and hence not in need of licensing through \varnothing -Agree.

the imperfective. Assuming that the structural order of the heads corresponds to the order of morphemes, in accordance with the Mirror Principle (Baker 1985), the morpheme order is V-T-L in the perfective and V-S-T-L in the imperfective.

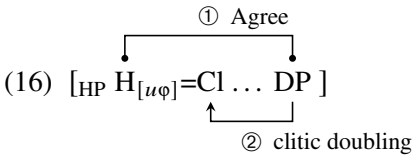
(14) *Clause structure in the perfective*

[_{AgRP} Agr_[uφ] (→ **L**) [_{TP} T [_{vP} ... V...]]]
 → *morpheme order*: V-T-L

(15) *Clause structure in the imperfective*

[_{AgRP} Agr_[uφ] (→ **L**) [_{TP} T [_{ImpfP} Impf_[uφ] (→ **S**) [_{vP} ... V...]]]]
 → *morpheme order*: V-S-T-L

I will analyze the L-suffix and the S-suffix as clitics rather than verbal agreement. In other words, both φ-probes trigger clitic doubling of the goal onto the head that hosts the probe once the Agree relationship is established (see Anagnostopoulou 2003, Preminger 2019, and the references cited there); the φ-probes themselves are not pronounced. This is schematized in (16).



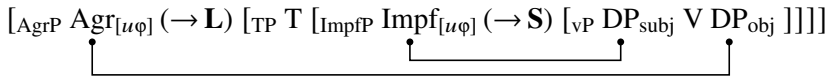
The view that the L- and S-suffix are clitics is consistent with Preminger’s (2009) heuristic for distinguishing agreement from clitic doubling. Preminger argues that failed agreement (that is, agreement that has failed to locate a goal) results in default agreement whereas failed clitic doubling results in the wholesale absence of a clitic. I will propose below that the absence of the L-suffix with nonspecific objects in the imperfective is an instance of failed agreement. The fact that the L-suffix disappears altogether (rather than surfacing with default features) thus provides theory-internal motivation for treating it as a clitic. Doron & Khan (2012), Kalin (2014), and Kalin & Urk (2015) likewise treat the L-suffix as a clitic. Note that no analogous reasoning

can be applied to the S-suffix, which always finds a goal, but I will assume that the S-suffix is a clitic as well (though this is not crucial for the account).³

4.2. Imperfectives

I first consider the imperfective with a specific object. Impf agrees with, and clitic-doubles, the subject DP. I assume, following Anagnostopoulou (2003), Béjar & Rezac (2003), Preminger (2009), and Coon & Keine (2021), that a DP that has been clitic-doubled is rendered invisible for subsequent Agree operations. As a result, subsequent probing by Agr skips the subject and agrees with, and clitic-doubles, the object. The resulting structure is shown in (17). The clitics themselves are not represented in (17) for readability.

(17) *Imperfective with specific object*

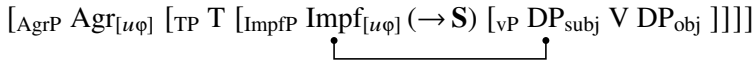


If the object is nonspecific, it does not trigger an L-suffix. Clitic doubling that is limited to specific objects is independently attested. For example, nonspecific objects may not be clitic-doubled in Porteño Spanish (Suñer 1988). This restriction may be implemented in a number of ways. One is to assume, following Preminger (2019) and the references there, that clitic doubling is not itself sensitive to specificity, but that it is phase-bounded. Specific objects undergo movement out of the VP (e.g., Diesing 1992, 1997, Diesing & Jelinek 1995), where they are then accessible to the probe on Agr. By contrast, nonspecific objects remain in a VP-internal position and are thus separated from Agr by a clause-internal phase, preventing Agree and thus clitic doubling. Subjects are always VP-external and thus always visible to the ϕ -probe, regardless of whether they are specific or not. Thus, if the object

³Doron & Khan (2012) treat the L-suffix as a clitic but the S-suffix as agreement in Neo-Aramaic. Their reason (p. 228) is that the L-suffix follows the tense marker *-wa*, which they treat as an auxiliary, whereas the S-suffix precedes it (see (4)). However, this difference does not necessarily mean that the two suffixes differ in their status; it may only show that the probe that underlies the L-suffix is higher than *-wa* whereas the probe that underlies the S-suffix is lower.

is nonspecific, only the subject agrees, leading to only an S-suffix, as shown in (18).⁴ Agr’s failure to find a goal is harmless (Preminger 2014).

(18) *Imperfective with nonspecific object*



4.3. Perfectives

Turning now to the perfective, recall that here the S-suffix never appears. Within the analysis developed so far, the reason is that perfective clauses lack the Impf layer present in imperfective clauses, and hence the ϕ -probe associated with this head. What we have in perfectives, then, is a configuration in which there exists only a single ϕ -probe (on Agr), but potentially two accessible DPs. In this respect, the perfectives crucially differ from imperfectives, which contain two probes. The “one probe–two goals” configuration in perfectives is precisely the configuration that may result in gluttony (see (1)), and indeed it is precisely in the perfective that ungrammaticality results if the object is specific and hence capable of being clitic-doubled.

To develop this approach, it is necessary that the ϕ -probe on Agr agrees with more than one DP if its search space contains two licit goals (i.e., DPs that have not already been clitic-doubled). This requires an extension of the theory proposed in Coon & Keine (2021). The model of Agree adopted there decomposes ϕ -probes into smaller, geometrically-organized segments, which probe independently (see, e.g., Béjar 2003 and Béjar & Rezac 2009 for decomposed probes of this kind, and Harley & Ritter 2002 for ϕ -feature geometries more generally). This has the effect that an articulated probe, after having agreed with a DP₁, will enter into Agree with a DP₂ only if DP₂ matches segments on the probe that have not been matched by DP₁. A key consequence is that double Agree is never established if DP₁ bears more segments than DP₂ (e.g., in 1>3 configurations) or if they are equally specific (e.g., in 3>3 configurations). As it stands, this model does not extend to Senaya DOM because the ban on specific objects in the perfective holds regardless of the features of the subject. For example, we already saw based

⁴Alternatively, one might assume that the clitic-doubling process itself is subject to specificity—that is, the probe that underlies clitic-doubling may only agree with specific DPs, though in this case more needs to be said about why subjects always agree.

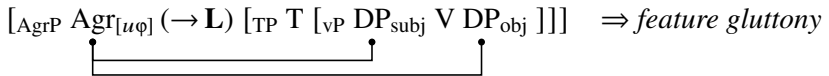
on (9b) that 1>3 configurations give rise to the restriction, and Laura Kalin (p.c.) informs me that 3>3 configurations do so as well. What is needed, then, is an Agree calculus that leads to double Agree by Agr if the object is specific regardless of the properties of the subject.

To achieve this behavior, I will draw on the literature on *Multiple Agree* (e.g., Hiraiwa 2001, 2005). By assumption, Agr's φ -probe is a Multiple-Agree probe, as stated in (19). In this respect, it differs from Impf's φ -probe.

- (19) Agr's φ -probe enters into Multiple Agree: it agrees with every available goal DP in its search space (i.e., every DP in the same phase that has not already been clitic-doubled).

The crucial consequence of (19) is that Agr will agree with both the subject and the object in the perfective if the object is specific, as shown in (20). The result is a gluttonous configuration.

- (20) *Perfective with specific object*



Hiraiwa (2001, 2005) argues that Multiple Agree is established *simultaneously*: the probe enters into Agree with all goals at the same time, rather than in order. I will adopt this assumption in what follows.

Coon & Keine (2021) propose that gluttonous configurations like (20) may give rise to irresolvably conflicting requirements for subsequent operations. What conflict arises depends on whether the probe induces clitic doubling or morphological φ -agreement. Assuming that the L-suffix is a clitic (see section 4.1) and that the probe on Agr is therefore a probe that induces clitic doubling, the conflict that arises from Agr having agreed with two DPs concerns the clitic-doubling process. Following Coon & Keine (2021:671), if a clitic-doubling probe has agreed with a DP, this DP must be clitic-doubled onto the head hosting the probe (commonly modeled as head movement). This requirement is stated in (21); also see Coon et al. (2021) for phrasal movement.

- (21) If a clitic-doubling probe on a head H has agreed with a DP, this DP must be clitic-doubled onto H.

Satisfying (21) is straightforward if Agr agrees with only a single DP. But if Agr has agreed with two DPs, (21) demands that both DPs must be clitic-doubled onto Agr. Coon & Keine (2021) argue that it is not possible to satisfy (21) in this case. The reason is that, in line with the assumption that syntax is strictly derivational and does not have access to look-ahead, (21) must be satisfied for every relevant DP immediately (i.e., temporary violations that are rectified at a later stage of the derivation are not permitted). In other words, (21) is an inviolable derivational requirement that must be satisfied whenever its structural description is met. As a result, it is not possible to clitic-double the two DPs in (20) sequentially as clitic doubling one would lead to a fatal violation of (21) for the other. Furthermore, it is not possible to clitic-double both DPs simultaneously because doing so would require Merge of three elements (the subject's clitic, the object's clitics, and Agr) in a single derivational step. Assuming, as is standard, that Merge is binary, this option is ruled out. Finally, a derivation in which Agr first agrees with the higher DP, which is then clitic-doubled, followed by Agree with the lower DP, which is then clitic-doubled, is likewise ruled out, given that Multiple Agree is established simultaneously rather than sequentially, as noted above (Hiraiwa 2001, 2005). There is hence no stage of the derivation in which Agr has agreed with the subject but not the object in (20).⁵

Putting these pieces together, the φ -probe on Agr must immediately agree with both the subject and the specific object DP in (20), which leads to an unavoidable violation of (21). Assuming that (21) is inviolable, this violation is fatal, making the structure in (20) ineffable—there is no grammatical continuation. As a result, specific objects are ungrammatical in the perfective.

By contrast, if the object is nonspecific in the perfective, no gluttony arises because nonspecific objects never trigger verb agreement or clitic doubling (as seen particularly clearly in the imperfective). Recall from the imperfective

⁵Other options of ruling out such a derivation are available as well. Rezac (2003, 2004) and Béjar & Rezac (2009) argue that Agree is subject an *earliness requirement* (i), which demands that φ -Agree must be established right away if it can be (i.e., if the structural conditions for it are met). A derivation of (20) in which Agr agree with the subject DP followed by clitic doubling of the subject DP would violate (i) because the conditions for Agree with the object DP are met after Agree with the subject DP, yet this Agree is not established at this stage of the derivation.

(i) If φ -Agree is possible at a stage of the derivation, it must apply.

derivation in (18) that nonspecific objects are not available goals for the ϕ -probe on Agr (because they remain within a lower phase, I have assumed). As a result, Agr in the perfective only agrees with the subject DP in this case, as in (22), and no gluttony arises.

(22) *Perfective with nonspecific object*

$$[\text{AgrP Agr}_{[\text{u}\phi]} (\rightarrow \mathbf{L}) [\text{TP T } [\text{vP DP}_{\text{subj}} \text{ V DP}_{\text{obj}}]]]$$

Because Agr's ϕ -probe only agrees with a single DP in (22), (21) is obeyed (as is (i) in fn. 5), and no conflict arises. This derives that nonspecific objects are grammatical in the perfective from the independently-observable fact that such objects do not participate in the verbal agreement/clitic system.

5. Conclusion

In this paper, I proposed a gluttony-based analysis of differential object marking (DOM) in Senaya. This account differs from Kalin's (2014, 2018) nominal-licensing-based account of Senaya DOM in a number of ways, both analytical and conceptual. The core idea behind a nominal-licensing account is that specific objects are subject to special licensing requirements that need to be met via ϕ -Agree in order for these objects to be grammatical. As discussed in section 3, this model entails significant computational complexity. Most strikingly, to block object agreement/clitic doubling of nonspecific objects, the model must invoke a transderivational constraint (the Licensing Economy Principle (13)) that compares a derivation in which the secondary probe is activated to one where it is not, with the former licensed only if the latter leads to ungrammaticality. Moreover, this last-resort mechanism must only be available in the imperfective aspect.

I instead proposed an account of these facts in terms of feature gluttony. Nominal licensing plays no role in this account. What bans specific objects in the perfective is not that they must agree but cannot, but that they agree with Agr's ϕ -probe alongside the subject. This leads to gluttony and thereby overwhelms the probe, with no way of satisfying (21). The fact that the restriction is found only in perfective clauses is attributed to the independently-motivated view that perfective clauses are structurally smaller than imperfective clauses: imperfective clauses contain an additional ϕ -probe that clitic-

doubles the subject and thereby renders it invisible to Agr's ϕ -probe, avoiding gluttony. Thus, while specific objects are always visible to verbal ϕ -probes (directly observable in the imperfective), this visibility creates a "one probe–two goals" configuration only in the perfective. This reanalysis thus shifts the burden of the account away from the (licensing) requirements of nominals and instead views the restriction as arising from a problem in the ϕ -probe.

In eschewing nominal licensing, the account also avoids the need for a transderivational constraint such as the Licensing Economy Principle (13). In fact, the gluttony account views syntactic requirements such as the clitic-doubling requirement in (21) as immediate, unranked, and inviolable (hence resulting in ineffability if violated), with no need to appeal to last-resort operations or transderivationality.

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Reflections on the scholarly nature of linguistics

Tibor Kiss

1. The scholarly nature of linguistics

Linguists have claimed repeatedly that linguistics is a science (see Chomsky 2013: 48), and more specifically that it is a branch of biology. Biologists have, as far as I know, not endorsed this view (except for bioinformatics, which employs methods developed in computational linguistics to deal with sequences). Leaving the relationship between biology and linguistics aside, the more general question is: is it expedient for linguistics to be treated as a science, instead of ... as what exactly?

In this paper on the occasion of the 60th birthday of my colleague and friend Gereon Müller, I shall try to address this issue from a personal and a more general perspective, but I cannot promise that I shall always be able to properly separate both perspectives. Personally, I have been confronted with the issue relatively late in my academic life, when I realized that the majority of academic staff at Ruhr-University Bochum takes seriously the architectural design of the university, which has been set up in the 1960s in brutalist concrete structures, properly named the G-, I-, M-, and N-buildings, standing for the German terms *Geisteswissenschaften* (humanities), *Ingenieurwissenschaften* (engineering), *Medizin* (medical science), and *Naturwissenschaften* (natural sciences). Of course, I had come to know the nomenclature for several years, but it never crossed my mind that at Ruhr-University you were considered a *Geisteswissenschaftler*, *Ingenieurwissenschaftler* etc. if your office was in one of the respective compounds (there are no S-buildings for *Sprachwissenschaften* (linguistics)). Many of my colleagues residing in the N-buildings even found relief in the Sapir-Whorf-Hypothesis, claiming that the English-speaking world had long drawn a necessary distinction between *science* (scientific) and the *humanities* (non-scientific).¹ It followed that scientists and humanists

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¹A former first minister of Baden-Württemberg had similar views and suggested to rename

are not only concerned with different topics, but now being a humanist, I was surely in danger of acting outside of proper scientific methodology.² I have frequently rejoined that demarcations between scholarly disciplines are cultural products, but to no avail (ironically, the ECTS points required for a B.Sc. in biochemistry are the same as required for a B.A. in media studies).

Being a linguist, I was more than mildly puzzled. I had learned early in my studies that de Saussure had moved linguistics away from philology (similar ideas are found in Husserl's philosophy), and I always took it seriously that language – and grammar in particular – is a system with its own regularities, which is clearly apparent in issues ranging from word order (if ambiguity should be avoided and processing eased, all languages should be VSO!) to the count/mass distinction (see Kiss et al. 2021).³ In addition, I had the opportunity to work in interdisciplinary research projects (generously funded by a then-giant in computer manufacturing) together with logicians, computer scientists, and linguists (all in the same building, which was not even adorned with the three letters then known to signify the presence of big blue).

Enough of these personal matters, back to the question: can linguistics be viewed as a science, or, more specifically, should the kind of linguistics undertaken between 1920 and today, which I currently see as being endangered, be viewed as a science? The date 1920 is somewhat arbitrary, and one could of course take the publication of the *Cours de Linguistique Générale* in 1916 as a starting point, but this is arbitrary as well (and why not start with the *Junggrammatiker*?). What is important is that linguistics did not emerge in isolation, but in form of a concoction that in addition to what we call

Geisteswissenschaften as *Diskussionswissenschaften* ('talk studies' would perhaps be the most appropriate translation).

²Selling linguistics as scholarly conduct is also confronted with early generative linguists reflecting the then current political and cultural developments in their use of allusive linguistic terminology. Consider *which hunts*, *high nodes* and *low nodes* (from *Loch Lomond*), and a transformation named after an almost impeached US president. If at all, these titles invoke smiles on today's students' faces that careen between the condescending and the bashful. I have been so fortunate to never place myself in a situation to explain a *which hunt* to a biologist.

³The difference between the system of grammar and the conceptual structure of the world is present in many areas. Many of these cannot be illustrated as easily as the count/mass distinction. This has the consequence that linguists quite often are not heard with their concerns, which can be witnessed in the recent debate on 'gendering' in Germany. Highly pertinent expositions like Trutkowski & Weiß (2023) are only known to specialists (= linguists) as the complex issues cannot easily be broken down to widen their reception without hampering their scholarly merits.

linguistics contained disciplines (or proto-disciplines) from anthropology, archeology to formal logic, formal language theory, the theory of programming languages, and computer science. Various giants are associated with this brew, such as Bloomfield, Church, Gödel, Harris, Turing, to name but a few.⁴ After World War II, the brew cooled down and produced new disciplines, but there was still lively interaction and no real necessity to set up borders. As an illustration, consider the early formal works by Noam Chomsky and Marcel Schützenberger, and Richard Montague's fundamental insight that *compositionality* should not be limited to formal languages, but works with the grammar of natural languages as well. Interestingly, the term *natural language* is a matter of debate. Non-linguists often see language as a cultural object, effected by humans and open to human influence. Linguists have reason to assume that language should be viewed as a natural object, or at least should also be viewed as a natural object. It is clear since Jakobson, Fant & Halle's (1952) *Preliminaries to Speech Analysis*, if not earlier, that phonology is concerned with natural objects. The subtitle of the essay explicitly addresses natural objects at the foundation of the analysis: *The Distinctive Features and their Correlates*.

Chomsky's early idea that languages are sets of sentences derived from a grammar allowed linguistics to treat sentences as natural objects as well. Thus, Chomsky provided a bridge to a scholarly endeavor that already related conventional terms to natural, physical correlates.

Phonology of course has the advantage of its dizygotic twin *phonetics*, so a clear relationship between *physical* objects and a nomenclature of phonemes could be determined, establishing phonology at least in the realm of science. Similar claims about syntax are perceived with doubt, or even discontent because syntax contrasts with phonology as conceived by Jakobson, Fant & Halle in that it was not able to break away from conventionalism (Sasse 2015). Unfortunately, a discussion of the role of conventionalism is lacking from linguistic methodology, so generative linguistics is attacked as being founded on conventions but reacts with ignorance and apparently only implicitly tries to adapt to the problem.

Current linguistics, and syntax theory in particular, has also loosened its ties to

⁴I recommend reading Hofstadter (1979), which also provides the best introduction to the cognitive implications of recursion to date.

the concoction it came from. So, the general program of lifting linguistics from the humanities, or specifically philology, suffers from three problems: a connection to biology is programmatic at best (and ignored as a fancy by most linguists), the issue of conventionalism is not approached with the necessary sobriety, and finally, the connection to formal approaches has been given up. Altogether, this has left current linguistics with facing the fate of being repatriated to philology again.

Belonging to the group of linguists who see no real connection of linguistics with biology, I shall concentrate on conventionalism here, which is discussed in section 2. In my view, the problem of conventionalism is an undercurrent at best in current (and past) linguistic theorizing, and theoretical linguistics would benefit from explicitly addressing conventionalism (it cannot do away with it because we need names to term things, and nobody objects against calling the *Higgs boson* exactly this).

2. The Name of the Rose

Jakobson, Fant & Halle (1952) starts with a remarkable programmatic statement about features and names for features (called *terms*):

“[I]t is not important whether the term refers primarily to the physical or the perceptual level, as long as the feature is definable on both levels. In cases, where no generally accepted term was available, we have used names for certain distinctive features which may later be supplanted by more suitable ones. Nevertheless, a discussion of the features themselves seems to us more pertinent than an argument over their labels.”

(Jakobson, Fant & Halle 1952: v)

In this short paragraph, we can identify three important statements:

1. Phonological features can be mapped to a physical or perceptual level, i.e. there are – as the subtitle says – physical or perceptual correlates to these linguistic features.
2. The names chosen for the features are arbitrary and subject to improvement, but this will not affect the physical/perceptual correlates (it is

kind of clear that addition is not affected if we switch from Arabic to Roman number signs).

3. The identification of the physical/perceptual correlates is more important than assigning appropriate names to the features.

Taken together, these statements place phonology in the domain of the sciences, with the physical/perceptual properties as the natural objects, about which phonology will reason. If one wants to apply these statements to syntax, the question appears which objects should be considered the natural correlates of syntactic categories, a question which has been evaded more often than not. Syntactic categories apparently seem to lack a *prima facie* physical correlate, and critics of the generative enterprise often point out (see Sasse 2015 for a recent attack) that current syntactic categories (or word classes) are conventions that have come to us via *Platon*, the Stoics, the Alexandrian grammarians (*Dionysius Thrax*), and Roman grammarians (*Priscian*). Regarding the status of syntactic categories in generative grammar, Sasse (2015: 159) states that “*arbitrary category symbols . . . taken over from traditional grammar without any closer examination, were regarded as innate substantive universals*”. While I would not endorse the jump from *arbitrary category symbols* to *innate substantive universals*, I see some truth in employing conventions without explicitly addressing them as such (as did Jakobson et al. 1952). A cursory look into generative works reveals to me that a certain unease about the relationship between the terms and the correlates can be extracted, but in most cases, the discussion is not explicit, or outright subconscious.

Interestingly, it takes some 20 pages into *Syntactic Structures* (Chomsky 1957) before syntactic categories enter the scene – the one syntactic category Sasse cannot argue against: *S*, but then *NP* and *VP* quickly follow. But as if Chomsky bows to their possibly ancient origins, he introduces angular categories such as *T* (for determiners) and *C* (for inflection), possibly as to reflect that “*the features themselves [seem] . . . more pertinent than an argument over their labels*” (Jakobson et al. 1952: v). Chomsky’s next move in this direction is found in *Aspects of the Theory of Syntax* (Chomsky 1965), where he provides a definition of the (equally conventional) grammatical relations *subject* and

object in terms of their syntactic configuration.⁵ Later developments in the Minimalist Program, *Bare Phrase Structure* in particular (Chomsky 1995), can be seen as further attempts to eliminate reference to conventional categories.⁶

One of the most remarkable attempts to deal with conventional categories is found in Jackendoff (1977). It is remarkable not only because it addresses the category problem head-on, but also because it appears to me to be all but forgotten. Jackendoff (1977: 31, emphasis mine) states:

*“The choice among **competing systems of distinctive features** should be made on the basis of how easy it is to state actual rules of the language in terms of the **proposed systems**. One presumes that rules are more likely to generalize to ‘natural classes’ ... This criterion is essentially the same as the one used in justifying phonological feature systems ...”*

Jackendoff does not only counter Sasse *avant la lettre* by pointing out that the linguist has to choose or even invent different category systems, but also draws a direct connection to the methodology introduced by Jakobson et al. Jackendoff (1977: 31ff.) continues to develop a feature system for English, one property of which is whether syntactic entities select subjects or not, but not without spoiling what he has just built up by stating that

“it is worth pointing out that in French ... nouns cannot take NP subjects ... Nevertheless, we assume that French ... and English nouns have the same syntactic features, and that it is only the way these features appear in the grammar that differs from one language to another.”

(Jackendoff 1977: 32)

⁵Of course, Chomsky replaces one convention by using another, since grammatical relations are defined by the position of *NPs* in syntactic structure. The point is, however, that conventional categories are identified and subjected to elimination.

⁶While Chomsky's attempts to confront conventionalism appear ineffective, we can at least identify such attempts. Other grammatical frameworks have succumbed to conventionalism without realizing their downfall.

Jackendoff (1977: 45ff.) also contains a discussion of the category *complementizer*.⁷ We should remind ourselves that this category's name is pure convention: it names what is the complement of *S* under *S'*. But we are aware that the category *complementizer* received a different interpretation since Fukui (1986) and Chomsky (1986), namely as a functional category. The question is: does the non-rechristening of the category (we do not count the abbreviation from *Comp* to *C* as rechristening) reflect its conventional status, or did nobody care about the issue?

3. Quo vadis?

It appears that conventionalism remains a challenge for theoretical linguistics. But conventionalism is the expression of an essential feature of research in theoretical linguistics: theoretical linguists believe in the existence of linguistic entities and thus search for a parsimonious description of these entities. As long as the existence of the entities is not under debate, there is no real problem with using conventional labels (as Jakobson, Fant & Halle (1952) have already pointed out).⁸

Support for a clear distinction between the labels and the objects described comes from an unlikely ally. Recent work in analyzing the attention layers of large language models (known from *ChatGPT*), particularly by Hewett & Manning (2019) and Manning et al. (2020), shows that syntactic relationships

⁷It also reflects the then state of the art in providing a discussion of relative clauses that starts with the statement that the analysis “*is concerned only secondarily with the internal structure of relative clauses*” (Jackendoff 1977: 169) only to never take up the internal structure of relative clauses again.

⁸The perennial conflation of phenomena with their analyses cannot be ignored here. Most linguists can name a few *control* verbs, as well as a few *raising* verbs without ever realizing that they have used a particular analysis of the verbs to provide a category for them. This is not only disadvantageous, since we are unable to discern control verbs from experiencer-object verbs, conative verbs, and what have you, it is detrimental when linguists try to reach out to the public and communicate their (clearly significant) results. Amazingly, the conflation of phenomena and analyses does not only show up where one would assume them (in the works of those who assume that any analysis differing from their own can only be a notational variant), but also in the works of the contenders. And one of the solutions to this problem appears to be to rename the phenomenon without making sure that the new name is co-extensional with the old one (as e.g. if a linguist tries to rename control verbs into subject drop verbs, but ignores the crucial distinction between *control* and *raising* verbs).

such as head-complement, subject-verb agreement, and coreference can be extracted from intermediate attention levels of transformer models such as *BERT* (Vaswani et al. 2017).

What is more, they are able to show that transformers are able to learn tree structures from their tasks. Without going into detail, it is important to understand that the task itself (such as predicting the next word) is supervised, but the learning of tree structures is not, which means in particular that syntactic categories are not fed to such systems. Similarly, equivalence classes corresponding to parts of speech (POS) can be induced without any knowledge of their corresponding labels.

Perhaps the prior discussion only serves as an indication where linguistics is falling short of its efforts to lift itself from the humanities (and I do not imply in any way that this lift should lead linguistics to engineering). But this does not mean that the effort is in vain. Given this, it is somewhat surprising to observe that theoretical linguistics has begun to succumb to postmodern theorizing in recent years. We should be aware that *Theory* (that being the *name* of postmodernism's successor), and literary studies as its little sister argue for the opposite methodology: anti-essentialism supports endless chains of terminological imbroglia. This is the opposite of the relationship between terminology and described entities in linguistic discourse, and it is also characterized as being cynical in critical reflection (see Pluckrose & Lindsay 2020). Developing a complex terminology, linguistics has failed to enter communication with the public, and has given room to other scholars who concern themselves with language (without knowing much of linguistics), but linguistic reasoning allows a critical assessment of popular themes without resorting to unreflecting, yet popular jargon, as is amply demonstrated in works like Haider (2023) and Trutkowski & Weiß (2023). We should not abandon our knowledge of language in the moment in which ChatGPT can be shown to have learned the structures that we have proposed. It is not the perihelion of Mercury, but it is a start.

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All Movement Reprojects

Gregory M. Kobele

Abstract

In order to have a homomorphic mapping between the featural make-up of a phrase and the semantic type of its denotation, we must require that moved phrases always reproject.

That phrases are headed is a central tenet of linguistics. It is the head of a phrase that determines its category, its external distribution. The internal distribution of a phrase, the arrangement of phrases internal to it, is also commonly thought to be similarly determined by the head. The head specifies only certain combinations of dependents as acceptable. This assumption is visually most salient within (lexicalized) tree adjoining grammar (Frank 2002), whereby a lexical entry consists of a tree structure with a specific root node and with open positions for dependents and adjuncts. In categorial grammar as well, the syntactic category of a maximal expression, and the categorial identities of its dependents, are specified by the syntactic types assigned in the lexicon, although there exists the possibility of transferring arguments specified lexically as belonging to one head, to other, higher heads (via hypothetical reasoning), or of eliminating them altogether (via higher order selection). Regardless of details, the general picture is that each lexical item carries with it requests for dependents, as well as specifying the category of its ultimate projection.

In systems like categorial grammar or minimalist grammar, the maximal projections are constructed as part of a derivational process. Here dependents can be combined with the head one at a time up until the head is saturated, at which point it relinquishes control over the derivation, and can then itself be selected as a dependent. In both cases, the categories of the intermediate projections are determined by the category assigned to the head lexical item.

Hornstein & Uriagereka (2002) discuss *reprojection*, which allows a moved

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expression to wrest control of the phrase from its erstwhile head.¹ Donati & Cecchetto (2011) make use of this mechanism to capture the conflict between the internal and external structure of free relative clauses. Internally, they are clauses, but externally they are nominal. According to Donati & Cecchetto, they are in fact (wh-)clauses, but the moved (nominal) wh-word has projected its category as the category of the phrase.

Reprojection allows the internal distribution of a phrase to be divorced from its external distribution. This is achieved by having one head be responsible for selecting arguments, and another for determining the category of the resulting phrase. When one head ‘takes over’ from another, it must be the most-recently merged element, if it is assumed that the head of a phrase Y must be the head of all phrases lying between it and Y.² If any element could reproject at any time, we might expect to find that the categorial status of phrases should be much more variable than it is. Donati & Cecchetto, observing that free relatives can only be headed by lexical wh-words, restrict reprojectability to moved heads.³ They observe that this restriction fits naturally with Chomsky’s formulations of how to determine which sister projects (Chomsky 2013).

One might of course be skeptical of the utility of labeling algorithms, in which case the mechanism of reprojection looks *ad hoc* and just one of many possible ways to derive free relative clauses.

I will here argue that semantically interpreted movement *always* reprojects. My argument is straightforward, and depends only on the existence of a mapping between syntactic category and semantic type, as is familiar in linguistics from categorial grammar. I will begin by presenting a proposal about how syntactic category and semantic type relate. This proposal will be incompatible with basic and obvious analyses, leading to a simple paradox of sorts. Deconstructing the paradox will lead to the needed formulation of syntactic reprojection.

¹This is formally very different from reprojective *head movement*, as used for example by Georgi & Müller (2010), which there serves to allow for more flexibility between the c-command relations and linear order between post-head dependents.

²This is the axiom of *Succession* in Kornai & Pullum (1990).

³Heads seem to undergo a different array of processes than phrases. Nunes (2004) argues that only heads can be multiply spelled out, for example. I will not have anything to say about this.

1. A Formulae-as-types correspondence for minimalist grammars

I adopt the convention (Stabler 1997, Müller 2010) that there are two different kinds of features, one relevant for external **Merge**, and one relevant for operations (**Move**) within an already constructed structure.⁴ For each feature type, there are positive and negative variants, which appear on the governor and dependent respectively. These are shown in table 1.

Table 1: Features

	Merge	Move
Positive	x^\bullet	x^+
Negative	x°	x^-

Features represent dependencies that lexical entries must enter into, with the polarity of the feature indicating the direction of the dependency. Feature bundles are sequences of features. Just as in Müller (2010), grammatical operations target the first feature in a bundle. I will make a number of assumptions about feature bundles. First, I will assume that all positive features precede all negative features in a feature bundle. This reflects my assumption that the maximal projection of a head must be fully constructed before it can be selected by another. Second, I will assume that there is exactly one negative merge feature in a bundle. This reflects my assumption that a phrase can only be externally merged once. Finally, I will assume that the negative merge feature is the first negative feature in the bundle. This reflects my assumption that an expression must be externally merged before it can be internally merged.

A simple example of a lexicon is given in table 2.

Table 2: A simple lexicon.

every :: $n^\bullet d^\circ .k^-$	will :: $v^\bullet .k^+ .s^\circ$
child :: n°	laugh :: $d^\bullet .v^\circ$

This lexicon allows for the generation of the single sentence *every child will laugh*, by first merging *every* and *child*, then merging *laugh* and *every child*,

⁴I differ here from Müller (2010) in taking **Agree** to supervene on **Merge**, and not to be a syntactic operation in its own right (Ermolaeva & Koble 2022).

then merging *will* and *laugh every child*, and then finally moving *every child* to the specifier of *will*. This derivation can be depicted in terms of the tree in figure 1.

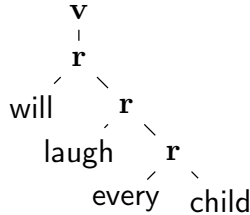


Figure 1: A derivation tree. *v* and *r* abbreviate Move and Merge respectively.

Intuitively, the meaning of this sentence is that every child will, at some future time, laugh. This can be rendered in higher order logic as $\text{EVERY}(\text{CHILD})(\lambda x.\text{WILL}(\text{LAUGH } x))$. We would like to assign each of the four constants used in this term to one of the lexical items in table 2, in the obvious way given in table 3.⁵

Table 3: An interpreted lexicon

EVERY : $(et)(et)t$	\rightsquigarrow every :: $n^\bullet.d^\circ.k^-$
CHILD : et	\rightsquigarrow child :: n°
WILL : tt	\rightsquigarrow will :: $v^\bullet.k^+.s^\circ$
LAUGH : et	\rightsquigarrow laugh :: $d^\bullet.v^\circ$

The question I would like to address is to what extent the semantic type of a lexical item's meaning is predictable from its syntactic feature bundle. As a simple observation, the only syntactic argument of *every* must have feature n° , and the first semantic argument of *every* should have type et . The lexical item *child*, which has (just) feature n° has exactly this semantic type. This makes at least initially plausible the idea that positive merge features correspond to semantic arguments.

⁵I here make use of basic types e (entities) and t (truth values). The type $\alpha \rightarrow \beta$, representing the type of functions with inputs of type α and outputs of type β , will be for convenience sometimes represented with simply juxtaposition $(\alpha\beta)$. The type forming operator \rightarrow is right associative, and parentheses will be left out with this in mind: abc abbreviates $a(bc)$, not $(ab)c$.

There are two logically possible semantic configurations for (external) merger. In one, a scope taking element is merged, which must later move to a scope position, leaving behind only a trace. Thus, the selector must semantically select for an expression with the type of the trace. In the other, the merged dependent is interpreted *in situ*. In this case, either expression could in principle take the other as its argument. However, a uniform characterization of the map between features and types is obtained if the selector always takes the selectee as its argument.

These considerations motivate the (partially specified) mapping between feature bundles and types given in table 4. The last line in table 4 expresses

Table 4: A preliminary feature bundle to type correspondence (just Merge features)

$\text{ty}(x^\bullet.\alpha) \mapsto \tau(x) \rightarrow \text{ty}(\alpha)$
$\text{ty}(x^\circ) \mapsto \tau(x)$
$\text{ty}(x^\circ.\alpha) \mapsto (\tau(x) \rightarrow _) \rightarrow _$

the case when the merged element is a scope taker, and thus has the type of a generalized quantifier $(A \rightarrow B) \rightarrow C$. The type A is the type of the ‘trace’ the quantifier leaves behind. The blanks indicate that we are not yet sure what type to put in for the B and C .

We can use this feature-type mapping schema to align the feature bundles and types of our simple lexicon, at least for all words but *will*, which has a positive move feature in it.

Table 5: Aligning actual and calculated types

<i>every</i>	$(e \rightarrow t) \rightarrow (e \rightarrow t) \rightarrow t$
$\text{ty}(n^\bullet.d^\circ.k^-)$	$\tau(n) \rightarrow (\tau(d) \rightarrow _) \rightarrow _$
<i>child</i>	$e \rightarrow t$
$\text{ty}(n^\circ)$	$\tau(n)$
<i>laugh</i>	$e \rightarrow t$
$\text{ty}(d^\bullet.v^\circ)$	$\tau(d) \rightarrow \tau(v)$

It is easy to visually identify the desired feature to type map that will

associate the types assigned to the lexical items with their feature bundles:

$$\tau = \begin{cases} v \mapsto t \\ d \mapsto e \\ n \mapsto e \rightarrow t \end{cases}$$

We can see in addition that, at least for *every*, the ‘empty boxes’ should both be realized as the propositional type t .

Turning our attention to the remaining lexical item *will*, we note that, were we simply to ignore the positive movement feature k^+ , this feature-type map would correctly assign the desired type $t \rightarrow t$ to it so long as the feature s° were mapped to the type t . We present our initial feature bundle to type correspondence in table 6.

Table 6: A preliminary feature bundle to type correspondence

$\text{ty}(x^\bullet.\alpha) \mapsto \tau(x) \rightarrow \text{ty}(\alpha)$
$\text{ty}(x^+.\alpha) \mapsto \text{ty}(\alpha)$
$\text{ty}(x^\circ) \mapsto \tau(x)$
$\text{ty}(x^\circ.\alpha) \mapsto (\tau(x) \rightarrow t) \rightarrow t$

2. A relative paradox

Consider now adding the lexical items in table 7 to our original lexicon in table 2. These new items are designed to allow for relative clauses according to a raising analysis.

Table 7: Lexical items for the raising analysis of relative clauses.

$D :: n^\bullet.d^\circ.k^-.rel^-$	$that :: s^\bullet.rel^+.n^\circ$
------------------------------------	-----------------------------------

Adding the abstract D head to a common noun creates a relative DP D *child* waiting to move to check its rel^- feature. The lexical item *that* selects a sentence, and then triggers movement of a relative DP to its specifier, at which point it becomes a common noun. The NP *child that will laugh* can be derived as in figure 2.

The intuitive meaning of this noun phrase can be represented in higher order logic as the term $\lambda x.CHILD\ x \wedge WILL(LAUGH\ x)$. There is only one new

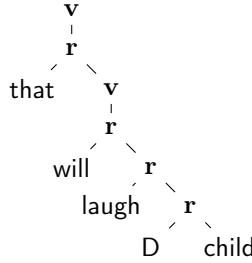


Figure 2: A derivation tree for the NP *child that will laugh*.

constant in this term, the coordinator \wedge , but two new lexical entries. Kobele (2006) suggests interpreting the abstract D head as coordination, and the relative *that* as the identity function, as shown in table 8. The type of the identity function is polymorphic, and will be seen shortly to be problematic.

Table 8: Interpretations for the relative clause lexical items

$\lambda x.x : \alpha\alpha$	\rightsquigarrow that :: $s^\bullet.\text{rel}^+.\text{n}^\circ$
$\lambda P,Q,x.P x \wedge Q x : (et)(et)et$	\rightsquigarrow D :: $n^\bullet.d^\circ.k^-\text{.rel}^-$

The types associated with these terms are aligned with their calculated types, given by the scheme in table 6, as shown in table 9. The lexical entry

Table 9: Aligning actual and calculated types for relative clause lexical items.

<i>that</i>	$\alpha \rightarrow \alpha$
$\text{ty}(s^\bullet.\text{rel}^+.\text{n}^\circ)$	$\tau(s) \rightarrow \tau(n)$
D	$(e \rightarrow t) \rightarrow (e \rightarrow t) \rightarrow (e \rightarrow t)$
$\text{ty}(n^\bullet.d^\circ.k^-\text{.rel}^-)$	$\tau(n) \rightarrow (\tau(d) \rightarrow t) \rightarrow t$

for *that* diverges from what we would expect based on our previous analytic assumptions. In particular, for *that* to be well-typed, $\tau(s)$ must be identical to $\tau(n)$. But of course, $\tau(s) = t$ whereas $\tau(n) = e \rightarrow t$. We cannot plausibly treat common nouns as having type t , nor can we reasonably treat propositions as being of type $e \rightarrow t$. If we were to attempt to construct a term of type $\tau(s) \rightarrow \tau(n) = t \rightarrow e \rightarrow t$, we would find that the only possibility would be a variant of $\mathbb{K} = \lambda\phi,x.\phi$, which does not result in a plausible meaning. As *that*

merges with a sentence (and thus combines with a proposition as its input), it must be lexically assigned the type $t \rightarrow t$, which would indeed be what we obtained if its syntactic feature bundle were $s^\bullet.\text{rel}^+.s^\circ$, but then we would not be able to assign the desired meaning above to the derivation in 2, as the meaning is of type $e \rightarrow t$, but the object derived would have feature s° . This then is the paradox of relative clauses.

The type we have calculated for D is also problematic. In particular, we have calculated that the quantifier should scope over a property ($e \rightarrow t$), and return a proposition (t), but the desired type scopes over a property and returns a property. It appears we must adjust our type calculation for scope taking expressions. The return value should depend on the feature driving movement, in this case rel , as shown in table 10.

Table 10: Updating the feature bundle to type correspondence

$\begin{aligned} \text{ty}(x^\circ.\alpha) &\mapsto (\tau(x) \rightarrow t) \rightarrow \text{ty}(\alpha) \\ \text{ty}(x^-) &\mapsto \tau(x) \\ \text{ty}(x^-\alpha) &\mapsto \text{ty}(\alpha) \end{aligned}$
--

We observe that the desired types for the scope takers in our grammar emerge if we assign types to atomic features as follows:

$$\tau = \left\{ \begin{array}{l} \vdots \\ k \mapsto t \\ \text{rel} \mapsto e \rightarrow t \end{array} \right.$$

3. Reprojective resolutions

The problem is that the mover necessarily projects semantically: the mover has type $(A \rightarrow B) \rightarrow C$, and the expression out from inside of which it moves has type B . The type C is unknown by the lexically specified categorial feature of the head, which dictates at most the type B . To make the syntactic type correctly reflect the semantic type, the syntactic type must be controlled by the mover as well. This means that the category feature of the expression (potentially)

changes after each movement. We write x^y for the type determined by y^- and x° .⁶ Table 11 provides a table of some values for this operation.

Table 11: Reprojecting types

inputs	output	type
s^{rel}	n°	et
s^k	s°	t

The problematic lexical feature bundle we assigned to the relative C head, $s^\bullet.\text{rel}^+.n^\circ$, is revealed to be $s^\bullet.\text{rel}^+.s^{\text{rel}}$. Thus the lexical entry for the relative C head is simply $C_{\text{Rel}} :: s^\bullet.\text{rel}^+.s^\circ$, of semantic type $\tau(s) \rightarrow \tau(s)$ with meaning $\lambda x.x$. Our mistake lay in trying to assign the type x^y to a lexical item—the type x^y indicates that control has been passed to the mover. Interestingly enough, the natural lexical entry for the +Q C head would be $C_Q :: s^\bullet.\text{wh}^+.s^\circ$ as well, also with meaning $\lambda p.p$. A natural generalization has it that there is but one such head, whose combinatory future depends on which feature it ends up attracting to its specifier.

The reprojecting operation itself is straightforwardly implementable in the syntax. A concrete implementation (using the ‘chain notation’ of Stabler & Keenan (2003)) is shown in figure 3.

$$\frac{x^+.\alpha.z^\circ.\beta; \Phi; x^-; \Psi}{\alpha.z^x.\beta; \Phi; \Psi} \text{Move}$$

Figure 3: Movement with reprojecting

In this rule we see that the moved item is replacing the category of the head to whose specifier it moves, but leaving all of the other features the same. Thus this kind of reprojecting is not about ‘wresting control’ of the derivation from another expression—the identity of the head remains the same after movement—but rather just changing the categorial identity of this expression.

⁶While the movement feature completely determines the semantic type of the resulting expression, the syntactic feature which maps to that type is underdetermined by the movement feature. For example, the rel feature dictates that the result of movement should be of type $e \rightarrow t$, but that this type should be expressed by the category n° is not obviously derivable in a principled way.

4. Conclusion

I have shown that a homomorphism between syntactic features and semantic type can be imposed upon minimalist grammars. Doing so requires of us that we recognize that semantically interpreted movement always reprojects (though this may at times be vacuous). Having an explicit relation between syntax and semantics allows us to use information about one to constrain our development of the other. Current minimalism has moved away from an explicit characterization of feature bundles, preferring instead to enforce combinatorial constraints more holistically, at interfaces.⁷ While the categorial information about lexical items must still be encoded somehow at the interfaces, the tight connection between syntax and semantics becomes muddled and therefore difficult for the linguist to take advantage of, if features are left implicit.

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⁷Kobele (2014: section 3.1) notes that the formal properties of minimalist grammars ensure that the effects of features can be pushed off to the interfaces, and the filtering effects of the interfaces can be moved into the features. See Graf (2017) for a more extended discussion.

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External possession in Kipsigis involves movement

Maria Kouneli*

Abstract

In this paper, I provide an analysis of external possession constructions in Kipsigis (Nilotic; Kenya), and I argue that possessor raising best captures the properties of the phenomenon in the language. Evidence for movement comes from an interesting interaction between possessor raising and topicalization. My analysis highlights that well-known constraints on remnant movement can be used as diagnostics for movement in external possession constructions in various languages.

1. Introduction

Possession in Kipsigis (Southern Nilotic; Kenya) is usually expressed DP-internally: the possessum is marked with the clitic *-a:p* and it precedes the possessor, as shown in (1).¹

- (1) Kò:-á-mwét [DP íjgðràìk-à:p Tʃè:bê:t].
PST.REC-1SG-wash clothes-POSS Cheebeat
'I washed Cheebeat's clothes.'

The language, however, also possesses an external possession construction, which is illustrated in (2). In this case, the possessum is unmarked, and the

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¹Glosses follow the Leipzig glossing rules, with the addition of: CL2 = (conjugation) class 2, IMP = impersonal, PART = participant, PST.CURR = current past, PST.DIST = distant past, PST.REC = recent past.

possessor is an argument of the verb, which is marked with the applicative suffix *-tʃi*.²

- (2) Kòr-á-mwé(t)-tʃi Tʃè:bê:t íngòràik.
 PST.REC-1SG-wash-APPL Cheebeet clothes
 ‘I washed Cheebeet’s clothes.’ (OR ‘I washed clothes for Cheebeet.’)

External possession constructions of this type are quite common cross-linguistically, and they have received significant attention in the theoretical literature because they exhibit a(n at least apparent) mismatch between syntax and semantics: a noun phrase behaves semantically as a possessor of another noun, but syntactically as an argument of the verb.³ There are two broad families of approaches to the phenomenon (see Deal 2017 for an overview):

- (3) *Approaches to external possession*
- a. Movement: The possessor is base-generated inside the DP, where it receives its thematic role. It then moves to a position within the vP; this position could be a thematic position (e.g., Lee-Schoenfeld 2006) or a position that is only associated with case/licensing (e.g., Landau 1999, Deal 2013).
 - b. Base generation: The possessor is base-generated as an argument of the verb. The possessor reading arises either via binding of an operator within the DP (e.g., Borer & Grodzinsky 1986) or via the semantics of a (low) applicative head used to introduce this verbal argument (e.g., Pykkänen 2008, Nie 2019).

In this paper, I analyze external possession constructions as in (2) in Kipsigis, and I argue that a movement-based analysis along the lines of (3a) best captures the properties of the phenomenon in the language. The main argument for movement comes from the following puzzle: while topicalization of the possessor in examples like (2) is possible, topicalization of the possessum is

²This applicative suffix can also be used to introduce benefactive (and other) applied arguments, which is why the noun *Tʃè:bê:t* can be interpreted either as a possessor or as a beneficiary in (2). See Section 2 for more details.

³In Africa, the phenomenon has mostly been studied for Bantu languages (e.g., Keach & Rochemont 1994 on Swahili, Henderson 2014 on Chimwiini, Halpert 2021, Zeller 2021 on Zulu), but even within Bantu it remains relatively understudied (Van de Velde 2020). There is barely any work on external possession in Nilotic languages (e.g., Payne 1997 on Maasai, Andersen 2019b on Jumjum, Andersen 2019a on Dinka).

not. This is quite surprising, since topicalization of either argument is possible in all other ditransitive constructions in the language. For example, in (4) below, topicalization of either DP is possible under the beneficiary reading of *Tfè:bê:t*, but not under the possessor reading.

- (4) a. **Tfè:bê:t**₁ kó kò:-á-mwé(t)-tjí _____₁ ɲgɔraik.
 Cheebeet TOP PST.REC-1SG-wash-APPL clothes
 ‘Cheebeet, I washed her clothes/the clothes for her.’
- b. **ɲgɔrar-tfɔ**₁ kó kò:-á-mwé(t)-tjí Tfè:bê:t _____₁.
 clothes-DEM.PL TOP PST.REC-1SG-wash-APPL Ch.
 ‘These clothes, I washed them for Cheebeet.’
 #‘These clothes of Cheebeet, I washed them.’

I argue that this asymmetry between possessors and other types of applied arguments is due to the fact that the former, but not the latter, end up in their surface position via movement. Under such an analysis, movement of the possessum over the possessor in examples like (4b) should obey well-known constraints on remnant movement.

The remainder of the paper is structured as follows: in Section 2, I provide some relevant background on Kipsigis syntax, especially the syntax of applicatives and movement types, which are important in the analysis of external possession constructions; in Section 3, I discuss the basic properties of external possession in the language and I present my analysis; in Section 4, I conclude and discuss avenues for further research.

2. Background on Kipsigis

Kipsigis is the major variety of Kalenjin, a dialect cluster of the Southern Nilotic branch of Nilo-Saharan. It is spoken by approximately 2 million speakers in Kenya (Eberhard et al. 2020). Unless otherwise indicated, data in this paper come from fieldwork with four speakers in Kenya. The language is pro-drop and it has the typologically rare marked nominative case system; case is generally expressed tonally (Toweett 1979, Kouneli & Nie 2021).

2.1. Kipsigis applicatives

Kipsigis has two applicative morphemes: *-tʃi*, primarily used for recipients, beneficiaries, and (directional) location, and *-ɛ:n*, primarily used for instru-

ments and (static) location. Examples of the former are given in (5) and of the latter in (6).

- (5) a. Kà-∅-í-gò:-[tʃí] Tʃé:bê:t Kíbê:t kítábó:t.
 PST.CURR-3-CL2-give-APPL Cheebeet.NOM Kibeet book
 ‘Cheebeet gave Kibeet a book.’
- b. Kò:-á-mwé(t)-[tʃí] Tʃè:bê:t íngòràik.
 PST.REC-1SG-wash-APPL Cheebeet clothes
 ‘I washed the clothes for/on behalf of Cheebeet.’
- c. Kà-α-twà:l-[tʃí] kàrí:t.
 PST.CURR-1SG-jump-APPL car
 ‘I jumped into the car.’
- (6) a. Kà-∅-tém-[é:n] Kíbê:t ímbàr mógó:mbé:t.
 PST.CURR-3-dig-INSTR Kibeet.NOM farm hoe
 ‘Kibeet dug the farm with a hoe.’
- b. ∅-tjén-[é:n] ajnɛ:t.
 3-sing-INSTR.IPFV river
 ‘He/she is singing at the river/about the river.’

2.2. Movement in Kipsigis

The pragmatically neutral word order is VSO, but various post-verbal orders are allowed depending on information structure (Bossi & Diercks 2019). Additionally, the language has a pre-verbal position marked by the particle *ko*. Thus, in a sentence with a subject and an object, all orders in (7) are possible.

- (7) a. Kò:-∅-ké:r Tʃé:bê:t là:kwé:t.
 PST.REC-3-see Cheebeet.NOM child
- b. Kò:-∅-ké:r là:kwé:t Tʃé:bê:t.
 PST.REC-3-see child Cheebeet.NOM
- c. Tʃé:bê:t kó kò:-∅-ké:r là:kwé:t.
 Cheebeet TOP PST.REC-3-see child
- d. Là:kwé:t kó kò:-∅-ké:r Tʃé:bê:t.
 child TOP PST.REC-3-see Cheebeet.NOM
 ‘Cheebeet saw the child.’

In Driemel & Kouneli (2022), we show that the pre-verbal position in examples

like (7c)–(7d) can only be occupied by topicalized elements, with *ko* being a dedicated topic marker. The position is subject to island effects, as shown in (8)–(9).⁴

(8) *Complex NP island* (Driemel & Kouneli 2022: p.14)

***Kibè:t**_i [ko] kɑ-∅-soman Tʃébé:t [kitàbó:t
 Kibeet TOP PST.CURR-3-read Cheebeet.NOM book
 ne ki:-∅-sir-e **iné:ndèt**_i/__ i].
 REL.SG PST.DIST-3-write-IPFV 3SG.NOM
 Intended: ‘Kibeet, Cheebeet read the book that he wrote.’

(9) *Adjunct island* (Driemel & Kouneli 2022: p.14)

***Kibè:t**_i [ko] ka-kɪ-sɪ:ndan-ɛ:tʃ [amun
 Kibeet TOP PST.CURR-1PL-win-1PL(IMP) because
 mɑ-∅-jɔ: __ i].
 NEG-3-come
 Intended: ‘Kibeet, they beat us (at the race) because he didn’t come.’

We can thus assume that topicalization involves movement to SpecCP, with *ko* spelling out the C head (see also Bossi 2023 for the same conclusion). Similar to the same position in the related language Dinka (van Urk 2015), topicalization in Kipsigis shows mixed *A* – \bar{A} properties.⁵

Starting with the \bar{A} properties, movement to the *ko*-position is driven by an information structure feature (=topic) and it can be long-distance, as shown in (10). Furthermore, there is obligatory reconstruction for Principle C (Bossi 2023), illustrated in (11).

(10) **Kibè:t**_i kó kɪ:-á-mwá [à:-lé kɪ:-∅-tʃó:r __ i
 Kibeet TOP PST.DIST-1SG-say 1SG-LE PST.DIST-3-steal
 ràbí:ník].
 money
 ‘Kibeet, I said that he stole the money.’

⁴See also Bossi (2023), as well as Creider & Creider (1989) for the related dialect Nandi.

⁵Relativization seems to behave in the same way, but I have not been able to run all of the diagnostics yet.

- (11) Linus is looking through a big box of pictures. There's a picture of Chebet, one of Kiplangat, one of Lydia, even one of himself. Some of the pictures were stuck together, though, so Linus saw some of them, but didn't see others. I'm explaining which pictures he saw and which pictures he didn't see. I say:
- a. Pichaart-aap Cheebet ko koo-Ø-keer.
 picture-of C. TOP PST2-3-see
 'As the the picture of Chebet, he saw it.'
- b. Lakini pichaart-aap Linasj ko ma-Ø-i/*j-keer.
 but picture-of L. TOP NEG-3-see
 'But as for the picture of Linus_j, he_{i/*j} didn't see it.'
 (Bossi 2023: p.65)

However, other properties of topicalization point towards A-movement. First, the *ko*-position is restricted to nominals. Examples (12) and (13) show that fronting of adverbs and PPs respectively is ungrammatical.⁶

- (12) ***Mù:tjà** kó Ø-kèt-t-é Kíbê:t.
 slowly TOP 3-drive-IPFV Kibeet.NOM
 'Slowly, Kibeet drives.' (Driemel & Kouneli 2022: p.6)
- (13) ***Ak Kiplàngàt** kó ka-Ø-tʃap-e Kíbê:t
 with Kiplangat TOP PST.CURR-3-make-IPFV Kibeet.NOM
 amitwa:gik.
 food
 'With Kiplangat, Kibeet made food.' (Driemel & Kouneli 2022: p.6)

Second, there is a case alternation for subject DPs: they are inflected for marked nominative in post-verbal positions (14a), but are unmarked for case in the pre-verbal position (14b).⁷

- (14) a. Ø-ám-è **Kíbê:t** kímpé:t.
 3-eat-IPFV Kibeet.NOM ugali
 'Kibeet is eating ugali.'

⁶PPs headed by *een* can sometimes appear in this position. See discussion in Driemel & Kouneli (2022) and Bossi (2023).

⁷This is a robust property in Nilo-Saharan languages with this case system (König 2006, 2008, van Urk 2015).

- b. **Kibê:t** kó Ø-ám-è kímpé:t.
 Kibeet TOP 3-eat-IPFV ugali
 ‘Kibeet is eating ugali.’

Third, there is no reconstruction for quantifier-variable binding, illustrated in (15).

- (15) a. kɔ:-Ø-sús ηð:ktà age-tùγúḷi **tʃi:ɾá-nì:nj/i**.
 PST.REC-3-bite dog.NOM any-all.NOM person-his.SG
 ‘Every dog bit its owner.’
 b. **tʃi:ɾá-nì:nj/*i** ko kɔ:-Ø-sús ηð:ktà age-tùγúḷi
 person-his.SG TOP PST.REC-3-bite dog.NOM any-all.NOM
 —.

‘Its owner, every dog bit.’

It is clear that the *ko*-position has many similarities to the pre-verbal position in Dinka, a related Nilotic language, as described by van Urk (2015). The Dinka position exhibits similar mixed properties: movement to this position is long-distance and driven by information structure features, but it also exhibits A properties such as a restriction to nominals and the same case alternation displayed by subjects in Kipsigis.⁸ I therefore analyze topicalization in Kipsigis along the lines of van Urk’s (2015) analysis of Dinka. More specifically, I assume that C probes for two features: a topic feature [top] and a nominal feature [δ] responsible for the A properties that we observe.⁹ For a noun phrase to satisfy this probe, it must be able to check both features. Thus, for a phrase to move to SpecCP, it must be specified for *both* [top] and [δ].

With this background on Kipsigis syntax in place, I present in the next section the main properties of external possession in the language, along with my analysis.

⁸There are also some differences between Kipsigis and Dinka, the analysis of which has to be left as a topic for further research. These are the following: in Dinka, but not in Kipsigis, there is agreement between the verb and the fronted DP; in Dinka movement to SpecCP is obligatory and compatible with either topics or foci, while in Kipsigis it is optional and restricted to topics; there is no reconstruction for Principle C in Dinka.

⁹I leave the exact nature of this feature open for the time being. For van Urk (2015), this is a [ϕ] feature, but this choice is (at least partly) motivated by the fact that the verb agrees with the noun phrase in SpecCP in Dinka. This is not the case in Kipsigis.

3. External possession in Kipsigis

In the Kipsigis external possession construction, the presence of the applicative morpheme *-tʃi* on the verb is obligatory, as shown in (16).¹⁰

- (16) Kà-∅-méj-*(tʃí) Tʃè:bê:t ɲò:ktà.
 PST.REC-3-die-APPL Cheebeat dog.NOM
 ‘Cheebeat’s dog died.’

Furthermore, there is a restriction to internal arguments.¹¹ So far, we have seen examples with possessors associated with the direct object of a transitive verb (2) and the sole argument of an unaccusative (16). A DP added to an unergative, however, cannot be interpreted as a possessor of the agent: in (17), *Tʃè:bê:t* can only be interpreted as a beneficiary.

- (17) ∅-tjén-tʃín Tʃè:bê:t là:kwè:t.
 3-sing-APPL.IPFV Cheebeat child.NOM
 ‘The child is singing for/on behalf of Cheebeat.’
 # ‘Cheebeat’s child is singing.’

An additional property of the construction in Kipsigis (which is common cross-linguistically) is that the possessor has to be ‘affected’. For example, in all of the above examples, speakers reject the possessor reading in a context where *Tʃè:bê:t* is known to be dead. Moreover, possessor readings are impossible with stative verbs (18), another diagnostic for affectedness (e.g., Tyler 2021).

- (18) α:ɲgen-tʃim-i Tʃè:bê:t là:kwé:t.
 1SG-know-APPL.IPFV-PART Cheebeat child
 # ‘I know Cheebeat’s child.’

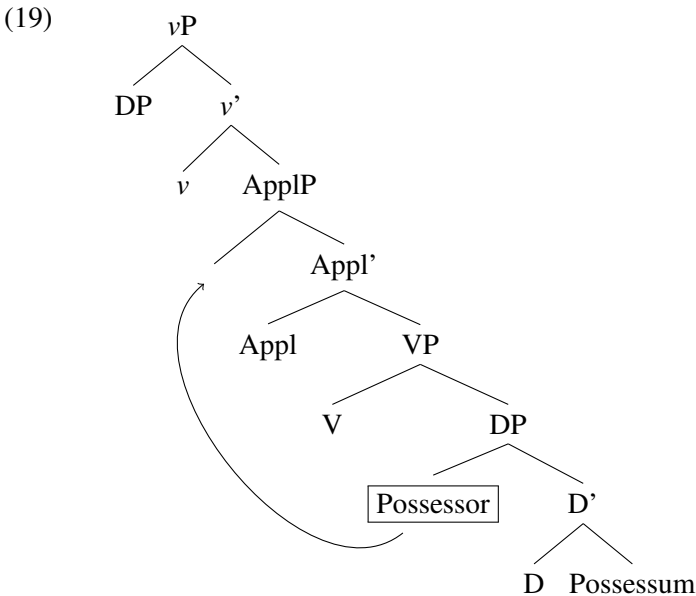
Any analysis of the phenomenon will need to capture (at least) the following properties: the obligatory presence of the applicative morpheme, the restriction to internal arguments, and the fact that the possessor has an additional thematic role (associated with affectedness). Assuming a theory in which applied arguments are introduced by applicative heads, all of those properties can be

¹⁰This is different from the situation in many Bantu languages, where there is a tendency for the applicative morpheme to be absent in these constructions (Van de Velde 2020).

¹¹In this respect, Kipsigis is similar to Hebrew, where external possession has been used as an unaccusativity diagnostic (Borer & Grodzinsky 1986 and subsequent work).

explained if the possessor DP occupies the specifier position of an applicative head. Let's look at the details.

I assume that the possessor DP is base-generated in the specifier position of the DP headed by the possessum; this is where it receives its possessor thematic role. I further assume that the possessor is unable to receive case in this position (e.g., Landau 1999), and it therefore needs to move to a position within *v*P to receive case.¹² I argue that the position that the possessor DP moves to is the specifier of a (high) applicative head, where it is assigned case and an additional thematic role associated with affectedness. The tree in (19) illustrates the derivation.



This derivation accounts for the properties of the external possession construction in Kipsigis. The presence of the applicative head implies the presence of

¹²As a reminder, the language also has a DP-internal possession construction, which was illustrated in (1). In this case, the possessum is followed by a possessive clitic, which is absent in the external possession construction. I assume that this clitic spells out a Poss head within the DP, with the possessor being generated (and assigned case) in SpecPossP. Thus the difference between the DP-internal and DP-external constructions lies in the presence vs. absence of the Poss projection and the position in which the possessor is first merged. The possessor is licensed within the DP in the presence of Poss, but has to move outside of the DP in its absence.

applicative morphology and the assignment of an additional thematic role to the possessor DP. Furthermore, since the applicative head is below the external argument-introducing head, we have an explanation for the restriction of the external possession construction to internal arguments: if the DP in which the possessor is base-generated is merged in SpecvP, there is no higher projection that it can move to to get case.¹³

Given the discussion so far, it would seem that most of the work in accounting for the properties of the construction is done by the presence of an applicative head, and not necessarily the movement of the possessor. Apart from the fact that a movement analysis gives a straightforward explanation for the relationship between the possessor and the possessum, it can also account for the puzzle first introduced in (4), repeated here as (20): while the possessor can move to the topic position in the left periphery (discussed in Section 2.2), the possessum cannot.

- (20) a. **Tʃè:bê:t₁** kó kò:-á-mwé(t)-tʃí _____₁ ɲgɔraɪk.
 Cheebeat TOP PST.REC-1SG-wash-APPL clothes
 ‘Cheebeat, I washed her clothes/the clothes for her.’
- b. **ɲgɔraɪ-tʃu₁** kó kò:-á-mwé(t)-tʃí Tʃè:bê:t _____₁
 clothes-DEM.PL TOP PST.REC-1SG-wash-APPL Ch.
 ‘These clothes, I washed them for Cheebeat.’
 # ‘These clothes of Cheebeat, I washed them.’

What is striking about this asymmetry is that it only arises in external possession constructions. For all other ditransitive constructions in the language, either the direct object (=DO) or the indirect object (=IO) can move to the topic position. Topicalization is symmetric irrespective of the thematic role of the IO or the form of the applicative morpheme on the verb. Various examples of symmetry are given in (21)–(23) below.¹⁴

¹³This means that only DP-internal possession (where the possessor can be licensed within the DP) is possible for external arguments, which is indeed what we observe in the data.

¹⁴In these examples, the DO often has a demonstrative when in topic position. The presence of a demonstrative ensures a definiteness interpretation, which makes topicalization easier.

(21) *IO = Recipient*

- a. **Tfè:bê:t₁** kó kà-∅-í-gó:-tjí Kíbê:t
 Cheebeet TOP PST.CURR-3-CL2-give-APPL Kibeet.NOM
 ___₁ kítábú:t.
 book
 ‘Cheebeet, Kibeet gave her a book.’
- b. **Kítábù:-nì₁** kó kà-∅-í-gó:-tjí Kíbê:t
 book-DEM TOP PST.CURR-3-CL2-give-APPL Kibeet.NOM
 Tfè:bê:t ___₁.
 Cheebeet
 ‘This book, Kibeet gave to Cheebeet.’

(22) *IO = Instrument*

- a. **Kíla:mr:-nì₁** kó kà-∅-sír-é:n Kíbê:t
 pen-DEM TOP PST.CURR-3-write-INSTR Kibeet.NOM
 ___₁ párwé:t.
 letter
 ‘This pen, Kibeet wrote the letter with it.’
- b. **Párwà:-nì₁** kó kà-∅-sír-é:n Kíbê:t
 letter-DEM TOP PST.CURR-3-write-INSTR Kibeet.NOM
 kílá:mít ___₁.
 pen
 ‘This letter, Kibeet wrote it with a pen.’

(23) *IO = Location*

- a. **ajna:-nì₁** kó kà-∅-wí:r-tjí Tfé:bê:t ___₁
 river-DEM TOP PST.CURR-3-throw-APPL Cheebeet.NOM
 kòjtá.
 stone
 ‘This river, Cheebeet threw a stone into it.’
- b. **Kò-I₁** kó kà-∅-wí:r-tjí Tfé:bê:t
 stone-DEM TOP PST.CURR-3-throw-APPL Cheebeet.NOM
 ajne:t ___₁.
 river
 ‘This stone, Cheebeet threw into the river.’

Given the analysis provided for topicalization in Section 2.2, symmetry is to be expected: for a DP to move to SpecCP, it must carry both a [top] and

[δ] feature. This also means that only DPs with both features can act as interveners. Therefore, the DO can always move past the IO if the former, but not the latter, carries a [top] feature. This makes the ungrammaticality of possessum topicalization even more surprising. We therefore need to look for differences between external possession constructions and other ditransitives in the language. I argue that the relevant difference is the following: the possessor in external possession constructions differs from other IOs in not being base-generated in SpecAppIP.

According to the analysis in (19), the possessor moves to SpecAppIP for case-related reasons. This movement step creates a remnant in the DO position: the DP that contains the possessum. Thus, topicalization of the possessum over the possessor should obey well-known constraints on remnant movement (Müller 1996, 1998, 2011, Abels 2007 a.o.). The relevant constraint for the configuration at hand is the following:

- (24) *The Müller-Takano Generalization* (Müller 1993, 1996, Takano 1994)
 After phrase XP has moved from node α to node ω , a remnant phrase YP that dominates α but not ω cannot move to any node c-commanding ω if movement of XP and movement of YP are of the same type.

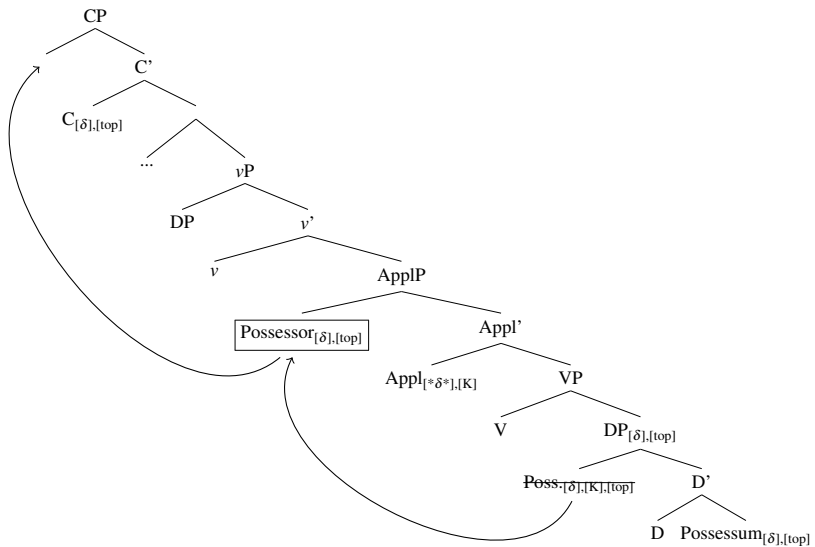
This constraint rules out movement of the remnant DP containing the possessum over the possessor DP if movement is of the same type (usually this translates into the movement being driven by the same feature). Recall that topicalization in Kipsigis displays A properties; possessor raising is also an example of A movement. Thus, whatever feature(s) these two movement types have in common must be responsible for the violation of the Müller-Takano generalization, and thus the ungrammaticality of possessum topicalization in external possession constructions.

There have been various proposals on how to derive the constraint in (24) (e.g., Müller 1998, 2011; see Zompì 2023 for a recent overview of previous proposals). I will here illustrate how a minimality-based account would derive the Kipsigis pattern, but further research is necessary to determine whether this is the best approach to the Müller-Takano generalization more generally.

An assumption that will be important in the case of Kipsigis is that if a DP carries a [top] feature (or any other type of information structure-related feature), this will percolate to all DPs contained within this DP. Thus, in (25),

when the DP where the possessor and possessum are base-generated has a [top] feature, then the possessor and possessum DPs will also carry this feature. The first head that is merged above the VP is Appl. I assume that this head has the ability to assign case to a case-less DP, which I will model here as an abstract feature [K].¹⁵ It also has a feature [δ], the feature responsible for A-properties in Kipsigis. The possessor moves to SpecApplP, since it carries both of these features.¹⁶ Later in the derivation, C is merged. It carries a [δ] and a [top] feature. Both the possessor and the possessum (=the remnant DP) can satisfy this probe and move to SpecCP. However, the possessor will always be closer to C than the possessum, blocking movement of the latter. We thus correctly predict that the possessum can never be topicalized in the presence of possessor raising.

(25)



¹⁵The details of case assignment do not matter - any mechanism that will attract a caseless DP to SpecApplP will do. This does mean, however, that the DO must have case assigned before Appl is merged (otherwise, it would be attracted to SpecApplP before Appl can probe for the possessor).

¹⁶It is irrelevant that it also has a [top] feature. What matters is that the features on the probe can all be checked.

4. Conclusion

In this paper, I have argued that external possession in Kipsigis is best analyzed in terms of possessor raising. Kipsigis is thus added to a list of languages in which movement is involved in external possession constructions (see Deal 2017 for an overview). The interaction of possessor raising and topicalization highlights that constraints on remnant movement (such as the Müller-Takano generalization) can sometimes be used as a diagnostic for movement in external possession constructions.

In this brief paper, only a sketch of the derivation for the Müller-Takano effect was provided. Further research into the nature of the mixed position in the Kipsigis left periphery is needed in order to determine the details of the analysis, as well as the implications of the Kipsigis pattern for the analysis of constraints on remnant movement more generally. Kipsigis is an interesting case study, since remnant movement has not been extensively studied in languages with documented cases of movement with mixed $A - \bar{A}$ properties.

Finally, unexpected asymmetries in external possession constructions have also been observed in Bantu languages that are otherwise symmetric for movement (e.g., Zulu; Halpert 2021, Zeller 2021). It is an interesting topic for further research whether these should receive the same analysis as the one developed in this paper.

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Reanalyzing syntactic ergativity in Control and conjunction reduction

Lisa Morgenroth & Martin Salzmann*

Abstract

Research on syntactic ergativity has focused on accounting for the ban on A'-movement of the ergative. In this paper, we focus on syntactic ergativity in Control and conjunction reduction, which has received considerably less attention. We argue that the S/P-pivot in these constructions can be accounted for if the movement theory of Control (MTC) is adopted and the following two assumptions are made: First, Control complements/non-initial conjuncts are merged as complements of the matrix verb. Under the MTC, this automatically derives the S/P-pivot in the matrix clause/initial conjunct given Minimality: the object position is targeted first by theta-driven movement. Secondly, the ergative cannot undergo A-movement since it is an inherent case (or possibly a PP). This derives the S/P-pivot w.r.t. the gap in the non-finite clause/non-initial conjunct as only S or P arguments can move out. The fact that movement out of Control complements/non-initial conjuncts is possible follows from the assumption that S and P are not involved in an Agree operation that involves a full set of phi-features. For coordination, this requires that non-initial conjuncts are treated as non-finite, which receive their tense specification from the matrix clause, as in clause-chaining languages. This analysis favors a theory of case assignment where both S and P receive case (nominative/absolutive) from T (and thus fail to be deactivated in control clauses/non-initial conjuncts). For a language like Dyirbal, the perhaps most prominent syntactically ergative language, this favors a theory like that of Müller & Thomas (2017).

1. Introduction: Syntactic ergativity

Languages can differ in how the grammatical functions pattern w.r.t. argument encoding (case, agreement) and their behavior in certain syntactic processes.

*This paper is based on discussions of the authors in late 2012 and early 2013. A first version appeared as Morgenroth (2013). Given Gereon's recurrent reminders concerning the unpublished status of this work, we have taken the occasion to make these ideas available to a wider audience in revised and updated form. Many aspects of the paper have greatly benefited from Gereon's comments on Morgenroth (2013).

Strict Cycling: A Festschrift for Gereon Müller, 341–364

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser (eds.)

STRICT CYCLING, Universität Leipzig 2024

In what follows, we will distinguish the following functions/argument roles well known from the typological literature (see, e.g., Palmer 1994):

- (1) a. S-argument: sole argument of an intransitive verb
- b. A-argument: the usually agent-like external argument of a transitive verb
- c. P-argument: the usually patient-like internal argument of a transitive verb (sometimes also referred to as O-argument)

Nominative-accusative alignment obtains if S and A pattern together, ergative alignment arises if S and P pattern together. In what follows we will often use the term S/A- or S/P-pivot to indicate that two functions/argument roles pattern together. An example for ergative case alignment is provided in (2) (from Dixon 1994: 10):¹

- (2) a. η uma banaga-n^yu
 father:ABS return-NONFUT
 ‘Father returned.’
- b. η uma yabu- η gu bura-n
 father:ABS mother-ERG see-NONFUT
 ‘Mother saw father.’

Dyirbal

Ergative alignment in syntax is most prominent in A'-movement. In a subset of morphologically ergative languages, A'-movement of S and P is unproblematic, while A'-movement of A can be restricted in various ways, viz., requires detransitivization (antipassive), nominalization, resumption or special agreement (anti-agreement or so-called agent focus).² The example in (3) illustrates the S/P-pivot in Dyirbal relativization. While S and P can be relativized without additional means and thus appear as zero inside the relative clause, (3a–c), to relativize the A-argument, antipassive is needed (which involves detransitivization and thus turns A into S), (3d), see Dixon (1979: 128), Dixon (1994: 169–170) (note that the case-marking on the relativized verb indicates the function of the head noun in the main clause):

¹The glosses follow the Leipzig glossing rules.

²See Polinsky (2017: 8–9, 10–12) for more discussion of the compensatory strategies and evidence that syntactic ergativity need not affect all types of A'-movement in the language.

- (3) a. η uma [banaga- η u] yabu- η gu bura-n
 father:ABS return-REL.ABS mother-ERG see-NONFUT
 ‘Mother saw father who was returning.’
- b. η uma yabu- η gu [banaga- η u-rru] bura-n
 father:ABS mother-ERG return-REL-ERG see-NONFUT
 ‘Mother, who was returning, saw father.’
- c. η uma [yabu- η gu bura- η u] du η gara-n^yu
 father:ABS mother-ERG see-REL.ABS cry-PST
 ‘Father, who mother saw, was crying.’
- d. yabu [bural- η a- η u] η uma-gu]
 mother:ABS see-ANTIPASS-REL.ABS father-DAT
 banaga-n^yu
 return-NONFUT
 ‘Mother, who saw father, was returning.’

Syntactic ergativity thus implies morphological ergativity, while the reverse does not hold (see Polinsky 2017: 8–10 for an attempt to assess the pervasiveness of syntactic ergativity). In general, even syntactically ergative languages do not function along an S/P-pivot in all areas of syntax. Domains like reflexivization or imperatives never seem to show an ergative pattern (see Manning 1996 and Aldridge 2008: 970–972 for an overview of split subject properties). It is contested to what extent S/P-alignment can be found in other areas of syntax.

The most debated cases involve Control and conjunction reduction. W.r.t. Control, Deal (2015: 661–662) mentions two languages displaying an S/P-pivot, viz., Dyirbal and Sama Southern. Kazenin (1994) lists Yidin, Kalkatungu, Mam, and Aguacatec. Kazenin explicitly limits his claims to Control into purpose clauses, while some of the examples in Deal illustrate (translational equivalents of) Control into complement clauses. The ergative pattern can usually be seen in the fact that only the S/P-argument can be PRO/zero, and it seems that at least in Dyirbal, Kalkatungu and Yidin, the controller must also be S or P (while in Sama Southern, it can also be A). Here is a paradigm from Dyirbal with the controller in P-function, which shows that S and P can be zero, (4a/b), while for a transitive subject (viz., A) to be zero inside the purpose clause, antipassive is required (which turns A into S), (4c), see Dixon (1994: 168–169):

analyzed in Otsuka (2010).⁴ Based on this distribution, Kazenin (1994: 92) proposes the following hierarchy (slightly reformulated for our purposes):

- (6) conjunction reduction is ergative \succ Control is ergative \succ A'-movement is ergative \succ argument encoding is ergative

Dyirbal would thus constitute a language that is ergative in all respects of the hierarchy, Kalkatungu would be ergative in all aspects except coordination, West Greenlandic (Deal 2016: 166–169) or Chukchi (Manning 1996: 26) would only show syntactic ergativity in relativization, while a language like Basque (Polinsky 2017: 4) would only be morphologically ergative.

Ergativity in both Control and especially in coordination thus seems to be rather rare. In addition, in both cases it is not a priori clear whether what looks like Control or conjunction reduction on the surface really has the corresponding underlying syntax. On these grounds, Polinsky (2017) discards both phenomena as irrelevant for the study of syntactic ergativity.

While this may eventually turn out to be the correct strategy,⁵ we will instead – we think in line with Gereon's thinking – pursue what we take to be the more interesting and especially challenging perspective, viz., that true syntactic ergativity in Control and conjunction reduction does exist and therefore has to be accounted for by a theory of syntactic ergativity.

Given that it is the most prominent language in the discussion of syntactic ergativity and seems to display the most consistent S/P-pivot, we will in

⁴Dixon (1994: 178–179) mentions two further languages displaying an S/P-pivot in coordination, viz., Nadeb and Alutor.

The situation in Tongan is more complicated in that there are two different coordinators with a different alignment each. Thus, while there is an S/A-pivot with *mo*, *pea* instantiates an S/P-pivot. In addition, even with *pea*, there is also the possibility for conjunction reduction of A if the antecedent is an A as well, see Otsuka (2010: 325). Thus, conjunction reduction in Tongan arguably works differently than in Dyirbal. Otsuka (2010) argues that *pea*-coordination involves PF-deletion under case-identity, but this leaves unexplained why under coreference deletion of the coreferential argument in the second conjunct and deletion of tense are obligatory. *Mo*-coordination is argued to involve feature copying from the antecedent onto a silent pronoun in the second conjunct which has to be in the same syntactic position.

⁵See, e.g., Legate (2008a) for arguments that there is no good evidence for proper Control or conjunction reduction in Dyirbal. Rather, both constructions seem to be instances of clause-chaining with optional deletion of the S/P-argument. Note, though, that this leaves unexplained the fact that only S and P arguments can be zero but A cannot. If the ergative is analyzed as an inherent case, this pattern could be related to an independent (and cross-linguistically well-attested) requirement for inherent case to be visible.

what follows focus on Dyirbal but will occasionally point out what other assumptions would be necessary to account for slightly different patterns.

This paper is structured as follows: Section 2 briefly sketches theories of case assignment in ergative languages. Section 3 discusses syntactic ergativity in Control and conjunction reduction and outlines why they constitute an interesting challenge for existing theories of syntactic ergativity. Section 4 proposes a reanalysis in terms of movement as Control. Section 5 concludes.

2. Case assignment in ergative languages

Perhaps the most widespread analysis in recent years of the S/P-pivot in case marking in ergative languages involves inherent ergative assignment to A by *v*, while both S and P receive absolutive/nominative case from T. Variants of this can be found in Polinsky (2016), where the ergative is instead analyzed as a PP, and in Müller (2009), where A receives *structural* case from *v* (see Deal 2015: 670–685 for an overview of theories of case assignment in ergative languages).

Legate (2008a) shows that identical morphological case on S and P need not imply that both receive their case from T. Rather, she argues that two classes of ergative languages must be distinguished. In one, as sketched above, S and P both receive case from T. In another class of ergative languages, however, P actually receives accusative case from *v*, which is, however, usually not morphologically realized (except on certain types of DPs, e.g., pronouns). Such languages are thus actually underlyingly tripartite. She adduces a number of syntactic arguments in favor of such a split between ergative languages, the most straightforward being the licensing of P in non-finite contexts. Since P receives its case from different heads under this classification, P is expected to be PRO in those languages where it receives case from T but not in those where it receives case from *v*. The reason why S and P receive the same morphological case is due to the fact that there are no special exponents for nom and acc, rather, a default form is inserted. Additional morphological evidence for an analysis as a tripartite system comes from case-mismatches: These languages often show case splits in that some P-arguments bear accusative case, while others are unmarked (and some A-arguments bear ergative, while others bear nominative). If a P-argument is complex, there can be mismatches in that some part of the DP bears accusative, while other parts bear absolutive/nominative, see, e.g., Legate (2008b: 77, ex. 44a).

What is important in the present context is that Legate (2012, 2014) applies the tripartite analysis also to Dyirbal, thus, nominative for S, ergative for A and accusative for P. Ergative on A is only overt on nominals but zero (= impoverished) on local pronouns, while accusative on P is only visible on pronouns, optional for human nouns and proper names but zero (= impoverished) on all other nominals.

Müller & Thomas (2017) provide a reanalysis of such three-way systems as two-way systems, viz., P receives its case from T, like S (while A receives its case from *v*). Nominative on certain A-arguments such as local pronouns results from impoverishment, as in Legate (2012, 2014). Where the approach differs is in the analysis of the separate accusative form on certain P-arguments. It is reanalyzed as a (marked) absolutive, which has failed to undergo impoverishment. Concretely, impoverishment effects all S-arguments and most but crucially not all P arguments (viz., it does, e.g., not apply to local pronouns). The zero-exponent on S and unmarked P arguments is thus a default, while the visible exponent on P arguments is specified for nominative/absolutive. Note that this Optimality-Theory approach is formulated in such a way that one need not stipulate that impoverishment affects a non-natural class.

For what follows, both the nature of the case on the A-argument as well as which head case-licenses the P-argument will be important. We will see that the facts favor an approach where the case on A is inherent (possibly even a PP), while the case on P is assigned by T.

3. Syntactic ergativity in Control and conjunction reduction

In this section, we will try to highlight why ergative alignment in control and conjunction reduction poses interesting challenges to both theories of syntactic ergativity and theories of Control and conjunction reduction.

3.1. Control

Starting with Control, accusative alignment in languages like English is traditionally related to Case: Since non-finite T cannot assign structural nominative, subjects can only be PRO (on some accounts, it bears a special null case).

The same logic has been extended to languages with an S/P-alignment in Control: It obtains under those approaches to ergativity where the case

borne by S and P is absolutive/nominative and is assigned by T (and S/P move to Spec,TP), while ergative is (an inherent case) assigned by v. Under the assumption that non-finite T cannot license absolutive, ergative alignment is a natural consequence.

Non-ergative alignment in Control (as, e.g., in West Greenlandic) can arise if P receives case from v, see Deal (2016: 171-172) for discussion.⁶

Recall from above that Dyrbal is sometimes reanalyzed as a tripartite language with accusative on P, assigned by v (Legate 2012, 2014). Still, S and P pattern together w.r.t. all syntactic ergativity diagnostics in Dyrbal. Thus, under this type of analysis, PRO in Dyrbal Control constructions cannot be due to the absence of case, at least not in the case of P, which receives its case from v.

An orthogonal challenge for all approaches is the fact that at least in some syntactically ergative languages, the controller must also be S/P (recall ex. (4)). Since there can be case-mismatches in Control between controller and PRO (see section 4 below), one cannot easily rule out Control by A by means of a condition requiring case identity.

3.2. Conjunction reduction

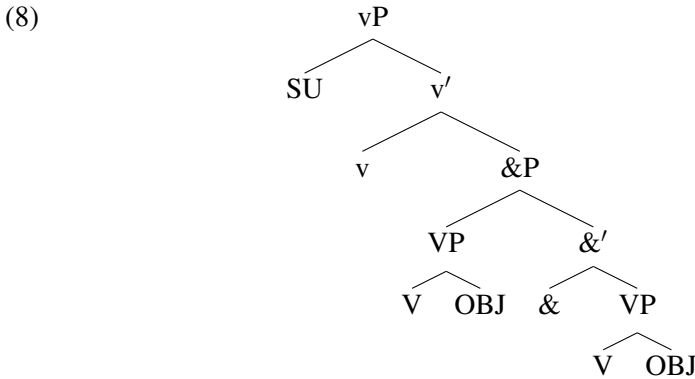
Turning to coordination, it is instructive to start with a language with an S/A-pivot such as English, where only the S/A-argument can be omitted in the second conjunct, and it can only be coreferential with an S/A-argument of the preceding clause:

- | | | | |
|-----|----|--|---------|
| (7) | a. | John kissed Mary and fell. (= John fell.) | A = S |
| | b. | John fell and kissed Mary. (= John kissed Mary) | S = A |
| | c. | John kissed Mary and bought flowers. (= John bought flowers) | A = A |
| | d. | *John kissed Mary and Peter praised. (intended: Peter praised John/Mary) | A/P = P |

⁶Given that the ergative receives case from v, it is actually not clear why it can be (and perhaps has to be) PRO in languages like West Greenlandic. Perhaps this raises similar issues as finite Control, to which we turn in section 4 below.

There are essentially two technical possibilities to ensure that the subject is realized only once in such coordinations:⁷

First, the subject is introduced above the coordination. Such examples would thus involve VP-coordination with *v* introducing a single argument:



This type of analysis only works if both subjects are external arguments. In (7a/b), however, the subject of one of the conjuncts (that of *fall*) is arguably unaccusative and thus merged as an object. Consequently, the low coordination analysis is not applicable.

Second, the subjects undergo ATB-movement (however it is to be analyzed) to Spec,TP, e.g., as in (9), the derivation for (7a):

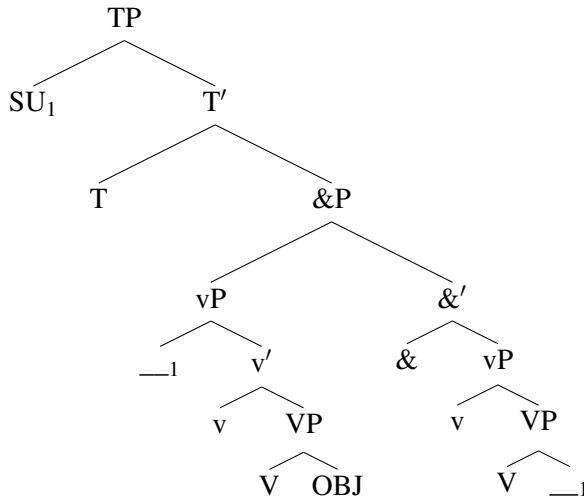
⁷One may think that conjunction reduction could also involve full clausal coordination with PF-deletion in the second conjunct. However, apart from the fact that this would leave unexplained why it should only affect the A/S argument, it also leads to incorrect interpretations as, e.g., in (i):

- (i) a. No one kissed Mary and fell.
- b. No one kissed Mary and no one fell.

Clearly, the two sentences in (i) differ in meaning with *no one* having scope over both events in (ia) but not in (ib).

While one can rule out a biclausal analysis with PF-deletion for (at least some cases in) English, one cannot rule out a priori that something along these lines is possible in ergative languages. The literature usually does not provide any relevant tests that would help limit the number of possible analyses. In what follows, we will assume that conjunction reduction is not the result of PF-deletion but should point out that exactly this type of analysis is proposed for the S/P-pivot in Tongan, see Otsuka (2010) and recall fn. 4.

(9)



The S/A-pivot follows from minimality: The EPP on T triggers A-movement of the closest argument to its specifier, which in the presence of two or more arguments is the external argument. As a consequence, only A and S can be moved.⁸ Without ATB-movement, a constituent of the second conjunct cannot be silent. This rules out examples like (7d), where the object of the first conjunct does not c-command that of the second.⁹

The question is now whether the analyses that have been proposed for English can be extended to syntactically ergative languages. We will in what follows assume that the external argument is merged in Spec,vP and the internal argument as a complement of V, viz., arguments are projected in the same way as in languages with accusative alignment.¹⁰ As in English, low coordination fails whenever one of the coreferential arguments corresponds to

⁸In object experiencer constructions as in *The book pleases me*, the nominative argument moves across the experiencer. A minimality violation can be avoided if the experiencer is not visible/accessible to T, either because it already bears case (Activity Condition) or because it is encapsulated in a PP. Inherent case will also play an important role in our analysis in section 4.2.2 below.

⁹This would be an instance of sideward movement, which is only possible in very restricted circumstances such as adjunct Control, in which case, however, only the subject but not the object can be targeted, a point to which we return in our analysis in section 4.2.1 below.

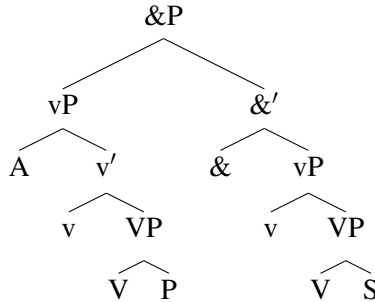
¹⁰Apart from universalist considerations, the major motivation for this assumption comes from reflexivization in ergative languages, which displays an accusative pattern, suggesting the ergative is merged higher than the absolutive argument, see, e.g., Aldridge (2008: 970f.) for discussion and references.

an internal argument, as arguably in (5a/b), and can therefore be set aside. As for ATB-movement, an S/P-pivot can only arise if (i) movement of the absolutive across the ergative is not blocked by minimality, (ii) only the absolutive can move to Spec,TP and (iii) T has an obligatory EPP-feature.

There is in fact a tradition in the analysis of syntactic ergativity that includes exactly these ingredients, viz., posits obligatory movement of the absolutive across the ergative, the so-called inversion analysis, see Deal (2015: 690–701), Deal (2016: 170–172), Polinsky (2017: 15–24) for description and references. Movement of the absolutive is usually linked to case-licensing (or an EPP-requirement), while the ergative receives inherent case from *v*. There is no minimality violation because the ergative argument is not visible to T (as it no longer needs case). The inversion analysis receives support from languages like West Greenlandic, where the absolutive systematically scopes over the ergative (irrespective of the surface order), suggesting it occupies a high A-position. However, the inversion analysis of ergativity is unlikely to be the source of the S/P-pivot in conjunction reduction: First, languages with inversion do not necessarily display an S/P-pivot in conjunction reduction, cf., e.g., West Greenlandic, where only A'-movement shows an ergative pattern. Second, it is not clear that the absolutive always has to be externalized and the ergative may stay low, see Polinsky (2017: 20), Deal (2015: 685–688), Deal (2016: 174–175). Crucially, if the absolutive in the first conjunct stays low, an ATB-derivation would not be possible since the gap in the second conjunct would fail to be c-commanded. The following tree diagram represents the structural relationship in (5b) (assuming that the S-argument of the second conjunct is unaccusative, though nothing hinges on this):¹¹

¹¹Surface word order is often taken to be unreliable in the relevant languages, which is why ergative > absolutive word order may involve an extra movement step of the ergative rather than the base-generated structure with the absolutive in a low position. But at least in some languages, there is no evidence from scope that the absolutive occupies a higher A-position than the ergative, see, e.g., the data from Chukchi in Polinsky (2017: 20). Also, if ergative-initial orders involve an extra movement step of the ergative, one wonders what kind of movement could be involved. There is often reference to optional scrambling, but this must then crucially not represent A'-movement given the ban on A'-moving ergatives – unless, of course, it affects only a subset of A'-constructions.

(10)



It thus seems safe to conclude that since (i) inversion does not always correlate with an S/P-pivot and (ii) the evidence for actual inversion/externalization of the P-argument is not sufficiently strong, the inversion theory of ergativity is inadequate to account for the S/P-pivot in conjunction reduction.¹²

4. Reanalysis via Control als Movement

In this section, we will argue that, given certain assumptions, the S/P-pivot in Control and conjunction reduction in the relevant languages can be elegantly accounted for by means of the movement theory of Control (MTC), see Hornstein (1999, 2001), Boeckx et al. (2010). We will first illustrate the basic logic of this theory before applying it to the puzzles at hand.

4.1. Introduction: Control as movement

In the standard theory of (obligatory) Control, a silent element, PRO, appears in the subject position of non-finite clauses and specific assumptions ensure

¹²As discussed above w.r.t. the S/P-pivot in Control, the inversion analysis is not obviously applicable under analyses where P receives case from v and externalization thus cannot be motivated by case-theoretic reasons. There is a version of the inversion approach championed by Aldridge (2008: 983–987) where inversion is not triggered by the case-licensing needs of the absolutive but by an EPP-feature on v, which moves the object past the external argument and thus closer to the probes on T. This type of approach to syntactic ergativity is, in principle, compatible with an analysis of Dyrbal where the transitive object receives case from v. Given that conjunction reduction that involves arguments with different cases, viz., accusative and nominative/absolutive, is possible in Dyrbal, see Dixon (1994: 15–16), ATB-movement must then be assumed to tolerate mismatches between structural cases, cf. also English *Who did John support and Mary say would win?* Still, it is not clear whether there is always inversion in Dyrbal, viz., whether the P argument always moves to Spec,TP, while the ergative stays low.

that it appears only in that position and has a local controller (nowadays this often involves some form of Agree linking controller and PRO), cf. (11a).

A prominent alternative introduced in Hornstein (1999, 2001) is to reduce Control to movement: The controller is generated in the relevant argument position of the embedded clause and undergoes A-movement via the embedded subject position to the matrix argument position and, in case of subject control, finally to Spec,TP of the matrix clause, see (11b):

- (11) a. John_i expects [PRO_i to PRO_i win].
 b. [John₁ [_{VP} John_T expects [_{TP} John_T to [_{VP} John_T win]]]]

Under this theory, DPs can bear more than one theta-role. The trigger for movement under this theory is to check theta-features of a predicate. This requires numerations that contain too few DPs for the number of theta-roles assigned by the predicates. Note that case is not the trigger given the robust evidence that PRO can bear case, usually an oblique/quirky case (at least in Icelandic). This entails that under the MTC a DP can receive more than one case (and usually surfaces with the latest case assigned), see Boeckx et al. (2010: 152–168). DPs can move on despite case- and phi-feature checking in the embedded clause because this does not involve (complete) phi-feature checking: Both the v-head associated with the quirky case assigning head and the embedded T-head are deficient in such a way (viz., do not bear a full set of phi-features including person) that Agree does not deactivate the DP. It can thus move on into the matrix clause. Since movement is involved and tails of movement chains are normally not spelled out, it is correctly predicted that a gap obtains in the embedded clause.

The MTC has sparked a lot of controversy and we will not attempt to justify it here (but see Boeckx et al. 2010: chapter 5 for discussion of the many challenges that have been raised against it). Rather, we will go on to show that it has the potential to provide an elegant account of syntactic ergativity in Control and conjunction reduction.

4.2. Applying the MTC to syntactic ergativity

Syntactic ergativity can be obtained by means of the MTC given the following two key assumptions:

- control clauses and non-initial conjuncts are merged as complements
- only S/P can undergo A-movement

The first ingredient derives the fact that the Controller of PRO/the antecedent of the gap in the subsequent conjunct can only be S/P. The second assumption is necessary to explain why only S/P can be zero in Control clauses/non-initial conjuncts. We will discuss both aspects in turn.

4.2.1. *Complementation*

The first assumption is unproblematic in the case of Control into complement clauses as in example (4) above. However, the same assumption is necessary for Control into what at least translationally seem to be adjunct clauses (viz., proper purpose clauses), see Dixon (1972: 68), Dixon (1994: 168) for examples. There is a minority position in the field according to which some adjunct clauses are merged very low, sometimes even as complements of the verb, see, e.g., Larson (1988). Support for this view comes from the observation that some adjuncts, and crucially also purpose clauses, can be transparent for extraction in several languages, see, e.g., Truswell (2011: 130–134):¹³

(12) Who did John travel to England [to make a sculpture of ___]?

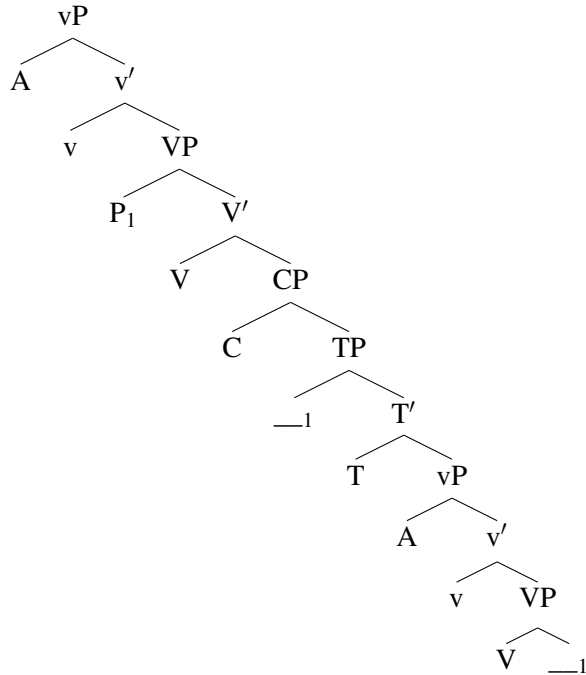
Surely the most unorthodox assumption is that non-initial conjuncts are merged as complements. However, in a language like Dyrbal, purpose clauses and non-initial conjuncts seem structurally similar (see also section 4.2.3 below on clause-chaining): they always follow the main clause; there is in fact no overt coordinator, and the interpretation of non-initial conjuncts is always sequential.

Merging both Control clauses and non-initial conjuncts as complements is a crucial piece in accounting for the S/P-pivot: Under the MTC, given minimality, the moved subject targets the first argument of the matrix clause, viz., the object (*promise*-type verbs require a special treatment of their objects). Thus, if an S or P argument of the subordinate clause/a non-initial conjunct moves into the matrix clause/previous conjunct, it will invariably target the lower argument, viz., the P-argument (if there is one). In other words, the

¹³Note, though, that Truswell links the transparency of purpose clauses not to their structural integration but to their event properties.

MTC automatically derives this part of the S/P-pivot. A schematic derivation for an example like (4b) is given in (13) (the derivation includes a stop-over in Spec,TP; this will arguably be necessary for locality reasons, even if the language does not have systematic inversion; the derivation for an example with conjunction reduction would be essentially the same):

(13)



If purpose clauses and non-initial conjuncts were merged as adjuncts, this generalization could no longer be derived given that Control into adjunct clauses is normally only possible for subjects (see Hornstein 2001: 49 for the data and how this follows under the MTC).^{14, 15}

¹⁴The purpose clause-like Control examples in Dixon (1994: 168) involve an intransitive matrix clause, which would be compatible with adjunct control and thus an adjunction structure, but at least some purpose clause-examples in Dixon (1972: 68, 377, ex. 52) involve a transitive matrix clause with P functioning as the controller. Hence, to derive the S/P-pivot, complementation is necessary after all.

¹⁵As mentioned in fn. 3, there is a version of conjunction reduction in Dyirbal where the antecedent in the initial conjunct is A rather than S/P. One possibility to account for the fact that A is the antecedent rather than P is to assume that such clauses are in fact adjuncts,

4.2.2. *Only S and P can move*

We will entertain two possibilities that account for why only S and P but not A can move out of Control clauses/non-initial conjuncts. First, A cannot move because A'-movement is involved and thus is blocked from moving for whatever reason accounts for the ban on ergative movement. Second, there is A-movement involved, and the configuration in syntactically ergative languages is such that A cannot undergo A-movement. We will discuss both options in turn, but we will conclude that a solution based on A-movement is more promising.

MTC involves A'-movement Under the MTC, movement out of a Control clause is usually taken to be A-movement, not the least given certain similarities with raising and the fact that the movement targets a theta- (and thus A-related) position.

In line with this, Control complements were originally treated as TPs (and thus like raising complements) in Hornstein (1999), contrary to the prevalent assumption in the Government and Binding era that they are CPs. In later work, though, see, e.g., Boeckx et al. (2010: 127ff.), Control complements are treated as CPs, in accordance with the more traditional assumption (an assumption that seems unavoidable at least in those languages that have overt complementizers in Control complements). But once a CP is present, questions pertaining to the locality of movement from the Control clause arise given the Phase Impenetrability Condition (PIC). If the non-finite clause counts as a strong phase, then movement from the embedded subject position (Spec,TP) to the matrix external argument position (Spec,vP) should not be possible – the TP-complement of the embedded C-head should be spelled out once the next higher phase head, viz., matrix v, is introduced, thereby bleeding movement from the embedded Spec,TP. We are not aware of any clear evidence in favor of the strong or weak phasal status of Control CPs and there is also not much discussion about this issue in the literature adopting the MTC. The most explicit discussion we have been able to find is in Nunes (2010: 95–98), who actually claims that there *is* an intermediate movement step to Spec,CP. Simplifying somewhat, one possible piece of indirect evidence is Control into

thereby precluding object control. A similar solution could be entertained for those languages mentioned in section 1 (like Sama Southern) where the controller of PRO can also be A.

indirect questions or clauses from which *wh*-movement has taken place as in (14):

- (14) a. What did John try to do?
 b. John wondered what to do.

In both examples, at the point when the embedded subject moves into the matrix clause, there will be an element in Spec,CP, which potentially could cause intervention for movement of the subject. While Boeckx et al. (2010: 76ff.) argue that under a relativized minimality perspective there is no intervention given that different features are involved (*viz.*, *wh*- vs. *theta*-), Nunes (2010: 96) proposes that movement of the embedded subject via Spec,CP voids the intervention effect as it renders both specifiers equidistant.

Admittedly, the evidence for an intermediate movement step is not overwhelming, but for the sake of the argument we will assume that under the MTC, there is movement via Spec,CP.¹⁶ The question then is whether this qualifies as *A'*-movement. Given that the final movement step into the matrix *theta*-position will count as *A*-movement, this is not clear, unless any movement via Spec,CP qualifies as *A'*-movement. Let's assume for the sake of the argument that it does (and set aside questions that may arise concerning improper movement), then, whatever moves out of the Control clause/the non-initial conjunct in a syntactically ergative language will actually have to be compatible with *A'*-movement.

As a consequence, in principle any theory of the ban on ergative movement (see Deal 2015, 2016, Polinsky 2017 for detailed discussion and references) can derive the *S/P*-pivot in the non-finite clause/the non-initial conjunct.

There are broadly two types of approaches: First, the ergative cannot be extracted because the absolutive moves across it (usually for case-licensing/EPP-checking, by means of *A*- or *A'*-movement, depending on the proposal) and then blocks *A'*-movement of the ergative. This usually has to do with locality, *viz.*, the absolutive is closer to the higher *A'*-probe (minimality), see Campana (1992), Aldridge (2008) or the fact that the object occupies the only specifier of the *vP*-phase boundary, see Coon et al. (2014), or the fact that the absolutive

¹⁶Drummond & Hornstein (2014: 461) actually concede that the MTC is possibly not compatible with movement via phase-edges. Otherwise, the distinction between licit sideward movement from adjuncts and illicit regular *A'*-extraction from adjuncts can no longer be made (note, though, that this only concerns the *vP*-edge and not movement via Spec,CP).

cannot be case-licensed if the ergative moves instead, see Bittner & Hale (1996), Assmann et al. (2015).

As discussed above, apart from the version in Aldridge (2008: 983–987), where movement of the absolutive is triggered by an EPP-feature, these approaches fail if Dyirbal is analyzed as a tripartite language, where P receives case from *v* rather than T as in Legate (2012). Furthermore, as also mentioned above, the evidence for inversion is limited and we are not aware of any conclusive evidence in favor of it in Dyirbal apart from the fact that many examples have the absolutive in clause-initial position.

Under the second type of approach, the ban on ergative movement arises because (i) the ergative is a PP and PPs cannot move since the language allows neither P-stranding nor pied-piping, see Polinsky 2017: 25–28 or (ii) C probes (like certain ϕ -probes) are case-discriminating in that they can only attract goals with certain case-features, viz., unmarked/absolutive case, see Otsuka (2010), Deal (2016: 175–178).¹⁷

We are not aware of any conclusive evidence that the ergative is a PP in Dyirbal. While we have no information about P-stranding, the fact that the language allows flexible order (see, e.g., Dixon 1972: 107) could suggest that ergatives *can* move; if they were PPs, one would have to conclude that pied-piping is possible; consequently, the categorial status of ergatives is unlikely to be responsible for their inability to undergo A'-movement. Stipulating that C-probes are case-discriminating, viz., can only attract goals bearing unmarked/absolutive case, is, of course, a possibility and would derive the desired result, although it would essentially restate the facts.

In conclusion, then, deriving the S/P-pivot in Dyirbal on the assumption that there is an A'-movement step involved is not very promising. Not only is the evidence for A'-movement being involved in theta-related movement rather shaky, it is also not clear whether existing theories of syntactic ergativity can be fruitfully applied to languages like Dyirbal.

MTC involves A-movement only The alternative possibility to account for the S/P-pivot in Control/conjunction reduction is to relate it to a ban on

¹⁷See also Legate (2008a) for the proposal that the S/P-pivot follows from the fact that only the cases associated with a phase-head can undergo A'-movement (assuming that nominative originates on C) and Legate (2012: 190) for the proposal that only structurally-case marked DPs can undergo A'-movement.

ergatives to undergo A-movement. Given different theories of ergativity, this could be implemented in different ways:

Under the inversion approach where the absolutive moves across the ergative, often to an A-position like Spec,TP, one could argue that further A-movement of the ergative past the absolutive is blocked by Minimality. Obviously, this kind of approach will only work if there really is inversion and the absolutive targets an A-position; in addition, there is a danger that this incorrectly predicts there to be syntactic ergativity in Control and conjunction reduction in all inversion languages, contrary to fact (recall that West Greenlandic provides the best evidence for inversion, yet, relativization is the only domain with an S/P pivot in the language).

A different and more promising possibility is that the ergative generally cannot undergo A-movement. This may follow if the ergative is an inherent case, as is usually assumed in inversion approaches, or a PP (see Polinsky 2016: 65-68). In many languages, only DPs bearing structural case can undergo A-movement, viz., EPP-driven movement to Spec,TP; cf., e.g., the impossibility for PP-experiencers in French to undergo raising, see Preminger (2014), or the fact that in English object experiencer constructions the surface subject is a theme generated below the experiencer and moves across it to Spec,TP.¹⁸ An analysis of languages like Dyirbal where A bears inherent case, while S and P bear a structural case (either both nominative or S nominative and P accusative) will thus straightforwardly derive the S/P-pivot if A-movement is only possible for structurally case-marked DPs.¹⁹

¹⁸Recall that ergatives can undergo A-movement/raising in some languages, see Deal (2016: 687–688); Polinsky (2016: 101–104) claims that what may look like raising in syntactically ergative languages actually constitutes a different construction, e.g., copy-raising or prolepsis. What would be crucial under our hypothesis is not the absence of raising but rather the existence of an S/P-pivot in raising; unfortunately, there is generally little empirical information available about raising in ergative languages which is why this hypothesis cannot be tested properly.

¹⁹Recall that Dyirbal retains the S/P-pivot even with pronouns, which display nominative-accusative case-marking (see Dixon 1994: 15-16). This shows that what is at stake is structural rather than morphological case.

Interestingly, Yidin displays an S/A-pivot in conjunction reduction with pronouns (which display nom-acc alignment like in Dyirbal), see Kazenin (1994: 89). Consequently, extra assumptions will be necessary to account for the switch in alignment depending on the morphological form.

4.2.3. *Questions about the defectiveness of clauses*

As discussed above, the trigger for movement in Control is not Case, given the possibility of multiple Case-assignment. Rather, movement is theta-driven because there are not enough arguments in the numeration for the number of theta-roles assigned by the predicates of that numeration. In addition, to limit the MTC, the subjects are taken to be active only until they have been involved in Agree with a probe bearing a full set of phi-features. This largely limits the MTC to non-finite clauses.

It has been argued that the MTC can also be extended to finite control, viz., Control clauses with fully inflected verbs, such as declaratives in Brazilian Portuguese or Balkan subjunctives. In Boeckx et al. (2010: 63–79) it is argued that movement from these finite complements is possible if the T-head is deficient in some way, viz., either lacks tense (as in Balkan subjunctives) or a full set of phi-features (3rd person in Brazilian Portuguese has been analyzed as a default with T initially bearing only a number feature). In either case, Agree will not deactivate the subject and therefore it can move on into the matrix clause (the same analysis is then proposed for hyperraising).

We would like to propose that this logic, viz., a deficient T-head enabling A-movement out of a clause, can be straightforwardly extended to Control and conjunction reduction in syntactically ergative languages, given certain assumptions. Starting with Control, while there is no agreement on subordinate verbs, they bear a purposive marker rather than a tense marker like main clause verbs, suggesting that they are non-finite and thus count as deficient. If S and P are licensed by and thus agree with T in Dyirbal, they will not be deactivated in Control complements and thus must move into the matrix clause. The S/P-pivot thus can successfully be derived in a theory where both S and P are licensed by T as in Müller & Thomas (2017). It is much less clear how this result could be obtained if instead P is licensed by *v* (as in Legate 2012) given that there seems to be no reason to assume that *v* has an incomplete set of phi-features/is deficient in any other relevant sense.

Once we look at conjunction reduction, the defectiveness of final conjuncts may seem less obvious given that the verbs are marked for tense. We can think of one way in which non-initial conjuncts can still be defective: As described in Dixon (1972: 67–73), what is sometimes described as conjunction reduction is part of a more general phenomenon, viz., clause chaining, where the S/P-argument is silent. Now these topic chains in Dyirbal look different

from prototypical clause chaining constructions where usually only the last verb is finite, while the preceding ones (so-called medial clauses) are non-finite to varying degrees and often display switch reference, see, e.g., Weisser (2015). But given that the interpretation of topic chains in Dyirbal is sequential, non-initial clauses do not seem to be specified for independent/absolute tense. One possibility is thus to treat topic chains as reversed clause-chains with only the initial clause being fully finite, while all subsequent clauses are defective, which would be sufficient for A-movement out of them to be possible according to the MTC. Again, the S/P-pivot follows most straightforwardly if both S and P are licensed by T.²⁰

A final question pertains to cross-linguistic variation in the degree of syntactic ergativity. Recall that we need to distinguish three types of languages, viz., languages that display syntactic ergativity only in A'-movement, those that also display it in Control and finally those that also display it in conjunction reduction. Those that in addition to A'-movement display an S/P-pivot in control can be assumed to involve Case-licensing via T. The presence/absence of an S/P-pivot in coordination could be related to various factors: (i) the nature of coordination, viz., not all languages may merge non-initial conjuncts as complements; (ii) the defectiveness of non-initial conjuncts, viz., not all languages may have clause-chaining with defective non-initial conjuncts; (iii) even if a language has clause-chaining with complementation, an S/A-pivot may still obtain once ergative arguments can A-move.

5. Conclusion

In this paper we have argued that syntactic ergativity in Control and conjunction reduction can be accounted for if the movement theory of Control is adopted. More precisely, the S/P-pivot with respect to what can be the antecedent and what can be zero follows from the assumptions (i) that Control clauses and non-initial conjuncts are merged as complements and (ii) that ergative arguments

²⁰The tense-marking on non-initial clauses would thus be the result of an Agree relationship of an unspecified T-head with the fully specified T-head of the matrix clause, see Weisser (2015: 41).

Again, complications arise if P receives case from *v* (as in Legate 2012). One possibility to make movement of P possible nevertheless under such assumptions, is to tie its deactivation to a *v* that is connected to a T-head that bears tense. This would only be possible in main clauses, but not in (non-finite) Control clauses or non-initial conjuncts.

cannot undergo A-movement. This result obtains most straightforwardly in theories of ergativity where A receives inherent case, while both S and P receive structural absolutive/nominative case from T. The facts thus favor a two-way analysis of Dyirbal as in Müller & Thomas (2017) rather than a three way analysis as, e.g., in Legate (2012).

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Phonological effects of movement gaps

Andrew Murphy*

1. Introduction

A fundamental question in syntactic research has been how best to represent displacement. In syntactic theories employing Merge as the basic structure building operation, there are at least two distinct conceptions of movement. The first is one in which movement consists of a filler and several distinct ‘gap’ positions that may correspond to either a deleted copy of that phrase (Grinder 1972, Chomsky 1995, Nunes 2004) or a phonetically-null trace (Chomsky 1973, 1995, Fiengo 1977). As representative of each of these approaches, I will simply use the more neutral notation of a gap (___), as in (1a). The second approach, known as multidominance, embodies the idea that movement involves a single element occupying multiple positions (1b) (e.g. Citko 2005, Gračanin-Yüksek 2007, Johnson 2012, Bachrach & Katzir 2017). Here, gaps as such do not exist other than as a by-product of the linearization algorithm, where the moved element is pronounced in only of the positions it occupies.

- (1) a. Which song₁ is John happy [CP ___₁ that Paul wrote ___₁] ?
b. ___ is John happy [CP ___ that Paul wrote ___] ?
which song

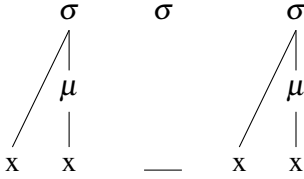
In this paper, I would like to put forward the following observation: There are several cases in which it looks like the position of a gap generated by A'-movement interacts phonologically with material in its immediate vicinity. I will argue that this provides an argument that movement gaps should be treated

*Thank you, Gereon, for being a much-needed source of inspiration and encouragement at so many different times. I am grateful to Gereon for teaching me many things: ‘Stechow’s Filter’, the beauty of OT, and the insight that can be gained from an explicit analysis.

as representationally distinct from the associated filler, as in (1a). Accounting for such data is a serious challenge for multidominance analyses (1b).

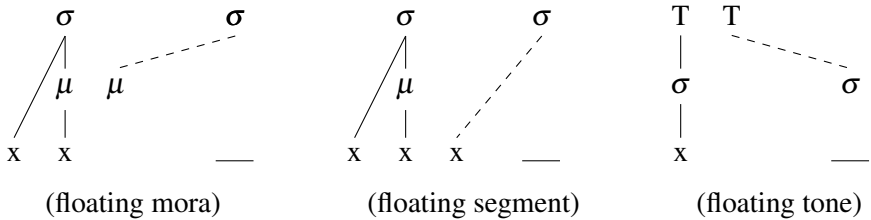
The main idea I will pursue here is that movement gaps correspond to a prosodically defective representation, namely a floating syllable node. In an autosegmental representation, this looks as follows:

(2) *Movement gaps are prosodically defective representations*



As we will see, there are cases in which this unassociated syllable node has a reductive effect on neighbouring phonological material. In particular, it may interact with unassociated autosegmental elements, forcing them to attach in order to satisfy high-ranked markedness constraints against an undominated/undominating syllable node (cf. SPECIFY; Yip 2002). In the various case studies we will see, I argue that autosegments from three different representational tiers attach to the floating syllable node associated with a movement gap, namely moras, segments and tones:

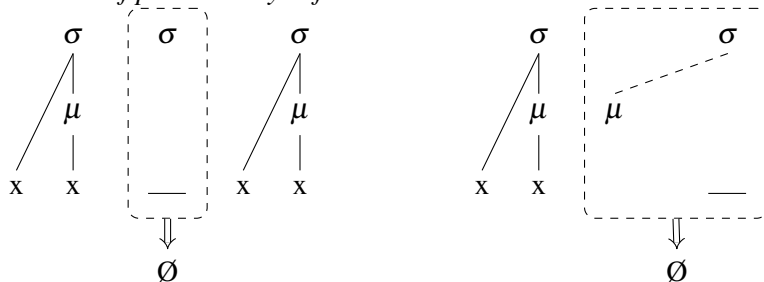
(3) *Floating autosegments attach to prosodically-defective gaps*



Given the prosodic defectiveness of the representation above, I assume that the floating syllable node associated with the movement gap must ultimately be eliminated from the phonological representation. There are a few options here. This may be due to some PF process applying to movement chains (e.g. Copy Deletion; Nunes 2004) or by some phonological ‘clean-up’ operation such as *Stray Erasure* (Steriade 1982, Harris 1983) that applies to illicit phonological representations before prosodification. Crucially for the analysis here, any

material that has previously associated with the floating syllable node will also be deleted as part of this process:

(4) *Deletion of prosodically defective structures*



While I will not be able to discuss every detail of this proposal here, this overview should suffice to appreciate the general idea and how it will apply to the relevant data.

Before moving on, I should briefly mention that I will only consider movement gaps in base positions and at Spec-CP. It is possible that there are further copies that should be considered at locations, such as Spec- ν P, which can complicate matters significantly. With that said, the status of Spec- ν P and other potential intermediate landing sites is still somewhat controversial (see e.g. Keine 2020, Keine & Zeijlstra to appear).

2. Case study #1: Past tense deletion in Akan serial verb constructions

The first example I would like to discuss is a, to the best of my knowledge, previously unnoticed observation about tense marking in serial verb constructions (SVCs) in Akan. In Akan, the past tense marker is a suffix on the verb that copies the final vowel of an open syllable, for example. In a SVC, the past tense marker is found on both verbs (5a). Interestingly, if the object of the first verb is A'-moved, the tense suffix on the first verb in the series must be absent (5b). The second verb remains unaffected. If the indirect object of the second verb is extracted, then both tense suffixes are preserved (5c).¹

¹This is also true if the extractee leaves a gap rather than a resumptive pronoun (data not given here). The data here are all from Sampson Korsah (p.c.).

- (5) a. Kofí tó[-ɔ] bayéré ma-a Ám'má
 Kofi buy-PST yam give-PST Ama
 'Kofi bought yams and gave them to Ama.'
- b. Déén₁ na Kofí tó[*-ɔ] —₁ má-a Ám'má nó
 what FOC Kofi buy give-PST Ama CD
 'What did Kofi buy and give to Ama?'
- c. Hwán₁ na Kofí tó[-ɔ] bayéré má-a nó₁ nó ?
 who FOC Kofi buy-PST yam give-PST 3SG CD
 'Who did Kofi buy the yams and give them to?'

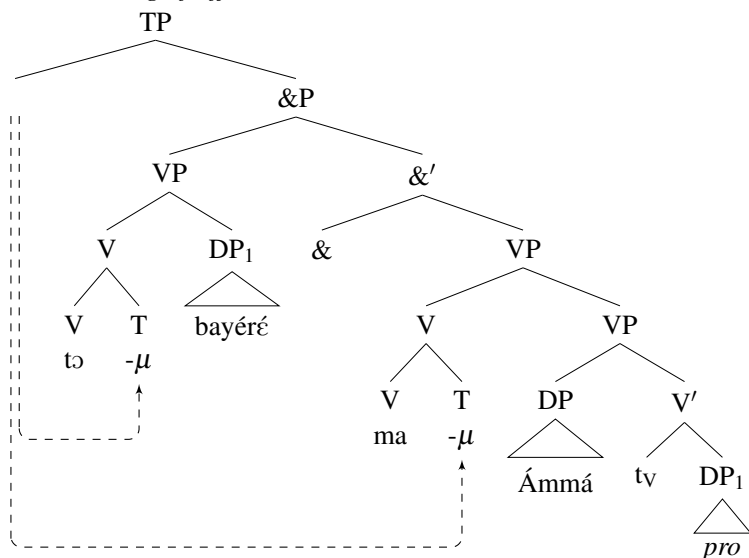
To the best of my knowledge, this effect is not found with any other affix type. For example, the progressive prefix *re-* remains on the first verb even if the object of that verb is extracted (6b). It should be noted that the tense suffix is only the TAM marker that appears on both verbs. In all other tense/aspect combinations, all but the first verb are invariably marked by a special suffix *a-* that is specific to SVCs and is sometimes called the 'consecutive', as I have glossed it below (see Forson 1990, Hellan et al. 2003, Boadi 2008).

- (6) a. Kofí [re-]bobó entomá a-to fam
 Kofi PROG-fold cloth CONS-put ground
 'Kofi folded the cloth and put it on the ground.'
- b. Déén₁ na Kofí [ré-]bóbó —₁ a-tó fam nó ?
 what FOC Kofi PROG-fold CONS-put ground CD
 'What did Kofi fold and put on the ground?'
- c. Èhén₁ na Kofí [ré-]bobó entomá a-tó —₁ nó ?
 where FOC Kofi PROG-fold cloth CONS-put CD
 'Where did Kofi fold the cloth and put it?'

The generalization at this point is clear: In SVCs, a past tense marker on the first verb is deleted if it is adjacent to a movement gap (5b). Why is this effect limited to the past tense marker? I argue that this is due to the fact that, unlike other TAM markers, the past suffix is represented by a floating phonological element, namely a mora (μ) (Ofori 2006, Zimmermann 2017). This captures the fact that the final segment is always lengthened, even when it is a nasal (e.g. *nom* 'to drink' – *nom-m* 'drank').

I assume that SVCs involve a coordination structure and that the subject is shared by means of ATB-movement, as shown for (5a) in (7). Following Collins (1997), I treat object sharing as involving a silent *pro* in the object position of the second verb. In SVCs in particular, I assume that the past tense suffix is lowered to each verb in an ATB-fashion (Georgi 2019).²

(8) *ATB-lowering of affixes in Akan SVCs*



²This assumption is important in accounting for why we do not find the apparent deletion of the tense suffix outside of serial verb constructions, e.g. when the object of a verb is extracted.

- (7) Déén₁ na Kofí tó[-ɔ] —₁
 what FOC Kofi buy
 ‘What did Kofi buy?’

Here, I follow Kandybowicz (2015) who shows that the verb only moves to T in past tenses with *-μ*. When the verb moves to T, as in (7), it is not in the same domain/phase as the object gap (*vP*) in order to be able to interact with it phonologically. Only when the affix is lowered do we have the preconditions for the movement gap to ‘see’ the moraic suffix.

Given this structure, when the direct object of *t*₀ is extracted, the floating mora will be adjacent to a movement gap in the phonological computation. For the sake of concreteness, we assume the following constraints. First, there are two SPECIFY constraints. The first SPECIFY(σ, μ) (or $\sigma \Rightarrow \mu$) is violated by a syllable that does not dominate a mora in the output. The constraint SPECIFY(μ, x) (or $\mu \Rightarrow x$) is violated by any mora that does not dominate a segment. Finally, I assume a faithfulness constraint DEP-AL that punishes insertion of association lines. How this comes together for the relevant part of the representation in (5b) can be seen in the tableau in (9).

(9)

		σ \downarrow μ	μ \downarrow x	DEP-AL
a.		*!	*	
b.		*!		*
c.			*	*

In the absence of a movement gap, the relevant competition would be between (9a) and (9b) (without the floating syllable). Due to the DEP constraint being lower ranked than SPECIFY($\mu \Rightarrow x$), we would prefer to associate the mora with the closest segment, thereby lengthening it (10b). This option is blocked by a high-ranked preference in the presence of a movement gap, however.

Given a floating syllable node, the higher ranked SPECIFY constraint forces the mora to associate ‘upwards’ to the floating syllable instead.³ As previously mentioned, the floating syllable corresponding to the gap will be deleted along with any material associated with it. This is what leads to the deletion of the past tense marker on the first verb of an SVC. If an affix is not a floating autosegment, such as progressive *re-*, then high-ranked faithfulness constraints (MAX) protect against deletion of existing association lines and the floating syllable node has no discernable effect.

3. Case study #2: Downstep deletion in Kikuyu

The second case study we will consider involves downstep deletion in the Bantu language Kikuyu. Downstep deletion in Kikuyu is one of the earliest discussed examples of a reflex of syntactic movement (e.g. Clements et al. 1983, Zaenen 1983, Clements 1984a,b, Haik 1990). The descriptive generalizations are relatively complex. In Kikuyu, there is a particular kind of downstep (a decrease in pitch register between two high tones represented as ¹) that exhibits some mobility.⁴ As can be seen in (10), the downstep is assumed to originate on a finite verb and moves rightward (skipping over the indirect object and complementizer) until it encounters another underlying high tone.⁵

³One might wonder why it is not possible to associate the mora with both the syllable and the segment. I have not considered this candidate here, even though it would have a better violation profile than the others. The problem will ultimately be that, since the syllable node will be later deleted, associating the segment to it via the mora would lead to deletion of the vowel. Thus, this candidate must be ruled out either locally (by some additional constraint(s) in the tableau above) or globally in some other way.

⁴For ease of readability, I have omitted any static ‘lexical’ downsteps and only focused on the mobile downsteps that are relevant for this discussion.

⁵In general, the placement rules for the downstep are puzzling for a number of reasons, not least why the downstep seems to ‘skip’ certain constituents. For the example in (11), I would like to suggest that the spreading of downstep takes place from the base position of the verb, rather than its derived position in *v* given the base structure in (10).

(10) [_{VP} *v* [_{VP} Kanakε [_{V'} tell¹ [_{CP} ...]]]]

If we compare (12), we might think that the underlying representation of the complementizer is /áte/, thus begging the question why the downstep does not stop here. I contend that this initial high tone is actually the result of high tone spreading from the preceding word, a process that is often found in Kikuyu (Clements & Ford 1981, Clements 1984b). This would allow us to maintain that the complementizer is underlying completely low toned.

The effects of downstep are indirect. For the matrix downstep, the underlying low tones on *ate* and *Kariokĩ* become high. For the embedded clause, there is normally a Flattening rule that applies to turn sentence-final high tones into low ones. This is blocked in (11) for *mó-tě* due to the presence of the shifted downstep. For reference, the relevant underlying representations that have been assumed in the literature are /ka:náké/, /ate/ and /kariokĩ/.

- (11) Kamaú é:r-é^h Ka:náké [CP áte Kárió^hkí á-tém-ír-é^h mó-tě^l]
 Kamau tell-T Kanake that Karioki SP-cut-T 3-tree
 ‘Kamau told Kanake that Karioki cut the tree.’
 (Zaenen 1983:473)

With this in place, let us now consider what happens when there is movement from the matrix clause, as in (12). Under extraction of the matrix indirect object, we do not find some of the effects of downstep. There is no overwriting of the lower tones on *ate* or *Kariokĩ*. However, the effect of downstep in the lower clause is apparent as the final lowering rule is still blocked, leading to the sentence-final rising tone. It therefore looks like the movement gap in the matrix clause leads to the absence of the downstep associated with the matrix verb, but not the embedded verb.

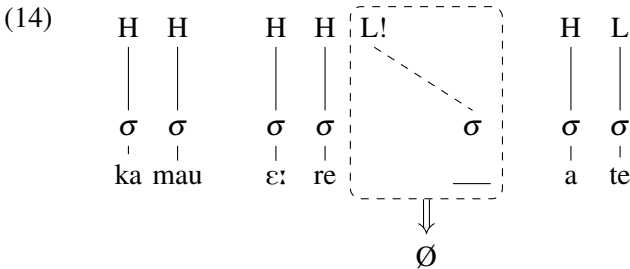
- (12) N-óo₁ Kámaú é:r-é^h ___₁ [CP áte Kariokĩ á-tém-ír-é^h motě^l] ?
 FOC-who Kamau tell that Karioki SP-cut-T tree
 ‘Who did Kamau tell that Karioki cut the tree?’

If extraction takes place from the embedded clause, i.e. from the embedded subject position in (13), we see no effects of downstep in either clause. As in the preceding example, the effects of the matrix downstep are absent (no second high tone on *áte*) and the sentence-final Flattening rule has now successfully applied to *motě* due to the absence of the downstep.

- (13) N-óo₁ Kámaú é:r-é^h Ka:náké [CP ___₁ áte [TP ___₁ o-tém-ír-é^h
 FOC-who Kamau tell Kanake that PP-cut-T
 mote]] ?
 tree
 ‘Who did Kamau tell Kanake that it was who cut the tree?’

It is therefore clear that the relevant generalization is that a downstep is deleted if and only if there is movement in that clause. Previous analysis have tried to accommodate these data by positing deletion rules of various kinds that are sensitive to movement (Clements et al. 1983, Lahne 2008, Georgi 2014) or a lexical alternation that is sensitive to movement (Zaenen 1983). However, such examples of ‘reductive reflexes’ of movement are actually rather rare.

On the other hand, our hypothesis that gaps generated by movement may lead to the disappearance of floating autosegmental material fits these data well. In fact, a common analysis of downstep in autosegmental phonology is as a floating L tone, see e.g. Clements & Ford (1979) on Kikuyu. With this in mind, the presence of a gap would lead to the attraction of the floating downstep tone in a similar way to the floating mora in Akan. Given the complexity of the data and the current space limitations, I will not attempt to develop a fully-fledged phonological account here (indeed, no such account of the relevant data exists at present; though see Gjersøe 2015). However, a rough representation for the downstep deletion in (12) is given in (14).



This is a rather naïve analysis that does not take into account several important findings about the tonology of Kikuyu (see the following section), however it still allows us to appreciate how the Kikuyu data can be analyzed as the reductive effect of a movement gap. Normally, the downstep L tone (L!) would be subject to alignment constraints regulating its rightward float and subsequent H-tone spreading (as in (11)). In the presence of a movement gap, however, a higher-ranked constraint against toneless syllables (i.e. SPECIFY(T \Rightarrow σ)) kicks in and causes the downstep tone to dock onto the floating syllable which is later removed from the phonological representation.

4. Case study #3: High tone deletion in Kikuyu partial movement constructions

The third example of a potential phonological effect related to a movement gap comes from a different construction in Kikuyu. In a discussion unrelated to the one about downstep deletion, Clements (1984a) points out an intriguing pattern in Kikuyu partial movement constructions. In the *wh-in-situ* baseline, the final vowel of the verb in each clause bears a high tone (15a). If we have partial *wh*-movement to the intermediate CP, the second highest verb ‘say’ loses its final H tone, while the highest and lowest do not (15b). Finally, if the *wh*-phrase moves to the highest CP, then both the matrix and intermediate verbs lose their final H tones (15c).

- (15) a. ó-ɣw-[!]éciiri [á] [CP Ngóɣe a-úɣ-ír [-é] [CP ate n-óo
 SP-T-think-FV Ngugi SP-say-T-FV that FOC-who
 o-ɔn-ír-é Kanake]] ?
 PP-see-T-FV Kanake
- b. ó-ɣw-[!]éciiri [á] [CP n-óo₁ Ngóɣe a-úɣ-ír [-ε] [CP —₁
 SP-T-think-T FOC-who Ngugi SP-say-T-FV
 áte —₁ o-ɔn-ír-é Kanake]] ?
 that PP-see-T-FV Kanake
- c. n-óo₁ ó-ɣw-eciiri [-a] [CP —₁ Ngoɣe a-úɣ-ír [-ε] [CP
 FOC-who SP-T-think-FV Ngugi SP-say-T-FV
 —₁ áte —₁ o-ɔn-ír-é Kaanake]] ?
 that PP-see-T-FV Kanake
 ‘Who do you think Ngugi said saw Kanake?’

(Clements 1984a:47)

This pattern has received little to no attention in the subsequent theoretical discussion of movement reflexes. The empirical generalization as formulated by Sabel (2000:425) is that ‘verbs have special forms if and only if movement into or through the clause in which these verbs are located applies’. Though notice that the lowest verb does not change its form despite being in a clause containing movement in (15b–c). I would like to suggest that a better generalization is that the final H tone of the verb disappears if it is adjacent to a movement gap. Here, the relevant gap is a step of successive-cyclic movement at the edge of CP.

A potential objection here is that this pattern does not seem to fit with our current hypothesis that phonological effects of movement gaps are only found with floating autosegmental material. It seems that the fixed final tone of the verb is lost rather than some floating element. In fact, a closer look at tone assignment in Kikuyu reveals that this case may in fact be compatible with the generalization after all.

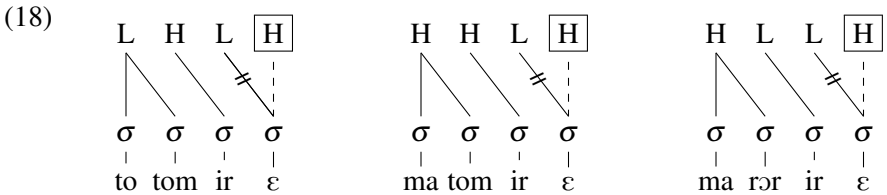
Clements (1984b) lays out the principles of tone assignment in Kikuyu verbs in quite some detail. The overarching insight he provides is that there is a systematic pattern in the way underlying tones are linked to syllables. In particular, the tone of the first syllable is always associated to the first two syllables, thereby causing all remaining tones to shift one to the right. (see McCarthy et al. 2012 for discussion of the theoretical consequences of this). To see this, consider the examples in (16). The verb *tóm* ('send') is underlyingly high-toned, but surfaces as low if the subject prefix bears an underlying low tone (16a). If the subject prefix has a lexical high tone, then the verb surfaces with a high tone (16b). In fact, this is true even for verbs that are underlyingly low-toned such as *rɔr* ('look at'). If the prefix is low-toned, then the stem stays low (16c). However, if the prefix is high, the underlyingly low-toned *rɔr* adopts a high tone (16d).

- (16) a. to-tom-ír-é (to-tóm-ir-é/)
 1 PL.SBJ-send-PST-FV
 'We sent.'
- b. má-tóm-ír-é (/má-tóm-ir-é/)
 3 PL.SBJ-send-PST-FV
 'They sent.'
- c. to-rɔr-ir-é (/to-rɔr-ir-é/)
 1 SG.SBJ-look.at-PST-FV
 'We looked at.'
- d. má-rór-ir-é (/má-rɔr-ir-é/)
 1 SG.SBJ-look.at-PST-FV
 'They looked at.'
- (Clements 1984b:293)

Also notice that the tone of the TAM suffix *-ir* varies in these examples. It is high when adjacent to a stem with an underlying high tone (17a,b), whereas it is low-toned when adjacent to */rɔr/*.

All of these facts follow on the account proposed by Clements (1984b),

as shown for (16a), (16b) and (16d) in (17).⁶ The underlying high tone of the root shifts to the past tense suffix *-ir*. When the root is low, this suffix is assigned the low tone of the root (17c,d). While Clements (1984b) assumes that *-ir* does not have a lexical tone, I suggest that it is underlying low-toned and thus the H tone of the final vowel is left floating at the word level due to the rightward shift in tone assignment. Since the phrase/sentence-level phonology militates against floating high tones, this will later dock to the final vowel and trigger de-linking of the L tone.⁷



If the proposal is on the right track that the final H tone of verbs is actually floating, then we have the necessary conditions for it to interact with a movement gap. Rather than attaching to the final vowel as in (18), when adjacent to a floating syllable associated with a movement gap as in (15), the floating H tone would be compelled to attach to the floating syllable by a high-ranked constraint such as SPECIFY(T⇒σ) against toneless syllables.

⁶With this said, the examples in (15) do not seem to show this ‘initial plateau’ systematically. I am not fully sure why this is. However, it is worth noting that Clements (1984b) mostly provides word forms in isolation, while Clements (1984a) transcribes full sentences. It seems likely that the word-level processes described here can be obscured by further tone spreading rules at the phrase/sentence-level.

⁷Contour tones do not seem to be permitted at the end of verbs. This is different for nouns, e.g. *Kariokī*, and the final H of the rising tone can spread to the following word under the right conditions (Clements & Ford 1981, Clements 1984b). Given the representations in (18), we might expect to find downstep between the final two H tones given the presence of the floating L. Indeed, many of the examples in Clements (1984a) appear to show this, e.g. (17), but not systematically so. At present, I am not sure whether this is a lack of consistency in transcription or the result of a more regular, poorly-understood process.

(17) Kamaú ne-a-ʒn-!r-ε Kaanáké
Kamau FOC-SP-see-T-FV Kaanake
‘Kamau saw Kanake’

(Clements 1984a:46)

The H tone would then be deleted along with the defective phonological representation of the gap.

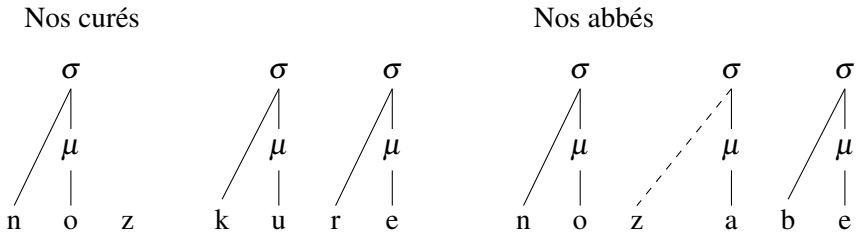
5. Case study #4: Liaison in French

Turning now to the fourth example of a phonological effect of a movement gap, let us consider the phenomenon of liaison in French. This refers to the observation that some lexical items trigger a ‘linking’ consonant when a vowel-initial word follows (19a). This consonant is otherwise absent, e.g. as a coda, when the following word begins with a consonant (19b).

- | | | | |
|---------|---|----|--|
| (19) a. | Nos [noz] abbés
our abbots
‘Our abbots’ | b. | Nos [no] curés
our priests
‘Our priests’ |
|---------|---|----|--|
- (Garrapa 2012:147)

A common representational approach to liaison has been to treat this linking consonant as a floating (or extrametrical) segment in the underlying representation (see e.g. Booij & de Jong 1987, Tranel 1996, Durand 2001, Garrapa 2012). We can assume that this latent consonant is left floating at the end of the word-level phonology (20), similar to what we assumed for final H tones on verbs in Kikuyu. At the phrase-level, this consonant can associate to the following word if this maximizes onsets, as in (19a). Otherwise, it is left floating and therefore unrealized.

(20)



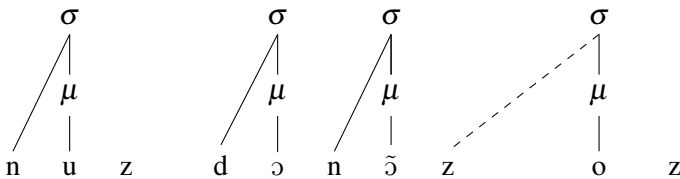
Since this is a floating segment at the sentence level, we might expect it to be susceptible to the reductive effect of movement gaps. Indeed, this is

what Selkirk (1972) claimed. She claimed that, at least in some idiolects of French, liaison is blocked across a gap generated by relativization and wh-movement.⁸ As a baseline, consider the following examples from Selkirk (1972:248) illustrating liaison:

- (21) a. Nous donnerons $\widehat{\hspace{1.5cm}}$ une grande somme à l'organisation
 we will.give a large sum to.the.organization
 'We will give a large sum to the organization'
- b. Nous donnons $\widehat{\hspace{1.5cm}}$ aux institutions charitables les plus
 we give to institutions charitable the most
 chics
 fashionable
 'We give to the most fashionable charitable institutions'

Given the representational theory of liaison outlined above, a very rough analysis of the example in (21b) is given in (22). Here, we see the latent consonant of the verb attaching to the preposition.

- (22) Nous donnons aux ...

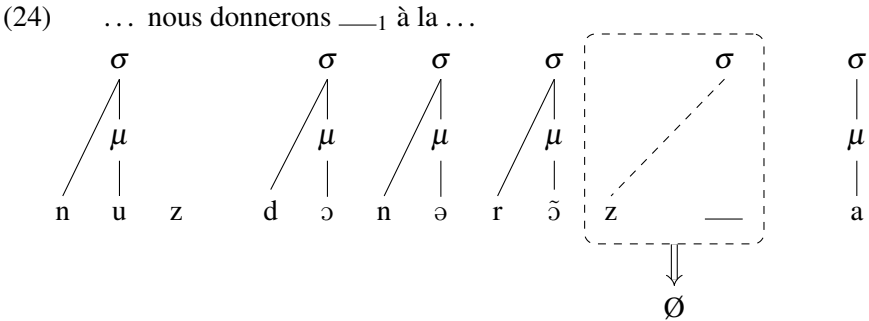


Crucially, Selkirk (1972:248) argues that, in comparable examples with a gap generated by A'-movement, we do not find liaison for some speakers. The following examples show both relativization (23a) and wh-movement (23b).

⁸In what follows, I will take Selkirk's claims for granted. Durand (2001) casts doubt on the reliability of this generalization based on elicitation with speakers, stating that several speakers do in fact have liaison across an A'-gap. This does not mean that the idiolects that Selkirk was describing do not exist, however. Apart from this, Selkirk's claim has not yet been subjected to serious empirical scrutiny, as far as I can tell.

- (23) a. La somme₁ que nous donnerons $\overset{x}{\text{---}_1}$ à l'organisation
 the sum which we will.give to the.organization
 'The sum which we will give to the organization'
- b. Qu'₁est-ce que nous donnerons $\overset{x}{\text{---}_1}$ à l'organisation
 what.is.it which we will.give to the.organization
 'What will we give to the organization?'

Here, the analysis would be similar to what we have seen so far. For the examples in (23), the presence of a movement gap would compel the floating consonant to attach to the floating syllable node rather than to provide an onset of the following word. A rough analysis is given in (24).



This suggests that the relevant constraint SPECIFY($\sigma \Rightarrow x$), requiring that a syllable dominates a segment, would have to outrank ONSET. After the consonant has attached to the syllable introduced by the movement gap, it is later removed due to its prosodic deficiency (e.g. lacking a nucleus/mora).

6. Case study #5: English *wanna*-contraction

The final example I will present is an oft-repeated argument for traces going back to Lakoff (1970) (citing Larry Horn, p.c.). The basic observation is that *Who do you want to succeed?* is ambiguous because *want* can be a control verb (25a) or an ECM verb (25b) (while *succeed* may also be transitive).

- (25) a. Who do you want PRO to succeed ---_1 ?
 b. Who do you want ---_1 to succeed?

This ambiguity is lost, however, if *want* and *to* contract into *wanna*. Thus, (26) may only have the control verb interpretation (25a) and not the ECM interpretation (25b). In cases which are unambiguously ECM (26b), contraction is impossible.

- (26) a. Who do you *wanna* succeed? ≠ (25b)
 b. *Who do you *wanna* succeed you?

The reason for this has been argued to be the presence of a trace between *want* and *to* that blocks contraction from applying, thereby providing evidence for the phonological reality of traces (Chomsky & Lasnik 1977; but cf. Postal & Pullum 1978 and much subsequent debate).

For present purposes, I want to focus on how *wanna*-contraction may fit into the current view that movement gaps may trigger deletion of underlyingly floating autosegmental material. In order to do this, I take inspiration from the rule-based analysis in Suiko (1978). Suiko's analysis of *wanna*-contraction derives the process as the result of two ordered rules. The first is word-final post-*n* /t, d/ deletion (27a), whose application can be seen in forms like [wɛn] (*went*) or [hævən] (*haven't*). The second rule in (27b) is similar, but can apply across word boundaries and is restricted to /t/ before an unstressed vowel, as in [wʌnəd] (*wanted*), [sænə] (*Santa*) or [frʌnev] (*(in) front of*).

- (27) a. Word-final post-*n* /t, d/ deletion
 /t, d/ → Ø / n ___ #
 b. Post-*n* /t/ deletion
 t → Ø / n (#) ___ $\left[\begin{array}{c} \text{V} \\ \text{-stress} \end{array} \right]$

In Suiko's derivation of *wanna*-contraction, the rule in (27a) applies first to delete the final /t/ of *want*.⁹ Now, the more general /t/-deletion rule can apply across the word boundary to remove the initial /t/ of *to*. Once other phonological rules have applied, we arrive at the desired output *wanna*.

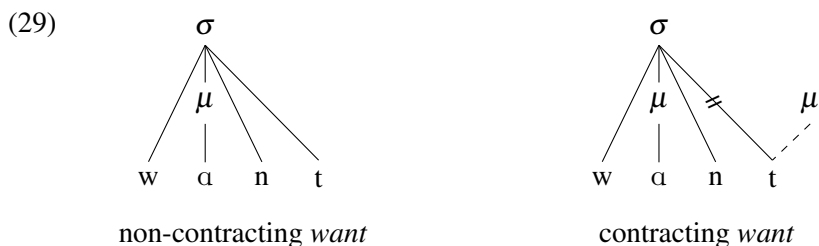
⁹An alternative approach in Selkirk (1972) involves a 'degemination' rule to delete the final /t/ of *want*.

(28)

<i>/want # tə/</i>	
<i>wɑn # tə</i>	(27a)
<i>wɑn # ə</i>	(27b)
<i>wɑnə</i>	(other rules)
<i>[wɑnə]</i>	

I follow Suiko in assuming that this is how *wanna*-contraction is derived phonologically, however I will assume that the final */t/* may be optionally deleted in the class of words undergoing *to*-contraction as a lexical property instead of by the rule in (27a). To achieve this, I follow the leading idea in Trommer & Zimmermann (2014) that deletion can be triggered by the presence of a floating mora. Trommer & Zimmermann (2014) use this assumption to derive various cases of ‘subtractive morphology’ in which deletion is used to mark grammatical distinctions. For example, the imperfect in Tohono O’odham is marked by deleting the final segment of the perfect form (*má:k* → *má:* ‘giving’). This is analyzed by assuming that the imperfect is a floating moraic suffix which attracts the final consonant of the stem. Since this floating mora cannot be prosodically realized (similar to the floating syllable of a movement gap), this causes the consonant to disappear.

With this view of deletion in mind, I argue that we can view the first step of contraction as being the result of two distinct underlying representations. To be precise, *want* may optionally have a final floating mora. Given high-ranked constraints, the final */t/* will attach to this mora, later becoming invisible when it is removed by Stray Erasure. This deletion of */t/* feeds the rule in (27b).



The assumption that deletion is triggered by a floating mora can then account for why, when ‘contracting *want*’ is adjacent to a movement gap, contraction is no longer possible. The mora prefers to attach to the floating syllable and is therefore deleted along with it. A movement gap therefore removes the trigger

for final word-final /t/-deletion from the representation. A potential benefit of this view is that it defines the relatively small class of contracting verbs in terms having special underlying forms and can thereby avoid certain problems associated with a more general rule of *to*-contraction (see Pullum 1997).

7. Conclusion

In this paper, I have presented several cases in which a movement gap can have a reductive phonological effect on its neighbouring phonological context. I have suggested that this follows if movement gaps correspond to a defective representation (a floating syllable node) that can trigger reassociation of floating material only. Material that is already associated at the phrase/sentence-level will be shielded from such effects, potentially accounting for their rarity.

Of course, these remain rather speculative observations at this point. There are several issues to work out still, including how exactly we arrive at this phonological representation of the gap and the theoretical consequences of this (e.g. Trace Theory vs. the Copy Theory of Movement). What these observations hopefully illustrate, however, is that gaps derived by displacement should be treated as representationally distinct from the moved phrase.

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When cyclicity of operations unearths chains of tone

Andrew Nevins

Abstract

The dichotomy of researchers and thinkers presented by Isaiah Berlin (see also Aronoff 2016 for specific application to the field of linguistics) contrasts the ‘fox’ and the ‘hedgehog’ – whereby the latter is driven by a singular, focused goal around which all subsequent intellectual activity is channeled. I present this contribution to celebrate the achievements of the ‘Igel of Igra’, to specifically honor Gereon Müller for his singular and impactful “Leipzig School” contribution on formalizing and then gaining insights from being explicit about the order of operations, and the potential feeding and bleeding interactions that can be found in the syntax as a result. One of the central themes of IGRA research was the parallels between order of operations across various grammatical domains, and in this paper I specifically attempt to bring out parallels between tonal movement in phonology and A'-dependencies in syntax.

1. Overview

“The most striking property of African tone is its mobility” (Yip 2002: 133)

The dissertation of Georgi (2014) looks at reflexes of A'-movement across a range of languages and charts a four-way typology of patterns: these reflexes of A'-movement (usually on the verb or functional material through which the A'-moving element passes) may occur in *all* or *none* of the clauses of the dependency, in the clause where the dependency terminates, or solely in clauses where it does not terminate (the latter being Pattern III in the typology).. In charting these different means of chain-realization, Georgi discovered a virtually theretofore undocumented morphosyntactic pattern of *wh*-movement chains, the Pattern III (PIII): in which the reflex of movement is spelled-out on intermediate, but not the final landing position of a *wh*-phrase (see Georgi 2017 for a distillation of these patterns into an article-length presentation). An instantiation of Pattern III is one in which the reflex is exactly the same in all

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of the places where it surfaces other than the final position, and an example from Kiitharaka (Georgi 2017: 590) is one in which a prefixal focus marker on verbs surfaces along all verbs through which a moved *wh*-phrase passes, but not on the highest verb:

- (1) n-uu_k u-ku-thugania [ati John n-a-ug-ir-e [Lucy
 foc-who 2sg-pres-think [that John FOC-SM-say-PERF-FV [Lucy
 n-a-ring-ir-e t_k]]
 FOC-SM-beat-PERF-FV]]
 ‘Who do you think that John said that Lucy beat?’

Adopting the Crossmodular Structural Parallelism hypothesis in Nevins (2010) – that the most fundamental differences between the syntactic computation and phonological computation is not in the inventory of operations that the two contain, but mostly limited to the alphabet of primitives on which they operate – and thus that locality principles such as relativized minimality, boundedness, and defective intervention will apply in vowel harmony to features like [± high] in the same manner they do in syntax to features like [+wh], one can immediately ask the question of whether anything like Georgi’s Pattern III is instantiated in phonological dependencies. Given that defective intervention, relativized minimality, and so forth are at work in long-distance dependencies between vowels in different syllables in the word domain, one can ask whether within vowel harmony there are cases of intermediate realizations of a moved element that are in turn not found on the final landing site – but the answer seems to be negative. However, vowel harmony itself, in light of Crossmodular Structural Parallelism, is more akin to phi-agreement phenomena (e.g. valuation on various positions that are ‘missing’ features needed for surface realization), and not really akin at all to an A’-movement phenomenon (without the notion of true ‘displacement’ to an ultimate landing site).

Let’s consider a well-known example from vowel harmony, from the domain of metaphony (in which the stressed vowel constitutes a kind of ‘landing site’ for features from the final syllable). Final high vowels can cause mid-vowels to raise in processes such as Veneto metaphony (Walker 2010), even affecting intervening vowels on the way. For example, when the stressed vowel is penultimate, a final high vowel causes raising of the stressed penultimate vowel: *tenpo/tinpi* ‘time sg/pl’. This also happens to intermediate mid-vowels along

the way, if stress happens to be on the antepenultimate vowel: *enʃene/ɪnʃɪni* ‘shin sg/pl’). However, low vowels do not undergo this raising (e.g. *gato/gati* ‘cat sg/pl’), and interestingly, neither do mid-vowels that would be ‘along the way’ when stress is antepenultimate, e.g. *ázeno/ázeni* ‘donkey sg/pl’. In other words, if a [+high] feature is destined to move two syllables to its left, it will affect the intervening syllable, but if the stressed target two syllables away is ineligible, it seems that the [+high] feature doesn’t try to move there in the first place. Indeed, Walker characterizes such patterns as ‘non-myopic’, in the sense that when attraction is specifically to the stressed syllable, intermediate facilitators do not undergo the metaphony, despite being ‘along the path’. Again, however, this failure to find a Pattern III here in terms of Crossmodal Structural Parallelism is perhaps unsurprising, as phi-agreement phenomena in syntax also do not seem to instantiate Georgi’s Pattern III, and indeed, agreement does not contain the facilitatory ‘intermediate’ steps found with true movement, given the notion of an ultimate landing site.

To find a truly structural parallel of Pattern III, then, one needs to find a structural parallel of movement, and I contend that the process of tone shift in the Mijikenda and Nguni languages, extensively documented by Charles Kisseberth (and related work), instantiates this. In such languages, an underlying high tone on a prefix (e.g. 3rd person) shows up not in its ‘deep structure’ position, but rather is attracted towards the metrically strong penultimate (or ultimate, depending on the language) syllable; let us call this position the final landing site of the tone. As for Georgi’s Pattern I – reflexes of movement both on the intermediate site and on the final landing site – it is clearly instantiated in cases where intermediate facilitatory syllables also arise with high tone. The elusive Pattern III, however, can be found, specifically when arising from the interaction of high tone attraction with so-called depressor consonants – voiced obstruent onsets, which prevent high tone in their syllable.¹

This paper is largely an exposition of the intriguing patterns of tone shift in these languages in a manner that makes their relevance clear for potential explorations of Crossmodal Parallelism. (In fact, it raises the question of whether Georgi’s Pattern III in syntax itself may be modeled as a kind of

¹Note that prenasalized stops, such as /^hd/, do not pattern as depressor consonants in Mijikenda – perhaps because they are not contrastively voiced; see Hyman (2013) for discussion. See also Zheng (2023) for a fine-grained classification of three distinct types of depressor consonant effects on tone in Zulu.

realization plus later suppression on the final landing site, as is the case for depressor consonants with high tone shift). In addition, this paper aims to open questions related to cyclicity (again a topic fundamental to the research program of the Igel of Igra!), once verbs are combined with objects, as in these configurations, the high tone shift process cyclically moves further to the (pen)ultimate syllable(s) of the embedded object as well. While the investigation herein is largely preliminary – developed during the heady experience of being a Brugmann Scholar in Leipzig in 2014 during the World Cup – and its conclusions speculative, it is an attempt to foment interest in this topic through a new lens of its potential broader grammatical relevance.

2. Background on Crossmodular Structural Parallelism

As mentioned above, Crossmodular Structural Parallelism (see also Nevins 2008, Arregi & Nevins 2012, Murphy 2019) is a hypothesis about the nature of human language that seeks to minimize differences between levels that do not follow from a difference in alphabet. Thus, the core locality computation driving Agree and vowel harmony differs only in the alphabet of data structures to which it applies. This is an unorthodox hypothesis, driven by the goal of a higher-order synthesis between linguistic phenomena; it enables one to frame existing phenomena in new terms, such as *defective intervention*, and pursue the extent to which these follow the same logic. To see this, consider the various forms of the prefix /gI-/ in Nawuri, which vary in terms of rounding harmony, acquired from a [+round] vowel in the stem:

- (2) Nawuri /gI-/ valuation (Casali 1995: 651):
- a. gɪ-ba: ‘hand’
 - b. gɪ-sɪbɪtɔ ‘sandal’
 - c. gɔ-aɔ ‘ear’
 - d. gɔ-lɔ ‘illness’
 - e. gi-ji ‘tooth’
 - f. gi-ke:li: ‘kapok tree’
 - g. gu-jo ‘yam’
 - h. gu-ku: ‘digging’

As straightforward as it may seem, not every segment that is [+round] is able to furnish a [+round] value for this prefix. In particular, *consonants* that

are [+round] will neither furnish this value for harmony, nor will they allow downstream values of [+round] on licit vowel providers to be furnished in harmony:

- (3) Nawuri /gI-/ valuation blocked by a round consonant (Casali 1995: 652):
- a. gɪ-mu: ‘heat’
 - b. gɪ-fufuli ‘white’
 - c. gɪ-pula ‘burial’
 - d. gi-bo:to: ‘leprosy’

What’s happening in (2) and (3) is that a [+round] element along the path of vowel harmony not only causes harmony to be blocked within that consonant’s syllable, but in all syllables to its left that would otherwise potentially undergo it. This is defective intervention: an element along the path that is ‘defective’ for the requirement R (in this case, it’s not [–consonantal]) causes the search to halt, and no further eligible targets to be reached.

- (4) Nawuri /gV-/ noun class prefix must:
ATR-Harmonize and Round-Harmonize:
 $\delta = \text{right}$, $F = [\pm\text{ATR}; \pm\text{round}]$ & $R = \text{–consonantal}$

This is fully parallel to defective intervention in syntactic agreement, in which an intervening element with case or person features that are not what the probe has been relativized for will cause the search to crash, even if a better target is available downstream, as in cases of dative intervention that block agreement between a probe and a lower nominative-cased target in Icelandic (Holmberg & Hróarsdóttir 2004), and illustrate the parallelism between locality patterns in syntax and how they shed light on opaque interveners in phonology. Going the other way round in terms of research directions, after formalizing *contrastive* and *marked* feature-values as probe-relativized differences on “needy vowels” that would trigger different locality patterns in harmony systems, in subsequent work, I imported this kind of value-relativization from phonology to morphosyntax in the typology of PCC effects (Nevins 2007). Work such as Murphy (2019) also brings repair effects well-studied from phonology to shed light on morphosyntax. Thus, more broadly speaking, research on crossmodular structural parallelism can flow in a multitude of directions, and indeed, it should, as true parallelism means that the application of identical computational principles or operations across modules shouldn’t

privilege their instantiation in syntax over say, in phonology – it is more of a historical matter of where these principles were articulated or discovered first scientifically, but their synchronic grammatical status is equal across modules.

3. Georgi’s discovery of Pattern III

As reviewed above, Pattern III is one in which reflexes of movement are found on intermediate sites, but not the final landing site. Thus, in Wolof long wh-movement, the classifier *k-* shows up on complementizers, and agrees with the wh-phrase by showing the reflex *-u* in agreement with the phrase that moves through it, although the final complementizer does not, instead showing default *-an*:

- (5) [_{CP} K-an l-a-ñu wax [_{CP} k-u jigéén j-i foog [_{CP}
 CL-an EXPL-a-3PL say CL-u woman CL-DEF.PROX think
 k-u ma dóór]]]
 CL-u 1SG hit
 ‘Who did they say that the woman thinks that I hit?’

Georgi (2014) includes a range of data from Dinka *ke*-stranding, Kitharaka focus-marking, and German extraposition to exemplify Pattern III. The crucial logic that is developed for this typology of movement reflexes is based on the highly articulated “Leipzig School” about the order of operations (see Heck & Müller 2007 for an early development, among many subsequent fruitful applications). In particular, Georgi proposes that the operation of Wh-Agreement is ordered in between the two operations of Intermediate and Final Movement:

- (6) Ordering for Pattern III in Wolof:
 Intermediate Wh- Movement > Wh-Agreement > Final Wh- Movement

As a result, final wh-movement counterfeeds agreement, and it is for this reason that it underapplies at the highest C position, which has a different kind of movement feature (and is thus a different kind of operation) than intermediate movement; the ordering between these operations yields the variation in patterns such as PI vs PIII. (Note that Georgi 2017: §4.2ff also considers other approaches to deriving PIII, including deletion and realization rules that affect final vs non-final heads differently.)

4. Tonal Attraction in Digo

As mentioned above, vowel harmony does not seem to be a domain in which the notion of “intermediate” and “final” positions are necessarily applicable. On the other hand, within phonology, there is a phenomenon that clearly involves the notion of a final, destined, landing site, with intermediate positions: that of high tone shift as found throughout the Bantu languages (I thank John McCarthy for originally having suggested to me this as a domain to look into). For this particular study, we begin with the Digo language, which is part of the Mijikenda family spoken in coastal Kenya and Tanzania, and includes Chonyi, Digo, Duruma, Giriyama, Jibana, Kambe, Kauma, Rabai, and Ribe. Digo tone was studied in Kisseberth (1984), from which the following data are drawn.

As Kisseberth says (p.106), “while a pitch contrast may be realized phonetically in one word, its point of origin may be in a preceding word.” This is a highly dramatic example of what we might call ‘chains’, in the syntactic sense, in the domain of phonological tones. A high tone with an origin leftwards within a phonological phrase is realized later on, sometimes even in a following word, as it seems to be attracted to a metrically prominent position. Sometimes, however, due to rule interaction, this high tone will be realized on an intermediate position along the way, and not in its target landing site.

Let’s examine the pattern by first considering toneless prefixes (such as the infinitive) and toneless verbs (7a). These contrast with verbs that bear lexical H tone. The ‘target’ or landing site for High Tone in Digo is the final foot (the final two syllables), which usually involve a tonal realization with a High tone on the penultimate syllable that extends into a falling tone contour on the final syllable (7b), although when the final onset consonant is a voiced obstruent, a so-called ‘depressor consonant’, then it blocks the high tone from surfacing on the following vowel (7c):

- (7) Underlyingly toneless and H-toned verbs (Kisseberth 1984: 106–107, ex 1–3)
- a. ku-ambir-a ‘to tell’
 - b. ku-arũk-â ‘to begin’
 - c. ku-fukíz-a ‘to apply heat’

Even when the H tone is lexically associated with the verb stem, the addition of

a reciprocal or applicative suffix (making this suffix the penultimate syllable) will thus attract the verb's H tone to be realized on this prominent position:

- (8) When a verb bears lexical H tone, it is attracted to the final (two) syllables (Kisseberth 1984: 109, ex 6–8)
- a. ku-vugur-a, ku-vugurir-a 'to untie (for)'
 - b. ku-bundúg-a, ku-bundugǎr-â 'to pound (for)'
 - c. ku-chekecherăn-â 'to sift-appl-recip'

Now we turn to the phenomenon of high tone shift. Certain prefixes, such as *u* below (1pl.obj) in (9b), or *a* (3sg subj) in (10b), have an underlying H tone, but it doesn't surface on them, but is rather attracted to the (pen)ultimate:

- (9) H-toned object prefixes (Kisseberth 1984: 110, ex 9)
- a. ku-ni-vugurir-a 'to untie for me'
 - b. ku-u-vugurĭrâ 'to untie for us'
- (10) H-toned subject prefixes (Kisseberth 1984: 111, ex 11)
- a. u-na-togor-a 'you are praising'
 - b. a-na-togôr-â 'he is praising'

So far, all we need to say is that there is movement/attraction to a 'criterial' position: the final two syllables. (Let us assume that the 'Fall' character on the final syllable is due to a very late phrasal L tone added to the very end.) This would simply be parallel to any straightforward case of A'-movement: there is an underlying position, and a criterial or landing position in which it is instead realized. (In this case, let us say it is because of the greater metrical prominence of the final foot as the potential metrical 'head' of the entire word).

Of course, one might already look at what happens when there is a depressor consonant as the onset to the final syllable. Consider, for example, a pattern like *ku-fukíz-a* 'to apply heat', in which the voiced obstruent onset [z] suppresses the final high tone. This would instantiate Pattern III, if we considered that in some sense, the criterial position is the final syllable. But let's instead assume it really is the final foot, and that both syllables are targeted in High Tone Shift.

The tonal attraction patterns can be schematized in the following diagrams, where boldface indicates the surface realization of H, parentheses around the final foot represent the target/criterial position, and DX represents a blocking depressor consonant. Low tones that are phrasal are represented by L_ϕ , and

Low tones that are morphological (and block further high tone movement) are represented by $L_\mu X$.

(11) ku a (ru ka) > kuarūkâ
 H → H **H** **H**
 L ϕ

(12) ku fu (ki za) > kufukíza
 H → H **H** DX
 L ϕ

Now let us consider imperatives which have a different final vowel, one which never attracts a H. Instead, it seems that this mood involves an inherent morphological L on the penultimate syllable, to which the H is attracted, creating a fall:

- (13) Imperatives have an L on the penult; attraction creates a fall (Kisseberth 1984: 153, ex 47):
- a. ni-tsukur-a ‘carry me’
 - b. a-tsukûr-e ‘carry them!’

These data (showing what Kisseberth calls “Low Attraction”, e.g. attraction to a morphologically Low-Toned penultimate vowel), allow us to conclude that the last foot is really the target of high tone shift in Digo. In declaratives, a phrasal L tone on the final syllable will cause a falling tone on it, and in imperatives, a morphosyntactic L tone on the penultimate syllable causes a fall on it, as shown in (14). We may thus assume that the target of H tone shift is both syllables. If depressor consonants are found on the onset of either the last syllable, or in fact, the penultimate syllable, then high tone will be inhibited.

(14) a tsu (ku re) > a-tsukûr-e
 H → H **H**
 L μX L ϕ

With this in mind, we can now turn to a case of Pattern III (abbreviated PIII). What happens with a depressor consonant in the onset of the penultimate syllable of the imperative? It will prevent the falling tone found in (14b). However, interestingly enough, in this case we suddenly observe an intermediate High Tone realized along the way, in the antepenultimate syllable (as the

antepenultimate *also* has a depressor consonant in this case; <j> represents [ɕ]:

- (15) Depressor Consonants and H prefixes in the Imperative (Kisseberth 1984: 157, ex 50)
- a. ni-rejezer-a ‘soak for me!’
 - b. a-réjezer-e ‘soak for them!’

The example in (15b) instantiates the first case of a facilitatory, intermediate syllable – the only place that an H shows up along its path of attraction. As Kisseberth says (p.157), “The high tone associated with the object prefix has moved away from that prefix as far towards the neutralized vowel as possible”. This instantiates Georgi’s Pattern III, specifically under the conditions of depressor consonant(s) inhibiting the realization of the ‘movement reflex’ on its criterial position. In addition, it provides evidence against what Kisseberth & Cassimjee characterize as a “shifting” analysis, with one fell swoop movement to the target position. In other words, what we observe here is that in Tonal Attraction, there really is the usual case of movement towards the Metrical target (Georgi’s Pattern I), but when the high tone is “stuck” in an intermediate position and can’t move onwards, that’s where it will stay.

- (16) a re je (ze re) > aréjezere
 H → **H** DX
 L_μX L_φ

What these data show is that metrical attraction to the final foot proceeds rightwards, migrating syllable by syllable. Should it, however, be not possible to move all the way rightwards, due to depressor consonants in the way, the high tone will stop in its tracks in an intermediate position.

The patterns become even more interesting to observe once we consider verbs together with objects. In these cases, the rule of H-realization applies within the verb phrase. This confirms the earlier intuition that in fact this attraction is to the criterial/most prominent position, which in the case of transitive verb phrase, involves the final foot of the more deeply-embedded object (essentially in concord with Cinque’s (1993) Nuclear Stress Rule):

- (17) Underlying H Verb plus Toneless Object Combinations (Kisseberth 1984: p.163, ex 61a)

Here we might expect wholesale shift to the object just as in (17), regardless of the fact that the verb has a depressor, but lo and behold, a high tone appears on the penultimate syllable of the verb in these cases, due to what is a “Throwback” rule when there is a final depressor consonant. Call this “Ultimate Depressor Doubling”.

- (21) Underlying H Verb with a Depressor, plus Toneless Object (Kisseberth 1984: p.163, ex 61b)
- a. mutu ‘someone’
 - b. ni-na-ádz-a ‘I’m mentioning’
 - c. ni-na-ádz-a mǔtû ‘I’m mentioning someone’

Similar results, whereby differently from (17) and (19c), a high tone does stay around on the verb, in addition to the one migrating to the object, will also obtain if the H is from a prefix on the verb:

- (22) Underlying H-Prefix Verb with a Depressor, plus Toneless Object (Kisseberth 1984: p.163, ex 61c)
- a. goma ‘a drum’
 - b. a-na-píg-a ‘he’s beating’
 - c. a-na-píg-a gǔmâ

What’s happening here? The crucial determining factor is the depressor consonant on the onset of the final syllable of the verb.²

Kisseberth proposes that Metrical Attraction and Ultimate Depressor Doubling (UDD) - a Right-to-Left Doubling Rule – are Cyclic. This means that procedures happen in steps. First UDD takes the high tone from the final syllable of the verb and doubles it leftward (representing the second H on another vertical level, to show its onward movement), and then the high tone can go on to migrate to the object within the verb phrase. This is shown below, where UDD copies the high tone onto the preceding penult, and then the second copy of tone itself moves onwards to the object. This is very different from (17) and (19c), where no high tone shows up on a verb when in tandem with an object. Clearly this is because the high tone has *doubled*, and one copy

²Similar throwback patterns can be found when there is a depressor onset in the Mijikenda languages Chikauama and Chirihe, with a downstepped high tone in the target syllable and a high tone in the preceding syllable.

stays on the verb, while the other continues to migrate. Finally, note that on the object, the rule of normal penult realization without depressors takes place. This is shown below in two cycles. Crucially, what cyclic means here (and yields a result with the intermediate tone retained) is ‘not everything is done at once!’

(23) a na (pi ga) ((go ma)) > a-na-píg-á goma
 H → H **H** DX (End of First Cycle)
H →

(24) a na (pi ga) ((go ma)) > a-na-píg-a gômâ
H
 H → H H
 L_φ

Derivationally, the high tone moves to the final syllable of the verb, but given the depressor consonant in the onset, is doubled and one copy is thrown back to the penultimate syllable of the verb. Then, the final high tone on the verb migrates to the object. Naturally, if the migration to the object took place before the rule of throwback could apply, then UDD would be bled. On the surface, the throwback to the penultimate looks like opaque overapplication, as there is no high tone following it. Crucially therefore, the second-cycle application of Metrical Attraction to its eventual position on the Object counterbleeds UDD, yielding the overapplication of the high tone in the verb, an intermediate stopping point. Unlike in (17), when there is a depressor consonant on the verb, we can detect intermediate movement in the verb on its way to the object.

This is a surface PIII pattern (as the tone does not appear on its final landing site within the verb), whereby the early cycle feeds UDD. Subsequently, the later cycle of metrical attraction counterbleeds it. Naturally, the specific ordering here that yields a PIII effect is somewhat different from the specifics of Georgi’s PIII rule interaction, but the surface effect is one in which cyclicity of operations yields realization on an intermediate, but not final position, and crucially lends evidence that such effects cannot be treated as ‘one fell swoop’.

input, let's go back to phrasal cases with an object. Suppose the Verb and Noun each have a High Tone.

- (28) a. chi-karǎngô 'frying pan'
b. ni-na-azimâ 'I'm borrowing'
c. ni-na-azim-a chi-kárángô 'I'm borrowing a frying pan'
(Kisseberth 1984: p. 171, ex 64c)

What's happening here is the following: Metrical Attraction feeds Stem-Raising, which creates a local 'plateau' on the object at a Post-Cyclic Stage.

(29) Cyclic Application of Metrical Attraction

- a. Earlier Cycle: Noun's H attracted all the way to object metrical peak, Verb's H attracted to verb metrical peak:
[ni-na-azim-á] [chi-karángó]
- b. Later Cycle: Metrical Attraction of Verbal H cannot apply again to Noun's Final H [ni-na-azim-á chi-karángó]
- c. Stem Raising moves then Verbal H onto the Noun Stem:
[ni-na-azim-a chi-kárángó] > ni-na-azim-a chi-kárángô

This again suggests that tonal movement, even onto objects from the verb, is always going stepwise, syllable by syllable, and will go as far rightwards as it can – usually all the way, unless something else blocks it. In this case the object already *has* an H tone on its metrical peak, and so the H tone from the verb still migrates rightward, but instead implements Stem-Raising in positions prior to the peak. I have used the term 'Stem-Raising' here also to make salient a potential parallel with A-movement, given that this is a 'lower' and 'more local' type of movement.⁴ But interestingly it is fed by what we might call A' movement in (28). The head of the chain created by Metrical Attraction at the end of the verb stem in turn becomes the foot of a chain of stem raising on the noun stem.

We've seen what happens when there is one H on the verb and one on the Noun: both of them end up on the noun, but in different places. Now there is

⁴Jardine (2016) characterizes the stem-raising process in Digo as an unbounded process, making it computationally more complex than many segmental phonological processes.

one more interesting case to consider: suppose the Verb has *two* High Tones, and it is combined with an object.

- (30) a. chi-ronda ‘wound’
 b. a-ka-tsútsúkâ ‘he is cleaning’

As we have seen above, in isolation, the verb’s rightmost H will undergo Metrical Attraction, and the one to the left will undergo Stem-Raising.

- (31) a. chi-ronda ‘wound’
 b. a-ka-tsútsúkâ ‘he is cleaning’ (Kisseberth 1984: p.172, ex 65b)

What happens when we put the verb and noun together? If there is no Cyclic Application, we would expect the same pattern as in (28), namely Metrical Attraction to the rightmost word (the Noun), and then one-fell-swoop Stem-Raising in the rightmost word (the Noun). But this isn’t what happens. Instead, the H tone on the prefix seems to ‘wait’ until the verb’s H tone cycles from the verb’s metrical peak onto the object’s metrical peak, and then afterwards applies post-cyclic stem raising to everything from the verb stem onward, within the phrase and even across word boundaries:

- (32) Cyclic Application of Metrical Attraction
- a. Earlier Cycle of H-movement: [á-ka-tsútsúká] [chi-ronda]
 - b. Later Cycle of H-movement: [á-ka-tsútsúka chi-rondá]
 - c. Postcyclic Stem-Raising moves Verbal H to the *Verb* Stem and raises all subsequent syllables: [a-ka-tsútsúka chí-rondá] > a-ka-tsútsúka chí-rondâ

These examples, taken together, exemplify cyclicity – namely, not doing everything at once, but proceeding according to domains – in the formation and interaction of tonal chains, namely (a) if there is only one H tone in a verb-object combination, it will migrate all the way to the object’s metrical peak; (b) but if the final syllable of the verb has a depressor consonant, in addition there will be a high tone on the penult of the verb; (c) if there is a high tone on the object as well, the verb’s high tone will be realized as stem raising on the object, and (d) if there are two high tones on the verb, one high tone will be realized as stem raising from the verb all the way to before the object’s peak. These complex set of interactions can be straightforwardly

understood if these moving tones form chains, link by link, where sometimes these chains will end at intermediate positions before their landing site, and if stem-raising is a late, postcyclic rule applying to an entire stretch after all the cyclic behavior has happened.

I have treated Stem-Raising as postcyclic, thereby breaking the parallel with A-movement in syntax (indeed, we might ask what Post-Cyclic syntax-internal rules (as opposed to PF operations) exist in today's local derivational landscape – although Late Merger of Adjuncts seems to be one very good candidate, and perhaps Stylistic Fronting in Scandinavian as well Bošković 2004); I thank Kenyon Branen for our discussion of these points. As such there may be no 'Improper Movement' problem to speak of in the case of tonal movement in phonology. In fact this raises the general question of whether, given two separate tonal-chain creating processes, if one is cyclic and A'-movement-like, and one is simply postcyclic and A-movement-like and follows the first one – does the notion of improper movement apply? To make this question sharper within the domain of phonology, let us however to a case which does exemplify this parallel, this time going back to vowel harmony.

5. An Aside: Williams-Cycle Effects in Vowel Harmony

The discussion of improper movement (in other words, the ban against A' movement in syntax occurring before A-movement) is part of a more general set of concerns about ordering relations between different types of operations in syntax, known as Williams cycle effects. In the most general sense, since A' movement involves larger syntactic chunks of the tree than A movement does, this relative difference in domain size, whereby 'larger domains are necessarily later domains' can be architecturally implemented to guarantee that A' movement cannot feed A movement (see Williams (2003) for this proposal, and Hornstein & Nevins (2005) for discussion). Are there Williams-cycle type effects in phonology – in other words, cases in which we can clearly show that two processes P and P', where P' involves a larger domain than P, cannot involve a feeding relation from P' to P? It turns out we can, with vowel harmony.

Vata (Kimper 2011) has both word-internal and cross-word [ATR] harmony. Call these W and W' harmony for convenience. The ATR vowels are /i, e, o, u ʌ/, whereas the –ATR vowels are /ɪ, ɛ, ʊ, ɔ, a/.

- (33) Root-controlled W-harmony in Vata:
- a. kla-lɛ ‘seize-with’
 - b. ɲɔnɔ-lɛ ‘sleep in’
 - c. pi-lɛ ‘prepare with’
 - d. su-lɛ ‘crush with’
- (34) W' harmony spreads [+ATR] regressively – among monosyllables:
- a. n la yo ‘I called child’ > n lɔ yo
 - b. o ka za pi ‘He will food cook’ > ɔ kɔ zɔ pi
- (35) However, W' harmony cannot feed W harmony in polysyllabic words:
 ɔ ni saka pi ‘he not rice cook’ > ɔ ni sakɔ pi, *ɔ ni sakɔ pi

This would suggest that all W harmony precedes all W' and that there is no cycle back to W (hence the mention of Williams (2003)). If we consider improper movement to really be about processes applying in larger domains not feeding back into processes applying within smaller domains, then Digo tone would seem to be exempt anyway, as both tonal migration and stem-raising apply in phrasal domains of the same size. Of course, within phonology, the notion of domains has been classically implemented in terms of what are called strata, whereby all processes within the lexical, or word-level stratum must occur before all processes within the postlexical, or across-word stratum. Notably, however, most discussions of A and A' movement within syntax do not adopt a notion of ‘strata’ of syntactic operations, despite some of the apparent parallels that Williams-cycle effects bring out.

6. A Preliminary Excursion into Giryama and Ribe

Giryama and other Mijikenda languages, within the same family as Digo, have a more consistent pattern of targeting the penult. These examples, as studied by Volk (2011), show even longer distance movement of the H tone, *past an intervening infinitival verb* and onto the object (Volk 2011):

- (36) ni- na- mala ku- gula n-guuwo
 1SG- PRES- want to- buy clothes
 ‘I want to buy clothes’ (Volk 2011: 58, ex 45)

- (37) a- na- mala ku- gula n-guúwo
 3SG- PRES- want to- buy clothes
 ‘She wants to buy clothes’ (Volk 2011: 58, ex 45)

The Pattern III cases are sometimes called ‘Fission’ in the tonology literature, especially because the Mijikenda languages have a more dramatic process than Digo’s Ultimate Depressor Doubling, in which a depressor consonant *anywhere* along the chain will cause H tone doubling to the syllable before it. Let us call this “Anywhere Depressor Doubling” (ADD). Kisseberth & Cassimjee (1992) explicitly say that data such as these provide “the basis for choosing between a two-step operation of spreading and subsequent delinking, and a one-step operation of shifting the H tone”. Parallel to the case in (22) above, consider what happens in Ribe when both the verb and the noun contain depressor consonants (recall that prenasalized stops are not depressors):

- (38) ni- na- piga ma-bu.mbu.mbu
 1SG- PRES- beat CL-drums
 ‘I am beating drums’ (Volk 2011: 58, ex 45)
- (39) a- na- píga má-bu.mbuú.mbu
 3SG- PRES- beat CL-drums
 ‘She is beating drums’ (Volk 2011: 58, ex 45)

A single underlying high tone, intending to move only to the highest metrical peak (always a penultimate syllable in these languages), will be copied due to Ultimate Depressor Doubling and be retained on the verb stem, and then also be doubled on the noun stem, due to ADD by the depressor consonant in *bu* – and then finally realized in the target position as well. These two intermediate realizations, due to depressor consonants anywhere along the path, in addition to the final landing site, in patterns such as (39) can be seen as a mix of Pattern II (realization on the highest position) and a variable/recursive Pattern III (non-realization on intermediate depressed syllables), as shown in Ribe. Microvariation in Georgi-patterns within the same language family of this sort is extremely interesting to pursue further, and the above examples, illustrating more cases of intermediate realization due to Anywhere Depressor Doubling (ADD) are really only the tip of a potentially very cyclic iceberg.

7. Conclusion

Georgi's documentation and formalization of PIII has forced us to look further at nonlocal phenomena in phonology through a different lens. It is not clear that for these phenomena at hand, the specific implementation in terms of final steps that counterfeed (or counterbleed) the reflex-realizing process is always the right one for tonal chains – and in fact, perhaps the effect of depressors raise the question of an implementation of PIII in terms of independently-motivated removal (or repair) of the realization in final position. Thus, there are in principle two different ways to derive these PIII effects: in Georgi's analysis, the intermediate movement steps and the final movement step are structurally different kinds of feature-based movement, and rule ordering among these different kinds can potentially determine counterfeeding effects. Another approach to deriving PIII patterns, which is what is developed here for the tonal chains, is that all of the movement steps are of the same type, but that the presence of depressor consonants along the path can cause non-realization in certain positions (and instead, yield their pronunciation on an intermediate, earlier position).

Note that while in the tonal cases examined here, the terminal landing site goes unrealized because of the presence of depressor consonants, we do not necessarily see an independently observable property of the terminal landing site in PIII languages with *wh*-agreement phenomena that might cause this non-realization. An alternative set of models to explore — for both sets of PIII phenomena — would be a calculus of preferential positions of chain realization, e.g. the entire tonal chain is first formed through every position, and subsequent conditions determine which links are overtly realized; cf. Cassimjee & Kisseberth's (1998) Optimal Domains Theory for a parallel/violable version of this. In both phonology and syntax, we find that these patterns are relatively rare, perhaps because they require a specific interaction of rule ordering – the implementation adopted here for both sets of cases. Perhaps, indeed, PIII in syntax could be 'rare' precisely because such removal operations specifically on the landing position (for grammaticalized reasons relating to being in absolute-initial position) require the right combination of circumstances. In any case, we have come full circle, as the phonology patterns have now invited us to go back to the syntactic cases and re-examine them through this lens.

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Agree and Merge repair Labeling

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Abstract

Following the Labeling Algorithm suggested in Chomsky (2013, 2015), movement can apply to repair an otherwise unlabelable syntactic configuration. In this paper, I will develop this idea and suggest that both movement and agreement can be viewed as repair operations for labeling. I will then show that languages with and without EPP differ in whether movement or agreement applies as a basic repair operation in a language.

1. Background: Chomsky's Labeling Algorithm

Following Chomsky's more recent work, Merge must be disentangled from Labeling to achieve the simplest possible definition of Merge. Labeling then requires a separate Labeling Algorithm that was suggested in a series of papers by Chomsky (2013, 2015, 2019) and further developed by several authors (see Epstein et al. 2014, 2020, Rizzi 2016, Hayashi 2020, McInnerney 2024, Moro & Roberts 2024 among others). This labeling algorithm constitutes the basis for this paper, so I will lay it out in detail in this section.

This labeling algorithm is set up in a model where Merge is not feature-driven, but applies freely. Consequently, syntactic selectional features that the traditional projection-by-selection approach (see Chomsky 1995, Adger 2003, and also Stabler 1997) relies on are not present. Furthermore, since there is no selection in syntax, labels are factually not used in syntax. Instead, they are required for interpretation at the PF and LF interfaces. As a result, labels can be established later, at Transfer.

The idea underlying Chomsky's labeling algorithm is that labeling applies under minimal search and its outcome depends on the phrase-structural status of merged syntactic objects. Two core configurations are distinguished: Merge

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of a head with a phrase and Merge of two phrases. First, if a head is merged with a phrase, the head, as an atomic computational item, determines the label:¹

(1) [XP X YP]

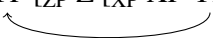
The second relevant configuration is created by Merge of two phrases. Minimal search finds the two heads of the merged phrases and thus does not give an unambiguous result.

(2) [? XP YP]

There are then two ways to avoid a crash and determine a label. One option is movement. If one of the merged phrases moves out, it thereby turns invisible for the labeling algorithm and the remaining phrase provides a label.

(3) Movement for Labeling


[YP [ZP Z [XP XP ~~YP~~]]]



Another option is agreement. If the heads of the two merged phrases agree in some feature, this feature can be taken as a label for the created constituent; see (4). Note that in the latter case, it is not the category that provides a label, but a feature present on both heads. Here and throughout this work I use the notation introduced by Heck & Müller (2007), according to which probe features are indicated as [*F*] and Merge/selection features as [●F●].

(4) Agreement for Labeling

[<2PL, 2PL> [XP X_[*φ : _*] ZP] [YP Y_[φ:2PL] WP]]



Chomsky (2015) adds a concept of weak heads to this labeling algorithm. Weak heads cannot provide a label by themselves, but must be strengthened by the presence of a specifier. The specifier must remain in its position at Transfer and the label of the final projection is determined via Agree as shown in (5b).

¹Rizzi (2016) points out that one complication is introduced by head movement: Complex syntactic objects created by head movement must still act as heads despite not being syntactic terminals. This issue has no immediate effect for this paper and I will not focus on it. The solution suggested by Rizzi (2016) is also fully compatible with my proposal.

- (5) a. [_? X_{weak} YP]
 b. [_(ϕ , ϕ) ZP [X_P X_{weak} YP]]


To sum up, the core idea behind Chomsky’s labeling algorithm is that labeling applies at Transfer and a label must be determined simply by minimal search. The actual implementation however includes further non-trivial concepts, most notably the opposition of weak and strong heads (see also Hayashi 2020 for some problems with weak heads) and the idea that otherwise unlabelable configurations may be repaired by movement: It can apply to resolve [XP YP] configurations by moving one of the phrases out and allowing the remaining one to label. Movement also repairs labeling with weak heads: Weak heads are strengthened by movement of some phrase to their specifier. The labeling algorithm thus actively employs the concept of repair, i.e., an operation that would not take place otherwise may apply if the structure would be illegitimate without it. Minimalist syntax does not allow for a straightforward implementation of the repair logic, but it can be naturally accounted for under Optimality Theory (see Grimshaw 1997, Pesetsky 1998, Müller 2000, Heck & Müller 2007, 2013, Heck 2008, 2021 among others).

The goal of this paper is to present a formal implementation of the repairs applying for labeling and more generally operations taking place at Transfer. In doing so, I will focus on the derivation of simple clauses and the puzzling linguistic phenomenon on which Chomsky’s approach to labeling offers a novel perspective—EPP. Before turning to my analysis, let’s consider the reanalysis of EPP suggested by Chomsky (2013, 2015).

Following Chomsky, the EPP is derived in the following way. At the CP level, there are two projections problematic for labeling. They are indicated as α and β in the structure below.

- (6) [CP C [_{β} T_{weak} [_{α} DP_{EA} [vP v ...]]]]]

Projection α results from Merge of two phrases, so it can be labeled if the heads of the two merged phrases agree or if one of the phrases moves out. Projection β is constructed by merging the phrase α and the weak head T. For this projection to get a label, the weak head must be strengthened. Both labeling problems are resolved by movement of DP_{EA}.

- (7) [CP C [_(ϕ , ϕ) DP_{EA} [TP T_{weak} [vP ~~DP~~_{EA} [v v ...]]]]]]
- 

Movement by assumption renders DP_{EA} invisible in its base position and allows to label α as vP . In its landing site DP strengthens the weak T head, so that it can now label β . Notably, DP_{EA} must remain in its landing site at Transfer, where labeling applies and consequently the strengthening of T is required. This derives the obligatory EPP in languages like English. Finally, movement of the DP_{EA} also creates a new projection. It is labeled by shared features: The T head must agree with the external argument in ϕ -features and these features constitute the label.

Languages without EPP differ in that they have a strong, not a weak T head. The strong T can label and does not require strengthening by a specifier.² Chomsky however does not address the problem of labeling in a lower vP projection that in the derivation above is also resolved by movement of the external argument. The analysis thus remains incomplete.³

In what follows, I will present an analysis of the EPP that builds on Chomsky's labeling algorithm, but differs from the analysis summarized above in that the additional concept of the strength for syntactic heads is not required and the cross-linguistic variation with respect to the EPP follows from which syntactic operation applies as a basic repair operation in a given language. I am thus building up on Chomsky's proposal that internal Merge can apply to repair labeling and suggest that both core syntactic operations—Agree and Merge—are repair operations applying at Transfer. I formalize the analysis using the Harmonic Serialist version of Optimality Theory.

In section 2, I will show how optimization applies at Transfer, present the

²Chomsky (2015) further suggests that there is a correspondence between EPP and ECP effects and that the approach captures it. In a nutshell, the ECP also follows from the strength of the T head: Languages with a weak T head require the subject to be present in Spec,TP at Transfer, so that it cannot, for instance, move to Spec,CP and thus remains in the Spell-Out domain. Further extraction is then impossible. This does not happen if the C head is deleted because it then passes its phasehood to the T head. In this case, the subject may remain in Spec,TP and be accessible for operations at the next phase. In languages with a strong T, the requirement for the subject to be in Spec,TP does not occur in the first place.

³Assuming that complements of phase heads are rendered invisible in syntax and v is a phase head, one might suggest that once the complement of the v head is transferred, the structure is processed as $[DP_{EA} v]$ and the v head can provide a label as a head (see Narita 2014, as well as Ott 2011, Gallego 2018, and Bayırlı 2022 on labeling and Spell-Out). This solution for labeling in vP is however not fully compatible with Chomsky's original proposal, because the latter assumes that v passes its phasehood to V, so that the specifier of V remains accessible after Spell-Out.

necessary constraints and the analysis of simple clauses. After this, in section 3, I will summarize and discuss some open questions.

2. Proposal

2.1. Optimization at phase level

Following Chomsky (2008, 2013, 2015, 2019), I assume that after the phase is built by external Merge, it is transferred to the interfaces and the majority of the phase-internal operations, including internal Merge and Agree, apply at Transfer.⁴ Merge (external and internal) is not feature-driven and as shown in the previous section internal Merge can apply in order to repair otherwise unlabelable structures. In this paper, I will explore a more radical version of this approach. I would like to propose that Merge as well as Agree are not feature-driven and apply to repair unlabelable structures. I suggest that both operations are restricted by economy constraints, but can take place to avoid a violation of a higher ranked labeling constraint.

I will implement this repair logic (already present in Chomsky's labeling algorithm, but expanded in the current work) and model operations applying at phase level in Optimality Theory (see Sells et al. 1996, Aissen 1997, 1999, 2003, Grimshaw 1997, Müller 1997, Fanselow & Féry 2002, Heck 2008, Müller 2015, Stanton 2016, Murphy 2017 for optimality-theoretic approaches to syntax). In particular, I use Harmonic Serialism, a version of Optimality Theory where the generator is restricted so that the set of outputs is produced by applying at most one operation to the input (see Heck & Müller 2007, McCarthy 2008). Outputs are then evaluated against the constraints and the output with the best constraint profile becomes the input to the next optimization cycle. The derivation terminates when the constraint profile cannot be further improved, that is, the output with the best constraint profile is identical to the input.

⁴For Agree, the necessity to apply at Transfer was motivated by the requirement for features uninterpretable at LF to be deleted before the interface (Chomsky 2004, 2008, Richards 2007). As interpretability of a feature at LF is not visible in syntax, it was suggested that being unvalued in syntax corresponds to being uninterpretable at LF. The valuation (i.e., Agree) must take place at Transfer, because the difference between interpretable and uninterpretable features would be otherwise lost too early. It is however not completely clear whether this logic is applicable to this work as I am assuming that Agree, like Merge, is not driven by probe features; see also Privizentseva (2023) for some problems with this approach.

I would like to suggest that after the phase is built by external Merge, the structure constitutes an input to the Harmonic Serialist derivation where Agree, internal Merge, and labeling apply in the generator and the outputs are evaluated by ranked constraints. I will focus on the derivation of simple clauses and use four constraints. They are introduced in the remainder of this section.

First, presence of a label is one of the requirements for the well-formedness of the syntactic structure and it is ensured by the constraint LABEL:

(8) LABEL:

Every projection present in the input is labeled in the output.

Labeling applies as suggested by Chomsky (2013); that is, labels are determined by minimal search (see also Ke 2024) and there is no distinction between weak and strong heads. This algorithm is summarized in (9). First, all terminal nodes are accessed before the heads of their branching sisters and provide a label. Second, lower copies of displaced syntactic objects are invisible for the search and do not provide labels. Third, if the search finds two heads of merged phrases, it selects a feature they share as a label.

- (9) a. X is a label in {X, YP}.
 b. XP is a label in {XP, YP} if YP moved out.
 c. $\langle \alpha, \alpha \rangle$ is a label in {XP, YP} if XP and YP agree in feature α .

Merge and Agree apply freely in the generator. There are no probe features that would require their application, i.e., both Agree and Merge are not feature-driven under this approach. This allows both operations to act as repairs. The outputs are then evaluated against the two economy constraints that restrict the application of Agree and Merge.⁵

(10) *AGREE:

Agree does not apply.

(11) *MERGE:

Merge does not apply.

⁵The *MERGE constraint refers to Merge in general and therefore could in principle restrict the application of external Merge as well, but it will in fact never apply to cases of external Merge, because the constraint is part of optimization that takes place at Transfer, after the structure has already been built by external Merge.

The final constraint that I will call DOMAIN CONSERVATION restricts movement that could in principle apply unboundedly in this approach, since it is not triggered by syntactic features. While the constraint was not formulated as in (12) in previous work, there is a clear precedence for it; see, for instance, the WH-CRITERION by Rizzi (1996), WH-RECOVERABILITY by Heck & Müller (2003). This constraint makes reference to \bar{A}/A -features and \bar{A}/A -positions (cf. Chomsky 1981, Mahajan 1990, Webelhuth 1992, Van Urk 2015, and Keine & Bhatt 2019 among others). I assume that case and ϕ are A-features, while [wh], [top], [foc], [rel] are \bar{A} -features. Note that these features, while being present in syntax, do not trigger syntactic operations directly. I am further defining \bar{A} -positions as specifiers of heads that may host \bar{A} -features, but do not necessarily have them in every single derivation. Thus, the complement and the specifier of the V head, the specifier of the v head, and the specifier of the T head are typically A-positions, while the specifier of the C head is the \bar{A} -position.

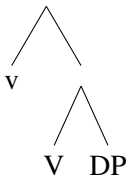
- (12) DOMAIN CONSERVATION (DC):
 Syntactic objects without \bar{A} -features are in A-positions.

In the next section, I will show how these four constraints derive simple clauses in languages with and without EPP.

2.2. Simple clauses and EPP

Let's consider the derivation of a simple clause. Recall that under the current approach, the phase is fully built by external Merge and then the structure is subject to an optimality-theoretic evaluation in the course of which all phase-level operations apply. The structure in (13) constitutes a first input to the Harmonic Serialist optimization procedure.

- (13) vP phase



This structure contains two projections that have no labels. They both are created by Merge of a head with a phrase and can be consequently labeled without application of further operations. The first optimization step is shown in (14). The output O_1 is identical to the input and it incurs two violations of LABEL, one for each unlabeled projection. In the output O_2 , one of the projections is labeled in the generator and LABEL is violated only once. Outputs O_3 and O_4 are built by the application of internal Merge and Agree correspondingly and they violate the respective economy constraints: *MERGE and *AGREE. The ranking of these constraints does not affect the outcome of the optimization at the vP-level, but will become relevant in the derivation of the next phase. Both O_3 and O_4 have only one violation of LABEL, because the constraint applies only to projections present in the input and in the output. In O_3 , the DP moves, so that projection [V DP] present in the input is not in the output and projection [DP V] that is part of the output is not in the input. Consequently, neither of the two projections is visible to the constraint. Similarly, I assume that as agreement changes feature makeup of the head, the projection in the output is not identical to the one in the input and therefore O_4 violates LABEL only once.

(14) vP-level optimization, step 1

I: [v [V DP]]	LABEL	DC	*MERGE	*AGREE
O_1 : No changes	**			
O_2 : Labeling in VP	*			
O_3 : DP moves to Spec,VP	*		*	
O_4 : V agrees with DP	*			*

The second step of the vP-level optimization is shown in (15). Output O_{24} created by labeling of the remaining unlabeled projection has the best constraint profile.⁶

⁶As the optimization is phase-based, labeling in the higher projection could apply before labeling in the lower projection. I assume that this is indeed possible, but the order in which labeling operations apply has no effect on the final output of the derivation.

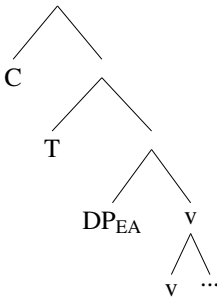
(15) vP-level optimization, step 2

I_2 : [v [VP V DP]]	LABEL	DC	*MERGE	*AGREE
O ₂₁ : No changes	*			
O ₂₂ : DP moves to Spec,VP			*	
O ₂₃ : V agrees with DP				*
\mathbb{E} O ₂₄ : Labeling in vP				

After this, the derivation converges: All projections are labeled; further Agree or Merge do not improve the constraint profile.

I will now turn to the derivation of the CP phase. As in the previous case, the phase built by external Merge (see (16)) is fed into the Harmonic Serialist optimization procedure.

(16) CP phase



The first two steps of optimization at the CP-level are given in (17)-(18). In these steps, projections created by Merge of the head and the phrase are labeled.

(17) CP-level optimization, step 1

I : [C [T [DP [VP v ...]]]]	LABEL	DC	*MERGE	*AGREE
O ₁ : No changes	***			
O ₂ : DP moves to Spec,TP	**		*	
O ₃ : v agrees with DP in ϕ	**			*
\mathbb{E} O ₄ : Labeling in TP	**			

(18) CP-level optimization, step 2

I ₄ : [C [TP T [DP [vP v ...]]]]	LABEL	DC	*MERGE	*AGREE
O ₄₁ : No changes	**			
EPP O ₄₂ : Labeling in CP	*			
O ₄₃ : v agrees with DP in ϕ	*			*
O ₄₄ : DP moves to Spec,TP	*		*	

The remaining unlabeled projection is created by Merge of the two phrases and cannot be labeled without application of further operations. There are two ways to provide a label: First, the subject DP agrees with *v* and the shared feature is used as a label. Second, the DP moves out and the remaining vP labels. I would like to suggest that both these scenarios are attested, but in different languages. The difference follows from whether Agree or Merge applies as a basic repair operation in a language and resolves the problem created by Merge of the subject. The choice of the repair operation in turn depends on the respective ranking of *MERGE and *AGREE constraints. In languages without EPP, where the subject remains in-situ, *MERGE outranks *AGREE, so that Agree typically repairs labeling.⁷

(19) Languages without EPP

LABEL \gg DOMAIN CONSERVATION \gg *MERGE \gg *AGREE

For these languages, the third optimization step is given in (20). As discussed above, application of Merge and Agree to unlabeled projections remedy one violation of LABEL, because the unlabeled projection in the input is not identical to the unlabeled projection in the output and is therefore disregarded by the constraint. In result, outputs O₄₂₂ and O₄₂₃ have no violations of LABEL. As *MERGE outranks *AGREE, O₄₂₃ formed by agreement wins.

(20) CP-level optimization, step 3

I ₄₂ : [CP C [TP T [DP [vP v ...]]]]	LABEL	DC	*MERGE	*AGREE
O ₄₂₁ : No changes	*			
O ₄₂₂ : DP moves to Spec,TP			*	
EPP O ₄₂₃ : v agrees with DP in ϕ				*

⁷I assume that the ranking is fixed on the language basis: *MERGE and *AGREE are ranked in all steps of the derivation, but their ranking was irrelevant for the choice of the optimal output in the earlier optimization cycles.

Application of Agree makes labeling by a shared feature possible in the next step (21) and the derivation converges after this.

(21) CP-level optimization, step 4

I ₄₂₃ :	[_{CP} C [_{TP} T [DP [_{vP} v _φ ...]]]]]	LABEL	DC	*MERGE	*AGREE
	O ₄₂₃₁ : No changes	*			
☞	O ₄₂₃₂ : Labeling by ϕ				

Let’s now turn to languages with EPP. In these languages, the labeling problem created by the Merge of the external argument is repaired by movement of the subject. Movement is preferred over agreement in situ, because the ranking of constraints banning Merge and Agree is reversed.

(22) Languages with EPP

LABEL ≫ DOMAIN CONSERVATION ≫ *AGREE ≫ *MERGE

The first two optimization steps proceed as shown in (17)–(18) above. The third step is shown in (23) and the output O₄₂₂ where the subject DP moves to Spec,TP has the best constraint profile. Movement to Spec,CP in O₄₂₄ incurs the violation of the DOMAIN CONSERVATION constraint as it places a noun phrase without any \bar{A} -features in the \bar{A} -position.

(23) CP-level optimization, step 3

I ₄₂ :	[_{CP} C [_{TP} T [DP [_{vP} v ...]]]]]	LABEL	DC	*AGREE	*MERGE
	O ₄₂₁ : No changes	*			
☞	O ₄₂₂ : DP moves to Spec,TP				*
	O ₄₂₃ : v agrees with DP in ϕ			*	
	O ₄₂₄ : DP moves to Spec,CP		*		*

The [DP TP] constituent is created in the third optimization step in (23) and for this reason does not violate the two-level constraint LABEL there. This constituent is part of the input in (24), so it violates LABEL unless further operations apply. There are again two ways to resolve the labeling problem: movement of the DP to a higher projection as in O₄₂₂₂ or agreement as in O₄₂₂₃. Despite *AGREE being ranked higher than *MERGE, the output O₄₂₂₃ with agreement has the best constraint profile. This is because Spec,CP is the only available position for further movement and placement of the subject in

this position violates DOMAIN CONSERVATION.⁸ As a result, different repairs are preferred at different stages of the derivation within one language.

(24) CP-level optimization, step 4

I ₄₂₂ :	[_{CP} C [DP [_{TP} T [_{VP} v ...]]]]	LABEL	DC	*AGREE	*MERGE
	O ₄₂₂₁ : No changes	*			
	O ₄₂₂₂ : DP moves to Spec,CP		*		*
☞	O ₄₂₂₃ : T agrees with DP in ϕ			*	

Finally, shared ϕ -features provide the label in (25).

(25) CP-level optimization, step 5

I ₄₂₂₃ :	[_{CP} C [DP [_{TP} T ϕ [_{VP} $\bar{D}\bar{P}$ [_v v ...]]]]]	LABEL	DC	*AGREE	*MERGE
	O ₄₂₂₃₁ : No changes	*			
☞	O ₄₂₂₃₂ : Labeling by ϕ				
	O ₄₂₂₃₄ : DP moves to Spec,CP		*		*

To sum up, I suggested that after the phase is built by external Merge, the syntactic structure is evaluated against the set of ranked constraints. The constraint LABEL requires the labeling in all syntactic projections, which sometimes forces the application of the core syntactic operations—Agree and Merge. Their application however incurs a violation of the corresponding economy constraints. Languages with EPP and those without it differ in the mutual rankings of the constraints *ARGEE and *MERGE. The possible rankings and the resulting patterns are summarized in the table below:

(26) Languages with and without EPP

EPP	*AGREE \gg *MERGE
No EPP	*MERGE \gg *AGREE

3. Outlook

This paper makes three contributions. First, investigating Chomsky's labeling algorithm, I show that this algorithm involves a concept of repair, which can be hardly formalized in standard minimalist syntax. The paper presents a formal implementation of Merge and Agree as repair operations in the Harmonic Serialist version of Optimality Theory. Second, I suggest that the attested

⁸If the subject has an \bar{A} -feature, the approach predicts that it may move to Spec,CP directly. This might be a correct prediction (see Messick 2020 among others).

cross-linguistic variation with respect to subject movement follows from whether Merge or Agree applies as a basic repair in a language. Third, this paper explores the possibilities to ensure and correctly restrict the application of Merge and Agree in a system where these operations are not driven by features, but apply freely. I suggested that they are restricted by economy constraints and are acceptable only if their application improves labeling.

The account developed in this paper also raises further questions concerning the analyses of specific linguistic phenomena. I will now identify three such issues.

First, according to this analysis, languages with EPP and without EPP differ in the location of the subject agreement within verbal projections. In languages with EPP, the T head agrees with the subject, while in languages without EPP, the *v* head is the locus of verbal agreement. On the one hand, this is a falsifiable prediction and indeed different loci of subject agreement were proposed for different languages (see Chomsky 2001, Sigurðsson 2000, Bejar 2003). At the same time, languages with both higher and lower locus of agreement may ultimately display inflection on the verb, for instance, due to post-syntactic morphological operations. They can be thus indistinguishable at the surface.

Second, for languages with EPP, the analysis derives obligatory movement of the argument merged in Spec,vP to Spec,TP, but the analysis so far does not predict movement of unaccusative subjects that originate as complements to the V head. I would like to suggest that subjects of unaccusatives move to Spec,vP because of case filter constraint as in (27) (Chomsky 1981, Vergnaud 2008/1977).

(27) CASE FILTER: All nouns have case.

As subjects of unaccusatives do not receive case at the vP-phase, they must escape the phasal spell-out by movement to the specifier of the phase head, vP, to the position where subjects of unergatives and transitive verbs are first merged. After this, the derivation proceeds as sketched above.

Third, simplifying the model by eliminating the concept of weak heads present in Chomsky's proposal, the approach also narrows its empirical coverage: The analysis does not account for the correspondence between the EPP and the ECP that Chomsky's original proposal is claimed to derive. I suggest that this is a welcome result: The co-occurrence of the two principles

is attested in some languages (e.g., in English), but is not universal; see Müller & Rohrbacher (1989).

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On FORMCOPY and the Form of Copy Raising

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Abstract

This paper revisits the phenomenon of English copy raising in light of recent developments in minimalist theorizing (Chomsky 2019 et seq.), in particular the separation of copy formation (FORMCOPY) from movement (Internal Merge). After reviewing the empirical facts and previous analyses, an attempt is made to recast the copy-raising dependency in terms of an (overt) M-gap (Chomsky 2021). Despite some initial appeal, this approach soon proves unviable, due to its incompatibility with unavoidable assumptions regarding the phase-internal and/or obligatory application of FORMCOPY. An alternative analysis afforded under the weak conception of Transfer (Chomsky 2008), exploiting the possibility of what is here dubbed ‘dislocal’ movement of previously transferred material, is argued to yield a more straightforward account of the observed hyperraising profile.

1. Identifying a problem

Until fairly recently, the simplest conception of Merge in conformance with the Strong Minimalist Thesis (SMT) was as summarized by Chomsky (2014) in *Minimal Recursion*:

“It is commonly held that I[nternal] M[erge] is more complex than E[xternal] M[erge], requiring the operations Form-Copy, Rmerge, Copy identification, and Copy deletion. But that is unwarranted. **There are no operations Form-Copy or Rmerge, just Merge in its simplest form, satisfying [the] N[o] T[ampering] C[ondition] and hence yielding copies.** Copy

*It is a privilege and a pleasure to be able to contribute something both familiar and new to Gereon’s richly deserved Festschrift. Gereon’s creative, eclectic, impeccably rigorous and often daringly original work has been an inspiration to me ever since I first encountered it in person at CGSW 17 in Reykjavik (2002), and it was an honour to have him as one of my PhD examiners. I will be forever grateful to Gereon for the opportunity to spend five stimulating years in Leipzig as a postdoc, expanding my linguistic horizons well beyond my minimalist comfort zone.

identification is based on a straightforward property, easily detectable at the phase level. Copy deletion follows from elementary third factor considerations.” (Chomsky 2014 (2012b: 13); my emphasis.)

In his latest writings, however, Chomsky (2019, 2021, 2023) has revisited the definition of Merge and argued for a more restrictive conception, MERGE, which operates on workspaces, mapping one derivational state to the next in conformance with a resource constraint (*Minimal Yield*) that limits possible outputs. The details of this re-conception do not concern us here, beyond one remarkable development. In a striking volte-face, a separate operation or rule of FORMCOPY is invoked in order to identify occurrences at the phase level, and thus to create discontinuous elements, overturning the previously held position quoted above which explicitly rejects such an operation.¹ Copies are now distinguished from repetitions (unrelated instances of the same syntactic object) via FORMCOPY (FC) rather than by the respective operations of Internal and External Merge. With copy formation now severed from (internal) Merge, the possibility emerges of independently externally-merged items being identified by FC and thus interpreted as a single, discontinuous element – that is, chains may now arise from EM as well as IM. Chomsky (2021) refers to such EM configurations with deleted lower copies as M(arkovian)-gaps, and proposes that PRO in (obligatory) Control instantiates such an M-gap.²

The predicted existence of M-gaps opens up a rich empirical testing ground for the new theory (what Chomsky 2021 calls the “enabling function” of the SMT), which should in turn help refine the properties of FC (which are somewhat inconsistently defined in Chomsky 2021 and 2023): e.g., is it phase-internal, constrained by the Phase Impenetrability Condition (PIC),

¹(Chomsky 2021:17); whilst previously unnecessary, the need for FC now follows as a consequence of the strict Markovianism of the MERGE system (Andreas Blümel, p.c.). There is a partial rollback in Chomsky (2023), in which FC is recast as an automatic mechanism applying phase-internally rather than a separate operation that would add to the list of “admissible operations” (2023: 6), though it remains the case that copy-identification is divorced from Internal Merge.

²Thus FC identifies the pair <John₁, John₂> in John₁ tried John₂ to win as an M-gap, with deletion of John₂ applying under FC-identity with John₁. (Chomsky 2021:25) further suggests that anaphor binding (Principle A of the Binding Theory) is likewise the result of FC; reflexive pronouns would thereby set a precedent for overtly realized M-gaps, which we make use of below. See Blümel & Kitahara (2023) for an application of FC to null subjects in Romance and Greek that analyses *pro* as an M-gap.

or can it apply across phases? Does it apply automatically to all identical elements in a c-command relation within the relevant domain (as in Chomsky 2023), or is it optional (Chomsky 2021)? In an attempt to broach some of these questions from a different angle and, in doing so, to challenge the viability of the FC approach to copy identification, it seems appropriate to return here to an old syntactic chestnut which I first worked on during my time at Leipzig, under Gereon's inspiring and generous mentorship, and which has long proved a useful testing ground for minimalist advancements (including Probe-Goal Agree in Rezac 2004; the Activity Condition and phase theory in Fujii 2005): namely, English *copy raising*, which on the face of it has all the hallmarks of an (overt, externalized) M-gap. I first summarize its major properties, as identified by previous researchers, in section 2, before arguing in section 3 that these can best be understood in terms of direct (CP-skipping) A-movement under the weak conception of Transfer of Chomsky (2008, 2012a, 2013). Finally, in section 4, an M-gap alternative is mooted which quickly proves unworkable, at least under current formulations of FORMCOPY, leading to the conclusion that the earlier system, in which copy identification is simply the result of Internal Merge (IM), is to be preferred.

2. Identifying copies across clauses

2.1. The phenomenon: It looks like it might be Raising

Alongside the standard raising alternation in (1a-b), English famously exhibits another raising-like alternation, illustrated in (1a-b).

- (1) a. It seems [that John has lost his wallet].
 b. John seems [___ to have lost his wallet].
- (2) a. It seems [as if John has lost his wallet].
 b. John seems [as if he has lost his wallet].

The cross-clausal dependency in (2b) has come to be known as *Copy Raising* (CR): that is, this is a kind of raising that leaves behind an overt copy (a 'pronominal trace') in the embedded subject position, where standard raising (cf. (1b)) leaves an empty copy (trace).³ CR has a long history of interest and inquiry in the generative tradition. It was first noted in Postal (1971, 1974) and

³See Polinsky & Potsdam (2006) for how CR fits into a larger typology of related dependencies.

described and analysed in Rogers (1971, 1972, 1974), where it became known as the ‘Richard transformation’ (due to examples such as *Richard seems like he is in trouble*). It has since been a major focus of such works as Lappin (1984), Heycock (1994), Moore (1998), Potsdam & Runner (2001), Asudeh (2002), Asudeh & Toivonen (2004, 2012), Rezac (2004), Fujii (2005), Snider (2005), Landau (2009), and others.

These (and other) works have identified CR constructions in numerous languages apart from English (e.g. Hebrew, Turkish, Swedish, Greek, Romanian, Irish, Bantu languages), often under the more general rubric of *hyperraising*, i.e. raising out of finite clauses as in (3), which is normally excluded in languages like English.⁴ Examples of licit hyperraising in languages other than English are given in (4b) and (5).⁵

(3) *Hyperraising*

*John seems that [___ is happy]

(4) *Brazilian Portuguese hyperraising* (Boeckx et al. 2010)

a. Parece/acabou que os estudantes viajaram mais
seem.3SG/finished.3SG that the students traveled.3PL more
cedo
early
‘It seems/turned out that the students travelled earlier.’

b. Os estudantes **parecem/acabaram** que **vijaram** mais
the students seem.3PL/finished.3PL that traveled.3PL more
cedo
early
‘The students seem to have travelled earlier.’/‘The students ended up travelling earlier.’

⁴In terms of the *Derivation By Phase* system of Chomsky (2001), this exclusion followed from a conspiracy of the Phase Impenetrability Condition and the Activity Condition. Such instances of finite raising were originally excluded as violations of Chomsky’s (1973) *Tensed S Condition*, which banned raising out of finite clauses in general, as in such structures as **John seems (that) ___ has solved the problem*.

⁵See, for example, Zeller (2006) and Carstens & Diercks (2009) on hyperraising in Bantu, Nunes (2008) on hyperraising in Brazilian Portuguese, and Ura (1994) for a wider crosslinguistic survey.

- (5) *Greek hyperraising out of subjunctive clauses* (Alexiadou & Anagnostopoulou 1998)

Ta pedhia dhen **fenonte** na **doulevous**
 the children not seem.3PL SUBJ work.3PL
 ‘The children do not seem to work.’

In English, finite raising (in the form of CR) is restricted to *verbs of perception* (*sensation* or *appearance*) whose clausal complement is introduced by the predicative complementizers *as if / as though / like* – these include *sound, feel, taste, smell, look*, as well as the standard raising verbs *seem* and *appear*.

- (6) a. It looks [like this book has never been read].
 b. This book looks [like it’s never been read].
- (7) a. It sounds [like John’s got a lot of making-up to do].
 b. John sounds [like he’s got a lot of making-up to do].

Given that hyperraising is normally excluded in English, the existence of CR raises a number of important empirical and theoretical questions if this is genuinely a case of raising. We might first ask why we would want to treat CR as raising at all (indeed, most accounts avoid a movement analysis in favour of base generation of the matrix subject, a point to which we will return in section 2.2). There are many reasons for doing so. Firstly, the relation between the matrix subject and the pronominal copy in CR is the same as that between the matrix subject and the A-trace in standard raising: The matrix subject is the thematic subject of the embedded clause (i.e. it receives its θ -role in the embedded clause), as becomes abundantly clear when we apply the classical tests for raising versus control. As (8) shows, CR is possible with expletives and idiom chunks, which are incompatible with (raising to) thematic positions. (The following examples are from Potsdam & Runner 2001, unless otherwise indicated.)

- (8) a. There looks like there’s gonna be a riot.
 b. There seems like there’s likely to be a unicorn in the garden.
 c. The shoe seems like it’s on the other foot. (Snider 2005:2)
 d. The shit seems as if it’s likely to hit the fan very soon.
 (cf. Fujii 2005:44)

It thus appears that CR-verbs are monadic, just like standard raising *seem/appear*: They do not assign a θ -role to their subjects; in other words, the matrix subject position is nonthematic.

Secondly, the coreferential pronoun in the embedded subject position is *obligatory*, and it stands in an A-relation with its antecedent: it requires a local, c-commanding antecedent, cf. (9a-d), respecting the usual conditions on A-chains, such as the ban on superraising, as in (9e-g), where *the shoe / John* intervenes.

- (9) a. *Jody seems like it's raining. (Asudeh & Toivonen 2004)
 b. *Bill appears as if Mary is intelligent. (Lappin 1984)
 c. Bill_i appears as if he_{i/*j} is intelligent.
 d. *Bill_i's mother appears as if he_i is intelligent.
 e. *The other foot appears like the shoe is on it.
 (Potsdam & Runner 2001)
 f. *There seems like John expects there to be an election.
 g. *The shit appears as if John expects it to hit the fan very soon.

It thus appears that CR involves a canonical A-chain, just like standard raising. The obligatory identification (i.e. referential identity) of the matrix subject and the embedded pronoun is something that a movement account lends itself to particularly well, since Internal Merge (as originally conceived) creates copies, i.e. duplications of the self-same, identical item, without the need for the attendant complications and machinery of a binding-through-Agree approach (see section 2.2 below). Looking ahead to section 4, if such identification is now the result of FORMCOPY, then the latter must apply obligatorily to capture these facts (contra Chomsky 2021, but in accordance with Chomsky 2023).

Nevertheless, it seems clear that not all instances of CR have the properties in (8)/(9), and so not all instances of CR are necessarily to be treated as movement; in FORMCOPY terms, FC cannot be obligatory after all. Apparent examples of CR that do not conform to the usual conditions on raising do exist, especially with the physical perception verbs (*look, smell, feel, taste, sound*), as Asudeh (2002) in particular makes clear. Not least, an obligatory copy in the subject position of the embedded clause is *not* always necessary, as has been recognized since at least Rogers (1974):

- (10)
- a. He seems like his gums are bothering him. (cf. Snider 2005:4)
 - b. Richard smells like Gonzo has been baking. (Asudeh 2002)
 - c. Your car sounds like you need a new clutch. (Heycock 1994)
 - d. He seemed like there was no longer any turmoil or emotion over doing the tough things. (Landau 2009)
 - e. The sky appeared as though the clouds themselves had been stripped of life. (Landau 2009)

Crucially, however, there is a semantic difference between the examples in (10) and those in (8)/(9): The matrix perception verb is interpreted thematically here, suggesting that it assigns a particular θ -role to its subject. This role has been dubbed ‘PSource’ (for *perceptual source*) by Landau (2009); cf. also Asudeh & Toivonen (2012). Its interpretation is such that the matrix subject provides a direct stimulus responsible for triggering the perceived state of affairs specified in the complement clause, i.e. an auditory, visual/textual, gustatory, tactile, or olfactory stimulus as appropriate to the verb’s meaning, rather than a second-hand or indirect stimulus in which no actual looking, taste, smell, noise, etc., is involved.

With the verbs *seem* and *appear*, this thematic, ‘PSource’ interpretation is paraphrasable as *give the impression/appearance that* (cf. Rezac 2004:133), or by using the non-CR dyadic verb of appearance *act like* (Potsdam & Runner 2001, Snider 2005), as in (12b). True (nonthematic) CR, on the other hand, is paraphrasable as in (2a)/(6a)/(7a), i.e. by using a nonthematic, expletive subject and a propositional CP complement; cf. (11b):

- (11) ‘True’ CR (= nonthematic; matrix subject cannot be interpreted as a PSource)
- a. Mark Twain_i seems like he_i was a good man.
 - b. = It seems like Mark Twain was a good man.
 - c. ≠ Mark Twain is acting like he was a good man.
- (based on an example from Landau 2004)

(12) 'Apparent' CR (= thematic)

- a. He seems like Kim just dumped him.
- b. = He's acting like Kim just dumped him.
- c. ≠ It seems that Kim just dumped him.

(Potsdam & Runner 2001, Rezac 2004)

The consensus amongst authors is that we must therefore distinguish between true CR (genuine, non-thematic, monadic) and apparent CR (pseudo, thematic, dyadic), on principled interpretive grounds (cf. Potsdam & Runner 2001, Rezac 2004, Snider 2005, Landau 2009);⁶ where these authors differ is on where (and how) this line is to be drawn (for example, Landau 2009 would allow (10a) and (12), with an object pronominal copy, to be true CR).

The examples in (8) and (9e)-(9g) support this conclusion: Whenever raising is forced (i.e. whenever CR is forced to be true CR, not apparent CR), as with expletives and idiom chunks (i.e. items that resist movement to a θ -position), the coreferential copy in the embedded subject position is obligatory (compare the incompatibility of these items with paraphrasing by the thematic *acts like* predicate: **There acts like ... / *The shit acts like ...* on an idiomatic reading).

Other tests, such as those for control versus raising, then ought to confirm this split as well. For example, paraphrasing via passivization is only possible with raising predicates (which involve movement to a non- θ -position) – thus *John seems to have fixed the car* means about the same as *The car seems to have been fixed by John*, whereas *John tried to fix the car* is a rather different proposition from *The car tried to be fixed by John*. We therefore predict that such a passive paraphrase should be available only with true CR, not with apparent CR. This seems about right, as (13)-(14) show, thus confirming the thematic nature of the matrix subject position in the latter case.

(13) *True CR*

- a. John_i seems like he_i's fixed the car.
- b. = The car_i seems like it_i's been fixed by John.
- c. = It seems like John has fixed the car / It seems like the car has been fixed by John.

⁶Heycock (1994) is perhaps the only dissenting voice, claiming that CR is always of the latter type, i.e. that a coindexed copy is never obligatory, even with a nonthematic matrix subject.

For some speakers at least, (13b) paraphrases (13a) as *John* is the fixer and *the car* the fixee in both; both can be paraphrased as in (13c). The crucial point here is that, for such speakers, (13a) can be uttered having only seen the car and not seeing John; it's not necessarily a statement about John's appearance.

(14) *Apparent CR*

- a. The car seems like John has fixed it.
- b. \neq John seems like the car has been fixed by him.

Here again, *John* is the fixer and *the car* is the fixee in both variants, but the two sentences do not mean the same as each other, due to the additional *PSource* role that each receives when in the matrix subject position. Whereas *the car* is the perceptual source in (14a), *John* in (14b): (14a) is about John's appearance whereas (14b) is about the car's. (Those speakers who do not allow (13a) to be paraphrased by (13b) take *seem/appear* with CR to be necessarily thematic, i.e. always requiring a *PSource* subject.)

It should be noted, however, that CR and the judgements as to whether it is true (nonthematic) or apparent (thematic) are open to prodigious amounts of dialectal or interspeaker variation. In the following, I will restrict myself to what Landau calls the "restrictive" dialect of English, i.e. that which constitutes the 'true', 'genuine' CR that underlies the analyses of Potsdam & Runner (2001), Rezac (2004), Fujii (2005) and others. In this variety, a nonthematic CR subject (indicating 'true' CR) requires a copy in the embedded subject position, forming an A-chain (as per raising proper).⁷

2.2. Previous analyses: There seem like there might be some problems

Despite the similarities between true CR and standard raising, very few existing analyses treat CR as actually being derived by movement (i.e. by the same mechanism as raising proper), preferring to base-generate the subject in the matrix clause and implement the dependency with the embedded pronominal

⁷Like Potsdam & Runner (2001), the analysis I'll put forward in section 3 also allows for true CR to obtain with a thematic matrix predicate, i.e. movement to a θ -position in terms of the *Movement Theory of Control* (Hornstein 2001, 2003), leaving a subject copy in the embedded clause. The one-way implication, then, is from a nonthematic matrix subject to true CR (and thus the need for an embedded subject copy), not from a thematic matrix subject to apparent CR.

problem for movement accounts, namely why the lower copy is spelled out overtly in CR but not in standard raising (we return to this in section 3).

Although the lack of scope reconstruction with CR poses a significant problem for movement accounts, Fujii (2005), in a rigorous attempt at a genuine movement account of CR,⁹ provides evidence that CR does indeed reconstruct for *binding*:

(17) *True CR* (= movement):

- a. [Stories about [each other]_i]_j seem like [they_j have frightened [John and Mary]_i].
- b. [Pictures of his_i mother]_j seem as if [they_j will aggravate [every boy]_i].

(18) *Apparent CR* (= base-generation):

- a. *[Stories about [each other]_i]_j seem like [[John and Mary]_i like them_j].
- b. *[Rumours about his_i mother]_j seem as if [Bill expects them_j to aggravate [every boy]_i].

Fujii's argument is that, if we assume a Belletti & Rizzi (1988)-style analysis of the argument structure of psych-predicates, in which the experiencer starts out in a position c-commanding the theme as in (19), then the binding of the anaphor/variable is possible if true CR reconstructs after all.

(19) ... seem like [_{TP} [_α stories about [each other]_i] T [_{VP} (_{t_α}) frighten [_{VP} [John and Mary]_i t_{frighten} t_α]]]

By contrast, apparent CR, which does not involve movement, lacks these binding possibilities, as in (18). It may therefore be the case that true CR must involve IM (and thus copying) after all.¹⁰ In sum, base-generation approaches to the A-chains implicated in CR, such as Potsdam & Runner (2001) and

⁹Nevins (2004) also sketches a movement approach, albeit briefly, and without addressing the scope issue. Boeckx (2001) suggests that CR might be captured in terms of resumption, which (depending on the kind of resumption assumed) would treat the copy as a resumptive pronoun stranded by movement.

¹⁰Strictly speaking, insofar as the embedded subject copy in (17) is the PF realization of a full copy of the respective matrix *n*Ps (*stories about each other*, *pictures of his mother*, etc.), reconstruction for binding here is only in fact required within the embedded clause (i.e. from the position of *they* to the base position). This will allow us to reconcile the lack of reconstruction

Rezac (2004), face the problem of accounting for (17), whilst raising accounts like Fujii's have to say something about (15)/(16).

Base-generation-plus-Agree approaches to CR additionally face further problems which would be avoided if CR were treated as movement (IM). For example, such accounts fail to exclude examples of the kind in (20) from the domain of possible CR structures.

(20) *There seem as if [a lot of people are intelligent].

Further, in treating the obligatory coreference (variable-binding) relation between matrix subject and pronominal copy as resulting from Agree, accounts such as Rezac's face a problem common to all attempts to derive coindexation and anaphoric dependencies purely from ϕ -Agree (cf. Landau's 2004 analysis of obligatory control, Reuland 2005 on binding). The problem is that ϕ -features (Person, Number, Gender) alone are insufficient to narrow down the reference to single out a unique, unambiguous binder. Thus *himself* in *Bill hit himself* has to refer specifically to *Bill*, not to just any third-person singular male. The currency of ϕ -Agree is not fine-grained enough to provide accurate indexing information.¹¹ By contrast, identity comes for free from movement *qua* copying, i.e. Internal Merge, which creates multiple inscriptions (occurrences) of the exact same item (copies). Building on Hornstein (2001), I therefore take the simplest account of obligatory coreference (including anaphoric binding, pronominal/variable binding with sloppy identity, etc.) to be that which treats it a consequence of the one operation in our minimalist arsenal that we already know to deliver identity, namely Internal Merge. The question to which we shall return is whether the severing of copy identification (FORMCOPY) from IM, as in Chomsky (2021, 2023), is equally or even better able to capture these facts.

for scope in (15)/(16) with the availability of reconstruction for binding in (17) in sections 3-4 below.

¹¹Rezac (2004) thus has to appeal to special coindexation features as an additional kind of ϕ -feature for this purpose. Aside from this problem, there's the fact that a probe's features are uninterpretable at the semantic interface and thus deleted; their use for mediating binding, as in Agree approaches to anaphoric dependencies, is thus doubly dubious, as they cannot feed interpretation at SEM. See also Kratzer (2009), who argues that Agree is what we get precisely in the *absence* of binding; instead, a syntactic mechanism more akin to movement ('feature transmission') is required for semantic binding.

An IM approach to CR (such as Fujii's) is therefore to be preferred, insofar as the problems that stand in its way can be adequately addressed. As we will argue in the next section, the main technical problem standing in the way of a movement approach to CR, namely that it involves movement out of a transferred domain (in violation of the PIC), falls away under the conception of Transfer suggested in Chomsky (2008) precisely when an overt copy is left behind inside the lower phase, which circumvents the PIC-barred modification of transferred material (cf. Chomsky 2012a, 2013).

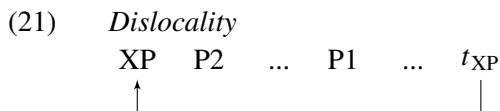
3. Overt copies, scope freezing, and identification through Internal Merge

Let us then consider in more detail the problems that CR poses both for raising/IM accounts in general, and for an analysis based on weak Transfer (Chomsky 2008, 2012a, 2013) in particular.¹² As desirable as it may be to put the raising back into copy raising, there are three major issues that need to be addressed in order for this to be a viable approach. Firstly, there is the question of how IM is possible at all, given that weak Transfer permits only probing of the transferred material (cf. footnote 12). In particular, cyclic linearization applies at the phase level and fixes the internal ordering of the transferred domain, so that further modifications are excluded (cf. Richards 2004, 2007) – spelled-out inactive material is internally frozen in place (though may be moved *en bloc* and thus interpreted elsewhere, as through piedpiping, roll-up movement, and so on; cf. Obata 2011). Secondly, there is the question of why CR, unlike standard raising, requires the embedded subject ‘trace’ position to be overtly pronounced – that is, why CR leaves an overt copy. Thirdly, we must account for why this kind of A-movement, unlike others, cannot reconstruct for scope (cf. (15)/(16)).

All three of these problems, I would like to contend, can be immediately understood if CR involves a direct (non-successive-cyclic) movement that skips the edge of the intermediate CP phase and directly targets the matrix

¹² Under the ‘weak’ conception of Transfer referred to here and assumed below, transferred material internal to a lower phase does not “disappear”, but is “immune from further changes” (Chomsky 2013:42); it may be “inspected”, but not “modified” (Chomsky 2012a:6), i.e. it may value a higher probe, but not be assigned a value by that probe or be moved, the latter restriction following from cyclic linearization, as elaborated below.

clause, as schematized in (21); for ease of exposition, let us call this *dislocal* movement.



Such a ‘dislocal’ derivation is only possible if Transfer of the CP phase (P1 in (21)), and thus the PIC-boundary between P1 and its complement, is weak (in the sense of footnote 12). This still leaves a (weak) PIC-boundary that CR must traverse, even though such boundaries normally only admit Search (e.g. Agree: access to a higher probe).¹³ My claim is that it is precisely because IM applies here to material that has already been (weak-)transferred that it must both leave an overt copy in the lower position and be (scope-)interpreted in the higher position. That is, both of these properties are Transfer-induced freezing effects at the interfaces: freezing of linear order at PHON/PF, and freezing of scope relations at SEM.

Turning first to the overt copy requirement, the realization of multiple copies along a movement chain is most naturally treated as a consequence of the linearization procedure (in the mapping from syntax to PF); see Bošković (2001), Grohmann (2003), Nunes (2004), and many others for pioneering models of multiple spell-out phenomena.¹⁴ In particular, we might assume that cyclic linearization (linearization by phase), as in Richards (2004, 2007), Fox & Pesetsky (2005), might force the realization of certain copies within a phasal domain. Fujii (2005) offers a cyclic linearization account of overt copy spell-out with CR, such that the pronominal copy is forced to be pronounced as the highest non-edge copy in its phase. Although it relies on certain

¹³Chomsky (2021:18) returns to the stricter, ‘strong’ view of Transfer in which even Search into a lower phase is barred by the PIC.

¹⁴Apart from the question of why the lower copy is realized at all, the fact that it is always realized as a pronoun warrants an explanation too. Plausibly, some ‘economy of spell-out/pronunciation’ principle might suffice to ensure that only enough features are realized as are required for satisfying the PF demand for realization (cf. Pesetsky 1998, Fujii 2005). For example, on the resumption approach of Boeckx (2001, 2003) and Nevins’s (2004) Case-peeling approach, this would just be the D head. If lower-copy spell-out with CR is indeed forced by PF considerations (as seems reasonable), then the PF-motivated last-resort realization of additional phonological material might well involve the insertion of functional items alone (i.e. no lexical roots, yielding a simplex pronominal).

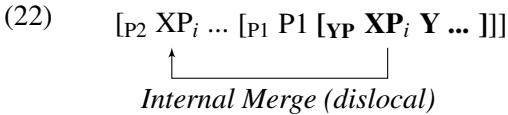
assumptions about the PIC which are not adopted here, his essential insight – that the lower copy is forced to be pronounced just if A-movement can skip the CP phase – is precisely the effect that we wish to achieve, and which I contend follows straight away from the nature of weak Transfer as described above.

On standard assumptions (cf. Chomsky 2007, 2008), valuation of the embedded C's ϕ -probe triggers (weak) Transfer of its TP complement. By cyclic linearization, all inactive items inside that TP are then ordered with respect to each other. It does not matter which particular linearization algorithm is assumed here; the point is simply that the embedded subject, whose Case has been valued by the embedded C, is part of that transferred inactive material. Its linear order with respect to the other items in the transferred TP is thereby fixed and cannot subsequently be altered.¹⁵ As Chomsky (2008, 2012a) suggests, this rules out (non-vacuous) movement of transferred material. Any such movement of this material to a higher phase would require a revisiting of the dead phase in order to update its ordering instructions so that the moved material could be pronounced in its new raised position instead of the lower position in which it was already linearized – the kind of countercyclic tampering that phases are designed to exclude, thus simplifying the computation. It is therefore not possible for a transferred subject in an expired phasal domain to undergo subsequent movement out of that domain and have its earlier spell-out overwritten such that it not be pronounced in the lower position. Once transferred and linearized, the transferred material cannot subsequently become a 'trace', i.e. have its spell-out (externalization) cancelled.

Viewed in this way, however, there is in fact nothing that prevents weak-transferred material from undergoing further IM – that is, nothing prevents us from *raising the dead*. All that follows is that any such resurrection (i.e. movement of transferred material) cannot affect the realization of the lower position. Such IM will therefore fail to result in the usual movement profile in which just one copy (the highest copy) is realized. Dead-raising occurs too late to go back and cancel or delete the externalization/spell-out orders that were already put in place for the lower phase. We thus predict that IM out of a (weak-)transferred domain will result in obligatory lower-copy

¹⁵Only by using the phase edge (i.e. successive-cyclic movement), which would require the subject to be active (e.g. *wh*-active), could the subject escape linearization in the lower TP; cf. Richards (2004), Fox & Pesetsky (2005).

externalization. Further, since this movement is not Transfer-triggered (i.e. it is not what Chomsky 2000 called *Indirectly Feature-Driven Movement* (IFM): the automatic displacement of active material to the phase edge to avoid Transfer), it will not involve movement via the lower phase edge. Rather, the relevant material is inactive, and IM of this material takes place long *after* the lower phase is transferred, hence bleeding movement via the edge. This ‘dislocal’ cross-phasal movement profile is schematized in (22), where XP is an inactive embedded subject that is transferred, linearized and pronounced as part of YP at P1, prior to creation of the higher copy at P2.



The overt lower copy of CR is thus entirely as expected if CR is raising the dead, i.e. movement of previously transferred inactive material which therefore proceeds directly (dislocally), skipping CP. We can adduce the usual kind of evidence for (absence of) successive-cyclic movement to support the conclusion that CR skips the CP edge, such as the lack of a position for floating quantifiers (following Sportiche’s (1988) analysis of stranded quantifiers):

- (23) a. The children (*all*) seem [CP/TP (*all*) to be happy].
 b. The children (*all*) seem [CP (**all*) as if they’re happy].

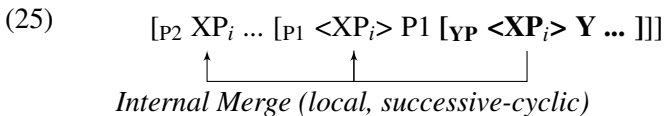
Only standard raising (23a), not CR (23b), exhibits evidence of a touchdown position at the left edge of the embedded clause. More convincingly, though, the evidence for edge-skipping dislocal movement from the PF-interface (freezing of the externalization of the lower copy) is corroborated by the scope-freezing effect at the semantic interface, which we can take to be the SEM equivalent and correlate of lower-copy spell-out/externalization, as I now argue.

The crux of Fujii’s (2005) analysis of lower-copy spell-out with CR is that the two realizations are each the head of a separate chain at PF. That is, linearization essentially treats CR as creating two chains, each of which is separately linearized and pronounced, due to the skipping of the intermediate edge position. We have derived this same result from weak Transfer and the movement of inactive material (‘raising the dead’). By not proceeding via the edge, a single movement chain comes to be treated as two separate chains for

interpretation at the interfaces – in effect, the cord is severed by not using the edge. This now speaks to the more general problem alluded to in section 1 to which Chomsky has repeatedly returned, namely the question of how copies (formed by IM) are distinguished from repetitions (formed by independent instances of external merge (EM) of the same lexical item), as in (24).

- (24) a. He arrived he. (copies; single realization)
 b. He thinks he is invincible. (repetitions; both are realized)

Prior to Chomsky (2021) and the introduction of FORMCOPY, Chomsky’s conjecture was as stated in the opening quote in section 1, namely that the difference between (24a) and (24b) is readily “detectable at the phase level” – essentially, the phase head ‘knows’ whether a given occurrence is created by EM or IM (see also Chomsky 2012a:5). How does it know this? Chomsky (2019:43-4) appeals to the “duality of semantics” and theta-positions to make the requisite local distinction. Another possibility is that the relevant difference between (24a) and (24b) – and the difference that the phase head has local access to in deciding which (if any) copy to pronounce – is whether or not the phase edge has been used. Two inactive repetitions of the same item in two separate phases will not be linked via the intermediate phase edge (cf. (22)), and so each will receive a separate realization – each is a separate candidate for linearization.¹⁶ By contrast, if the two items are created by IM and the edge is used (such as the unaccusative vP edge in (24a)), then the relevant item has undergone IFM as an active element and is not yet ready for Transfer, linearization and externalization in the lower phase. This is the standard non-local, cross-phasal dependency profile, as schematized in (25), where <XP> is an active lower copy that escapes Transfer and linearization at P1.



Crucially, if IM proceeds in a dislocal manner, as in (22), i.e. not via the edge, then this will look like an independent repetition (EM) at the phase level, at least for such purposes as copy deletion – dislocal movement will then be treated in the same way as (24b), not (24a).

¹⁶See Collins & Groat (forthcoming) for other possibilities.

Dislocal movement, then, essentially produces repetitions as far as the interfaces are concerned. Although generated by IM, the skipping of an intermediate phase edge severs the link, creating two identical items in disconnected positions. The result at PHON, as we have seen, is multiple copy realizations. At SEM, it is scope freezing, as in (15)/(16), due to the absence of a path, via linked phase edges, to a lower reconstruction site. The higher copy in (15a) and (16a) can therefore indeed be formed by IM (and thus identity of reference imposed at the higher phase level), but whilst the higher phase ‘knows’ that it has sourced X internally, from the existing workspace (rather than from the lexicon), and thus ‘knows’ that X is not to be interpreted as an independent repetition for referential purposes, this nevertheless comes too late to cancel or alter any interpretive PHON/SEM instructions already established for X in the lower, transferred phase.

If, as we are claiming, dislocal IM is essentially treated as non-movement (EM) at the two interfaces for the purposes of linearization and scope/reconstruction, creating two separately interpreted ‘chains’, then the question arises as to why we would want to treat CR as IM at all. Instead of raising, FORMCOPY could more straightforwardly provide the missing link between the two chains, yielding the requisite identification of the matrix and embedded subject positions. Let us consider this possibility in more detail.

4. FORMCOPY-Raising?

At first blush, FC seems well suited to deliver a simple and transparent account of (true) CR; its properties, reviewed in section 2, follow immediately. The lack of (A-)reconstruction for scope in (15)-(16) is as expected if the two clauses are linked only by FC, with separate EM-insertions of the matrix and embedded subjects. Indeed, Chomsky (2023:10) offers just such an account of the difference in reconstruction possibilities between (26a) and (26b):

- (26) a. One interpreter each seemed *t* to be assigned to the diplomats.
 b. *One interpreter each tried PRO to be assigned to the diplomats.
 (Chomsky 2023:10 (4))

Only the IM’d instance of *one interpreter*, i.e. the one in (26a), has a reconstruction site (*t*) in which it can be interpreted below *each*. PRO is an M-gap (a copy formed by FC) that is “inserted in-situ by EM”; it is otherwise

unrelated to the matrix subject. On an FC account of (true) CR, the latter would similarly instantiate an M-gap and thus be expected to pattern with (26b), rather than with (26a); hence (15)-(16) fall into line.¹⁷ Reconstruction for binding (cf. (17)) would follow from the interpretive identity imposed on copies through FC (Chomsky 2019, 2021 calls this the principle of *Stability*); the embedded subject can then reconstruct for binding within the embedded clause (see footnote 10 above).

The fact that the ‘M-gap’ in CR is overt (externalized), rather than a trace (deleted), would follow from the same considerations of cyclic linearization that yielded this effect on the IM ‘raising-the-dead’ approach put forward in the previous section. Indeed, we might make the generalizing assumption that all cross-phasal FC (by contrast with phase-internal FC) will be associated with an overtly realized, rather than empty or deleted, M-gap.

It is here, however, that we start to run into problems with the FC approach to CR, and ultimately with FC more generally. Chomsky (2023) requires that FC be strictly limited to the phase, i.e. to be PIC-constrained, a consequence of its being a Search operation (cf. footnote 13 above); Chomsky (2023:6 (fn.13)) states explicitly that FC observes the PIC. This allows Control (obligatory PRO) to be analysed as FC (Chomsky 2021, 2023, taking non-finite Control CP to be non-phasal), but would bar an FC account of CR. There are, moreover, strong empirical arguments for this restricting of FC to the internal phase domain, and these relate to the attendant question of whether FC is optional (Chomsky 2021) or obligatory (Chomsky 2023), a position which is forced to shift across those two papers. It is worth following the logic through in some detail.

The problem is simple transitive clauses, as in (27) (Chomsky 2021:25).

(27) John saw X (where X = John)

If FC applies obligatorily, then the result is **John saw*, with a reflexive interpretation. Instead, we get *John saw John*, where the two *Johns* are distinct, i.e. repetitions, referring to different individuals. The conclusion Chomsky reaches is that “like other operations, FC is optional” (*ibid.*). The illicit option (i.e. application of FC, yielding **John saw*) is then ruled out by a particular

¹⁷Chomsky here makes the clarifying generalization that reconstruction (interpretation) is in the theta-position. True CR would challenge this, at least insofar as it involves a non-thematic (non-*PSource*) matrix subject, as it does for some speakers (see section 2.1).

formulation of “Theta Theory” (given in Chomsky 2021:21): *John* here would purportedly be receiving two theta-roles from the same assigner, which is barred.

However, Chomsky (2023) reverts to the more standard view of argument structure in which V (here *saw*) assigns only the internal theta-role; the external role is assigned by the VP (i.e. by {V, Object}; equivalently by v^*), and so the unavailable option for (27) is no longer ruled out by Theta Theory (which he then dispenses with altogether as a departure from SMT). Addressing such configurations as (27), Chomsky (2023:8-9) devises an approach to IM that essentially segregates the A- and A-bar systems, placing theta-marked phrases into a “box” reserved for higher phases, thereby removing them from consideration for Merge to the thematic external argument (EA) position. The result is that *John* and X in (27) cannot be related by IM. But this does not address, much less solve, the problem discussed above for (27), namely why two instances of EM of *John*, one in the object position, one in the EA position, cannot be identified by FC, which after all is conceived precisely to operate independently of Merge (internal or external). We get the first hint of how this is to be accounted for in footnote 29 of the cited paper, in which Chomsky states that **many people like themselves*, a would-be FC configuration with deletion of the lower copy, is “barred by PIC” (Chomsky 2023:15 (fn. 29)). That is, FC in configurations like (27) – simple transitive clauses – must be blocked by a phase boundary, presumably the one between v^* and its complement VP. This is then stated more explicitly in a discussion of the contrast between (27) and (28), “a single phase” (Chomsky 2023:16):

(28) John₁ [arrived ~~John~~₂]

Taking the “verbal phase [to be] v^* with its internal arguments”, with EA “enter[ing] in the next phase”, the contrast between (27) and (28) now follows, with “PIC blocking any relation that crosses the PIC barrier, in particular the copy relation [FC]” (Chomsky 2023:16 (fn.30)).

In fact, for (29) to follow, it is furthermore crucial that FC be *obligatory*, not optional, in order to force deletion of *John*₂. As pointed out above, this reverses the position in Chomsky (2021), in which FC was concluded to be optional. Now, Chomsky (2023:14 (fn.28)) pivots to the opposite assertion, namely that “FC applies obligatorily (as is natural, given that it simply identifies a structural relation)”, which in turn allows FC to be delisted as an operation in

its own right (cf. footnote 1). FC must in any case be obligatory in order to block lower-copy externalization of the M-gap in Control configurations and thus ensure a null 'PRO', with no possibility of *John*₂ being overtly realized in *John*₁ tried ~~*John*~~₂ to win.

In sum, we arrive at two assumptions that must be made for FC to be workable at all: (i) FC is PIC-constrained, unable to cross a PIC boundary; (ii) FC is obligatory. At least the first of these renders FC incompatible with Copy Raising, which crosses a finite CP phase boundary.

One might seek to rescue an FC account by postulating a weaker form of FC, perhaps applying at the interface rather than within the narrow syntax, with the opposite properties to syntactic FC: essentially, this would be an interpretive procedure that crosses phase boundaries and applies optionally; as suggested above, being cross-phasal, it would yield an overt (externalized) rather than empty (deleted) M-gap/copy.¹⁸ The problem, however, is (as always) the simple cases, as in (27). Consider the even simpler pronominal variant, (29).

(29) He_j [saw him_{i/*j}]

As above, the option of *not* applying FC simply yields two repetitions, as in the available construal, i.e. *He* and *him* are independent instances of EM and thus interpreted disjointly. But this is not enough. To yield the obviation effect (i.e. Principle B), FC cannot just be optional; it must obligatorily *not* apply. There is no possibility, even as an option, for the interpretation *He* = *him* in (29), yet nothing excludes the application of a Merge-independent FC to these two instances of EM, identifying them as copies. FC thus seems to run into problems more generally, beyond CR, at least if it is to be extended to Principles A/B of the Binding Theory (cf. footnote 2).

The simplest route to capturing the full range of facts considered above is surely based on the opposite implication: not from absence of FC to EM (i.e. repetitions), but from EM to absence of a copy relation, and from IM to the presence of one. That is, we need to reassociate the copy relation with IM. Given that tight association, there is no need (indeed, no place) for a dedicated procedure of copy-formation, FORMCOPY, divorced from Merge. Instead, there is just IM, which remains the simplest and most natural source of identity in the system (Hornstein 2013). Richards (2020) offers an approach

¹⁸This has actually been proposed in a GLOW Asia XIII (2022) abstract, entitled "On Two Types of Form Copy", whose author I have been unable to identify.

to Principles A and B from this perspective, deriving the obviation effect in (29) from respective derivational choices of IM and EM. If tenable, the analysis of CR proposed in section 3 provides further demonstration of this IM-identity connection.

5. Conclusion

The preceding sections have sought to offer indicative arguments, proceeding from a case study of English copy raising, that an independent mechanism of copy identification such as Chomsky's (2021, 2023) FORMCOPY may be redundant, and indeed unworkable, both in analysing this particular cross-clausal dependency and for copy relations in general. In terms of referential identity and the difference between copies and repetitions, we have made crucial use of the phase edge to draw this distinction. We have exploited the technical possibility of 'dislocal' movement under weak Transfer, which circumvents the phase edge, thereby yielding occurrences that fall somewhere between copies and repetitions: they are treated as repetitions for certain interpretive purposes at the interface (those that are part of the lower phase's computation, prior to movement taking place), but they are repetitions of a referentially identical nature, effectively copies, for binding purposes. The following three-way typology emerges:

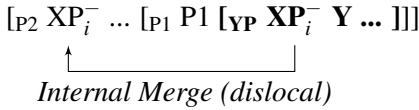
- (30) a. Internal Merge, within a phase or via the phase edge, produces *copies* (single interpretation at each of PHON and SEM):¹⁹

$$[P_2 \text{ XP}_i^- \dots [P_1 \langle \text{XP}_i^+ \rangle P_1 [\text{YP} \langle \text{XP}_i^+ \rangle \text{Y} \dots]]]$$

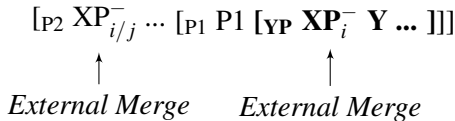
Internal Merge (local, successive-cyclic)

¹⁹In (30), a + superscript indicates activity, and a – superscript indicates inactivity; heads P1 and P2 are phases, and YP is the nonphase complement of the P1 phase head. Boldface indicates a domain that has been transferred upon valuation of P1. <Angled brackets> indicate an unpronounced lower copy.

- b. Dislocal movement of inactive material under weak Transfer produces *identified repetitions* (each separately linearized at PHON and separately interpreted for scope at SEM).



- c. External Merge produces *incidental repetitions* (each separately linearized at PHON and separately interpreted for scope and binding/reference at SEM).



It is (30b), the new possibility explored in section 3, which is where FC may yet have a distinctive role to play. If the problems brought out in section 4 can be overcome, it could well offer an alternative account of identified repetitions, including CR, in terms of M-gap configurations. As we have argued, however, even here, IM (*qua* ‘raising the dead’) may remain the simpler analytical variant favoured under SMT – as per our opening quote.

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A cyclic, phase-based approach to coordination structures

Luise Schwarzer & Philipp Weisser*

Abstract

A number of recent papers (Neeleman et al. 2023, Ke et al. 2023, Schwarzer & Weisser 2024) have discussed conflicting evidence in English and German as to whether coordination structures can be analyzed as uniformly binary branching and universally hierarchical. Against the background of this discussion, the paper at hand sets out to (a) evaluate the different technical options that we have at this point and (b) propose a restrictive, uniform account of English and German that rests on the assumption that coordination structures are binary branching. Processes seemingly indicating flat structures can and should be reanalyzed as referencing the absence of intermediate cycles rather than the absence of syntactic hierarchy.

1. Introduction

The literature on the syntactic structure of coordination contains a long-standing discussion about the question as to whether coordination is symmetric/flat or asymmetric/hierarchical in nature. A flat structure such as the one below in (1) has been argued for by i.a. Chomsky (1965), Dik (1968), Borsley (2005), whereas a hierarchical structure has been proposed by Munn (1993), Zoerner (1995), Johannessen (1998), Zhang (2010), Weisser (2015).¹

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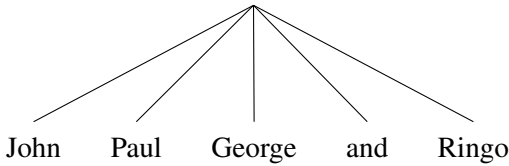
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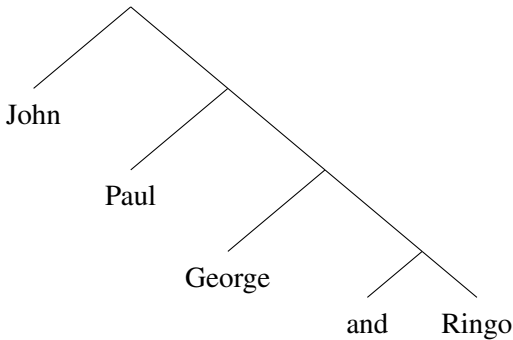
STRICT CYCLING, Universität Leipzig 2024

¹There is of course a wide variety of asymmetric proposals not all of which agree with the structure in (2). For overviews, see Progovac (1998a,b), Nevins & Weisser (2019).

(1)



(2)



While most works within the Minimalist Program seem to converge on the asymmetric, binary branching structure in (2), a number of recent developments have cast some doubt on the empirical validity of the arguments put forward for it. In the following sections, we will briefly review both sides of the empirical discussion, outline two possible analytical conclusions, and propose a version of the more ambitious one that attempts to reconcile the seemingly conflicting properties.

1.1. Recent arguments for flat structures

A traditional argument for hierarchical coordinate structures comes from variable binding: the initial conjunct seems to asymmetrically c-command the second one, leading to a binding asymmetry, (3).

- (3) a. every man_i and his_i dog
 b. *his_i dog and every man_i (Munn 1993)

In a recent paper, Ke et al. (2023) argue that the contrast in (3) is not indicative of a structural asymmetry but is rather an instance of logophoric binding. They

show that inanimate elements, which can be binders in proper binding relations (*'Every picture_i goes in its_i frame'*) but cannot function as logophoric centers, cannot bind a reflexive pronoun in a coordination, (4).

- (4) *They couldn't stop thinking about the castle_i and the pictures of itself_i.
(Ke et al. 2023)

They also observe that the alleged binding relation only holds between the first and all immediately following conjuncts, and can be blocked by an intervener, unlike proper binding configurations. The first conjunct, for example, cannot bind a pronoun in the third conjunct if a second conjunct that is not involved in the binding relation intervenes, (5b). In a structure like (2), the first conjunct should c-command the second and the third one alike and thus, binding should be possible.

- (5) a. The board is discussing each tutor_i, their_i students and the textbook.
b. *The board is discussing each tutor_i, the textbook and their_i students.
(Ke et al. 2023)

This indicates that the alleged binding asymmetries in coordination are due to logophoricity rather than binding and since logophoricity does not require c-command, Munn's data are not indicative of a syntactic asymmetry. This argumentation only disputes Munn's (1993) argument based on Principle A but not the one based on Principle C, for which Munn (1993:16) gives the following example:

- (6) *He_i and John_i's dog went for a walk.

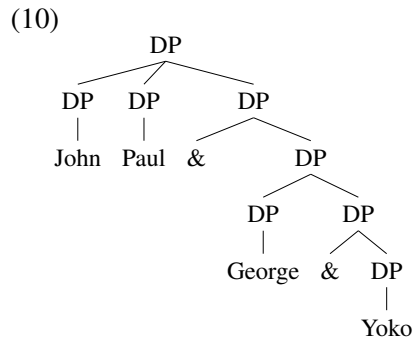
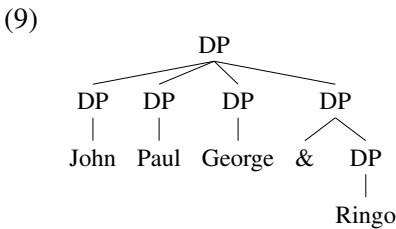
We will, for now, merely conclude that binding seems to yield contradictory results and a more detailed investigation of these facts seems to be required. It is also worth noting that German seems to pattern differently from English concerning Principle B in these configurations. While Munn (1993) judges the English translation of (7) grammatical, the German counterpart is unquestionably bad.

- (7) *Johns_i Hund und er_i gingen spazieren.
John's dog and he went for a walk
'John_i's dog and him_i went for a walk'

The second argument concerns elements that seem to be sensitive to the number of conjuncts like *both* and *respectively* (Borsley 1994, 2005). Borsley shows that elements like *both* can occur with three-part coordinations only when they can be parsed into subgroups, such that the top-level coordination consists of exactly two conjuncts, (8a-b). *Both* is incompatible with a three-conjunct structure like (8c). Neeleman et al. (2023) argue that since (8c,d) cannot be coerced into a binary coordination, they must constitute structures in which there are truly three conjuncts.

- (8) a. both [Tom and [Dick and Harry]]
 b. both [[Tom and Dick] and Harry]
 c. *both Tom, Dick and Harry
 d. *Tom, both Dick and Harry (Borsley 1994: 237)

They use these data as confirmation for their analysis of coordinate structures: Neeleman et al. (2023) propose that coordination is an instance of mutual adjunction of coordinands and as such flat and not necessarily binary. They assume further that the coordinator is a functional head attached to the last coordinand in the flat coordination sequence as shown in (9). Crucially, however, Neeleman et al. (2023) propose that, since syntax is inherently recursive, nothing prohibits the generation of an asymmetric, subgrouping structure as in (10) in addition to (9).



The structures (9) and (10) differ in the number of overtly realized coordinators. Since Neeleman et al. (2023) assume that a coordinator attaches to the final conjunct in each level of embedding, the subgrouping structure (10) can be diagnosed by having more than one overt coordinator. These structures also

differ in that the top level coordination consists of three conjuncts in (10) and of four conjuncts in (9). Thus, (8a), (8b) with two overt coordinators look like (10) underlyingly, (8b) being the left-branching version of (10), while (8c) and (8d) look like (9). Crucially, in a flat coordination structure with optional subgrouping, a contrast as with *both* can be expressed, but in an asymmetric structure where subgrouping is, in a sense, the standard case, it is much harder or even impossible to express that difference.

A second argument for the existence of (9) comes from adverbial and adjectival modification with three-conjunct coordinations. Neeleman et al. show that, with only one coordinator present (and hence no structural subgrouping), no non-trivial proper subset of conjuncts can be in the scope of the modifier, see (11) and (12).

(11) Mary will buy yellow crocuses, pansies and tulips.

- a. [[yellow crocuses] pansies and tulips]
- b. [[yellow crocuses, pansies and tulips]]
- c. *[[yellow crocuses, pansies] and tulips]

(Neeleman et al. 2023:72)

(12) Mary will buy crocuses, yellow pansies and tulips.

- a. [[crocuses, [yellow pansies] and tulips]]
- b. *[crocuses, [yellow pansies and tulips]]

(Neeleman et al. 2023:71)

In a binary branching, asymmetric structure like (2), it should be possible to adjoin an adjective to an intermediate subconstituent. This subgroup could be the initial conjunct, as tested in (11), or the final one, as tested in (12). The unavailability of the readings where the adjective scopes over a subgroup in (11c) and (12b) suggests that there is no constituent that includes two of the DPs but excludes the third, which is unexpected in the asymmetric structure in (2). In sum, it seems that data from adjectival modification and elements like *both* pose problems for the binary branching, asymmetric analysis of coordinate structures. However, novel observations from German suggest that the case for (the possibility of) flat coordinations is not as straightforward as it seems so far.

1.2. Counterarguments in Schwarzer & Weisser (2024)

Schwarzer & Weisser (2024) provide arguments from coordinations with three or more conjuncts with adversative coordination and subword deletion that show that Neeleman et al.'s (2023) analysis does not make the right predictions for German.

The first argument concerns the distribution of negation with adversative coordination of the corrective flavor. Horn (1989) and Vicente (2010) note that corrective *but/sondern* requires sentential negation in the first conjunct, (13).

- (13) a. Es ist nicht wahrscheinlich, sondern lediglich vorstellbar.
 It is not likely but merely imaginable.
- b. *Es ist unwahrscheinlich, sondern lediglich vorstellbar.
 It is unlikely but merely imaginable.

With three or more conjuncts, the pattern of where negation surfaces is exactly as we would expect from a cyclic approach. The negation requirement is introduced by the subconstituent that is headed by the corrective coordinator (*sondern*). Within this phrase, call it *sondernP*, the first conjunct must contain a negation, parallel to (13). In a cyclic approach, we would expect that the requirement for a negation falls on the penultimate conjunct in a three-conjunct configuration, since this conjunct is the first one within the &P headed by *sondern*. This is indeed what we find, (14).

- (14) a. Es ist [[etwas unplausibel], [*sondernP* [nicht wahrscheinlich],
 It is somewhat implausible, not likely
 sondern [lediglich vorstellbar]]].
 but merely imaginable.
- b. *Es ist [[nicht wahrscheinlich], [*sondernP* [etwas
 It is not likely, somewhat
 unplausibel], sondern [lediglich vorstellbar]]].
 implausible but merely imaginable.

In Neeleman et al.'s (2023) approach, (14) would constitute a flat coordination, since there is only one overtly surfacing coordinator (*sondern*). In a flat structure, one would have to stipulate that the conjunct immediately to the left of *sondern* must contain a negation. It is unclear why linear adjacency should

play a crucial role here, especially because it is the conjunct to the right of the coordinator that forms a constituent with it.

Their second argument comes from subword deletion in compounds, also called Suspended Affixation. This is a phenomenon where a morpheme can take scope over a coordination despite surfacing only in one conjunct. Deletion of part of a compound is possible in the initial or non-initial conjunct in German, see (15).

- (15) a. [~~Apfel-bäume~~ und Kirsch-bäume]
apple-trees and cherry-trees
'apple trees and cherry trees'
- b. [Herren-gürtel und ~~Herren-schuhe~~]
gentlemen-belts and gentlemen-shoes
'belts and shoes for men'

In coordinations with three conjuncts, this type of deletion can affect all three conjuncts, (16a), or, crucially, only two of them. In (16b,c), subword deletion applies only to the rightmost two conjuncts. This suggests that this type of ellipsis can pick out a subconstituent in the coordinate structure, see (18), (19) below, contrasting with the impossible subgrouping in English in (12b) above.

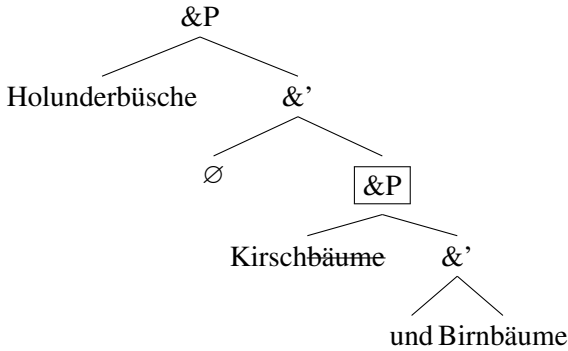
- (16) a. [Apfel-bäume, Kirsch-bäume und Birn-bäume]
apple-trees cherry-trees and pear-trees
'apple trees, cherry trees and pear trees'
- b. Holunderbüsche, [Kirsch-bäume und Birn-bäume]
elder.bushes cherry-trees and pear-trees
'elder bushes, cherry trees and pear trees'
- c. Damenhandtaschen, [Herren-gürtel und ~~Herren-schuhe~~]
lady.handbags gentlemen-belts and gentlemen-shoes
'women's handbags, men's belts and men's shoes'

Since there is only one overt coordinator in (16), this should be a flat structure in Neeleman et al.'s analysis. They would expect that a deletion process should affect either all or none of the conjuncts. The pattern observed in German is not predicted by a flat approach. Note that an alternative analysis in which linear adjacency, not (sub-)constituency, is the relevant configuration makes wrong predictions, too: subword deletion is impossible on the leftmost two conjuncts, (17).

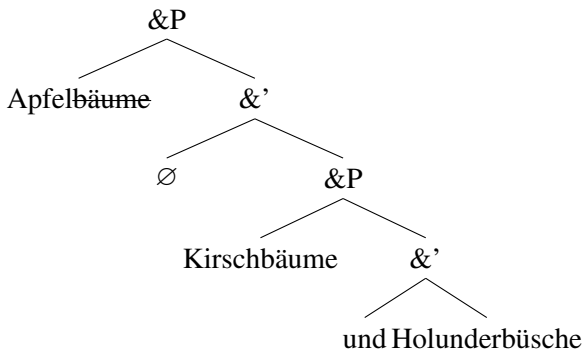
- (17) a. *[Apfel-bäume, Kirsch-bäume] und Holunderbüsche
 apple-trees cherry-trees and elder.bushes
 b. *[Herren-gürtel, Herren-schuhe] und andere Lederwaren
 gentlemen-belts gentlemen-shoes and other leather.goods

The contrast between (16) and (17) can be accounted for if the underlying structure of the coordination is complex and binary branching: Suspended Affixation applies cyclically to a constituent ($\boxed{\&P}$) in (18), from the bottom up, but cannot apply to a non-constituent, (19).²

- (18) ✓Ellipsis inside an XP



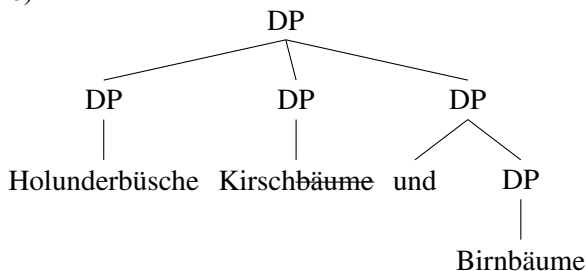
- (19) ✗Ellipsis in a non-XP



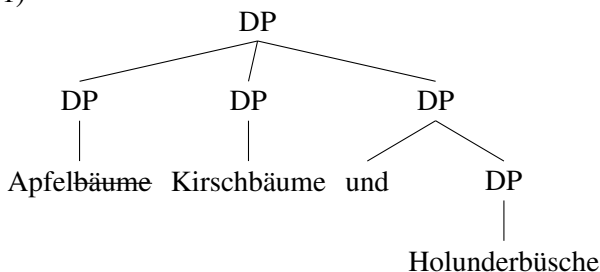
²The attentive reader probably wonders how a binary branching analysis can exclude (17) if a left-branching structure is in principle possible. See fn. 6.

A flat adjunction structure where no constituent c-commands another (Neeleman et al. 2023:59) would provide us with no handle to explain why (20) is grammatical but (21) is not.

(20)



(21) *



In sum, subword deletion patterns in compounds and adversative coordinations in German reveal an internal hierarchy in coordinate structures with only one overt coordinator, contrary to what is predicted in Neeleman et al. (2023).

2. The falsification problem of the weak account

We arrive at conflicting evidence: while the coexistence of hierarchical and flat coordination structures seems to be well-motivated for English, the evidence does not carry over to German. Since we view it as implausible to assume that the occurrence of a fundamental operation such as mutual adjunction could be language-specific, we are left with two possible conclusions: (A) We could take our argumentation to indicate that Neeleman et al.'s (2023) approach is wrong, and that coordinate structures are uniformly binary. On the other hand, (B), our observations actually only show that subgrouping is possible without a second overt coordinator, i.e., that Neeleman et al.'s diagnostic for

flat structures does not work for German. The German data are still compatible with an approach in which coordinations can be either flat or hierarchical if the distribution of the coordinators is accounted for in another way.

As far as we can tell, however, the approach to coordinator placement in Neeleman et al. (2023) does not allow for minimal manipulation of the sort that would be required for German. Neeleman et al. (2023) devise a placement algorithm couched in Optimality Theory that allows for a certain amount of flexibility of coordinator placement in flat structures. Depending on the different constraint rankings, languages might either opt to not mark any conjunct (which amounts to well-attested asyndetic coordination patterns), to mark every non-initial conjunct for coordination (a pattern exemplified by Arabic for example) or to mark only the final conjunct (as in English). Importantly however, what is needed to accommodate the coordinator placement in German is not flexibility in flat structures, it is flexibility in hierarchical structures. It seems that speakers of German do not need to have an overt second coordinator in cases of subgrouping. The OT-algorithm in Neeleman et al. (2023) does not provide for flexibility in these cases at all. All of the constraints only refer to the relations within a single coordination structure. Whether that coordination structure is embedded into another one or not, cannot ever play a role for the coordinator placement. It thus seems that the system cannot be amended in a straightforward way to accommodate the pattern.

Furthermore, we want to note that even if it did, we would still face a heuristic problem. In the light of the data summarized above, the weak account, according to which flat and hierarchical structures exist alongside each other, suffers from a grave falsification problem. If it is the case that the number of coordinators in German is not a reliable indicator to identify subgrouping (i.e. syntactic hierarchy), then we lose our tertium comparationis. In other words, if German can show flat or hierarchical structures in coordination contexts and we do not have the diagnostics to tell them apart, then it seems that anything goes and our theory does not make any testable predictions anymore. This in turn means that it cannot be falsified. We take this as reason enough to endorse option (A) and pursue an approach that tries to defend the stronger claim that coordination structures are universally hierarchical and binary branching.

3. The strong account in terms of phases

In what follows, we will propose an approach that pursues the strong claim that coordination structures are universally binary branching. The approach builds on an idea from the work by Wagner (2005, 2010) on the syntax-prosody interface but is fleshed out in a formal syntactic way.

3.1. Subgrouping references cycles, not hierarchy

Wagner (2005, 2010) discusses the prosodic grouping in complex coordination structures with three or more conjuncts. He notes that there is a strong correlation between semantic subgrouping and prosodic grouping in these cases. In (22a) and (22b), we see asymmetric pauses corresponding to different semantic subgroupings. But of course, we also get a pattern with a flat intonation corresponding to a structure without subgrouping (22c).

- (22)
- a. A || and B | and C = [A and [B and C]]
 - b. A | and B || and C = [[A and B] and C]] (Wagner 2010:186)
 - c. A | ∅ B | and C = [A and B and C]

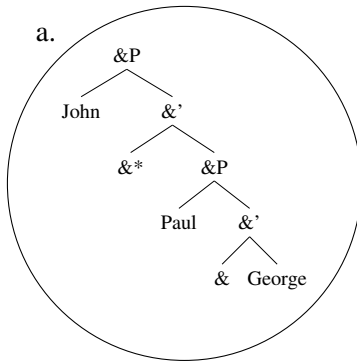
He addresses the question as to how to accommodate a flat intonation in (22c) with a binary branching structure and his idea is that the difference between subgrouping and non-subgrouping structures should not be encoded by means of flatness *vs.* hierarchy but rather by locality domains.

Crucially, Wagner notes that these domains are also semantically meaningful in that they indicate semantic subgrouping (or in his terms: “*they have to be semantically associative*”, Wagner 2010:196). Thus, as they relate semantic and prosodic properties, it is plausible to assume that these locality domains are instances of syntactic phases.³ We implement this in the following way: First, we assume that coordination structures are created by a coordination head &, which comes in a strong and a weak version. We represent the strong version with an asterisk &* and the weak version without. The strong version is a phase head and triggers spell-out, resulting both in a semantic grouping of its contents at LF as well as a flat prosody of all its content at PF. The entire coordination structure is obligatorily a spell-out domain (Weisser 2015,

³Wagner (2005, 2010) discusses the idea that the locality domains are defined by semantic criteria. We think, however, that it is more plausible to assume a syntacto-centric approach where the presence of a syntactic phase boundary impacts interpretation and prosody alike.

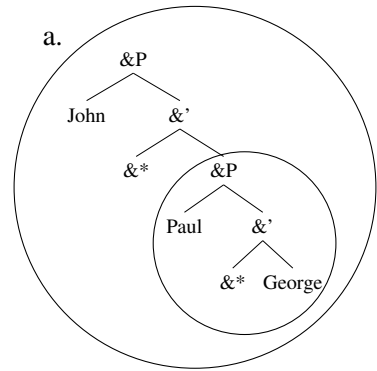
Bošković 2020a,b) and thus the highest head in the structure is of the strong type. Lower &-heads in complement position can be strong or weak.⁴ The latter will lead to a subgrouping reading and a non-flat prosody. The former will result in a flat prosody and a reading without semantic subgrouping:

(23) Single-cycle derivation
⇒ flat prosody



b. John | Paul | and George

(24) Two-cycle derivation
⇒ non-flat prosody



b. John || and Paul | and George

In essence, we propose that the difference between subgrouping and non-subgrouping readings of coordination is not to be encoded by means of flat *vs.* hierarchical structure but by means of locality domains. In the following, we will show how this explains the properties of English and German coordinate structures discussed in section 1.

3.2. Accounting for the distribution of coordinators

We start with the distribution of coordinators, which Neeleman et al. (2023) assume to be the most straightforward diagnostic for hierarchical *vs.* flat structures. Since in our account, all structures are hierarchical, we cannot follow

⁴Crucially, single-cycle derivations are not possible with left-branching structures. This must be due to the difference between specifiers and complements, where only the latter can but do not have to be a phase. Structures involving complex specifiers must necessarily involve different workspaces (see discussion in Uriagereka 1999, Phillips 1996, Wagner 2005) and by assumption have to be phasal.

the same strategy. Instead, we assume that the distribution of coordinators is governed by the following impoverishment rule:

$$(25) \quad \& \longrightarrow \emptyset / \&P$$

The rule in (25) states that we delete the coordination head in the context of another coordination head. Somewhat informally, we might think of this rule as a haplology effect.⁵ It is important for our purposes that the context of this rule is restricted to sisterhood: A coordination head whose sister is another coordination phrase is impoverished. Prima facie, this allows us to capture two configurations: First, it allows us why the lowest coordinator in the structure is always pronounced, namely because it can never be the sister of another coordination phrase. In (23) for example, only the higher coordination head can be deleted as it is the only one whose sister is a &P. Secondly, it allows us to capture the fact that left-branching structures (e.g. [_{&P} [_{&P} A [& B]] & C]) do not allow for deletion because in these cases, the embedded coordination phrase is not the sister of the higher coordination. As a result, subgrouping structures as in [*John and Yoko*] and *George*] will necessarily be pronounced with two coordinators.⁶

The last remaining question is whether the higher coordination head in (24) can be impoverished. This is where the difference between English and German comes in. In English, we argue, that the locality domain disrupts the context and thus (25) cannot apply. As a result, right-branching subgrouping structures such as [*George*] and [*John and Yoko*] will also need to be pronounced with two coordinators.

In German, the situation is slightly different as we have seen that German allows for a subgrouping structure even with one coordinator as evidenced by the diagnostics in Schwarzer & Weisser (2024). We assume that German can

⁵See Nevins (2012) for an overview of these effects at different stages of the derivation.

⁶This also explains the ungrammaticality of (17). While subword deletion is possible in a subgroup in specifier position, deletion of the coordinator is not, since it does not have a &P sister. Such left-branching structures are only possible with two overt coordinators, (ib).

- (i) a. *[_{&P} [_{&P} Apfel-bäume \emptyset Kirsch-bäume] und Holunderbüsche]
 apple-trees cherry-trees elder.bushes
 b. [_{&P} [_{&P} Apfel-bäume und Kirsch-bäume] und Holunderbüsche]
 apple-trees and cherry-trees and elder.bushes

apply the impoverishment rule despite the intervening phase boundary. As a result, we can have subgrouping with one coordinator only.

One might wonder how this difference comes about. One reason might be the timing and, as a result, a difference as to what kind of structure this rule has access to. In a standard phase-based model of cyclic spell-out, the postsyntactic component should not have access to material in other spell-out domains. As such, the English pattern might be considered expected as rules like (25) cannot apply across domains. However, it has been proposed that, in some cases, impoverishment rules can apply in the syntax or upon spell-out (see e.g. Keine 2010).⁷ If that were the case in German, then the rule in (25) could potentially apply before spell-out of the lower &P. In that case, spell-out would counterbleed the application of the impoverishment rule and the result would be that German can delete higher coordinators even in right-branching subgrouping structures.

Note however, that this is not obligatory in German. So either it is the case that the rule in (25) is optional in German to begin with or that the timing of application is more variable than it is in English.

3.3. Accounting for flat properties

Let us now see how the stronger approach, according to which coordination structures are universally binary branching, fares with respect to the arguments discussed in Section 1.

We start with the data involving *both* and *respectively*, which according to Borsley (2005) tell us whether the highest level of coordination consists of two or more conjuncts. However, in the approach at hand, a similarly straightforward solution seems tenable. All we have to do is count how many conjuncts there are *in the current cycle*. In a single cycle derivation with more than two conjuncts (23), an element like *both* is not licensed, whereas in a derivation with two cycles like (24), it is. The reason is that due to the intervening spell-out domain, material inside the lower spell-out domain is not accessible and the spell-out structure counts as one semantic unit for the calculation as to whether *both* is licensed.

Next, we turn to the modification data from Neeleman et al. (2023), which seemed to indicate that, in English, there is no adjunction site for adjec-

⁷For an overview and discussion see Keine & Müller (to appear).

tives/adverbs in the intermediate position of a seemingly flat structure of three-way coordinations. In their approach, this falls out quite neatly because there is no possible position for the adjunct to attach to. In our approach, there is such a position, at least at first sight. It thus appears that we need to constrain possible adjunction sites in our account. In particular, we argue that what is required is the statement that English can only adjoin elements to the strong version of the coordinator, i.e. to the one that demarcates a spell-out domain. Given that it is the strong coordinator that induces the interpretation of the respective conjuncts as a semantic unit, this makes sense since the adjunct is intended to modify exactly that semantic unit. And in fact, Zyman (2022) proposes that adjuncts can only be attached to a spell-out domain.⁸ The result is that adjuncts can attach only to an &P headed by a strong &*, which makes the right predictions: Subgrouped structures (regardless of whether they are in a specifier or in a complement position) can be modified directly because they are headed by &*. It is only in a single-cycle derivation that the lower &P cannot be modified.

This makes an interesting prediction about the fact that German should allow modification of the lower coordination structure without a second coordinator, namely in configurations of a multi-cycle derivation and impoverishment of the coordinator across the phase boundary. We have the impression that this is correct, (26).

(26) *Context: Antonia is very specific about drinks. At her wedding, she will only allow three types of drinks on the menu.*

Auf der Hochzeit gibt es lediglich schwedischen Schnaps,
at the wedding will.be EXPL exclusively Swedish liquor
bayrische Biere und Weine.

Bavarian beers and wines

‘At the wedding they will only serve Swedish liquor, Bavarian beers
and Bavarian wines.’

⁸Whether this only holds for late adjunction of elements or for all adjuncts throughout is an open question. When adjectives attach in their canonical position inside a DP, other restrictions might apply. However, we take it that upon modification of a complex element like the coordination of some sort, it is reasonable to assume that the adjunct modifies the spell-out domain directly.

In this example, we have, by assumption, a derivation involving the two cycles indicated below.

$$(27) \quad \boxed{[\&P \text{ Swedish liquor } \&* \quad \boxed{[\&P \text{ wines } \&* \text{ beers }]}]}$$

In accordance with the rules for German outlined above, we can impoverish the coordinator in the higher cycle as its immediate sister is an &P. We can do so despite the intervening domain boundary. We can also adjoin the respective adjective *Bavarian* to the embedded &P because it is headed by a strong version of & and demarcates a spell-out domain that is interpreted as a semantic unit at LF.

Against this background, we would like to conclude that the cyclic approach we presented in this paper allows us to capture the properties of coordination structures that have been taken to be evidence for flat coordination structures by Borsley (2005) and Neeleman et al. (2023).⁹ Furthermore, the approach allows us to capture the minimal difference between English and German without assuming fairly fundamental changes such as the assumption that English allows for ternary branching (or mutual adjunction) but German does not. In fact, in our account, the difference between English and German reduces to a simple difference in terms of the timing of the impoverishment rule and the way it interacts with cyclic spell-out: In English, the impoverishment rule is bled by spell-out, in German it is counterbled.

4. Conclusion

In this paper, we briefly reviewed the ongoing debate about underlying symmetry or asymmetry of coordination structures and we proposed an approach to coordination structures that maintains the strongest possible claim, namely that syntactic structures are universally binary branching. In our approach, apparent arguments for symmetry or flatness are reanalyzed and shown to be fully compatible with asymmetric hierarchical structures if we make use of syntactic cycles.

⁹One area that remains, at this point, fairly unclear is the domain of binding and whether binding can actually tell us something about symmetry or asymmetry in coordination structures.

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Telicity-sensitive PPs and double objects

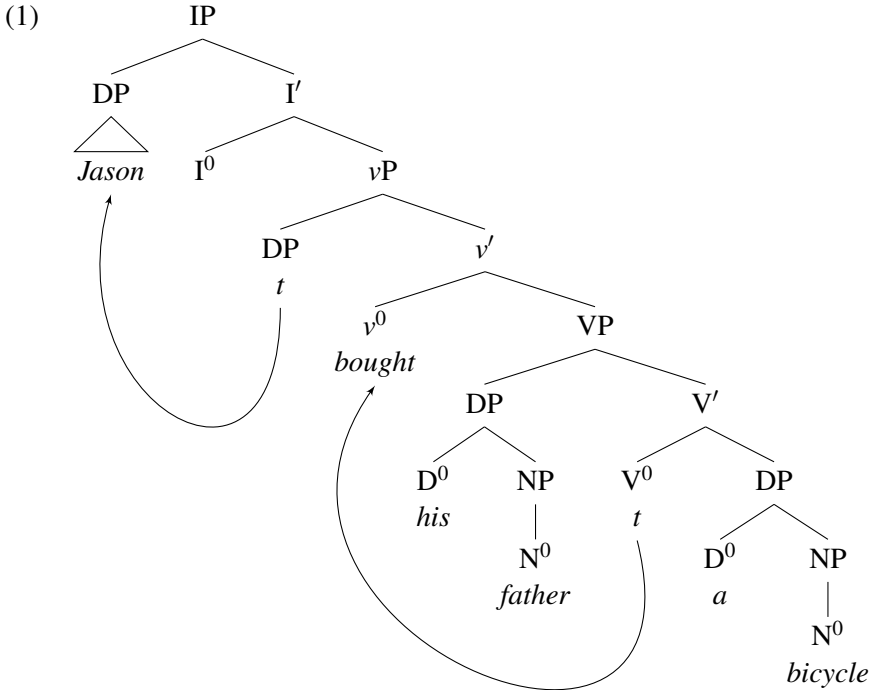
Sten Vikner and Caroline Heycock*

This paper will discuss the double object construction, and based on data concerning PPs sensitive to telicity, it will present support for an analysis in terms of VP-shells as suggested in slightly different versions in Larson (1988), Chomsky (1995: 280–290, 302–307), Kratzer (1996), Beck & Johnson (2004) (and also S. Vikner 1989), and to some extent also in Müller (1995: 188–200).

In (1), the verb *bought* is taken to be a complex predicate meaning something like “cause to have”. In (1), *Jason* is the subject, the AGENT, *his father* is the indirect object, the BENEFICIARY, and *a bicycle* is the direct object, the THEME. The **vP** thus corresponds to the entire complex event, *Jason* causing *his father* to have *the bicycle*, whereas the **VP** corresponds to the resulting state, where *his father* has *the bicycle*.

Our argumentation will be very similar to the one in Beck & Johnson (2004), except where they discuss different meanings of modification of vP or VP by *again* (viz. repetitive vs. restitutive), we will consider modification of vP or VP by temporal PPs. As in Vikner & Vikner (1997: 270), and in discussions referred to there, we assume (at least) the following aspectual verb classes (*Aktionsarten*): events, processes, and states.

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Processes and states have in common that they are unbounded (*atelic*), see (2a,b), because we abstract away from their beginning and end. They are different in that states are completely static, involving no change at all, whereas processes (called ‘activities’ in Vendler 1967: 100) are dynamic, in that they admit gaps and internal changes.

- | | | | |
|--------|---------------------------------|-------------------|---------------|
| (2) a. | Liz <u>hates</u> cheese. | STATE | ————— |
| b. | Liz <u>danced</u> at the party. | PROCESS | ●●—●●—●—●●—●● |
| c. | Liz <u>cleaned</u> her bike. | COMPLEX
EVENT | ●●—●●—●● |
| d. | Liz <u>recognised</u> them. | PUNCTUAL
EVENT | ● |

In contrast, events, both complex and punctual ones, are bounded (*telic*), see (2c,d), as they finish with a completion, i.e. they have an endpoint. (In Vendler

1967: 100, complex and punctual events are called ‘accomplishments’ and ‘achievements’.)

Testing for telicity can be done in a number of ways, including the following: If you were asked halfway through X-ing whether you had X-ed, the answer would be *yes* for atelic Aktionsarten (e.g. *Have you looked for the key?* in (5) below), but *no* for telic Aktionsarten (e.g. *Have you found the key?* in (7) below). All Aktionsarten are thus either telic or atelic:

- (3) a. **atelic** = not temporally bounded: processes and states
 b. **telic** = has an endpoint: complex events and punctual events

Depending on whether the Aktionsart of an example is one or the other, different types of temporal modification are allowed, as described for English, Danish and French in C. Vikner 1994: 148–149 (and in many other places, incl. Vendler 1967: 101; Fillmore 1975: 36; Dowty 1979: 50, 60; Dahl 1981: 79, 84; Krifka 1989: 166–170; Smith 1991: 157–159; Krifka 1992: 32):

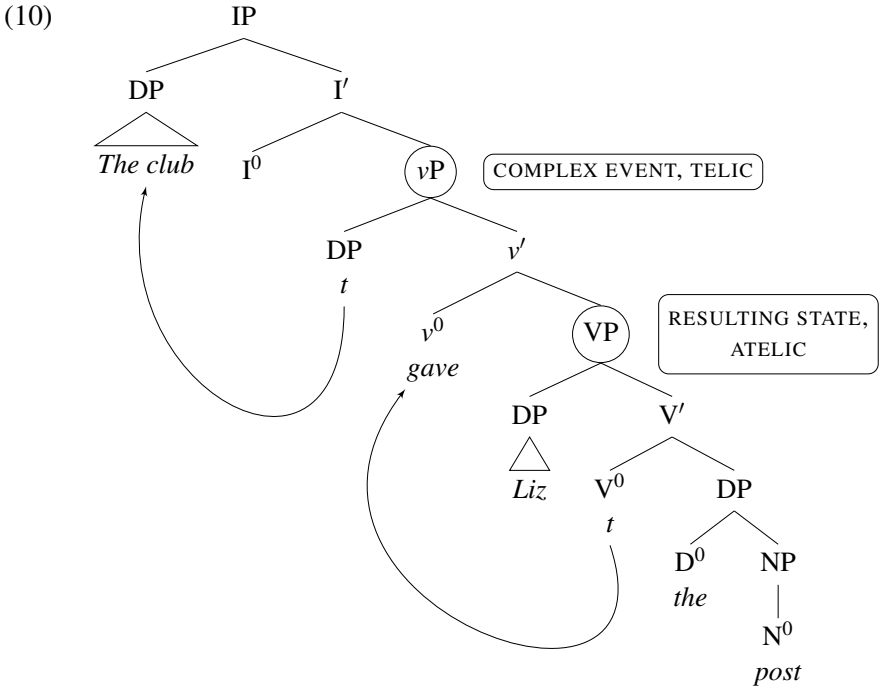
- (4) **states** (atelic, En. *for*/Da. *i*)
 En. a. ... because she missed licorice **for** three years.
 b. *... because she missed licorice in three years.
 Da. c. ... fordi hun savnede lakrids **i** tre år.
 d. * ... fordi hun savnede lakrids på tre år.
- (5) **processes** (atelic, En. *for*/Da. *i*)
 En. a. ... because he looked for the key **for** half an hour.
 b. *... because he looked for the key in half an hour.
 Da. c. ... fordi han ledte efter nøglen **i** en halv time.
 d. * ... fordi han ledte efter nøglen på en halv time.
- (6) En. a. ... because they biked in Leipzig **for** three years.
 b. *... because they biked in Leipzig in three years.
 Da. c. ... fordi de cyklede i Leipzig **i** tre år.
 d. * ... fordi de cyklede i Leipzig på tre år.

- (7) **complex events** (telic, En. *for*/Da. *i*)
- En. a. *... because he found the key for half an hour.
 b. ... because he found the key **in** half an hour.
- Da. c. *... fordi han fandt nøglen i en halv time.
 d. ... fordi han fandt nøglen **på** en halv time.
- (8) En. a. *... because they assembled the bike for three hours.
 b. ... because he assembled the bike **in** three hours.
- Da. c. *... fordi de samlede cyklen i tre timer.
 d. ... fordi de samlede cyklen **på** tre timer.

The interesting thing about clauses with double objects is that they allow **both** types of temporal modification:

- (9) En. a. ... because the club gave Liz the post of treasurer **for** two years.
 b. ... because the club gave Liz the post of treasurer **in** two minutes.
- Da. c. ... fordi klubben gav Lis posten som kasserer **i** to år.
 d. ... fordi klubben gav Lis posten som kasserer **på** to minutter.

This can be accounted for within the analysis in (1) above, as illustrated in (10) below. VP is a resulting **state** (atelic, temporal modification with *for/i*), whereas the entire vP is a **complex event** (telic, temporal modification with *in/på*), and so the final PPs in (9a,c) can be interpreted as right-adjoined to VP, i.e. modifying the atelic resulting state, whereas the final PPs in (9b,d), can be interpreted as right-adjoined to vP, i.e. modifying the whole complex event.



This analysis makes two further predictions. The first is that both types of PP may be present at the end of the clause only in one of the two logically possible orders. Because the VP is inside vP, the *for/i*-PP that modifies the atelic VP must precede the *in/på*-PP which modifies the telic vP:

- (11) En. a. ...because the club gave Liz the post of treasurer **for** two years **in** two minutes.
 b. *...because the club gave Liz the post of treasurer **in** two minutes **for** two years.
- Da. c. ...fordi klubben gav Lis posten som kasserer **i** to år **på** to minutter.
 d. *...fordi klubben gav Lis posten som kasserer **på** to minutter **i** to år.

Admittedly, a potential alternative account for the difference in grammaticality between (11a,c) and (11b,d) could be that in (11a,c), it is the the direct object

DP which is modified by the *for/i*-PP, i.e. that in (11a,c), we have a DP [*the post of treasurer for two years*]/[*posten som kasserer i to år*]. We do not find this a viable analysis, as this constituent does not seem particularly well-formed e.g. in cleftings, whereas cleftings of the DP without the *for/i*-PP as modifier are perfectly fine:

- (12) En. a. ??It was the post of treasurer for two years
that I heard that the club gave Liz ____.
- b. It was the post of treasurer
that I heard that the club gave Liz ____ for two years.
- Da. c. ??Det var posten som kasserer i to år
som jeg hørte at klubben gav Lis ____.
- d. Det var posten som kasserer
som jeg hørte at klubben gav Lis ____ i to år.

Given that (11a,c) are also perfectly fine, we think it is justified to take them to be related to (12b,d) rather than to (12a,c)¹ even though we readily admit that examples with the structure of (12a,c) do exist, e.g. *They gave her [the post of president for life]*.

The second prediction is that an *in/på*-PP is possible in the clause medial adverbial position preceding the finite main verb, but not a *for/i*-PP:

- (13) En. a. *... because the club **for** two years gave Liz the post of treasurer.
- b. ... because the club **in** two minutes gave Liz the post of treasurer.
- Da. c. *... fordi klubben **i** to år gav Lis posten som kasserer.
- d. ... fordi klubben **på** to minutter gav Lis posten som kasserer.

The reason why only the PPs that modify telic events are possible here is that the position of the PP in (13) precedes the finite main verb, the position of which is inside the vP but outside the VP, as seen in (10) above. Thus a PP preceding the finite main verb can be interpreted as adjoined to (and modifying) the telic vP but not as adjoined to (and modifying) the atelic VP.

Furthermore, a parallel analysis in terms of vP and VP can also account

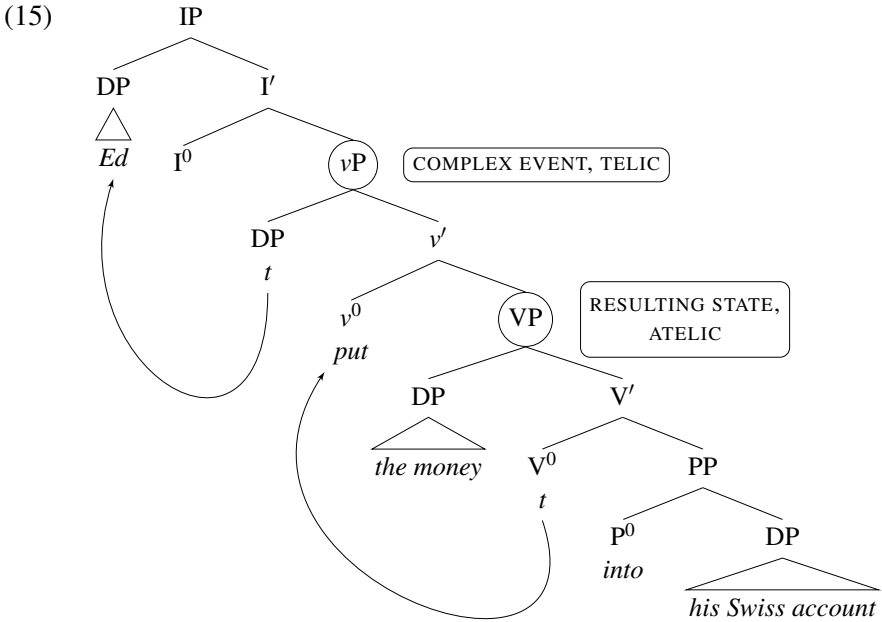
¹A further consideration against the reanalysis of (11a,c) along the lines of (12a,c) is that such a reanalysis is not possible in the case of the otherwise parallel (16a,c) below.

for data like those in (14), which shows that also clauses with an object and a following PP-complement (i.e. examples of the type *give something to somebody*) can have both a telic and an atelic interpretation, just as we have already seen in the double object examples (i.e. *give somebody something*) as modification is possible **both** with an *in/på*-PP and with a *for/i*-PP:²

- (14) En. a. ... because Ed put the money into his Swiss account
for two months.
 b. ... because Ed put the money into his Swiss account
in two minutes.
 Da. c. ... fordi Ib placerede pengene på sin schweiziske konto
i to måneder.
 d. ... fordi Ib placerede pengene på sin schweiziske konto
på to minutter.

This can be accounted for within the analysis in (1) above, as illustrated in (15) below. VP is a resulting **state** (*the money is in the account*, atelic, temporal modification with *for/i*), whereas the entire vP is a **complex event** (*the putting of the money into the account*, telic, temporal modification with *in/på*), and so the final PPs in (14a,c) can be interpreted as right-adjoined to VP, i.e. modifying the atelic resulting state, whereas the final PPs in (14b,d), can be interpreted as right-adjoined to vP, i.e. modifying the whole complex event.

²The relevant reading of (14a) is the one in which there is a single event of depositing the money, which remains in the account for two months. There is an additional reading—irrelevant for our purposes—where *put the money into his Swiss bank account* is interpreted as a repeated/habitual event. On this reading, *for two months* would be modifying the vP.



Once more, there are two further predictions. The first is that both types of PP may be present clause finally but only in one of the two logically possible orders. Because the VP is inside vP, the *for/i*-PP that modifies the atelic VP must precede the *in/på*-PP which modifies the telic vP:

- (16) En. a. ...because Ed put the money into his Swiss account
for two months **in** two minutes.
 b. *...because Ed put the money into his Swiss account
in two minutes **for** two months.
 Da. c. ...fordi Ib placerede pengene på sin schweiziske konto
i to måneder **på** to minutter.
 d. *...fordi Ib placerede pengene på sin schweiziske konto
på to minutter **i** to måneder.

The second prediction is that an *in/på*-PP is possible in the clause medial adverbial position preceding the finite main verb, but not a *for/i*-PP:³

³As expected, (17a) is acceptable to the extent that it is possible to give it the (irrelevant)

- (17) En. a. *...because Ed **for** two years put the money into his Swiss account.
 b. ...because Ed **in** two minutes put the money into his Swiss account.
 Da. c. *...fordi Ib **i** to år placerede pengene på sin schweiziske konto.
 d. ...fordi Ib **på** to minutter placerede pengene på sin schweiziske konto.

The reason why only the PPs that modify telic events are possible here is that the position of the PP in (17) precedes the finite main verb, the position of which is inside the vP but outside the VP, as seen in (15) above. Thus a PP preceding the finite main verb can be interpreted as adjoined to (and modifying) the telic vP but not as adjoined to (and modifying) the atelic VP.

The analysis in terms of vP/VP (VP-shells) thus makes the desired predictions concerning the various possibilities of modification by different types of temporal PPs sensitive to telicity.

By using an approach very similar to the one in Beck and Johnson (2004), we have tried to show that PPs that are only compatible with atelicity (e.g. En. *for two years*, Da. *i to år*) gives us a way of spotting (or a way of arguing for the existence of) atelic resulting states both inside double object examples, e.g. *give somebody something*, and inside DP-PP examples like *give something to somebody*. This is then a small but hopefully significant step in the direction of bringing the syntax and the semantics of these types of examples into closer alignment.

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reading mentioned in the previous footnote, where the vP has a habitual reading and can therefore be modified by *for two months*.

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Some qualms about orders and movements

Ralf Vogel

Bielefeld, the place where I have been living for 16 years now, is typical of the larger cities in the north-west of Germany. As an industrial centre, it was hit hard in the Second World War. The rebuilding of its infrastructure in the post-war period until the 1980s or so served the automotive industry, which had been pushed with especially high priority, it occurs to me, in the state of North Rhine-Westphalia, where car manufacturing has been a substantial part of the economy.

From the late nineteenth century until before WWII, Bielefeld was one of the centres of bicycle manufacturing in Germany.¹ But not even that could soften the city's car-centred rebuilding after the war.

Times have changed, however: the city council has rediscovered the bike. And so we find the construction of bike lanes all over the city.² But finding appropriate space for bike lanes under such conditions appears to be an art in itself. The typical bike lane in Bielefeld is small and switches constantly between sidewalk and street.

A biker in Bielefeld is always in the way of either other bikers, pedestrians or cars. So, as a biking syntactician in this city you are constantly in the middle of your profession: you never stop wondering about the rules that govern who is allowed to move first, where movement is blocked and why, what happens

Strict Cycling: A Festschrift for Gereon Müller, 477–488

Silke Fischer, Doreen Georgi, Fabian Heck, Johannes Hein, Anke Himmelreich, Andrew Murphy & Philipp Weisser (eds.)

STRICT CYCLING, Universität Leipzig 2024

¹If I recall it correctly, I learned to ride a bike on a *Göricke* bike made in Bielefeld. Another aspect of Bielefeld's bicycle history is that cycling has been promoted early on in the region. Bielefeld's first cycling track was among the first ones in Germany, when it was opened in 1885. The Bielefeld *Radrennbahn*, still among the fastest cycling tracks in Europe, was opened in 1953 and is a protected monument today. Once or twice a year, you can still watch the spectacle of *Steher* races, where racing cyclists drive in high speed in the slipstream of a pacemaker motor bike – another product Bielefeld's industry was famous for until 1960.

²Bielefeld has a strong "pro bicycle", i.e. pro bike lane, movement that has the support of the current city council. I suppose that bikers would be better off without bike lanes in Bielefeld, just riding on the roads, accompanied by a city-wide 30 km/h speed limit.

when movement paths intersect and so on. And you absolutely learn your lesson about the benefits of parallel movement (Müller 2001) on bike lanes.

To make things worse, the city council has installed barriers here and there on bike lanes, wherever they felt they needed to do bikers a favour. These barriers can only be crossed by one bike or person at a time. When two arrive simultaneously at such a barrier, as in Figure 1, the set of constraints governing who drives first appears to be as multi-faceted as the constraints governing the order in binomials in Müller (1997): I let pedestrians, children and old people go first, I won't let adult women on bikes go first (this no longer appears to be politically correct). If none of these criteria help, the one that was earlier (even only slightly) may go first, but if even that doesn't help, we get stuck and resolution may take ages, as both will be reluctant to go first (and appear impolite).

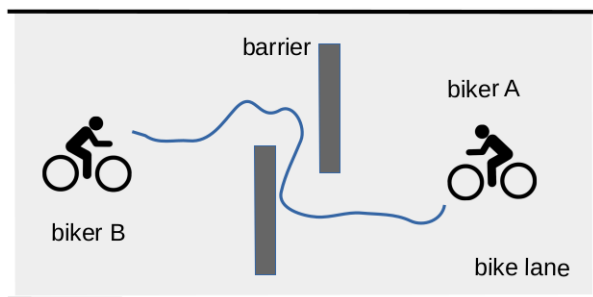


Figure 1: Barriers blocking movement on Bielefeld's bike lanes

The syntactician's moral: true optionality may not always be helpful. Constraints sometimes make life easier. Optionality can, of course, serve as a diagnostic tool: it is indicative of the *absence* of constraints.

But this may also be a matter of theoretical preferences. Pullum & Scholz (2001) (see also Pullum 2013) introduced the distinction between two ways of formulating theories of syntax and of explicating the grammar of a language, a *model-theoretic* and a *generative-enumerative* approach. Their differences can be illustrated with the problem sketched in Figure 1.

Suppose that there are constraints like *old people first*, *children first*, *first in – first out* etc., but that none of these apply here, as biker A and biker B are of the same age and arrived at the barrier simultaneously. So there is no constraint that would require either biker A or biker B to cross the barrier first.

The *model-theoretic* perspective would simply set the bikers free: whichever solution ('biker A first' or 'biker B first') you may choose, it will be fine, as neither solution would violate a constraint. The model-theoretic approach is thus somewhat agnostic about how the two bikers arrive at a solution. It is not only a non-derivational perspective, but it also abstracts away from details of execution. Table 1 may be an OT version of this, a really trivial account, I admit.

	biker A \approx biker B	KIDS-1 ST	OLDIES-1 ST	1 ST IN-1 ST OUT
☞	biker A 1 st	✓	✓	✓
☞	biker B 1 st	✓	✓	✓

Table 1: 'model-theoretic' OT solution

Table 1 implies a kind of *underdetermination* of the grammar: not every aspect in which candidates may differ is subject to a constraint. Crucially, the input is not used to make a difference between similar candidates via faithfulness constraints either.

From the perspective of a *generative-enumerative* approach, as classified by Pullum & Scholz (2001) and Pullum (2013), the situation is quite different, because two candidates can only be non-identical if there has been some difference between them in their derivational history. Furthermore, as every derivational step in such a procedure must be defined within the system, it is impossible to remain agnostic about such differences in the same way as in a model-theoretic account. OT can of course be used within the derivation as well (see e.g. Heck & Müller 2013).

But it appears to me that a central aspect of a generative-enumerative OT variant should be that there may only be one winner per competition. This can be achieved, in principle, in two ways, via markedness or faithfulness.

The markedness approach would work with two tied ad hoc constraints favouring exactly one of the two options. The two constraints are assumed to be globally tied, i.e. we have in fact two parallel grammars with two different constraint rankings. These are given in Table 2. Each of these parallel grammars has now exactly one winner. The faithfulness variant would use the input to implement the contrast and then let faithfulness decide, see Table 3.

The only purpose of the two additional constraints in Table 2 is to make a

biker A \approx biker B		KIDS-1 ST	OLDIES-1 ST	1 ST IN-1 ST OUT	A-1 ST	B-1 ST
☞	biker A 1 ST	✓	✓	✓	✓	*
	biker B 1 ST	✓	✓	✓	*	✓
biker A \approx biker B		KIDS-1 ST	OLDIES-1 ST	1 ST IN-1 ST OUT	B-1 ST	A-1 ST
☞	biker A 1 ST	✓	✓	✓	*	✓
	biker B 1 ST	✓	✓	✓	✓	*

Table 2: ‘markedness’ 1-winner solution

biker A \approx biker B		KIDS-1 ST	OLDIES-1 ST	1 ST IN-1 ST OUT	FAITH
A-1 ST					
☞	biker A 1 ST	✓	✓	✓	✓
	biker B 1 ST	✓	✓	✓	*
biker A \approx biker B		KIDS-1 ST	OLDIES-1 ST	1 ST IN-1 ST OUT	FAITH
B-1 ST					
☞	biker A 1 ST	✓	✓	✓	*
	biker B 1 ST	✓	✓	✓	✓

Table 3: ‘faithfulness’ 1-winner solution

difference between two specific candidates. They are not only construction-specific, but their motivation is of a more narrowly technical kind that is typical of faithfulness constraints. The analyses in Table 2 and 3 appear to work literally in the same way: the inputs in Table 3 each specify a property that occurs only in one of the candidates. The same holds for each of the two construction-specific constraints in Table 2. Of course, there are five constraints in Table 2, but the lowest-ranked constraint is superfluous and may even be omitted.

If we do that, we come close to the modelling of German word order optionality by Müller (1999), where we have a constraint subhierarchy in place of a constraint within the main constraint hierarchy, a kind of placeholder “tie break” constraint that can be filled by either A-1ST or B-1ST.

We could also formulate the two constraints “A-1ST” and “B-1ST” in a way

that comes closer to markedness as usually understood if we described them as forbidding, rather than requiring something, i. e. “ $\neg A-1^{st}$ ” and “ $\neg B-1^{st}$ ”. But this would not change their main function either: giving preference to one specific candidate – it would only do so in a more indirect way.

Again, Table 2 and 3 and the variants that we have just discussed are only different ways of implementing the same underlying logic: adding construction-specific constraints that transform an underspecifying multi-winner system of markedness constraints as in Table 1 into a single-winner system that could be taken to mimick a *generative-enumerative* approach.

I see one conceptual advantage in the faithfulness variant in that it does not add markedness constraints, but one could argue, as I just did, that “ $A-1^{st}$ ” and “ $B-1^{st}$ ” are just faithfulness constraints in disguise.

This may hold for many markedness constraints in the OT syntax literature. For instance, consider a constraint requiring the fronting of a verb in the imperative mood in German imperative clauses, $FRONTV_{IMP}$. This constraint simply expresses an aspect of the relevant sentence type in the form of a constraint. If we considered sentence types to be specified in the lexicon, then this constraint would be a faithfulness constraint (because the sentence type would have to be given in the input just like other lexical units), otherwise it would look like a markedness constraint. But it would function in the same way in both cases.

So let us consider some real language examples. Müller (1997) cites the *Ross alcohol rule* for binomials (Ross 1980, “more before less alcohol”, as in *liquor and wine*). What about beverages with an equivalent amount of alcohol? Two such beverages are beer and cider.³ The prediction of the alcohol rule should be that both possible orders can be found. This is correct, as the following two examples show:

- (1) This **beer-cider** cocktail is perfect for a warm, sunny day
(<https://thecidercrate.com/the-cherry-berry-orchard/>)
- (2) ... **cider and beer** are a natural fit for some delightful seasonal sipping
(<https://content.kegworks.com/blog/honey-cider-beer-cocktail>)

So, no addition to Ross’ alcohol rule has to be made, on the contrary: it would be empirically inadequate to posit one constraint each for (1) and (2).

³The southern Hessian version of cider, *Ebbelwoi*, is very famous in Frankfurt am Main, Gereon’s first station as a linguist.

Another example in case are attributive uses of adjectives in noun phrases. There are various semantic classes of these, and for some of them natural ordering conditions hold, such that the order (3a) is natural or unmarked, whereas the order (3b) requires specific motivation (e.g. contrastive focus on *blaues* ('blue') also implying givenness for *altes* ('old')).

- (3) a. mein altes blaues Fahrrad
 my old blue bike
 b. ??mein blaues altes Fahrrad
 my blue old bike

With *rostig* ('rusty') in place of *altes* ('old'), the same restriction occurs. However, the order appears to be optional with respect to these two adjectives:

- (4) mein altes rostiges | rostiges altes Fahrrad
 my old rusty | rusty old bike

If we were to build classes, we could state that colour is a constant property and being old and rusty are dynamic properties that increase over time.⁴ Another type of predicates are relational ones like *groß* ('large'), which naturally precede those in (4).

- (5) a. mein großes altes Fahrrad
 my large old bike
 b. ??mein altes großes Fahrrad
 my old large bike

Again, the way we usually proceed is taking optionality as evidence of the absence of a constraint. So the difference between relational, dynamic and constant properties expressed by adjectives is relevant for word order, but the semantic difference between properties like 'old' and 'rusty' is not.

Therefore, we can straightforwardly conclude, our grammar must not contain a constraint relating to this difference. Sadly, this clear line of reasoning has been blurred somewhat in Optimality Theory because one could also assume the relevant constraints to be there, but only "low-ranked".

This relates to the OT way of dealing with language particularities, typological contrasts, language variation and grammatical change. The default OT

⁴This, I should add, also holds for animate beings.

answer to all of these issues is constraint reranking. All grammars, by default, are assumed to have the same set of constraints. If a constraint that is active in one language plays no role in another language, then this is not due to absence of the constraint, but its low ranking.

The fundamental problem with this account lies in its ahistoricity. If language change is only constraint reranking and never implies the invention or loss of constraints, then all constraints must have been there from the very beginning of mankind, rooted in general or language-specific cognition.

This may be feasible with respect to constraints that do have a cognitive foundation.⁵ But as soon as we discover more subtle cultural aspects to be relevant for word order, like Ross' alcohol constraint, this story becomes completely implausible. Even with respect to the adjectives just discussed, it appears arbitrary that the difference between *rusty* and *old* does not affect word order preferences, while that between *old* and *large* does.

It seems, thus, unavoidable to accept that languages have different constraint sets, not only different rankings of the same set of constraints. Once we accept this, we can go one step further and assume that constraints are only part of one language's grammar if they have observable effects, and then optionality is indeed indicative of the *absence* of constraints.

The conclusion that constraint sets may change over time, that constraints can be introduced or get lost, opens the opportunity to integrate phenomena of grammaticalisation. New grammatical constraints are usually introduced in a very local domain from where the new pattern is then transferred by analogy into further domains, and so it will subsequently become a general constraint of the grammar.

This predicts that a synchronic grammar may display different regulations even for related domains, and of course, there are many candidates for phenomena of this kind. The example I will inspect, finally, are German definite and indefinite pronouns. I have always disagreed (in part) with the assessment put forward e.g. in Müller (1999) that there is a strict ordering condition for definite weak object pronouns in German. The proposal is that (6b,d,f) are equally odd, because they divert from the required NOM < ACC < DAT order:⁶

⁵Although I doubt that there are more than very few linguistic constraints that meet this condition.

⁶Please note that the judgements reported in (6) are my own subjective judgements.

- (6) a. dass er sie jemandem vorstellte
that he.NOM her.ACC someone-DAT introduced
- b. *dass sie er jemandem vorstellte
that her.ACC he.NOM someone-DAT introduced
- c. dass ihn ihm jemand vorstellte
that him.ACC him.DAT someone-NOM introduced
- d. ?dass ihm ihn jemand vorstellte
that him.DAT him.ACC someone-NOM introduced
- e. dass es ihm jemand vorstellte
that it.ACC him.DAT someone-NOM introduced
- f. ?dass ihm es jemand vorstellte
that him.DAT it.ACC someone-NOM introduced

I agree with the assessment reported in the literature only with respect to subject pronouns: the sentence is ungrammatical if the subject pronoun follows another pronoun, see (6b). But the constraint on the relative order of two object pronouns, if there is one, is much milder. Examples of this kind can be found occasionally in corpora,⁷ and their acceptability rating appears to be in the range of marked grammaticality.⁸ Still, I agree that (6c,e) are the ideal candidates for the unmarked orders, which implies, crucially, that *animacy* is no word order factor for this class of pronouns. Otherwise, (6f) should be preferred over (6e), and (6f) should be rated worse than (6d). There is no evidence, to the best of my knowledge, that would support such a claim.

⁷Here is one example from an academic paper:

- (i) Der Streitpunkt besteht darin, dass Turkmenistan aus dem Kanal mehr Wasser, als **ihm es** die Quoten vorschreiben, entnimmt . . .
“The point of contention is that Turkmenistan takes more water from the canal than the quotas require.”
<http://pub.ub.uni-potsdam.de/volltexte/2009/2768/>

⁸In one rating experiment, I used the example in (ii) as a filler sentence.

- (ii) Er freute sich, dass er ihm es geschenkt hatte.

Subjects' ratings were chosen between the three levels of unmarked, slightly and strongly marked grammaticality, as well as ungrammaticality. The 88 ratings were distributed in a rather flat manner, with a majority in the range of no or slight markedness (✓ = 21, ? = 29, ?? = 23, * = 15).

Let us now consider the series of *wh*-pronouns used as indefinite pronouns. In such uses, these pronouns are prosodically weak and may not occupy the clause-initial position in V2-clauses. But clause-internal pronominal clusters are possible. Are they subject to the same ordering constraints as definite pronouns? Not quite. The *animate* variants are subject to the same subject-first condition and optionality with respect to two object pronouns:

- (7) a. Da hat wer wen begrüßt
 there has someone.NOM someone.ACC greeted
 b. *Da hat wen wer begrüßt
- (8) a. Da hat wer wem wen
 there has someone.NOM someone.DAT someone.ACC
 vorgestellt
 introduced
 b. Da hat wer wen wem vorgestellt

But the inanimate *wh*-pronoun is preceded by the animate variants in the unmarked case, no matter which case it has. The alternatives appear to me to be borderline cases of (un)grammaticality.

- (9) a. Da hat wen was begeistert
 there has someone.ACC something.NOM fascinated
 b. ?*Da hat was wen begeistert
- (10) a. Da hat wer wem was
 there has someone.NOM someone.DAT something.ACC
 gezeigt
 shown
 b. ?*Da hat wer was wem gezeigt

Hence, we have two constraints and the ranking ANIMATE-1ST >> SUBJECT-1ST for indefinite pronouns, whereas ANIMATE-1ST plays a minor role, if any, for the definite pronouns. Just as in the cases discussed above, we identified a semantic factor, animacy, as relevant for word order. But it is only relevant in one of the two related cases.

So both the indefinite and the definite pronouns have their own unique ordering rules. Furthermore, not all languages may have such weak indefinite pronouns. Hence, whatever we find out about these in German may not be

helpful for the understanding of pronouns in other languages. It may be quite an idiosyncratic aspect of the German grammar.

Definite and indefinite pronouns differ in their pragmatics, of course. Definite pronouns are anaphoric and represent discourse topics, indefinite ones are crucially non-anaphoric and introduce new, non-topical and unspecified referents. This pragmatic contrast may be related to the low vs. high relevance of animacy for word order in the two cases,⁹ but it certainly does not *enforce* the observed syntactic contrast.

So where are we? I have discussed the claim that optionality is indicative of the absence of markedness constraints and tried to show that this is a reasonable heuristic criterion. It implies, in OT terms, that competitions may have more than one winner. This is a problem from the production perspective: you cannot utter two different sentences at the same time. But how do speakers come to their decisions in those cases? As grammarians we do the right thing when we remain agnostic about this. The contrast between *model-theoretic* and *generative-enumerative*, thus, parallels somewhat that between comprehension and production, or, in behavioural terms, between acceptability and preference. I tend to prefer the comprehension perspective.

This also means, for instance, that corpus data have to be handled with care. Every sentence in a corpus is based on a decision by its speaker/writer in favour of it, and the criteria underlying this decision are a mixed bag: some are linguistically relevant, others aren't, the choice might be accidental. Two variants may be equally well-formed, but still, one may be strongly preferred in language use for non-linguistic reasons. It still has to be clarified, precisely to what extent frequency contrasts are indicative of grammatical factors, for instance, how large such a contrast has to be in order to corroborate the assumption of a grammatical constraint.

So much for my own humble thoughts on these issues. Gereon has spent his whole life on questions like those raised here and could do much better than me in pointing out the intricacies of grammatical frameworks. Thank you very much, Gereon, for your extensive and extremely inspiring contributions to the field. Keep going! Happy birthday!¹⁰

⁹ Animacy is of course an organising principle for the paradigm of German *wh*-pronouns, whereas the personal pronouns are differentiated by grammatical gender. But this feature, interesting as it may be, cannot explain either how animacy affects the ordering conditions for these pronouns.

¹⁰ I would like to express my great thanks to the editors of this Festschrift, for taking the

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(NON-)AGENS und (NON-)PATIENS: Über ‚Kasuslinking‘ im Deutschen

Bernd Wiese

1. Traditionelle Theorie

Bei der Interpretation eines Satzes wie *Der Jäger hat den Löwen getötet* ist die Verteilung der Rollen auf die am Geschehen Beteiligten wesentlich: Wer hat wen getötet? Im Folgenden soll die Frage aufgegriffen werden (das ‚Linking‘-Problem), welchen Beitrag die Kasusmarkierungen zur Signalisierung der Rollenverteilung leisten und wie sie zu diesem Zweck eingesetzt werden. Nach einer älteren Tradition könnte man sagen: *der Jäger* steht im Nominativ, und daher wissen wir, dass die NP *der Jäger* als Subjekt fungiert. Das Verb ist ein Handlungsverb; es steht im Aktiv. Unter diesen Voraussetzungen ergibt sich, dass das Subjekt den Handelnden – das AGENS – bezeichnet; vgl. (1).

(1)

	<i>Der Jäger</i>	<i>hat</i>	<i>den Löwen</i>	<i>getötet</i>
Kasus (Morphologie)	NOMINATIV		AKKUSATIV	
Funktionen (Syntax)	SUBJEKT		OBJEKT	
Argumente (Semantik)	AGENS		PATIENS	
	TÖTEN (AG, PAT)			

Ganz entsprechend ergibt sich die Korrelation zwischen Akkusativ, Objekt und PATIENS. Ebenso könnten die Verhältnisse bei einem dreistelligen Verb wie GEBEN beschrieben werden. Hier haben wir zusätzlich ein Komplement im Dativ mit der Funktion INDIREKTES OBJEKT und der semantischen Rolle REZIPIENS; vgl. (2)

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(2)

	<i>Der Jäger</i>	<i>hat</i>	<i>dem Farmer</i>	<i>das Fell</i>	<i>gegeben</i>
Kasus (Morphologie)	NOMINATIV		DATIV	AKKUSATIV	
Funktionen (Syntax)	SUBJEKT		IND. OBJEKT	OBJEKT	
Argumente (Semantik)	AGENS		REZIPIENS	PATIENS	
GEBEN (AG, PAT, REZ)					

Die Kasusmarkierungen sind danach formale, nämlich morphologische Mittel, um syntaktische Funktionen zu kennzeichnen; die syntaktischen Funktionen liefern zusammen mit den lexikalischen Bedeutungen die Basis für die semantische Satzinterpretation. Von den lexikalischen Bedeutungen der Verben muss man hier nur so viel wissen, wie in (1) und (2) angezeigt ist. TÖTEN nimmt zwei Argumente mit den Rollen AGENS und PATIENS. GEBEN nimmt zusätzlich ein drittes Argument, ein REZIPIENS. In (1) und (2) ist dies in quasi-prädikatenlogischer Form notiert. Diese Notation beschreibt, wie ich sagen will, die *Argumentstruktur* des Verbs.

Das Bindeglied zwischen Kasus und Semantik bilden in diesem traditionellen Ansatz die syntaktischen Funktionen oder Relationen (hier: SUBJEKT, DIREKTES OBJEKT, INDIREKTES OBJEKT). Wenn man herleiten will, welche NP welchen Kasus bekommt (,Kasusselektion‘), muss man daher bestimmen können, welche NP welche syntaktische Funktion übernimmt, ohne dabei schon auf den Kasus Bezug zu nehmen. In den deskriptiven Grammatiken des Deutschen werden aber traditionell hybride Termini (oder Konzepte) wie *Akkusativobjekt* und *Dativobjekt* verwendet (vgl. Gallmann & Sitta 1992); auch die einführende Charakterisierung des Begriffs *Subjekt* erfolgt oft, indem das Subjekt als ein Typ von Nominativ-NP vorgestellt wird, wie in der Duden-Grammatik (2016: 821). Ein Ausweg scheint zu sein, das ‚Linking‘-Problem in die Lexik zu verlegen. Valenzwörterbücher würden den Zusammenhang zwischen Argumentstellen und Kasus liefern. Die Kasus der Komplemente wären durch die Rektion der Verben bestimmt. Auch das entspricht einer traditionellen Konzeption, die in der Valenztheorie weitergeführt worden ist (Welke 2011).

Fest steht aber, dass die Korrelationen zwischen Kasus und semantischen Rollen, wie sie die Beispiele zeigen, nicht einfach spezifisch für Einzellexeme sind. Allgemeine Regularitäten der Kasus-Rollen-Korrelation lassen sich

beobachten, und sie müssen erfasst werden, unabhängig davon, welchen systematischen Platz sie letzten Endes erhalten sollen.

2. Agentivitätsbasierte Kasusmarkierung

2.1. Kasusselektion

Viele neuere Arbeiten, auch Grammatiken (vgl. u.a. Eisenberg 2020: 78ff, Duden-Grammatik 2009: 919, Duden-Grammatik 2016: 397ff), gehen von der Beobachtung aus, dass bei einem dreistelligen Verb wie GEBEN die Agentivität (auch ‚relative Agenshaftigkeit‘ oder ‚Aktivität‘) der Partizipanten in der Reihenfolge AGENS – REZIPIENS – PATIENS abnimmt. Etwas verallgemeinert, bekommt man eine Hierarchie semantischer Rollen, an deren Spitze die Rolle AGENS steht (AGENS > ... > PATIENS). Zwischen AGENS und PATIENS wären ‚dativtypische‘ Rollen wie etwa Rezipient, Benefizient, Malefizient oder Possessor u.a. anzusiedeln. Es sollte dann gelten: Der Partizipant mit der höchsten Agentivität wird durch den NOMINATIV markiert, der Partizipant mit der niedrigsten Agentivität durch den AKKUSATIV. Ein dritter Partizipant (mit mittlerer Agentivität), falls vorhanden, bekommt den DATIV (vgl. auch Primus 2012 mit Literatur). Diese Regel liefert für Verben wie TÖTEN und GEBEN die Korrelationen von Rolle und Kasus, die (3) zeigt, und damit die korrekte Kasusverteilung.

(3)	TÖTEN (AG, PAT)	GEBEN (AG, PAT, REZ)
	AGENS – NOM	AGENS – NOM
	PATIENS – AKK	PATIENS – AKK
		REZIPIENS – DAT

Die Argumentstrukturen stellen Abstraktionen aus Verbbedeutungen dar. Bei unterschiedlichem Abstraktionsgrad ergeben sich unterschiedliche Rollentypen. Als maximal abstrakte Konzepte sind Proto-AGENS und Proto-PATIENS vorgeschlagen worden (Dowty 1991). Ich gehe hier davon aus, dass eine Rolle wie PATIENS jedenfalls so abstrakt gefasst werden kann, dass sie die Akkusativ-NPs sowohl bei TÖTEN und als auch bei GEBEN abdeckt.

2.2. Rolleninventar

Die bei den genannten Verben zu beobachtenden Korrelationen werden vielfach in der Literatur als kanonische Fälle ausgewiesen. Fälle, die dem Muster nicht folgen, müssten als Abweichungen besonders erklärt werden. Nominativ korreliert mit AGENS, Akkusativ mit PATIENS. Für den Dativ gibt es keine vergleichbare einfache Rollenzuordnung. Die Rolle des REZIPIENS könnte zwar als die prototypische Rolle des Dativkomplements angesehen werden. (Die traditionelle Bezeichnung *Dativ* weist daraufhin.) Doch kommen daneben, wie angeführt, verschiedene andere Rollen in Betracht (Benefizient, Malefizient, Possessor u.a.). Die betreffenden Rollen zeigen sicherlich eine Familienähnlichkeit; die Bestimmung einer einheitlichen semantischen Rolle (vergleichbar mit AGENS und PATIENS) ist aber anscheinend eher ein aussichtsloses Unterfangen.

Wenn es eine allgemeine rollenbasierte Charakterisierung des Dativs gibt, dann eine negative: die Rolle einer NP im Dativ ist weder die AGENS-Rolle noch die PATIENS-Rolle. Ich werde hier deshalb annehmen: Der Dativ signalisiert, dass das betreffende Komplement weder AGENS noch PATIENS ist (vgl. Wiese 2017: 903–908 mit Literatur).

Wie weit der Anwendungsspielraum des Dativs in einer Einzelsprache tatsächlich reicht, variiert und ist wesentlich dadurch bestimmt, welche konkurrierenden spezielleren Rollenmarkierungen, insbesondere Präpositionen und speziellere lexikalische Kasus (wie der adverbale Genitiv im Gegenwartsdeutschen) zur Verfügung stehen und wann diese verwendet werden müssen oder können. Zwei Beispiele: (i) In älteren germanischen Sprachen kann der Dativ die Instrumental-Rolle abdecken. Im heutigen Deutschen haben Präpositionen die entsprechende Rollenmarkierung übernommen, vor allem die Präposition *mit*. (ii) Umgekehrt nehmen im Deutschen privative Verben wie STEHLEN den Dativ, wo andere Sprachen vielfach einen Ablativ oder eine andere speziellere Markierung fordern.

Die negative Bestimmung für den Dativ hat den Vorteil, dass man sich – jedenfalls im Rahmen einer Betrachtung des Kasuslinkings – nicht darum kümmern muss, ein festes Inventar der diversen semantischen Rollen aufzustellen. Es reichen drei Rollenspezifikationen, wie in (4) angegeben: AGENS, PATIENS und NONAGENS NONPATIENS, abgekürzt NN.

- (4)
- | | | |
|--------------------------|---|-----------|
| AGENS (AG) | – | NOMINATIV |
| PATIENS (PAT) | – | AKKUSATIV |
| NONAGENS NONPATIENS (NN) | – | DATIV |

3. Reichweite der Agentivitätstheorie

3.1. Taxonomie der Verben

Die Tabelle in (5) gibt eine Taxonomie der Verben nach dem primären Kriterium: Ist ein AGENS-Argument oder ein PATIENS-Argument vorhanden bzw. beides oder keines von beidem? Die Tabelle zeigt zudem die Zuordnung zwischen Verbarargumenten und Kasus (vgl. Wiese 2017: 898–911, und Eisenberg 2020: 85, „prototypische Argumentstrukturen“).

(5)

			NOM	AKK	DAT
(I)	(a)	ARBEITEN (AG)	AG		
	(b)	STERBEN (PAT)	PAT		
	(c)	BLÜHEN (NN)	NN		
	(d)	TÖTEN (AG, PAT)	AG	PAT	
(II)	(a)	HELFEN (AG, NN)	AG		NN
	(b)	GELINGEN (PAT, NN)	PAT		NN
	(c)	PASSEN (NN, NN)	NN		NN
	(d)	GEBEN (AG, PAT, NN)	AG	PAT	NN

Das einzige Argument einstelliger Verben (Ia, b, c) kann ein AGENS sein, ein PATIENS oder ein Argument, das weder AGENS noch PATIENS ist, ein NONAGENS-NONPATIENS-Argument (NN). Die Unterscheidung der drei Typen intransitiver Verben entspricht der traditionellen Einteilung nach „Aktionalität“ (Duden-Grammatik 2016: 419) in (a) Tätigkeitsverben (mit AGENS-Argument), (b) Vorgangsverben (mit PATIENS-Argument), (c) Zustandsverben (mit NN-Argument); vgl. u.a. Jespersen (1924: 86). Verben mit AGENS- und PATIENS-Argument wie TÖTEN (Id) sind Handlungsverben. Von besonderem Interesse ist nun: Bei jedem der vier Typen (a), (b), (c) und (d) kann ein zusätzliches

NN-Argument auftreten; solche Verben bilden in (5) die Klasse (II), mit den entsprechenden vier Untertypen.

Ob ein AGENS- oder PATIENS-Argument vorliegt, ergibt sich einerseits aus der Semantik der Verben; andererseits kann das Vorhandensein oder Fehlen entsprechender Argumente bekanntlich an den ‚Verhaltenseigenschaften‘ der Verben abgelesen werden. Traditionell werden insbesondere die Attribuierbarkeit des Partizip Perfekt (Partizip II), die Passivbildung und die Perfektbildung herangezogen (vgl. z.B. Brinkmann 1962). Zur Korrelation von Rollenverteilung und Verhaltenseigenschaften siehe im Einzelnen Wunderlich (1985). Knapp skizziert gilt: Verben mit AGENS-Argument erlauben die Bildung des *werden*-Passivs. Dies gilt für den Typ TÖTEN, aber auch für einstellige Handlungsverben wie ARBEITEN in unpersönlicher Konstruktion wie in *Gestern Abend wurde hier noch gearbeitet*. Andere einstellige Verben lassen gewöhnlich nur unter etwas forcierter Lesart ein Passiv zu (genauer: Primus 2011). Verben mit PATIENS-Argument erlauben die attributive Verwendung des Partizip II wie in *der gestern getötete Mann* oder *der gestern gestorbene Mann*, andere nicht. Verben des Typs (b), die ein PATIENS-Argument haben, aber kein AGENS-Argument, bilden zudem in der Regel das Perfekt mit SEIN, andere mit HABEN. Die Verhaltenseigenschaften gelten ebenso für Verben der Klasse II. HELFEN und GEBEN sind Verben mit einem AGENS-Argument und lassen *werden*-Passiv zu. GELINGEN wie in *Der Kuchen ist ihr gut gelungen* und GEBEN sind Verben mit einem PATIENS-Argument und lassen attributiven Gebrauch des Partizip II zu. Verben mit PATIENS-, aber ohne AGENS-Argument, also Typ (b), nehmen wieder SEIN-Perfekt. PASSEN, Typ (c), wie in *Der Pullover passt mir nicht* ist ein Verb ohne AGENS- und PATIENS-Argument; weder attributiver Gebrauch des Partizip II noch *werden*-Passiv ist möglich. (Besonderheiten bei verschiedenen Verbklassen wie Bewegungsverben, *psych*-Verben, Besitzverben, Wetterverben usw. müssen hier außer Betracht bleiben.)

Bezüglich der Kasusverteilung bei Verben der Klasse I gilt: Im Deutschen steht das einzige Komplement einstelliger Verben in der Regel im Nominativ, also im gleichen Kasus wie das AGENS-Argument eines AGENS-PATIENS-Verbs; das ist einfach das Charakteristikum eines Akkusativ-Systems. Für Verben der Klasse II gilt: Das zusätzliche NN-Argument der Verben der Klasse II erscheint immer im Dativ. Im Übrigen wiederholen die Verben der Klasse II das akkusativische Muster der Kasusmarkierung, das an Klasse I abgelesen werden kann. Wenn neben dem Dativ-Argument nur noch ein weiteres Argument vorhanden ist, so steht es im Nominativ; sind noch zwei

weitere Argumente vorhanden, so steht das PATIENS-Argument im Akkusativ und das verbleibende Argument im Nominativ. Die Nichtunterscheidung von AGENS-, PATIENS- und NN-Rolle mittels Kasus findet sich nicht nur bei den einstelligen Verben. Sie findet sich ganz parallel bei den zweistelligen Verben der entsprechenden Klassen – also immer bei den Klassen (a), (b) und (c).

3.2. Falsche Voraussagen

Die Agentivitätstheorie orientiert sich an AGENS-PATIENS-Verben, also Verben die ein AGENS- und ein PATIENS-Argument besitzen, d.h., an Verben des Typs (d). Die Agentivitätstheorie sagt nichts über einstellige Verben, sie bezieht sich nur auf Agentivitätsdifferenzen bei mehrstelligen Verben. Das Fehlen einer Rollenunterscheidung mittels Kasus bei den einstelligen Verben der Klassen (a), (b) und (c) muss gesondert erfasst werden. Dagegen macht die Agentivitätstheorie – wie vielleicht die Mehrheit der Linking-Theorien – eine falsche Voraussage bezüglich der zweistelligen Verben der Klassen (a), (b) und (c). Zweistellige Verben sollten nach der Agentivitätstheorie immer genau ein NOMINATIV-Komplement und ein AKKUSATIV-Komplement aufweisen. DATIV-Komplemente wären nur als dritte Komplemente wie bei Typ (IId) möglich. Im Ergebnis müssten die Verben der Typen (IIa), (IIb) und (IIc) sämtlich als ‚Ausnahmen‘ qualifiziert werden, wie die Duden-Grammatik auch deutlich angibt; ganz aus dem Rahmen der Agentivitätstheorie fallen Verben des Typs *gelingen* (IIb) (Duden-Grammatik 2016: 405f).

Es ist klar, dass es sich bei den fraglichen Klassen um ‚kleinere Klassen‘ handelt; es ist aber zweifelhaft, dass es sich um ‚Ausnahmen‘ in einem vernünftigen Sinne handelt. Die Tabelle legt nahe, dass diese Klassen sich in eine systematische Ordnung einfügen. Wesentlich ist die Beobachtung, dass die DATIV-Komplemente bei zweistelligen Verben häufig gleiche oder ähnliche semantische Rollen tragen wie die DATIV-Komplemente bei dreistelligen Verben. Auch darauf ist in der Literatur wiederholt hingewiesen worden (vgl. Meinunger 2007, Duden-Grammatik 2016 a.a.O.). Zu beachten ist auch, dass intransitive Dativverben keine Idiosynkrasie des Deutschen darstellen.

4. Diskriminative Kasusmarkierung

4.1. Grundidee

Der Agentivitätstheorie kann ein zweiter Ansatz zum Kasuslinking gegenübergestellt werden, der zunächst pauschal als *Diskriminative Kasusmarkierung* bezeichnet werden soll. Die geläufige Grundidee (etwa bei Dixon 1979: 69) ist: Wenn es darum geht, die Zuordnung von Komplementen zu Argumentstellen sichtbar zu machen, so reicht es, bei zweistelligen Verben eines der Argumente mittels einer Kasusmarkierung zu versehen, die seine semantische Rolle anzeigt; bei dreistelligen Verben müssen zwei Argumente besonders gekennzeichnet werden, wenn es möglich sein soll, die Komplemente allein anhand der Kasus richtig den Rollen zuzuordnen. Es ist klar, dass die Rolle des verbleibenden unmarkierten Komplements feststeht, wenn man die Verbbedeutung kennt, und daher nicht besonders angezeigt werden muss. Bei einstelligen Verben muss natürlich nichts unternommen werden. Das nicht weiter markierte Komplement erscheint jeweils im Nominativ. Der Nominativ kann dabei als der merkmallöse Kasus im Sinne von Jakobson (1936: 33) betrachtet werden: Er signalisiert nichts bezüglich der semantischen Rolle. Das entspricht auch einer auf die Antike zurückgehenden Tradition.

4.2. Kernargumente

Die Verben der Klassen I und II in (5) stimmen in ihren Argumentstrukturen überein, wenn man von dem im Dativ erscheinenden ‚Extra-Argument‘ absieht. Das folgt aus den Definitionen der Klassen. Die Argumente, die die Verben einer Klasse, etwa Klasse (a), definitionsgemäß haben müssen, nenne ich im Folgenden Kernargumente.

Wie dargelegt, weisen die Verben der Klasse (a) definitionsgemäß ein AGENS-Argument auf; dies gilt für den Typ ARBEITEN ebenso wie für HELFEN. Die Verben der Klasse (b) wie STERBEN und GELINGEN weisen definitionsgemäß ein PATIENS-Argument auf. Die Verben der Klasse (c) wie BLÜHEN und PASSEN weisen definitionsgemäß ein NN-Argument auf; den entsprechenden Partizipanten könnte man pauschal als den ZUSTANDSTRÄGER oder STATUSINHABER charakterisieren, also als denjenigen, über dessen Zustand etwas gesagt wird, somit in *Der Baum blüht* den fraglichen Baum und in *Der Pullover passt mir nicht* den fraglichen Pullover. Die Verben der

Klasse (d) wie TÖTEN und GEBEN weisen definitionsgemäß ein AGENS und ein PATIENS-Argument auf.

Kernargumente in diesem Sinn sind also einfach die Argumente, die Verben der vier Klassen (a), (b), (c) und (d) in jedem Fall haben müssen, um sich für die Klasse zu qualifizieren, egal ob die betreffenden Verben noch weitere Argumente nehmen oder nicht. Andere Argumente bezeichne ich als periphere Argumente oder Non-Kern-Argumente.

Die Kasusverteilung lässt sich nach diesen terminologischen Vorbereitungen in zwei Schritten beschreiben. Erstens. Ein peripheres Argument, das nicht anderweitig, etwa mittels Präposition, markiert wird, bekommt den Dativ. Der Dativ ist die unspezifische Rollenmarkierung für periphere Argumente. Welche semantischen Rollen die DATIV-Komplemente im Einzelnen tatsächlich tragen können, richtet sich, wie erläutert wurde, vorrangig danach, welche konkurrierenden spezielleren Markierungen zur Verfügung stehen. Unter die peripheren Argumente fallen auch die sogenannten freien Dative. Freie Dative können nach dem Konzept der Stellenaufstockung analysiert werden (Zifonun, Hoffmann & Strecker 1997: 723). Freie Dative sind danach Realisierungen zusätzlicher Argumente, die in der Grundvalenz nicht angelegt sind. Auch hier kommt der Dativ zum Zuge: Er ist der Kasus der Wahl für Verbdependentien, die keine Kernargumente realisieren, immer da, wo keine spezielleren Markierungen gefordert sind. Zweitens. Die Markierung der Kernargumente folgt im Deutschen dem akkusativischen Muster, und zwar sowohl für Verben des Typs I als auch für Verben des Typs II. Das heißt: Wenn es zwei Kernargumente gibt, so wird das PATIENS-Argument besonders markiert; es steht im Akkusativ. Das AGENS-Argument bleibt unmarkiert; es steht im Nominativ. Gibt es nur ein Kernargument, so bleibt dies ebenfalls unmarkiert und steht im Nominativ – egal, welche Rolle es trägt.

Dass das PATIENS-Argument im Deutschen immer besonders ausgezeichnet wird und im Akkusativ steht, ist natürlich ein einzelsprachliches, empirisches Faktum. In vielen Sprachen, z.B. im Türkischen, wird das PATIENS-Argument bekanntlich nur unter besonderen Voraussetzungen markiert, etwa bei spezifischer Lesart („differentielle Objektmarkierung“). (Das wäre, ein weiterer Problemfall für die Agentivitätstheorie.) Aber auch im Deutschen wird die NOMINATIV-AKKUSATIV-Unterscheidung nur in ganz beschränktem Maße an einzelnen Wortformen tatsächlich sichtbar. In ergativen Systemen wird bei der Markierung der Kernargumente umgekehrt verfahren, das AGENS-Argument

wird markiert; es steht im Ergativ. Das PATIENS-Argument bleibt unmarkiert; der unspezifische Kasus wird dann meist *Absolutiv* genannt.

4.3. Diskriminative vs. non-diskriminative Kasusmarkierung

Bei den Kernargumenten erfolgt eine spezifische Kasusmarkierung nur, wenn zwei Kernargumente zu unterscheiden sind. Die Verwendung des Dativs ist dagegen nicht in dem geschilderten Sinn diskriminativ. Wenn die Anwendungsbedingungen für den Dativ erfüllt sind, wird der Dativ selbst dann verwendet, wenn es nichts zu unterscheiden gibt. Dies wird im Passiv deutlich wie in *Dem Manne kann geholfen werden*. Diskriminative Markierung gilt nur für Kernargumente. Daraus folgt ‚Burzios Generalisierung‘ (reformuliert in Haider 2010: 249): Ein Akkusativ kann (im Unterschied zum Dativ) nur auftreten, wenn schon ein Nominativ gegeben ist.

5. Kasusmerkmale

Im Ergebnis müssen die anfänglichen Annahmen zum Zusammenhang von Kasus und Rolle revidiert werden. Der Nominativ ist als merkmalloser Kasus auszuweisen. Die Beziehung zwischen AGENS und Nominativ ist nicht zweiseitig, sondern, auch das ist gut bekannt, implikativ: AGENS impliziert Nominativ; das Umgekehrte gilt nicht. Wenn man die Kasus innerhalb eines Merkmalsystems charakterisieren will, bedeutet das: Die obliquen Kasus Akkusativ und Dativ müssen als NONAGENS-Kasus ausgewiesen werden. Das ist nur eine andere Formulierung für die Implikation: Akkusativ und Dativ sind bei AGENS-Argumenten nicht anwendbar; gegebenenfalls kommt der Nominativ zum Zuge. Oben habe ich dafür plädiert, den Dativ als NONAGENS NONPATIENS-Kasus zu charakterisieren. Insgesamt bekommen wir das in (6) angezeigte partielle Kasusinventar für das Deutsche und vergleichbare Sprachen:

- (6) *Merkmalspezifikationen für Kasus:*
- | | |
|-----------|-------------------------|
| NOMINATIV | [] |
| AKKUSATIV | [NONAGENS] |
| DATIV | [NONAGENS NONPATIENS] |

Schließlich soll noch ausdrücklich festgehalten werden, dass im Deutschen, wie geschildert, diskriminative Kasusmarkierung vorliegt. Es gilt das *Prinzip*

der diskriminativen Kasusmarkierung: Genau ein Kernargument bleibt ohne Rollenmarkierung.

Wie gewöhnlich gilt auch das Spezifitätsprinzip: spezifischere Optionen haben im Zweifelsfall Vorrang. Es folgt dann: (i) Periphere NN-Argumente erhalten den Dativ. (ii) Bei Verben mit zwei Kernargumenten – das sind gerade die AGENS-PATIENS-Verben – wird ein Argument ausgezeichnet, und dafür kommt nach den Kasuspezifikationen im Deutschen nur der Akkusativ in Frage. Daher wird das PATIENS-Argument markiert. (iii) Im Übrigen kommt immer der Nominativ zum Zuge.

Damit ist die Kasusverteilung, wie sie aus der Tafel der Verbklassen in (5) zu ersehen war, vollständig und korrekt erfasst.

Die Merkmalspezifikationen entsprechen den allgemein angesetzten Markiertheitsverhältnissen unter den Kasus. Die Struktur des Merkmalsystems entspricht damit den Forderungen etwa in Wunderlich (2006).

Als Korollar bekommen wir die allgemein angenommene Kasushierarchie (gemäß Markiertheit): NOMINATIV > AKKUSATIV > DATIV > Diese oder eine entsprechende Hierarchie wird auf jeden Fall in irgendeiner Form benötigt, etwa in Form einer Hierarchie syntaktischer Funktionen wie in Keenan & Comrie (1977: 66).

Auch in Ansätzen, die die Agentivitätstheorie des Kasuslinking annehmen, müsste diese Kasushierarchie noch zusätzlich zur semantischen Rollenhierarchie eingeführt werden. Das hieße aber: Die Kasus würden aufgrund einer Hierarchie zugewiesen, ihre systematische Ordnung würde mit einer *anderen* Hierarchie erfasst.

Die Annahme, dass der Nominativ der merkmallose Kasus ist, muss vielleicht nicht weiter begründet werden. Sie fügt sich in das Gesamtbild morphologischer Kategorien ein, wo generell Oppositionen von unmarkierter Kategorie und markierten Kategorien herrschen, wie Singular versus Plural, Non-Femininum versus Femininum usw.

6. Schluss

Wenn man in einer deskriptiven Grammatik den eingangs geschilderten traditionellen Ansatz zur Beschreibung der Funktionen der adverbalen Kasus im Deutschen rekonstruieren möchte, kann das nach den vorangegangenen Überlegungen wie folgt geschehen. Unter Bezug auf die semantischen Rollen

kann bestimmt werden, welche Argumente welche syntaktischen Funktionen übernehmen, wie in (7) skizziert ist.

- (7) *Rollen und syntaktische Funktionen:*
 Erstes Kernargument → Subjekt
 mit der Rolle AGENS (bei zwei Kernargumenten)
 mit der Rollenspezifikation AGENS, PATIENS oder NN
 (bei nur einem Kernargument)
 oder ggf. (im Passiv) mit der Rolle PATIENS.
 Zweites Kernargument → Direktes Objekt
 mit der Rolle PATIENS
 Non-Kernargument → Indirektes Objekt
 mit der Rollenspezifikation NN

Hat man die Begriffe Subjekt, direktes Objekt und indirektes Objekt in geeigneter Weise eingeführt, so folgt die Kasusverteilung unmittelbar, wie in (1) und (2) vorausgesetzt wurde, mit Subjekt → Nominativ, Direktes Objekt → Akkusativ, Indirektes Objekt → Dativ.

Es ging im Vorhergehenden nicht um eine bestimmte technische Lösung des Linking-Problems. Das Ergebnis sollte vielmehr mit verschiedenen Grammatikkonzeptionen kompatibel sein; es besagt: (i) Der Nominativ ist der unspezifische Kasus. Akkusativ und Dativ signalisieren: NONAGENS; das macht ihren Status als Objektkasus aus. Der Dativ ist der markierte Objektkasus: er signalisiert, dass ein Objekt vorliegt, aber eben nicht in der typischen Objektrolle des PATIENS. Daher: NONPATIENS. (ii) Kernargumente werden nur ausgezeichnet, insoweit Unterscheidungsbedarf besteht.

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The typology of opacity and Containment Theory

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Abstract

In this paper, we provide the first step to the general argument that Containment Theory is a general representational solution to the opacity-problems standard correspondence-theoretic OT faces. More concretely, we show that a specific and restrictive version of Containment Theory employing the so-called ‘Cloning Hypothesis’ (Trommer 2011, 2014, Trommer & Zimmermann 2014) is empirically most adequate with respect to the typology of attested counterfeeding and counterbleeding patterns and is hence superior to rule-based alternatives.

1. Introduction

Phonological opacity is the pervasive phenomenon that the context for phonological processes can be obscured by the interaction with other processes. The classical definition by Kiparsky (1973) is given (1) and enriched with the terms of McCarthy (1999) after the arrows.

(1) Opacity

A phonological rule \mathbb{P} of the form $A \rightarrow B / C_D$ is opaque if there are surface structures with either of the following characteristics:

- a. instances of A in the environment C_D.
→ non surface true = underapplication
- b. instances of B derived by \mathbb{P} that occur in environments other than C_D.
→ non surface apparent = overapplication

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As Bakovic (2011) rightly summarizes, there are '[f]ew notions in phonological theory have received as much attention in the literature as opacity.' (p.40) One of the most prominent starting points is the observation that standard parallel correspondence-theoretic OT can not predict opacity whereas an SPE system based on ordered phonological rules can (see, for example, Bakovic (2011) for an overview and relevant citations).

In this paper, we add another theoretical perspective to this discussion: The claim that Containment Theory restricted by the Cloning Hypothesis is able to predict attested opacity cases and systematically excludes imaginable but unattested patterns.

Many of the existing theoretical discussions of opacity focus on possible interactions that arise between two processes and equate opacity with the process interactions of counterfeeding (1a) and counterbleeding (1b). That this is a simplification in both directions (there can be overapplication/underapplication without counterfeeding/counterbleeding respectively and there can be counterfeeding and counterbleeding without opacity) is the argument in, for example, Bakovic (2007) where the most complete typology of opaque interactions is given that we are aware of. In this contribution we also start with an investigation of classical counterfeeding and counterbleeding cases and hope that our theoretical argument can be extended to other types of opacity in future research.

Two classical examples of counterfeeding and counterbleeding that are repeated in the theoretical literature and will also serve as illustrations for our theoretical model are counterfeeding in Lomongo and counterbleeding in Tiberian Hebrew, given in (2) and (3).

In Lomongo, there are surface forms that violate the generalization that high vowels directly followed by another vowel are repaired via gliding [oina]. These surface forms arise if the context for gliding is only created by another process of /b/-deletion. The account for this underapplication opacity based on ordered rules is given in (2): Although deletion creates the context for gliding, it is too late for this process since the former is ordered after the latter.

(2) Counterfeeding in Lomongo (Bakovic 2011: 45)

	/o-isa/	/ba-bina/	/o-bina/
1. Gliding	wisa	–	–
2. Deletion	–	baina	oina
	‘you (sg)’	‘hide’	‘they dance’

In Tiberian Hebrew, both final /ʔ/-deletion and /ə/-epenthesis to avoid final clusters can apply to underlying forms like /defʔ/. Since the context for epenthesis is already destroyed as soon as the /ʔ/ is deleted, this is an instance of opaque overapplication. The account for Tiberian Hebrew in a system based on ordered rules is given in (3): Although deletion destroys the context for epenthesis, it comes too late since the former follows the latter.

(3) Counterbleeding in Tiberian Hebrew (McCarthy 1999: 333)

	/melk/	/qaraʔ/	/defʔ/
1. Epenthesis	melex	–	defeʔ
2. ʔ-Deletion	–	qara	defe
	‘king’	‘he called’	‘tender grass’

This paper is structured as followed: After we present our theoretical model of Two-Level-Containment in section 2.1, we show how it can predict counterfeeding and counterbleeding of the type illustrated with Lomongo and Tiberian Hebrew in section 2.2 and 2.3. That this model is restrictive and systematically excludes certain opacity types that are possible in a system based on ordered rules is shown in section 3. Section 4 takes a first look at the empirical reality of attested opacity patterns and concludes that one can be very optimistic that the predictions of Two-Level-Containment are empirically borne out. Section 5 concludes.

2. Proposal: Two-Level-Containment

2.1. Background Assumptions

Our central theoretical assumptions are identical to the original implementation of Optimality Theory (=OT) proposed by Prince & Smolensky (1993), namely the assumption of hierarchical autosegmental representations and the Containment restriction on candidates. This latter assumption excludes

any literal deletion from the phonology: All elements that are ‘deleted’ are simply marked as not realizable for the phonetic interpretation. In a system based on autosegmental representations, the material that remains unrealized by the phonetic component equals the material that remains un-integrated into the overall prosodic structure. This exclusion of literal deletion crucially distinguishes our system from classical Correspondence Theory (McCarthy & Prince 1995).

The two minimal departures from Classical OT we assume are the implementation of epenthesis by reference to morphological affiliation of phonological material and the generalization of the Containment assumption to autosegmental association lines. The central assumptions of our system that we term Two-Level-Containment (=2LC) can hence be summarized as in (4).

(4) Two-Level-Containment: Assumptions

a. Radical Containment:

No erasure of phonological elements or association lines.

(Trommer & Zimmermann 2014, Trommer 2011, Zimmermann 2017)

b. Hierarchical Nonlinear Representations:

Prosodic Phonology and Feature Geometry.

(e.g. Nespor & Vogel 1986, McCarthy 1981)

c. Colors:

Each morpheme has a unique color characterizing all of its underlying nodes and association lines.

(van Oostendorp 2003, 2008, 2007, Revithiadou 2007)

The assumption (4a) implies that the marking of association lines as invisible is the only counterpart to deletion operation in non-Containment approaches. Together with the assumption of autosegmental representations (4b), this means that phonetic realization of a phonological element can be specified as in (5).

(5) Axiom of Phonetic Visibility (Trommer & Zimmermann 2014)

A phonological node is visible to phonetics if and only if it is dominated by the designated root node of the structure through an uninterrupted path of phonetic association lines

The third assumption (4c) means that morphological structure is minimally reflected in phonological representations since every morpheme has its own

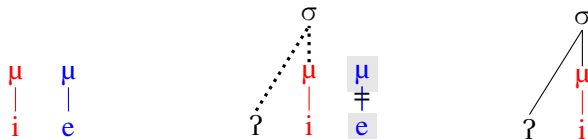
unique ‘color’ that is present on all phonological material that is underlyingly part of this morpheme. The phonology is thus able to distinguish whether 1) phonological elements are part of the same morpheme or not and 2) whether elements were underlyingly present or are epenthetic (=colourless). The assumption of colours is hence an explicit formalization for the morphemic affiliation of elements which is implicitly assumed in Correspondence-theoretic OT as well. Our notational conventions are illustrated in (6) and (7). Non-realized association lines are struck out (6b) whereas epenthetic association lines are given as dotted (6c).

(6) Notation of association lines (Trommer & Zimmermann 2014)

a. Morphological phonetically visible	b. Morphological phonetically invisible	c. Epenthetic phonetically visible

The depiction in (7) also introduces the three different structural levels that are implied in 2LC: the morphological structure (=M) that equals the underlyingly present input into the phonology, the integrated structure (=I) that equals the phonological output structure that contains all realized and non-realized elements, and the phonetic structure (=P) that is interpreted by the phonetics. To ease readability of the I-structures, non-realized phonological elements like segments, features, or tones are marked with a grey background in the following. The actual colours distinguishing elements with different morphemic affiliations are omitted in the following but all epenthetic elements are marked as underlined.

(7) Deletion as non-realization in 2LC: Three different structures
 Morphological = M Integrated = I Phonetic = P



In 2LC, there is no principled division into faithfulness and markedness constraints: Only information present in the output candidates is penalized

by constraints; there is hence no comparison with an ‘input’ anymore. In 2LC, the family of faithfulness constraints penalizing deletion in classical correspondence-theory, namely MAX, are constraints against non-realized material in line with (5). Since the name MAX is so well-established for this type of constraints, we will stick to it in the following. And constraints against insertion are simply constraints against colourless material, called DEP in the following for reasons of familiarity as well.

In Containment Theory, deleted elements hence remain in the structure and constraints can in principle refer to it. In 2LC, this reference is restricted by the Cloning Hypothesis in (8) that distinguishes it from other possible systems based on Containment: Constraints can either be evaluated on the I-structure and hence take into account all phonological elements (including phonetically unrealized ones) or they can be evaluated on the P-structure and hence only restrict phonetically realized material (Trommer 2011, Trommer & Zimmermann 2014).

(8) The Cloning Hypothesis

Every markedness constraint exists in 2 incarnations:

- a. The general clone refers to all structure in I.
- b. The phonetic clone refers only to structure in P.

In the following, the name of P-constraints will be underlined to distinguish them from their I-clone. The Cloning Hypothesis explicitly excludes any constraints that only refer to M-structure. Such a constraint type is, for example, possible in the correspondence-theoretic OT model proposed in McCarthy (1996) where all constraint parameters are specified for whether they apply on the ‘surface’, to the ‘underlying’ structure or whether they are ‘indifferent’.

In the next two subsections, we illustrate how this 2LC system predicts counterfeeding and counterbleeding patterns.

2.2. Counterfeeding in Two-Level-Containment

Recall that in Lomongo gliding underapplies although its context is created on the surface by /b/-deletion. In an account based on ordered rules, this was taken to follow since gliding applies after /b/-deletion applied, cf. (2). The 2LC account is based on the intuition that /b/-deletion does not create the

context for gliding since deletion is not true deletion. The relevant markedness constraints for this account are given in (9). Gliding is triggered by (9a) which penalizes adjacent vowels and /b/-deletion by (9b) which penalizes any postvocalic /b/. Both are P-constraints. Importantly, there is another constraint (9b) which bans adjacent consonants and this is now an I-constraint that takes into account all structure, including the non-realized one.

- (9) a. *VV: Assign a violation mark for every pair of adjacent vowels (=segments specified for [-cons]) in P.
- b. *Vb: Assign a violation mark for every postvocalic voiced sonorant in P.
- c. *CC: Assign a violation mark for every pair of adjacent consonants (=segments specified for [+cons]) in I.

Tableau (10) optimizes a transparent gliding context where two vowels are expected to be adjacent after prefixation. Candidate (10a) without any repair violates *VV and both gliding in (10b) and non-realization of one of the vowels in (10c) avoids this violation. Since non-realization of a vowel (10b) violates both MAXS and MAX[-cons], gliding (10c) which only violates MAX[-cons] is optimal.

(10) Gliding

	o-isa	<u>*CC</u>	<u>*Vb</u>	<u>*VV</u>	MAXS	MAX[-CONS]
a.	oisa			*!		
☞ b.	wisa					*
c.	o isa				*!	*

Tableau (11) adds the context of transparent /b/-deletion. Since MAXS is ranked below *Vb, the candidate non-realizing the /b/ (11b) is optimal

(11) Deletion

	ba-bina	<u>*CC</u>	<u>*Vb</u>	<u>*VV</u>	MAXS	MAX[-CONS]
a.	babina		*!			
☞ b.	ba b ina				*	

The opaque context where a /b/ is underlyingly preceded by a high vowel is optimized in (12). The absence of any repair processes in (12a) results in a

fatal violation of *Vb. Non-realization of the /b/ in (12b) avoids this violation but induces a new violation of *VV since a new pair of adjacent vowels is created in the P-structure. This violation can be avoided by additional gliding in (12c) but this now induces a violation of *CC since the new glide, formed by non-realization of underlying [-cons] and insertion of epenthetic [+cons], is adjacent to another [+cons] segment in the I-structure, namely the non-realized /b/.

(12) Deletion but no gliding

	o-bina	* <u>CC</u>	* <u>Vb</u>	* <u>VV</u>	MAXS	MAX[-CONS]
a.	obina		*!			
b.	o b ina			*	*	
c.	w b ina	*!			*	*

This minimal interaction of five constraints already suffices to illustrate the logic of a 2LC account of counterfeeding: It is based on the insight that the context for a process might be given in P but is not given on I, summarized in (13). In Lomongo, the context for gliding is restricted to high vowels that are directly followed by a [-cons] segment in the I-structure and is hence not given if the vowel that could undergo gliding is followed by a (non-realized) consonant.

(13) Counterfeeding in 2LC

The context for a process is present in P but not in I.

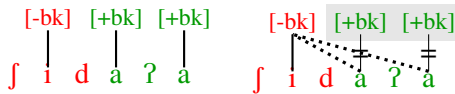
Another example for a pattern where deletion counterfeeds another process is Sea Dayak where vowel nasalization triggered by a preceding nasal consonant does not apply if this adjacency is created by deletion of a voiced stop or affricate after a nasal: /naŋga/ → [nãŋaʔ], *[nãŋãʔ] ‘set up a ladder’ (Kenstowicz & Kisseberth 1979: 298). A 2LC account based on a constraint *NV penalizing oral vowels after nasal segments which is sensitive to I-structure readily predicts this pattern. The non-realization of an element simply does not create the necessary adjacency relation of a nasal and non-nasal element in the I-structure for a case like /naŋ g a/. If vowel length is represented with moras, vowel shortening also involves the non-realization of an element. A case at hand is Maltese where vowel shortening counterfeeds rounding harmony that is only triggered by short vowels (Ettlinger 2008). This

pattern also falls out from the intuition (13): The constraint demanding that short round vowels spread their [+round] feature is an I-constraint that is hence not violated if an underlyingly long round vowel is shortened on the surface.

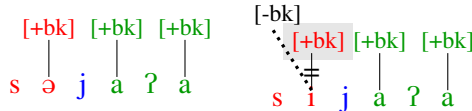
This general logic that non-realization of elements is not sufficient to create the context necessary for another operation can also be extended to feature changing operations since those involve non-realization of underlying features in Containment. A relevant case cited in the literature is counterfeeding in Mafa where vowel harmony for [±back] is not triggered by vowels that are only caused to be front by an adjacent glide: /sə-j-aʔe/ → [sijaʔa], *[sijeʔe] ‘drink it!’ (Ettlinger 2008: 9). This falls out in 2LC if the constraint triggering vowel harmony is sensitive to I-structure and hence penalizes any pair of vowels that are not associated to the same [±back] feature. Since an underlyingly [-back] vowel will always keep this value in the I-structure the constraint is not violated even if a fronted vowel cooccurs with a non-front vowel, sketched in (14). In (14a), two vowels with different underlying [±back] features would violate the harmony-triggering constraint and harmony applies. In (14b), however, the disharmony only arises in the P-structure via raising caused by an adjacent glide. Though the epenthetic [-back] feature is different from the [+back] of the following vowel, the first vowel still has its non-realized [+back] in the I-structure and hence no violation of the harmony-triggering constraint occurs.

(14) Vowel harmony counterfed by vowel raising: Mafa

a. Underlyingly different backness features: Vowel harmony



b. Underlyingly identical backness features: No vowel harmony



The additional non-realized features in the I-structure hence help to satisfy the constraint in Mafa. Interestingly, the context for a process can also be absent in the I-structure since too many features are there. This can be the case for parasitic harmony processes. An example is the famous counterfeeding in Yawelmani Yokuts where parasitic rounding vowel harmony which only

applies between vowels of the same height is not triggered by vowels that are lowered since they are long: /cu:m-al/ → [co:mal] *[co:mol] ‘might destroy’ (Kenstowicz & Kisseberth 1979: 90). This falls out in 2LC if the relevant I-constraint demands rounding harmony only for vowels that are associated to the same height features – an additional non-realized feature hence already makes a vowel too different in the I-structure.

As was already shown in the account for Lomongo in (12), the generalization that the context for a process is given in the P-structure but not in the I-structure can also follow if a higher ranked I-constraint blocks the result of a certain process. Another example at hand is the 2LC account of counterfeeding in Shimakonde where a root-controlled vowel harmony process is triggered by mid vowels. If such a mid vowel results from coalescence of a low and a high vowel, however, no vowel harmony surfaces (/va-nda-ím-an-a/ → [vandeémaána], *[vandeémeéna]¹ ‘they will deny each other’ (Ettlinger 2008: 116)). This follows if root-controlled vowel harmony is restricted by a high-ranked constraint penalizing any [+high] vowel that shares its height features in the I-structure. Since a mid vowel that results from coalescence still bears its [+high] feature in the I-structure, vowel harmony is blocked in such contexts.

Following the terminology of McCarthy (1999), all of the examples discussed above are instances of counterfeeding on environment where the element changed by one process is part of the context for the other process that does not apply. The counterpart are counterfeeding on environment cases where the element changed by one process is also expected to be changed by the other. Counterfeeding on focus cases that result in chain shiftings can follow from exactly the logic in (13) as well. A famous example can be found in Western Basque where mid vowels are raised to high but low vowels are only raised to mid (Hualde). In 2LC, this fell-swoop raising is blocked by a high-ranked constraint against vowels that are both [+low] and [+high] – exactly the configuration that arises in the I-structure if a low vowel is raised to high (see Trommer (2011) or Popp (2018) for the general analysis of chain shifts along these lines in Containment Theory).

¹As common for Bantu vowel harmony, the process never affects prefixes or final vowels.

2.3. Counterbleeding in Two-Level-Containment

In this subsection, we turn to the 2LC account of counterbleeding, starting with the famous Tiberian Hebrew example from (3). Recall that a rule-based account would assume that /ə/-epenthesis precedes /ʔ/-deletion and that this second process can destroy the context for the first process on the surface. The 2LC account is based on reversing the logic of the counterfeeding account presented above: The context for a process is not given in the P-structure but it is still present in the I-structure since deletion is not true deletion in containment, summarized in (15).

(15) Counterbleeding in 2LC

The context for a process is not present in P but it is present in I.

The relevant constraints for an account of Tiberian Hebrew are given in (16). The constraint (16a) triggers /ə/-epenthesis to break up a final consonant cluster and the constraint (16b) triggers final /ʔ/-deletion. Crucially now, only the latter is a P-constraint, the former is only sensitive to I-structure.

- (16) a. *CC]: Assign * for every sequence of two adjacent consonants at the right word edge in I.
 b. *ʔ]: Assign * for every [ʔ] at the right word edge in P.

Tableau (17) optimizes the transparent context of /ə/-epenthesis where two consonants are underlyingly adjacent. The absence of any repair process (17a) hence trivially results in a violation of *CC]. Interestingly, non-realization of one of the consonants (17b) does not avoid this violation simply because this consonant and hence the cluster is still present in the I-structure. Only epenthesis (17c) that destroys the adjacency of the two consonants can successfully repair the consonant cluster in the I-structure. Consequently, epenthesis becomes optimal although DEP dominates MAX.

(17) Epenthesis

	melk	*CC]	*ʔ]	DEPS	MAXS
a.	melk	*!			
b.	mel k	*!			*
ע c.	meləx			*	

The ranking argument for MAXS and DEPS becomes apparent in the transparent context of /ʔ/-deletion, shown in (18). In contrast to (17), both non-realization (18b) and epenthesis (18c) can resolve the problem of a final /ʔ/ that is excluded by high-ranked *ʔ] (18a). Since DEPS is ranked over MAXS, candidate (18b) becomes optimal.

(18) ʔ-Deletion

	qaraʔ	*CC]	*ʔ]	DEPS	MAXS
a.	qaraʔ		*!		
b.	qara ʔ				*
c.	qaraʔə			*!	

Tableau (19) adds the opaque context where a final consonant cluster ending in /ʔ/ is underlyingly present. Faithful realization of this structure induces violations of both *CC] and *ʔ] as in (19a). Epenthesis on its own (19c) avoids a violation of *CC] but still induces a violation of *ʔ]. Only the combination of epenthesis and non-realization of the final /ʔ/ in (19d) avoids both violations and is predicted to be optimal. The crucial transparent competitor is candidate (19b) that only undergoes non-realization of /ʔ/ and hence avoids a violation of P-sensitive *ʔ]. It still induces a violation of *CC], however, since this constraint is formulated for the I-structure. Although there is no phonetically realized consonant cluster, there still is one in the integrated structure and this cluster can only be avoided via epenthesis.

(19) Insertion and deletion

	/defʔ/	*CC]	*ʔ]	DEPS	MAXS
a.	defʔ	*!	*!		
b.	def ʔ	*!			*
c.	defəʔ		*!	*	
d.	defə ʔ			*	*

Counterbleeding in Tiberian Hebrew hence follows since a ‘deleted’ element remains in the I-structure and can still trigger processes if the relevant constraints are I-constraints.

This account can be extended to other pervasive counterbleeding examples: In West Greenlandic, for example, overapplication of vowel pharyngalization

after the triggering /q/ was deleted pre-consonantly (e.g. /taliq-t/ → [talit̪], *[talit̪] (Ettlinger 2008: 47)) follows if the constraint triggering pharyngalization is an I-constraint and still ‘sees’ the triggering consonant. A similar case of assimilation that is counterbled by consonant deletion is also cited for Ojibwa (Kaye 1974, McCarthy 1999).

Again, this logic also extends to feature changing operations since those involve non-realization of underlying features in Containment Theory. An example can be found in Polish where consonant devoicing counterbleeds vowel raising which is only triggered before voiced consonants (e.g. /ɔb/ → [ɔp], *[ɔp] ‘crib’ (Kenstowicz & Kisseberth 1979: 73)). In 2LC, devoicing involves the non-realization of an underlying [+vcd] feature that still remains in the structure. If the constraint demanding high vowels before [+vcd] consonants is sensitive to I-structure, this counterbleeding readily follows. Similarly, spirantization affects only voiced stops in Low German but is counterbled by final consonant devoicing (e.g. /ta:ɡ/ → [ta:χ], *[ta:k] ‘days’ (Bakovic 2011: 59)). If the constraint demanding a [-cont] feature on any consonant that is [+vcd] is sensitive to I-structure, this overapplication is again predicted: The context for the process simply remains in the I-structure though it is destroyed in the P-structure.

3. 2LC as a restrictive theory

In the preceding section, it was shown that 2LC provides a representational solution to counterbleeding and counterbleeding cases which are notoriously challenging in correspondence-theoretic OT. 2LC’s account relies on the fact that the I-structure can contain non-realized elements which make the I-structure different from the P-structure. This difference implies that the context for a process may not be given in I although it is present in P (=counterfeeding) or that the context for a process is given in I although it is not present in P (=counterbleeding). The main argument for 2LC and against alternative accounts of opacity should be its restrictiveness: It only predicts certain attested opacity patterns but systematically excludes other imaginable but unattested patterns.

As we will discuss in this subsection, there are three restrictions on possible counterfeeding and counterbleeding patterns in 2LC that are predicted to exist in an alternative account based on ordered rules.

Firstly, 2LC systematically excludes patterns where epenthesis alone counterfeeds or counterbleeds another process, simply because the relevant parts of the I-structure and the P-structure are identical in such a case. Example (20) illustrates this restriction with a concrete example of counterfeeding epenthesis. In this made-up language, nasalization of vowels preceded by a nasal consonant is counterfed by nasal epenthesis that applies to break up otherwise adjacent vowel clusters. On the surface, nasalization hence underapplies in [baninã] that surfaces instead of transparent *[banĩnã].

(20) Counterfeeding in Dayak': Rule-based account

1. V-Nasalization	/naŋa/ nãŋã	/ba-ina/ bainã
2. Epenthesis	–	baninã

That this pattern is impossible to predict in 2LC is shown in tableau (22). The constraint (21a) triggers progressive vowel nasalization and (21b) triggers vowel epenthesis (all alternative repairs are excluded for ease of exposition). The former is necessarily a P-constraint since non-realization of [-nas] on the vowel would not help to avoid a violation of this constraints if it were evaluated on the I-structure. Constraint (21b) is also a P-constraint though it in fact does not matter whether it is an I- or a P-constraint since both versions are equally satisfied by epenthesis as a repair.

- (21) a. *NV: Assign a violation mark for every [-nas] vowel that is directly preceded by a [+nas] segment.
 b. *VV: Assign a violation mark for every pair of adjacent vowels.

The relevant counterfeeding context (22) shows how these constraints mispredict the transparent application of nasalization. Epenthesis of a nasal creates the adjacency between a nasal consonant and a non-nasal vowel penalized by (21a). Crucially, it creates this adjacency in both the P- and the I-structure, there is hence no version of the constraint (21a) in 2LC that would avoid this misprediction.

(22) Dayak' is impossible in 2LC

ba-ina	*NV	*VV	DEPS	MAX[NAS]
a. baina	*!	*!		
b. bainã		*!		*
c. baninã	*!			*
d. banĩnã				**

An absolutely similar restriction holds for counterbleeding interactions. As was shown in subsection 2.3, these follow in 2LC since the context for a process can (still) be given in the I-structure although it is already destroyed in the P-structure. This again restricts the processes that can counterbleed other processes to deletion that leaves certain elements non-realized. Epenthesis that counterbleeds another process is systematically impossible in 2LC.

This is illustrated with a concrete example in (23). In this made-up language Ojibwa', place assimilation between adjacent consonants is counterbled by /ə/-epenthesis to break up final consonant clusters.

(23) Counterbleeding in Ojibwa': Rule-based account

	/takossin-ka/	/takossin-k/
1. Place assimilation	takossin̩ka	takossin̩k
2. Epenthesis	–	takossin̩ək

That 2LC is again unable to predict this pattern is shown in tableau (25) where two consonants with different place features are at the right word edge in the input. The transparent candidate (25c) that only inserts an epenthetic vowel successfully avoids violations of both the constraint against consonants with different place features (24a) and the one against a final consonant cluster (24b). Opaque overapplication of place assimilation in (25d) is hence harmonically bounded.

- (24) a. $*C_{\alpha}C_{\beta}$: Assign a violation mark for every pair of segments associated with an identical place feature.
 b. $*CC]_{\sigma}$: Assign a violation mark for every consonant at the right word edge that is directly adjacent to a preceding consonant.

(25) Ojibwa' is impossible in 2LC

	takossin-k	$*C_\alpha C_\beta$	$*CC]_\sigma$	DEPS	MAX[PL]
a.	takossink	*!	*!		
b.	takossɪŋk		*!		*
c.	takossinək			*	
d.	takossɪŋək			*	*!

The mispredictions illustrated in (22) and (25) are systematic in 2LC and follow from the restrictiveness of the Cloning Hypothesis. Epenthesis destroys an underlying adjacency relation in both the P- and the I-structure and the only constraints that could refer to pre-epenthesis contexts are M-constraints that only refer to coloured material.

The discussion of whether epenthesis can counterbleed other processes has been present since the beginning of the opacity discussion (cf., for example, Kenstowicz & Kisseberth (1971), Kiparsky (1973), Bakovic (2007)) and it is interesting that this restriction arises (again) in 2LC.

A second opaque pattern that is systematically impossible in 2LC but can be predicted by ordered rules is one where a process applies if and only if its context is given in the underlying form and a second process both counterbleeds and counterfeeds this first process. A famous example for this comes from Yawelmani Yokuts where parasitic roundness harmony is taken to be both counterfed and counterbled by lowering of long vowels as in (26).

(26) Yawelmani Yokuts (Kenstowicz & Kisseberth 1979: 90+92)

	Counterbleeding	Counterfeeding
1. V-Harmony (if same height)	/c'uju:-hin/ c'uju:hun	/c'u:m-al/ –
2. Lowering (V:[+high] → V:[-high])	c'ujo:hun	c'o:mal

2LC can either successfully predict the counterfeeding or the counterbleeding relation but not the simultaneity of both. This would only be possible in a system where the constraint triggering parasitic vowel harmony is sensitive only to the M-structure – something explicitly excluded by the Cloning Hypothesis.

The final restriction of 2LC that we want to mention is the exclusion of fed counterfeeding where one deletion process feeds another one which in turn counterfeeds the first. A repeatedly cited example is Lardil where final vowel deletion feeds deletion of final apical consonants. Crucially, this consonant deletion does not feed another application of vowel deletion although it can create the surface context for final vowel deletion.

(27) Fed counterfeeding in Lardil (Hale 1973)

1. V-deletion V→∅ / __ #	/wangalk/ –	/jilijili/ jilijil	/dibirdibi/ dibirdib
2. C-deletion C _[-apic] →∅ / __ #	wangal	–	dibirdi
	‘boomerang’	‘oyster species’	‘rock cod’

2LC cannot predict such a pattern simply because the two constraints triggering the deletion must be P-constraints. This is necessary since no I-constraint can ever result in deletion within 2LC. And as soon as the context for the second deletion process is hence created on the surface, it is predicted to apply (iteratively).

4. The empirical reality of counterfeeding and counterbleeding

In this section we will test the three restrictions of 2LC discussed in the last section 3 against the empirical reality.

We start with the restriction that epenthesis can never counterfeed or counterbleed another process. To get a representative overview over attested patterns, we looked at all examples of counterfeeding and counterbleeding patterns discussed in three central theoretical contributions to the opacity discussion: The proposal of Sympathy Theory in McCarthy (1999) (=M99), the detailed typology of opaque interactions in Bakovic (2007) (=B07) and Bakovic (2011) (=B11), and the argument for diagonal correspondence-theory in Ettliger (2008). All of these cases are summarized in (28) with an implied rule-based account where process 1 is counterfed or counterbled by process 2. The patterns are distinguished into ‘on environment’ (=E) and ‘on focus’ (=F) cases.

(28) Counterfeeding and counterbleeding: Examples

		Process 1	Process 2	
Counterfeeding				
E	Lomongo	Gliding	C-Deletion	B11
	Sea Dayak	V-Nasalization	C-Deletion	M99,E08
	English	Flapping	C-Deletion	M99
	Maltese	V-Harmony	V-Shortening	E08
	Mafa	V-Harmony	V-Fronting	E08
	Bedouin Arabic	V-Raising	Glide Vocalization	M99, B07
	Yawelmani Yokuts	V-Harmony	V-Lowering	M99, E08
	Kalong	V-Harmony	V-Tensing	E08
	Shimakonde	V-Coalescence	V-Harmony	E08
	Shimakonde	V-Reduction	V-Coalescence	E08
	Icelandic	V-Rounding	V-Epenthesis	E08
F	Western Basque	V-Raising (to high)	V-Raising (to mid)	B11
	Bedouin Arabic	V-Deletion	V-Raising	B07
	Nuu-Chah-Nulth	C-Labialization	C-Delabialization	M99
	Shimakonde	V-Reduction	V-Coalescence	E08
	Mafa	V-Harmony	V-Epenthesis	E08
	Agulis Armenian	V-Harmony	V-Epenthesis	E08
Counterbleeding				
E	Tiberian Hebrew	V-Epenthesis	C-Deletion	M99
	West Greenlandic	V-Pharyngalization	C-Deletion	E08
	Ojibwa	C-Assimilation	C-Deletion	M99
	Shimakonde	V-Harmony	V-Reduction	E08
	Polish	V-Raising	C-Devoicing	B11
F	Yawelmani Yokuts	V-Harmony	V-Lowering	E08
	Yawelmani Yokuts	V-Lowering	V-Shortening	M99, B07
	Low German	C-Spirantization	C-Devoicing	B11

This overview shows that out of these 25 patterns, only three involve an obvious epenthesis process² which counterbleeds another process.

The first case is Icelandic where vowel epenthesis before /r/ in coda clusters

²Other cases might involve epenthesis depending on the specific interpretation of the relevant processes. In Kalong (Hyman 2002), for example, only vowels in certain stems are undergoers of tensing in open syllables. If those are taken to be underspecified, tensing is hence an epenthesis process that doesn't overwrite an underlying value. However, a reanalysis without a proper epenthesis process is easily possible.

seemingly counterfeeds glide deletion to avoid coda clusters with rising sonority, shown in (29).

(29) Counterfeeding in Icelandic (Karvonen & Sherman 1997: 7)

	/miðj-r/
1. Glide deletion	miðr
2. Epenthesis	miðyr
	‘middle’ (nom.sg.fem)

However, it has been convincingly argued in Riggs (2008) that this in fact involves a transparent interaction with */ji/ banning glides before high vowels as the responsible constraint that triggers glide deletion in epenthesis contexts.

The other two examples of Mafa and Argulis Armenian are quite similar and involve epenthetic vowels that don’t undergo vowel harmony. In Agulis Armenian, it is quite telling that the non-undergoer epenthetic /ə/ is in fact the only /ə/ of the language – these vowels don’t exist underlyingly (Vaux 1998). That they resist vowel harmony can hence follow from a special (underspecified) featural representation of these vowels; an analysis that can easily be extended to Mafa as well.

All other 22 counterbleeding and counterfeeding patterns are consistent with the restriction that epenthesis can never counterbleed or counterfeed another process. The 2LC account for many of them was in fact discussed above in sections 2.2 and 2.3.

For the other two restrictions of 2LC – the impossibility of simultaneous counterfeeding and counterbleeding and fed counterfeeding – the apparent counterexamples were already discussed above, namely Yawelmani Yokuts and Lardil. Although both patterns are repeatedly discussed in the theoretical literature, their validity as empirical arguments is potentially questionable.

For Lardil, it has been argued convincingly that the final vowel deletion is only found in the nominative (cf. Hale (1973), McCarthy & Prince (1993), Horwood (2001), Bye (2006) and Round (2011); but see Staroverov (2015) for counterarguments against this claim). It is hence not a regular phonological process but an instance of non-concatenative morphology (see Trommer & Zimmermann (2014) for an account of this morphological vowel deletion within containment).

And the extensively discussed opacity pattern in Yawelmani Yokuts (for

example, Archangeli (1984), Cole & Kisseberth (1995) or Krämer (2003) among many) is not entirely based on actually attested data, as is emphasized in Kenstowicz & Kisseberth (1979), the source usually cited for opaque interactions in Yawelmani Yokuts.³

The empirical reality of attested counterfeeding and counterbleeding cases hence leaves us rather optimistic that 2LC makes the correct predictions about possible and impossible patterns. The apparent counterexamples can either be reanalysed in 2LC without too much a price to pay or are empirically quite questionable.

It is also apparent, however, that such an argument requires more future research, both in terms of arguing for the alternative reanalysis implied for Mafa and Argulis Armenian and also in terms of checking 2LC's predictions against a larger typology of putative cases of counterfeeding and counterbleeding.

5. Summary

In this paper, we investigated the predictions made by 2LC, a restricted version of Containment-based OT, for instances of counterfeeding and counterbleeding. We concluded that the theory systematically excludes certain opaque interactions: Instances where epenthesis counterbleeds or counterfeeds another process, simultaneous counterfeeding and counterbleeding, and fed counterfeeding by deletion. The empirical evidence seems to support these restrictions.

It is clear that this is only a first step for a convincing argument for 2LC based on opacity. For one, the theoretical account needs to be extended to other types of opacity (see, for example, the concise overview and typology in Bakovic (2011)). On the other hand, the restrictions discussed in this paper need to be tested against a more complete typology of empirical evidence and hence include other (putative) cases of counterfeeding and counterbleeding.

³ 'The data discussed here are taken from Stanley Newman's (1944) description. [...] It should be pointed out that not all of the forms cited in this section, nor in the previous generative analyses of Yawelmani, are actually attested in Newman's grammar, the only published source on the language.' (Kenstowicz & Kisseberth 1979: 78).

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