

Movement in disguise

Morphology as a diagnostic for verb movement in Algonquian

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Abstract This paper argues for a unification of two apparently unrelated phenomena from unrelated language families: verb second in Germanic, and *Conjunct vs. Independent Order* in Algonquian. It is argued that both relate to the possibility of the verb moving to C, but that in polysynthetic languages the movement is only detectable in the morphology. In Algonquian, V-to-C movement manifests as morphological alternations of agreement suffixes and cliticization of additional agreement markers—the pattern is shown to have the signature of the same processes in languages with more transparent verb movement. This analysis dispenses with *Conjunct* and *Independent* as language family specific categories, and opens new avenues of research in relation to V-to-C movement, framing it as a parametric option with potentially very different surface results in different languages depending on the setting of other parameters.

Keywords agreement · linguistic typology · syntax-morphology interaction · cliticization · polysynthesis · Algonquian · Germanic · V-to-C movement

1 Introduction

Typological work has become a major influence on syntactic theorizing in the generative tradition. In particular, typological studies are an integral tool in exploring the nature of *Universal Grammar* (UG) (Chomsky 1965) and the limits of language variation within the *Principles and Parameters* model (Chomsky 1981) as well as its more current incarnations.¹ Research in this tradition seeks to eliminate language specific and language family specific constructions, deriving them instead from the interaction of universally available language principles and parameters. In this study, we consider an apparent Algonquian specific phenomenon—the *Independent/Conjunct Order* alternation—which seemed to resist characterization in universalist terms. We show that the phenomenon can in fact be analyzed as resulting from the polysynthetic character of Algonquian interacting with verb movement to the complementizer

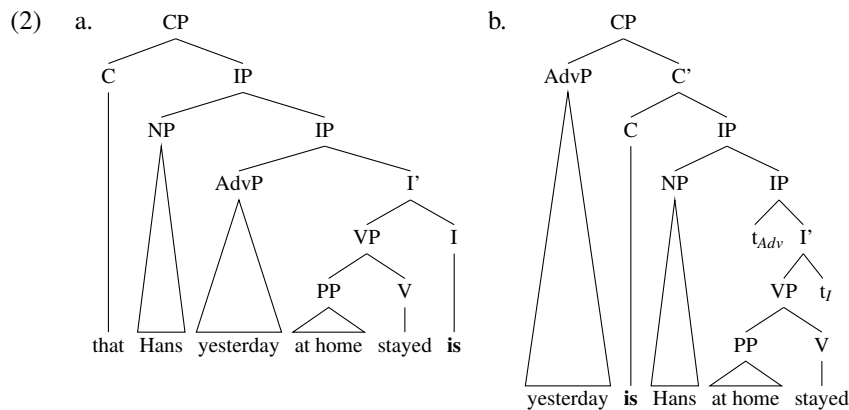
¹ See Baker and McCloskey (2007) and Baker (2010) for a comprehensive overview of such work, relevant references, and a mission statement of the *Generative Typology* program.

position—two attributes that are not in themselves language specific. Furthermore, we suggest that the type of morpho-syntactic evidence we use to make our claim can be used more broadly as a diagnostic for verb movement in unrelated (polysynthetic) languages where identifying this kind of movement is generally a difficult task.

The difficulty of this task is best illustrated by considering what polysynthesis is and how verb-second usually manifests in a language. Starting with the latter, a language is described as having verb-second (henceforth V2) if the finite verb must be the second constituent in some subset of clauses (often specifically in matrix clauses or in finite clauses). This configuration can be seen in the German sentences in (1).

- (1) a. Ich bezweifele [daß Hans *{ist} gestern zu Hause geblieben {ist}.]
 I doubt that Hans {is} yesterday at home stayed {is}
 ‘I doubt that Hans stayed at home yesterday.’
 b. Gestern ist Hans zu Hause geblieben.
 yesterday is Hans at home stayed
 ‘Hans stayed at home yesterday.’ (Richards 2004:366)

V2 is usually analyzed as resulting from: (i) head movement of the finite verb to the C(omp) position, and (ii) phrasal movement of one syntactic constituent to the specifier of the corresponding CP (den Besten 1977, 1989, i.a.; see Holmberg 2015 for an overview and additional references). (1a) then has roughly the structure in (2a), with the finite verb at most as high as the inflectional domain (IP), while (1b) roughly corresponds to (2b), with the finite verb in C and the fronted constituent in SpecCP.



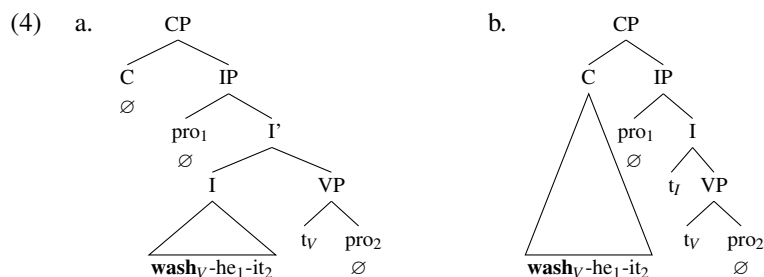
Although most commonly associated with Germanic languages, V2 is not an areally or genetically restricted phenomenon. As Holmberg (2015) reports in his overview, V2 has been identified in a growing number of unrelated languages outside Germanic.² Thus, Holmberg (2015:377) asks, if V2 can in principle arise in any language given the appropriate parametric setting, could V2 also exist in a polysynthetic/head-marking language? What we tackle here is a natural follow up question to this: if a polysynthetic language were to also be a V2 language, how could we tell?

² He lists: Rhaetoromance (Modern Romance), Old French, Old Spanish (Medieval Romance), Breton (Modern Celtic), Brythonic Celtic (Old Celtic), Estonian (Finno-Ugric), Sorbian (Slavic), Kashmiri, two dialects of Himachali (Indo-Aryan), and Karitiana (Tupi). See Holmberg (2015) for references.

Polysynthesis is characterized by Baker (1996) as a cluster of properties—most prominently head-marking (Nichols 1986, 1992) and free word order—that co-occur in a number of unrelated languages. Head-marking entails the extensive use of agreement to mark grammatical relations, accompanied by a propensity to either drop or incorporate all constituents other than the verb. This is illustrated for Plains Cree in (3) (Dahlstrom 1991, Blain 1997, Hirose 2000); more generally, all languages of the Algonquian family exhibit the defining traits of polysynthesis.³

- (3) a. *kisîpêk-in-am* (wiyâkan) [agreement/argument drop]
 wash-by.hand-3>INAN (dish)
 ‘S/He washes it (a/the dish).’
- b. *kisîpêk-in-iyâkan-ê-w* [incorporation]
 wash-by.hand-dish-INTR-3
 ‘S/He washes a/the dish.’ (Plains Cree; Hirose 2000:128–33)

As a result, a whole clause may correspond to a single verb form. Consider what this means for detecting V-to-C movement: if the verb is the only overt constituent in a clause (C is often null in Algonquian), there is no way of telling how high the verb is. This is illustrated with (4a) vs. (4b) (‘∅’ marks a null element).



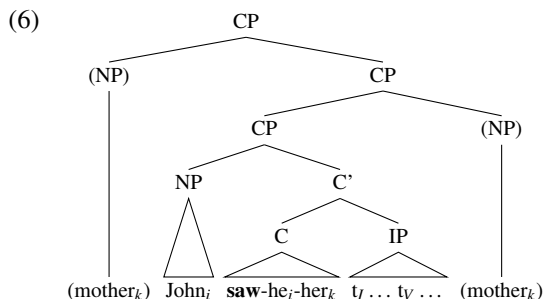
Other constituents can of course be present in a clause, but recall that polysynthetic languages also exhibit free word order; for example, a simple transitive clause can be realized in any of the six logically possible orders—three are shown in (5).

- (5) a. **John** ê-wâpam-â-t *o=mama-wa* [SVO]
 John IC-see-3>3OBV 3=mother-OBV
- b. ê-wâpam-â-t **John** *o=mama-wa* [VSO]
 IC-see-3>3OBV John 3=mother-OBV
- c. *o=mama-wa* ê-wâpam-â-t **John** [OVS]
 3=mother-OBV IC-see-3>3OBV John
 ‘**John** saw *his* mother.’ (Plains Cree; Blain 1997:14)

The optionality and free order of lexical NPs is generally attributed to them actually being CP adjuncts co-indexed with the real arguments, which are either assumed to

³ All examples are glossed using Leipzig glossing rules, with the following additions: ‘DIR’ direct; ‘IC’ initial change; ‘INV’ ‘inverse’; ‘NON1’ non-1st person; ‘OBV’ obviative; ‘PRET’ preterite; ‘RR’ relative root; and ‘TH’ theme sign. All examples use the orthographic conventions used in the source.

be the agreement markers themselves (Jelinek 1984) or null pronouns licensed by the agreement markers (Baker 1996:cf. (4)). As Holmberg (2015) notes, such configurations should mask V2 effects: V-to-C movement and phrasal movement to SpecCP would not necessarily make the verb the second element in the clause, as shown in (6). In other words, identifying the presence of these types of syntactic displacement from word order should be impossible in a polysynthetic language.

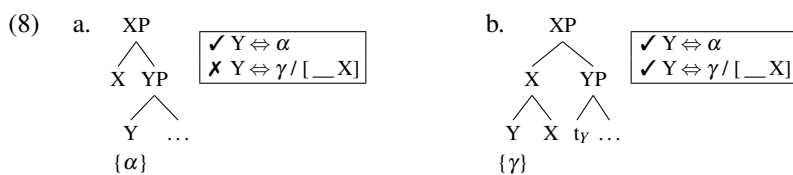


In spite of this complication, we will argue that one of the two operations that give rise to V2, namely V-to-C movement, is detectable by alternative means even in polysynthetic languages. Specifically, we can detect it by looking at morphological alternations on the verb. Our case study is based on Algonquian languages, which alongside polysynthesis exhibit another interesting property—two distinct verbal agreement patterns:

- (7) a. **verb stem** – AGR:α b. AGR:β – **verb stem** – AGR:γ

The first pattern, in (7a) (traditionally, *Conjunct Order*), realizes agreement only suffixally (AGR:α), whereas the second pattern, in (7b) (traditionally, *Independent Order*), realizes agreement both with a proclitic (AGR:β) and suffixally (AGR:γ). The morphological form of these suffixes may differ from the suffixes in the first pattern. Throughout the paper we refer to the former pattern as SUFFIXAL and the latter as COMPOSITE agreement. Importantly, the two patterns occur with the same verbs, their alternation is conditioned solely by the type of clause the verb appears in.

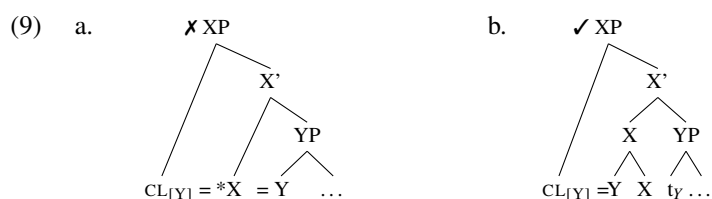
We will argue that this agreement alternation provides at least two ways of identifying V-to-C movement. The first one concerns head movement. As the verb becomes part of a complex head in its landing site, we predict the possibility of the result being morphologically distinct from the verb in situ. Consider, in relation to the structures in (8), Bobaljik’s (2012) proposal that a head X cannot condition the morphological realization of a head Y if the two are in distinct maximal projections.



In the absence of Y-to-X movement, the two heads are in separate maximal projections (cf. (8a)), and the condition for a local morphological rule is not met. In contrast,

if Y moves to X, they end up in the same head-complex (cf. (8b)), and morphological rules can apply. We will argue that the distinct agreement suffix forms in (7b) are the result of V-to-C movement feeding a morphological operation in this way.

The second argument concerns the fact that verb movement is also predicted to potentially affect elements whose realization depends on a local host, such as clitics. The logic here is similar to the morphological rule argument. If a clitic requires a local host of category Y, then an intervening category X will prevent cliticization (cf. (9a)), whereas movement may void the intervention and thus feed cliticization (cf. (9b)).



We propose that the proclitic in (7b) stands in this relation to the verb. The movement of the verb to C feeds its cliticization onto the verb. When V-to-C movement does not occur, cliticization cannot take place and the clitic is not spelled-out.

Based on these two arguments and further evidence from cross-linguistic variation we propose that the morphological alternation between the two kinds of agreement is in fact how V-to-C movement manifests itself in Algonquian. More than just a word order phenomenon, V-to-C movement may be viewed as a parametric option that can have radically different surface results in different languages depending on the setting of other parameters, such as the polysynthesis parameter in our case.

The remainder of this paper is structured as follows. In Sect. 2, we show that there is a remarkable parallelism between the distribution of the two agreement paradigms in Algonquian and the distribution of V2 across Germanic. In Sect. 3, we present our analysis of the agreement alternation in terms of C-driven morphological processes and provide an explanation for both the alternations in the form of agreement suffixes and the distribution of the agreement proclitic. Sect. 4 addresses the advantages of our analysis over alternative analyses of the Algonquian agreement alternation. We conclude with some broader cross-linguistic implications of our study.

2 Clausal environment sensitivity in Algonquian and Germanic

It is reasonable to expect if one of the agreement paradigms in Algonquian is tied to V-to-C movement, just like V2 order in Germanic, that we will see parallels in the distribution between the V2/non-V2 contexts in Germanic and V-to-C movement/non-V-to-C movement contexts in Algonquian. This is exactly what we see when we compare them: the clausal environments where V2 is found in Germanic match the environments where SUFFIXAL agreement is found in Algonquian while V2 and COMPOSITE agreement are simply found in all the other clausal environments. Furthermore, we show that even the outlier languages with respect to V2 in Germanic and COMPOSITE/SUFFIXAL agreement in Algonquian show strikingly parallel behavior.

2.1 Algonquian

The simplified morphological schemes of the Algonquian COMPOSITE and SUFFIXAL agreement paradigms are repeated here from the introduction:⁴

- (10) a. SUFFIXAL agreement (traditionally *Conjunct Order*):

verb stem – AGR: α

- b. COMPOSITE agreement (traditionally *Independent Order*):

AGR: β – **verb stem** – AGR: γ

The two paradigms are in complementary distribution, where SUFFIXAL agreement is generally restricted to a smaller set of clausal environments, while COMPOSITE agreement is found in the larger complementary set of clausal environments (Godard 1974, Campana 1996, Brittain 2001a, Cook 2008). The languages we look at in this section present only a portion of the languages that show this agreement alternation (we look at some more cases from a morphological perspective in Sect. 3.2.3). Our sample was chosen because it most economically illustrates the general pattern of the alternation and the fine grained variation within it, while contrasting that variation with a very informative outlier pattern. The sample includes Wampanoag, also known as Massachusett (Eastern Algonquian; Richards 2004), languages of the Cree-Montagnais-Naskapi complex (Central Algonquian; Dahlstrom 1991, Brittain 1997, 2001a), and Arapaho (Plains Algonquian), an outlier within Algonquian regarding the two agreement patterns (Cowell and Moss Sr. 2008). Importantly, we show that differences in the distribution of the two agreement patterns across these languages mirror closely what we see in Germanic with respect to the distribution of V2.

In the languages of the Cree-Montagnais-Naskapi language complex (henceforth CMN) (Brittain 2001a), the SUFFIXAL agreement paradigm is required with all embedded clauses. Furthermore, it is also required with focus constructions, negative clauses and wh-clauses regardless of their matrix/embedded status:⁵

- (11) a. SUFFIXAL / $\left\{ \begin{array}{l} \text{embedded clause} \\ \text{wh-clause} \\ \text{negative clause} \\ \text{focus clause} \end{array} \right\}$
- b. COMPOSITE / <other clauses>

⁴ We depart from traditional Algonquianist terminology here and introduce more transparent descriptive terms because: (i) the traditional terms tacitly characterize the phenomenon as being Algonquian-specific, and (ii) in Algonquianist literature the same morphological alternation also goes by different names due to crosslinguistic variation in the syntactic distribution and historical development of the two forms (for example, *Affirmative Order* vs. *Non-Affirmative Order* in Arapaho; see below).

⁵ We set aside imperatives here, since these inflect according to paradigm distinct from both the COMPOSITE and the SUFFIXAL paradigm (Brittain 1997:253–4); this also holds for other Algonquian languages, although not all of them. Interestingly, imperatives are special in Germanic as well, where they generally show a *verb-first* order (V1) as opposed to the V2 order. Although this could be seen as an additional parallelism, we set it aside for ease of exposition.

Observe that the COMPOSITE paradigm is identifiable by the presence of a proclitic (*chi-*), whereas there is only a suffix (*-an*) in the SUFFIXAL paradigm in CMN:⁶

- (12) a. **chi=** wâpim -iti -n COMPOSITE
 2= see -INV -1>2
 ‘I see you_{sg}’
 b. ... â- wâpim -it -ân SUFFIXAL
 IC- see -INV -1>2
 ‘... (that) I see you_{sg}’ (Western Naskapi; Brittain 2001a:25, 27)

Note here that the forms of the agreement suffixes are different in (12a) and (12b). This type of allomorphic variation is another hallmark of the COMPOSITE/SUFFIXAL alternation, the implications of which will be addressed in detail in Sect. 3.

As we have noted above, there are a number of (micro-)variants within the general pattern presented in (11). For example, in Wampanoag, SUFFIXAL agreement is restricted to a different subset of embedded clauses than in CMN:

- (13) a. SUFFIXAL / $\left\{ \begin{array}{l} \text{relative clause} \\ \text{adjunct } \textit{when/if} \text{ clause} \\ \text{embedded } \textit{wh}\text{-question} \end{array} \right\}$
 b. COMPOSITE / <other clauses>

As in most Algonquian languages, in Wampanoag, an agreement proclitic is required in the COMPOSITE paradigm. The two paradigms are also identifiable in Wampanoag via the presence or absence of the peripheral agreement suffix. This is seen in (14), with the contrast between a basic matrix clause (14a) and an embedded adjunct clause (14b). Whereas with the former agreement is marked by a proclitic (*ku-*), a central suffix (*-uwô*), and a peripheral suffix (*-eek*), the latter only has a central suffix (*-âk*).

- (14) a. **ku=** nâw -uk -uwô -pan -eek COMPOSITE
 2= see -INV -NON1PL -PRET -PL
 ‘They saw you_{pl}’
 b. ... nâw -uquy -âk -up SUFFIXAL
 see -INV -2PL -PRET
 ‘... (if/when/...) they saw you_{pl}’ (Wampanoag; Richards 2004:327)

Note that just as we observed allomorphy in agreement suffixes in CMN in (12), we observe that the central suffixes in the COMPOSITE (14a) and SUFFIXAL (14b) paradigms in Wampanoag have different exponents, despite the two clauses having the same two arguments in terms of person and number features. The split between

⁶ Some notes on the Algonquian agreement system are in order here. Agreement in Algonquian transitive clauses is governed by the *Person/Gender hierarchy*: 2 > 1 > 3 > Obviative > Inanimate, where verbal agreement tracks arguments based on the hierarchy, not their grammatical roles (e.g. in (14a) agreement alone would not distinguish between ‘*You saw them*’ and ‘*They saw you*’, since 2nd person outranks 3rd on the hierarchy). The grammatical roles of the arguments are encoded via the *theme marker/theme sign* (TH), which is realized as direct marking (DIR) when the subject outranks the object on the hierarchy, and inverse marking (INV) when the object outranks the subject. Our study is not concerned with how the φ -features expressed by the agreement markers are acquired, or the nature of the theme sign, but see Brittain (2001a), B  jar and R  z  c (2009), Oxford (2014, 2019) for discussion and competing analyses.

the two paradigms thus parallels the one in CMN exemplified in (11) and (12), and is highly comparable to the patterns found in most Algonquian languages.⁷

In short, the morphological difference between COMPOSITE and SUFFIXAL agreement, which is attested in most Algonquian languages and illustrated here with the examples of CMN and Wampanoag, is characterized by the presence vs. the absence of the agreement proclitic, and by the difference in the morphological form of the agreement suffixes. With respect to their syntactic distribution, the SUFFIXAL paradigm is the one which in most Algonquian languages, including CMN and Wampanoag, occurs in a small specialized set of clausal environments. The COMPOSITE paradigm, on the other hand, is the one which occurs in the larger (seemingly heterogeneous) complementary set of clausal environments. There is also, as we saw, some variation regarding the specific clausal environments that require the SUFFIXAL paradigm (readers are referred to Bruening 2001, Campana 1996, Valentine 2001 for more examples). In the described cases, the COMPOSITE agreement paradigm is available in matrix clauses more readily than in embedded clauses; i.e. in the relevant languages with the COMPOSITE/SUFFIXAL distinction, COMPOSITE agreement is found in more types of matrix clausal environments than embedded clausal environments.

Crucially, the matrix/embedded asymmetry regarding the agreement paradigms is not observed in all Algonquian languages. Namely, the Arapaho language (Plains Algonquian), which is an outlier within the language family in many respects (Cowell and Moss Sr. 2008), has a radically different distribution of the two agreement paradigms: COMPOSITE agreement (traditionally *Non-Affirmative Order*) is restricted to a small set of clause types—negative, interrogative, and modal clauses (as opposed to being the less restricted paradigm, like in the rest of Algonquian), while SUFFIXAL agreement (traditionally *Affirmative Order*) is the one that occurs in a larger non-homogeneous set of contexts; summarized in (15). Note that the matrix/embedded distinction plays no role in the distribution of the agreement paradigms.

- (15) a. SUFFIXAL / <other clauses>
 b. COMPOSITE / $\left\{ \begin{array}{l} \text{negative clause} \\ \text{interrogative clause} \\ \text{modal clause} \end{array} \right\}$

Basic declarative clauses, like (16a), require SUFFIXAL agreement, while negative clauses, like (16b), require COMPOSITE agreement. Importantly, the two paradigms are distinguished from one another in exactly the same way as in other Algonquian languages. The two paradigms differ in terms of the presence/absence of the agreement proclitic (*hé-*), and in the exponents of the agreement suffix (*-nee* vs. *-be*):

- (16) a. n<on>óóhob-í-**nee** SUFFIXAL
 <IC>.see-DIR-2PL>1
 ‘You_{pl} see me.’
 b. **hé=**íhoow-noohob-í-**be** COMPOSITE
 2=NEG-see-DIR-2PL>1
 ‘You_{pl} don’t see me.’ (Arapaho; Cowell and Moss Sr. 2008:488)

⁷ Unlike Wampanoag, there is no clear instance of a peripheral agreement suffix in CMN, which only has one agreement suffix. This difference is not central to our analysis and will not be explored further.

Table 1 Distribution of SUFFIXAL and COMPOSITE agreement

	Wampanoag	CMN	Arapaho
COMPOSITE	<other clauses>	<other clauses>	negative clauses modal clauses interrogative clauses
SUFFIXAL	relative clauses adjunct <i>when/if</i> clauses embedded <i>wh</i> -questions	embedded clauses <i>wh</i> -clauses negative clauses focus clauses	<other clauses>

In addition to negative clauses like (16b), COMPOSITE agreement is used in Arapaho also with questions (cf. (17a)), certain modal clauses (e.g. dubitative evidentials), and with the conditional use of the modal *eebeh-* (cf. (17b)).

- (17) a. **he=** ih- tou?- no?kóó? [question]
 2SG= PAST- when- arrive
 ‘When did you arrive?’
- b. [**n=** eebéh- no?úsee] h<é>ét- no?úxoh [conditional]
 1SG= MOD- arrive IC.FUT- bring-1SG>3SG-1SG-mother
 ‘If I come, I’ll bring my mother’ (Cowell and Moss Sr. 2008:242, 266)

The distribution of COMPOSITE and SUFFIXAL agreement in the two general patterns and the exceptional Arapaho one is summarized in Table 1. Recall that in all the cases, the *morphological* variation between the two paradigms is the following: the COMPOSITE paradigm involves an agreement proclitic, absent in the SUFFIXAL paradigm, and the form of the agreement suffixes alternates between the two paradigms.

We will argue that the general patterns as well as the seemingly exceptional Arapaho one are all manifestations of the same underlying phenomenon: the presence vs. absence of V-to-C movement. Our first argument, which we review next, is the striking similarity between the variation in the patterns of COMPOSITE/SUFFIXAL agreement in Algonquian and the different patterns of V2 in Germanic.

2.2 Germanic

In this section we consider German, Icelandic and English as surprising counterparts to Wampanoag, CMN, and Arapaho respectively, albeit in relation to the distribution of V2 and non-V2 clauses. The ample micro-variation within Germanic in terms of availability of V2 is well-known (see Holmberg 2015 for an overview and discussion—also beyond Germanic), and we do not aim to present the full range of variation here. Rather, we focus on some coarser distinctions, similarly to the way the variation in the distribution of COMPOSITE/SUFFIXAL agreement was addressed in the previous section. We show that not only the general Algonquian pattern of COMPOSITE/SUFFIXAL agreement mirrors the distribution of V2, but also that the outlier within Algonquian, Arapaho, has a parallel within Germanic as well. We take

this parallelism to indicate that the superficially different phenomena from two unrelated families have the same underlying cause; this provides crosslinguistic evidence for the idea that COMPOSITE agreement marks V-to-C movement.

Verb placement in German, a language we take to instantiate a canonical case of V2, is sensitive (among other things) to the matrix vs. embedded clause contrast. That is, in general, there is more V2 in matrix clauses than embedded clauses.

- (18) a. no V2 / $\left\{ \begin{array}{l} \text{embedded clause} \\ \text{adjunct clause} \\ \text{negative clause} \end{array} \right\}$
 b. V2 / <other clauses>

As a canonical example of V2 in German, consider the examples in (19) below, where we can see that the movement of the verb to C is blocked in an embedded clause (19a), but is present in a matrix clause (19b).

- (19) a. Ich bezweifele [daß Hans *{**ist**} gestern zu Hause geblieben {**ist**}.]
 I doubt that Hans {is} yesterday at home stayed {is}
 ‘I doubt that Hans stayed at home yesterday.’
 b. Gestern **ist** Hans zu Hause geblieben.
 yesterday is Hans at home stayed
 ‘Hans stayed at home yesterday.’ (Richards 2004:366)

Other Germanic languages may allow V2 in a wider range of embedded contexts than German. Consider Icelandic, which allows V2 in embedded contexts where German does not (cf. (19a) vs. (20a)). However, in other embedded clauses, including embedded questions like (20b), V2 is disallowed in Icelandic as well.

- (20) a. Jón efast um að [á morgun **fari** María snemma á fætur.]
 John doubts that tomorrow gets Mary early up
 ‘John doubts that Mary will get up early tomorrow.’ (Richards 2004:366)
 b. Jón veit ekki [Hvaða mynd *{**hafi**} María {**hafi**} horft á í gær.]
 John knows not which picture {had} Mary {had} watched yesterday
 ‘John doesn’t know what/which film Mary watched yesterday.’
 (p.c. Gísli Rúnar Harðarson)

In both German and Icelandic V2 occurs in matrix clauses in a wider range of contexts than in embedded clauses. However, V2 is disallowed in German in some cases where Icelandic allows it; i.e. in Icelandic, it is disallowed in a smaller subset of embedded clauses. Recall that this is exactly the difference in the distribution of COMPOSITE agreement between CMN and Wampanoag. This parallelism led Richards (2004) to suggest that the COMPOSITE/SUFFIXAL alternation in Algonquian is in fact correlated to V2-style V-to-C movement and subject to the same parameters of variation.

Note though that Arapaho is still the outlier under this view: the distribution of COMPOSITE agreement in Arapaho does not align with canonical V2 contexts (see Table 1). However, the parallelism with V2 distribution does, in fact, extended to Arapaho as well, and the key here is the outlier language within Germanic: English.

In modern English, V-to-C movement (or rather Aux-to-C movement) is only found in some specific environments that show subject-auxiliary inversion; this pattern of Aux-to-C movement has been called a *residual V2* pattern (Rizzi 1990b). Aux-to-C movement is limited to some auxiliaries and is only found with *interrogative inversion*, *negative inversion*, and *conditional inversion*; see (21).

- (21) a. **Had** I been rich, everything would have been OK [inversion]
 b. ***Did** I do that, everything would be OK [*inversion]

Historically, inversion occurred in English with a wider range of auxiliaries as well as with lexical verbs. This is illustrated by the examples from earlier historical iterations of English in (22–23) (see Biberauer and Roberts 2016):

- (22) My dear friend, **did** I want your aid I would accept it.
 (1840, *Bulwer-Lytton, Money V.iii, in 19c Plays, ed. Howell, p. 112*)
- (23) a. **Dewite** þ ungesewenlice ut þonne fylð adune þ gesewenlice
 depart.SBJV the invisible(soul) out then falls down the visible(body)
 ‘If the invisible soul departs, then the visible body falls down.’
 (AEHom I, 10: 123-4)
- b. **Wenst** þu þat ic ne cunne singe?
 wishes you that I not can sing
 ‘Do you think that I can’t sing?’ (The owl and the Nightingal 1.47)

Notice that the contexts where we find Aux-to-C movement in modern English are strikingly similar to those where we find COMPOSITE agreement in Arapaho, namely: modal/conditional, negative, and interrogative clauses.⁸ We suggest that this is not a coincidence; the Arapaho SUFFIXAL/COMPOSITE pattern is to the basic Algonquian patterns what English is to the basic Germanic V2 patterns.⁹

2.3 Summary and further parallels

To sum up, consider the three patterns of V2 distribution in Germanic, including the special case of English. Crucially, all three cases find counterparts in the patterns of COMPOSITE/SUFFIXAL agreement distribution we saw in Algonquian; see Table 2.¹⁰

⁸ However, some differences do exist: in Arapaho sentential negation requires COMPOSITE agreement (i.e. V-to-C movement according to our analysis), but this has a direct parallel only in some varieties of modern English; e.g. in African American English (Sells et al. 1996, Foreman 1999), Alabama English (Feagin 1979), Appalachian English (Montgomery and Hall 2004), and West Texas English (Foreman 1999). In Standard English, only some negative expressions trigger negative inversion (Haegeman 2000).

⁹ French patterns even more closely with Arapaho in terms of its residual V2 pattern, in that inversion also occurs with lexical verbs (which can be attributed to French having kept V-to-T movement unlike English; cf. Pollock 1989). We discuss (Old/Middle) English instead of French in order to highlight the parallelism between the variation within Algonquian and the variation within Germanic.

¹⁰ A minor discrepancy is observed with wh-questions, which are SUFFIXAL in CMN but V2 in German. The analysis we introduce in Section 3.1 offers a straightforward explanation for this. Wh-questions in CMN require the presence of the *Initial Change* (IC) morpheme in C (Brittain 2001a; see also Section 4.1 regarding IC). Since we argue that COMPOSITE agreement is tied to V-to-C movement, an already filled C—just as in V2 languages—will block V-to-C movement and consequently COMPOSITE agreement.

Table 2 Distribution of SUFFIXAL/COMPOSITE agreement compared to distribution of V2 in Germanic

Algonquian:	Wampanoag	Cree-Montagnais-Naskapi	Arapaho
COMPOSITE	<other clauses>	<other clauses>	negative clauses modal clauses interrogative clauses
SUFFIXAL	relative clauses adjunct <i>when/if</i> clauses embedded wh-questions	embedded clauses <i>wh</i> -clauses negative clauses focus clauses	<other clauses>
Germanic:	Icelandic	German	English (Aux-to-C)
V2	<other clauses>	<other clauses>	negative clauses modal clauses interrogative clauses
No V2	relative clauses adjunct <i>when/if</i> clauses embedded wh-questions	embedded clauses adjunct clauses negative clauses	<other clauses>

Even though we discussed only a few Algonquian and Germanic languages here, the remaining languages from both families to the best of our knowledge do not contradict our observations. What makes it very unlikely that the similarities are coincidental is the fact that even the outliers to the general pattern behave alike. Note also the parallelism at a more abstract level: overall, V2 and COMPOSITE agreement occur in more types of matrix environments than embedded environments.

Crucially, the parallel crosslinguistic variation is not the only case of parallelism: there are also cases of language-internal parallel grammatical behavior that strongly suggest the similarities between the two phenomena are not just superficial. For example, even in the Germanic languages that generally do not allow embedded V2 clauses, embedded V2 may still be observed with a restricted class of embedding verbs (Thiersch 1978, Haider 1984, Vikner 1995, Biberauer 2002, Heycock 2006). These are so-called *bridge verbs*, which optionally take embedded clauses without a complementizer, and allow for exceptional embedded V2 orders, as shown in (24).

- (24) a. Watson behauptete [*daß* Moriarty nor das Geld gestohlen **hatte**].
 Watson claimed that Moriarty only the money stolen had
- b. Watson behauptete [dieses Geld **hatte** Moriarty gestohlen].
 Watson claimed this money had Moriarty stolen
 ‘Watson claimed that Moriarty had stolen the/this money.’

(German; Vikner 1995:71)

Similarly, in Western Naskapi, SUFFIXAL agreement is generally required with embedded clauses. However, embedded COMPOSITE agreement clauses are exceptionally possible with a restricted class of embedding verbs. These verbs optionally take embedded clauses that lack the otherwise obligatory *Initial Change* (IC) morpheme, which is standardly analyzed as a type of complementizer (Brittain 1999, 2001a; see also Section 4.1). The alternation is shown in (25).

- (25) a. chichiwa nit-âhkwâtâyim-âw [*châ-nitûwû-t*] IC+SUFFIXAL
 really 1-be.excited-3>3OBV <IC>FUT-hunt-3
- b. chichiwa nit-âhkwâtâyim-âw [\emptyset -wî-nitûwî-w] COMPOSITE
 really 1-be.excited-3>3OBV 3-want-hunt-3
 ‘Really, I am excited that he will go/is going hunting.’
 (Western Naskapi; Brittain 1999:2n2)

Similar exceptions are also found in matrix clauses. Some plain matrix clauses in Germanic are exceptionally non-V2 with so-called *focus adverbs* in SpecCP (Egerland 1998, Nilsen 2003). As illustrated with the Swedish examples in (26), some such adverbs allow V2 optionally (cf. (26a)), and even allow a complementizer to follow them if the verb is not in C (cf. (26b)) (see Platzack 1986, Holmberg 2015).

- (26) a. Kanske {**kommer**} han inte {**kommer**}. V2/non-V2
 maybe {comes} he not {comes}
- b. Kanske *att* han inte **kommer**. *that*+non-V2
 maybe that he not comes
 ‘Maybe he’s not coming.’ (Swedish; Holmberg 2015:355-6)

Recall that in CMN plain matrix clauses require COMPOSITE agreement (cf. (12a)). However, *focus constructions* which are matrix clauses with a focused argument, adverb, or a particle preceding the verb exceptionally require SUFFIXAL agreement (Brittain 1999, 2001a). Crucially, just as in Swedish, these clauses are also exceptional in optionally allowing a complementizer (IC). Compare for instance two matrix clauses with exceptional SUFFIXAL agreement below: in (27a) a complementizer does not surface, while in (27b) the verb is infixed with the complementizer (IC).

- (27) a. mâ pichîtâmu-**ch** \emptyset -mânitâ-châ ... SUFFIXAL
 well smoke.rising-3INAN 3-be.stranger-3 ...
 ‘Well, that smoke rising must be a stranger.’
- b. mîn châtûhtâ-**t** IC+SUFFIXAL
 again <IC>.set.out-3
 ‘Again, off he went.’ (Western Naskapi; Brittain 1999:32,192)

These examples show that one of the main hallmarks of V2—namely, the complementary distribution between verbs and complementizers in C—is also paralleled in Algonquian with the complementary distribution between COMPOSITE agreement and the IC complementizer.

We take the parallelisms between Germanic and Algonquian discussed above as the first piece of evidence for the COMPOSITE/SUFFIXAL agreement alternation having the same underlying source as V2. However, we have to admit at this point that the parallel distribution alone is not sufficient evidence for a V-to-C movement analysis. One could still argue that the two phenomena pattern alike because they just share the same grammatical triggers, but what is being triggered could still conceivably be distinct grammatical processes. Nonetheless, the striking parallelism calls for an explanation. What we show next is that the morphological alternations that distinguish COMPOSITE from SUFFIXAL agreement in fact point towards verb movement actually being the driving force behind the agreement alternation.

3 Morphological evidence for V-to-C movement

As noted in the introduction, verb movement in polysynthetic languages cannot be identified through word order changes. However, we will argue that it can be identified through purely morphological means. By carefully considering the morphology of the two agreement paradigms in Algonquian, we will identify two kinds of morphological reflexes of V-to-C movement: (i) more agreement affixes on the verb, and (ii) fewer \varnothing -feature distinctions within individual agreement affixes on the verb. We argue that these are consequences of verb movement being a canonical case of head movement. Because of this, moving the verb should result in the creation of new structure in its landing site. Thus, agreement hosting heads high in the clause will become part of the verbal complex when the verb head-adjoins to them on its way to C. Additionally, the complex head formed by the verb moving to C will yield an environment for triggering morphological processes such as feature neutralization.

Independently of the head movement status of verb movement, one also expects that such movement will affect adjacency-dependent grammatical processes in the clause; the verb will potentially move either away from, or closer to, elements whose realization might depend on the verb being adjacent to them. We show that the distribution of the Algonquian agreement proclitic can be straightforwardly described in these terms under the assumption that its realization is fed by V-to-C movement.

We show that all the evidence converges on COMPOSITE agreement being the morphological reflex of V-to-C movement in Algonquian. This also offers an explanation for why, as established in the previous section, COMPOSITE agreement has a distribution parallel to that of V/Aux-to-C movement in Germanic languages.

3.1 V-to-C movement in Algonquian yields COMPOSITE agreement

There are two seemingly contradictory ways in which verb movement has been observed to correlate with agreement morphology: some types of verb movement correlate with richer agreement paradigms (the *Rich Agreement Hypothesis*; Roberts 1985, Kosmeijer 1986, Platzack and Holmberg 1989, Pollock 1989), while others can result in impoverished agreement paradigms (*anti-agreement*; Chung 1982, 1998, Georgopoulos 1991, Phillips 1993, Ouhalla 1993). A careful morphological examination of the Algonquian agreement alternation reveals that it abstractly involves both established types of interaction between verb movement and agreement: (i) verb movement results in a larger number of agreement morphemes on the verb (*more movement—more morphemes*), but also (ii) verb movement results in individual agreement morphemes showing fewer \varnothing -feature distinctions (*more movement—more neutralization*). Crucially, we argue that the presence of both patterns points toward COMPOSITE agreement being a reflex of V-to-C movement.

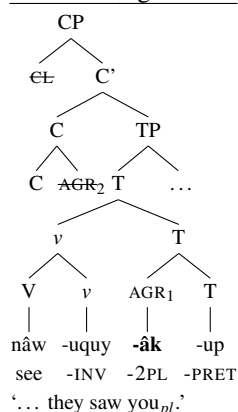
It must be noted that we are not the first to tie the COMPOSITE agreement paradigm to V-to-C movement. The same connection was independently suggested by Halle and Marantz (1993) and Richards (2004). In fact, we think Richards is correct in his explanation for why the COMPOSITE paradigm is comprised of more agreement morphemes than the SUFFIXAL paradigm. Looking at Wampanoag specifically,

Richards (2004) argues for three loci of agreement in the clause: two in C—the proclitic (CL) and outer suffix (AGR₂)—and another one lower in the clause (AGR₁). This is illustrated in (28) (simplifying somewhat Richards’s structure).

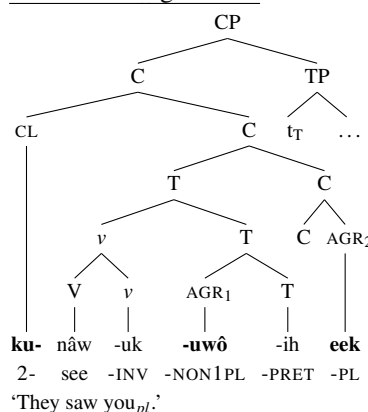
$$(28) \quad [_{CP} \text{ CL } [_{C'} \text{ C-AGR}_2 [_{TP} \text{ T-AGR}_1 [_{vP} \text{ v(TH)} [_{VP} \text{ V } \dots]]]]]$$

The basic idea is that AGR heads may only be morphologically realized when they are part of the verbal complex, which means that if the verb only head moves to T, as in (29a), only AGR₁ may be realized. Conversely, if the verb head moves not only to T, but also all the way to C, as in (29b), AGR₁, AGR₂, and CL may be realized (we discuss the conditions on the realization of CL in detail in Sect. 3.3). Importantly, the two options respectively yield the SUFFIXAL and the COMPOSITE paradigm of Wampanoag (the trees correspond to the examples in (14) from Sect. 2.1).

(29) a. SUFFIXAL agreement



b. COMPOSITE agreement



This approach derives the *more movement—more morphemes* effect of verb movement noted in the introduction; this is good, since the COMPOSITE paradigm is consistently the one with a larger inventory of agreement morphemes. However, the proposal of Richards (2004) does not in any way address the changing surface forms of the individual agreement affixes between COMPOSITE and SUFFIXAL paradigms (recall our description from Sect. 2.1). Furthermore, Richards allows for the possibility that COMPOSITE agreement may not involve V-to-C movement across all of Algonquian. We will argue that it always involves V-to-C movement.

In their analysis of Potawatomi, Halle and Marantz (1993) also consider the surface forms of specific agreement affixes, suggesting that those in the COMPOSITE paradigm can be morphologically conditioned by a special *Ind(ependent)* head associated with a specific discourse function. But as we saw, it is hard to characterize the COMPOSITE agreement contexts across Algonquian in terms of shared discourse functions—especially when considering the outlying Arapaho. Additionally, invoking an Algonquian-specific category *Ind* leaves unexplained the parallels between the distribution of COMPOSITE agreement and the distribution of V2 in Germanic.

The parallels can, in contrast, be easily explained if the trigger for allomorphy in the COMPOSITE agreement affixes is actually the same as the trigger for the V-to-C

movement that makes the verb realize more agreement affixes. We assume here the view of V-to-C movement in V2 contexts, where such movement is triggered by a C with a particular feature specification (den Besten 1977, Holmberg and Platzack 1995, Zwart 1997). More precisely, we adopt Roberts's (2010) implementation of this idea, where C attracts the verb when the former has unvalued uninterpretable [V(erb)] and [T(ense)] features, and extend it to the V-to-C movement which we argue yields the COMPOSITE agreement paradigm in Algonquian. With the trigger for V-to-C movement in Algonquian and the trigger for V2-style V-to-C movement in Germanic being identical, this automatically explains the striking distributional parallel between COMPOSITE agreement and V2.

Recall that, following Richards (2004), it is the V-to-C movement which makes the verb incorporate more AGR morphemes than it would if it only moved to T, thus yielding the COMPOSITE agreement paradigm.¹¹ We propose, additionally, that the presence of C in the complex verbal head, which results from head movement of the verb to C, is in fact also what drives the allomorphy in the agreement affixes. This crucially takes the COMPOSITE forms to be derived rather than the SUFFIXAL ones. Note that there is no *a priori* reason to do so if the allomorphy involves pure suppletion; one could also argue for the reverse analysis, where the SUFFIXAL forms are the derived ones (as the analyses of Campana 1996, Brittain 2001a, Branigan 2012 would require; see Sect. 4.1). However, we show next that across Algonquian the COMPOSITE suffixes systematically show the morphological behaviour of derived forms in relation to their SUFFIXAL counterparts—something that is missed by other accounts. Specifically, the COMPOSITE suffixes consistently express fewer ϕ -distinctions than the SUFFIXAL suffixes, which is a hallmark of a morphological neutralization process and indicates the presence of a derived conditioning environment. This will provide further crucial evidence for the V-to-C analysis of COMPOSITE agreement, revealing the paradigm to be a case of the *more movement—more neutralization* relationship.

3.2 Deriving the suffix asymmetries

The evidence that the COMPOSITE forms of the agreement suffixes are derived from the SUFFIXAL forms and not vice versa comes from the asymmetry in the number of ϕ -feature distinctions expressed in each paradigm: the COMPOSITE paradigm makes fewer distinctions than the SUFFIXAL paradigm. We argue that ϕ -features can be deleted in a derived environment, but never added. Crucially, the presence of a C in the verbal complex, a side effect of V-to-C movement, is what triggers the deletion. We capture our insights within a realizational model of morphology (Halle and Marantz 1993, 1994, Harley and Noyer 1999), where syntactic features can be modified by morphological operations before phonological spell-out (*Vocabulary Insertion*). In relation to our case, this means that particular agreement heads may always collect the same person and number features from arguments in the syntax, but which features will actually be expressed can be manipulated in the morphology.

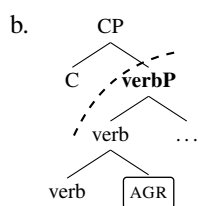
¹¹ It is not crucial for us that the SUFFIXAL agreement paradigm arises with V-to-T movement. It is only important that verb movement to C moves to or through more heads that (can) host AGR morphemes; the SUFFIXAL paradigm could in principle also result from V remaining in situ.

We argue, specifically, that the asymmetry in the feature contrasts expressed in the COMPOSITE and SUFFIXAL paradigms must be the result of morphological deletion of \varnothing -features in the verb in the presence of C, which only applies in the case of the COMPOSITE paradigm. The deletion is indirectly conditioned by V-to-C movement: only if the verb moves to C do the AGR morphemes inside the verb become part of the same morphological domain as C, and only then can C trigger the deletion of specific features on AGR, thus cause the insertion of less specific AGR morphemes; i.e. trigger *impoverishment* (Halle and Marantz 1993, Halle 1997, Calabrese 2008).

As an initial illustration of the proposal, consider the simplified derivations of the Arapaho examples in (30) and (31). The AGR morpheme syntactically acquires the \varnothing -features of the second person plural subject ([+part(icipant),+addr(essee),-sg]) and the first person singular object ([+part,-addr,+sg]). The exponent chosen for AGR is always the most specific form for the given feature context (cf. the *elsewhere principle*; Kiparsky 1973). In case of (30), the most specific form is the one inserted by rule (i.), since [+addr] is more specific than [+part] (Noyer 1992, Harley and Ritter 2002), and rule (iii.) cannot apply since C is not in the same complex head as AGR. In (31), in contrast, C is in the same complex head as AGR, so the conditions for rule (iii.) are met, deleting the [+addr]. Consequently, rule (i.) can not longer apply, since there is no [+addr] on AGR anymore, and rule (ii.) applies instead.

(30) Arapaho SUFFIXAL:

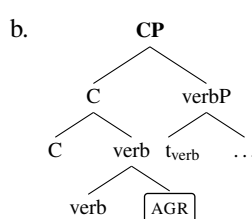
- a. n<on>óóhob-í-**nee**
 <IC>.see-DIR-ADDR,PL
 ‘You_{pl} see me.’



i.	[+addr,-sg] _{AGR} ⇔ -nee	✓
ii.	[+part,-sg] _{AGR} ⇔ -be	✗
iii.	[±addr] _{AGR} → ∅ / [C _]	✗

(31) Arapaho COMPOSITE:

- a. hé-íhoow-noohob-í-**be**
 2-NEG-see-DIR-PART,PL
 ‘You_{pl} don’t see me.’



i.	[+addr,-sg] _{AGR} ⇔ -nee	✗
ii.	[+part,-sg] _{AGR} ⇔ -be	✓
iii.	[±addr] _{AGR} → ∅ / [C _]	✓

Note that a morphological operation that is the reverse of (iii.), a contextual feature enrichment, is theoretically questionable. One could, of course, posit a rule that inserts a feature like [+addr] on AGR in the context of C, where the feature is not present on AGR in the syntax. But in order to prevent the insertion of \varnothing -features with values not matching those of the arguments, one would have to constrain the rule so that it could only insert features when a feature with the same value is present on the appropriate argument. This type of operation would not only involve morphological conditioning at an arbitrary distance, it would also redundantly replicate syntactic agreement in morphology. This kind of undesirable rule would, however, be necessary if we wanted to derive the SUFFIXAL suffix forms from their COMPOSITE counterparts, as we will show next.

Table 3 Abstract paradigmatic distinctions (toy example)

Paradigm I			Paradigm II		
	SG	PL		SG	PL
1	α	η	1	γ	ε
2	β	δ	2	γ	ε
3	ζ	ε	3	ζ	ε

3.2.1 Spelling out the argument

It is crucial for our argument that the agreement suffixes of the SUFFIXAL and COMPOSITE paradigms in fact constitute a single underlying morphological paradigm. In order to show this, we must first consider the structure of our arguments in abstract terms by way of the two toy paradigms presented in Table 3. Each paradigm consists of six cells: singular (SG) and plural (PL) forms of first (1), second (2) and third (3) person. *Paradigm I* has distinct morphological forms for all six cells, while *Paradigm II* makes fewer morphological distinctions: the same form is used for all PL cells, and 1st and 2nd person SG are expressed by the same form.

There are two ways to analyze this case. One way is to treat Paradigm I and Paradigm II as entirely independent from each other. We expect in this case no interaction between the paradigms. This could be, for example, taken as the reason why the morpheme / γ / is found in Paradigm II but does not show up in Paradigm I. However, any similarities between the paradigms (e.g. the / ε / vs. / ζ / contrast) would have to be treated as a coincidence under such an analysis. Moreover, there is no principled reason for Paradigm I to be comprised of six distinct forms and not three: it is equally likely for Paradigm I to have three distinct forms and for Paradigm II to have six. In other words, if two such paradigms were to be found consistently across a number of related languages, we would expect to find no pattern in relation to which one will make fewer and which one more distinctions.

The other, more restrictive, analysis treats the morphological forms of Paradigm I and Paradigm II as one paradigm underlyingly: the appearance of there being two paradigms is the result of morphological operations. Generally, morphological operations that yield different surface forms of morphemes are associated with specific conditioning environments. That is, only when a specific context is met, a rule is triggered; in any other context the rule does not apply. One class of such rules are impoverishment rules (Halle and Marantz 1993, Halle 1997, Calabrese 2008): they eliminate features and featural distinctions, which results in syncretic forms.

Let us see how an analysis assuming one underlying paradigm would work with the paradigms in Table 3. Paradigm II makes fewer paradigmatic distinctions, which can be accounted for by impoverishment rules. Observe that there are less distinctions made in 1st and 2nd person, which means that some version of the rules in (32) apply. As said, morphological operations apply in specific contexts, so we posit the context X_{II} , which stands for the syntactic environment requiring the use of Paradigm II.

$$(32) \quad \text{a. } [+speaker] \rightarrow \emptyset / _ X_{II}$$

- b. [+addressee] $\rightarrow \emptyset / _ X_{II}$]

The rules in (32) state that [+speaker] and [+addressee] features are deleted in the context of X_{II} . As a result, it is not possible to make a paradigmatic distinction between 1st and 2nd person anymore: the forms / α /, / β /, / δ / and / η / cannot be used in SG and PL contexts anymore since they require making reference to [\pm sp(eaker)] and [\pm addr(essee)] features. For 1PL and 2PL contexts, since there is no person distinction anymore, the general PL morpheme can be used, / ϵ / . For 1SG and 2SG, there is a different marker, / γ / . This marker is used in all [+part(icipant),+sg] contexts and as such it refers to a superset of [+sp] and [+addr] features (Noyer 1992, Harley and Ritter 2002). The fact that this marker is not used in Paradigm I is due to a blocking effect: [+sp,+sg] and [+addr,+sg] features are more specific instantiations of [+part,(+sg)] (see, for example, Halle 1997 regarding the subset principle).

Importantly, morphological rules, like the impoverishment rules in (32), are constrained by locality considerations; that is, the conditioning environment for the rule must be present within the same relevant domain as the element affected by the rule. We assume here, following Bobaljik (2012), that morphological processes cannot apply across syntactic maximal projections. In other words, the conditioning element must be in the same (complex) head as the element affected by the rule. In the case of the rules in (32), the impoverishment rule can only apply if X_{II} is part of the same complex head as the \emptyset -features it targets, as in (33a), but not if a maximal projection (YP) intervenes between them, as in (33b).

- (33) a. $\checkmark \emptyset \dots]_{Y^0} \dots X_{II}$
 b. $\times \emptyset \dots]_{YP} \dots X_{II}$

Relating this back to the issue of V-to-C movement in Algonquian, suppose that C is the conditioning environment for a morphological rule targeting an AGR head. The rule can only apply if C is inside the same complex head as the AGR head. Thus, if the AGR head is part of the verb, the rule can only apply when C is inside the same complex head as the verb, which happens only with V-to-C movement configurations.

Consider now the predictions our discussion of the two toy paradigms makes in relation to the Algonquian agreement alternation, with Paradigm I and Paradigm II corresponding to the SUFFIXAL and COMPOSITE paradigms respectively. Given an analysis where the suffix forms occurring in the SUFFIXAL and COMPOSITE paradigms are unrelated to each other, we expect no systematic pattern in the number of \emptyset -feature contrasts expressed by the suffixes of each paradigm: the SUFFIXAL forms should be just as likely to make fewer distinctions than the COMPOSITE forms. The alternative is an analysis where the suffix forms are drawn from a common paradigm and the apparent two paradigms arise due to an impoverishment rule tied to the syntactic environments that require COMPOSITE agreement; in our analysis V-to-C movement contexts. If the latter analysis is correct, we expect the COMPOSITE suffixes to consistently make fewer feature distinctions.

In the next two subsections we show that the pattern predicted by the impoverishment analysis is exactly what we find across Algonquian. We first turn to a detailed discussion of the Arapaho paradigms and after that to a more general discussion of data from Ojibwa, Plains Cree, and Nipmuck.

Table 4 Arapaho Intransitive paradigm

SUFFIXAL intransitive			COMPOSITE intransitive		
	SG	PL		SG	PL
1	-noo	-niʔ	1	-∅	-be
2	-n	-nee	2	-∅	-be
12		-noʔ	12		-n
3	-tʔ	-θiʔ	3	-∅	-noʔ

3.2.2 Paradigmatic neutralizations in Arapaho

As a syntactic operation, agreement is commonly taken to be what licenses the occurrence of specific arguments; see, e.g., Béjar and Řezáč (2009), Oxford (2014, 2019) in relation to Algonquian specifically. If the differences between COMPOSITE and SUFFIXAL agreement were actually the result of differences in syntactic agreement, we would also expect differences in argument licensing between them. However, no such differences are attested. Therefore, it is reasonable to assume that any paradigmatic differences between the two agreement patterns are morphological.

Such paradigmatic differences are easily identifiable if we look at the suffixes used in intransitive contexts in Arapaho; listed in Table 4 with the SUFFIXAL paradigm on the left and the COMPOSITE paradigm on the right ('12' stands for inclusive 1st person).¹² The suffixes available in each paradigm are listed in (34).

- (34) a. SUFFIXAL: /-noo/, /-n/, /-t/, /-niʔ/, /-nee/, /-noʔ/, /-θiʔ/
 b. COMPOSITE: /-be/, /-n/, /-noʔ/, -∅

Note that there are no person distinctions in the singular suffixes of the COMPOSITE paradigm: all cells are zero morphemes (-∅). The SUFFIXAL paradigm, on the other hand, has dedicated 1st, 2nd, and 3rd singular suffixes. We take this as evidence that the COMPOSITE forms are derived from the SUFFIXAL forms, and attribute this to the impoverishment rule in (35), which deletes *all* person features ($[\pi]$) in the context of singular features ($[+sg]$) and a C head (we return to the importance of the context).

- (35) $[\pi] \rightarrow \emptyset / _ [+sg] C]$

The rule neutralizes all person distinctions, blocking the insertion of any morphemes referring to $[\pi]$. Thus, the morphemes that spell-out $[\pi, +sg]$ in the SUFFIXAL paradigm cannot be used in the COMPOSITE paradigm and -∅ ($[+sg]$) is used instead.

More evidence in favor of an impoverishment analysis is found when we look at 1st and 2nd person plural forms. In the SUFFIXAL paradigm, there are distinct 1PL

¹² For ease of exposition, we focus only on part of the paradigms; we leave out: (i) 3rd person obviative markers, since obviation is most likely independent from person and number contrasts (see Brittain 2001b, Richards 2010, Lochbihler 2012, i.a.); (ii) the proclitic, which we discuss in Sect. 3.3; and (iii) the theme sign (i.e. direct/inverse marking), which is not central to the discussion at hand—however, if Oxford (2014, 2019) is correct, and inverse markers are really impoverished agreement suffixes, then the fact that COMPOSITE paradigms include more inverse markers than SUFFIXAL paradigms could be seen as more evidence for our proposal; we thank Norvin Richards (p.c.) for making this point.

Table 5 Arapaho Transitive Animate agreement

SUFFIXAL transitive animate				COMPOSITE transitive animate			
		SG(o)	PL(o)			SG(o)	PL(o)
2SG	> 1	-n	-n	2SG	> 1	-∅	-be
2PL	>	-nee	-nee	2PL	>	-be	-be
3SG	>	-noo	-t	3SG	>	-∅	-be
3PL	>	-θi?	-θi?	3PL	>	-∅	-be
1SG	> 2	-n	-nee	1SG	> 2	-∅	-be
1PL	>	-n	-nee	1PL	>	-∅	-be
3SG	>	-n	-nee	3SG	>	-∅	-be
3PL	>	-noni	-nee	3PL	>	-∅	-be
3SG	> 12		-no?	3SG	> 12		-n
3PL	>		-no?	3PL	>		-n
1SG	> 3	-ʔ	-ʔi	1SG	> 3	-∅	-no?
1PL	>	-t	-θi?	1PL	>	-be	-be
2SG	>	-t	-i	2SG	>	-∅	-no?
2PL	>	-nee	-nee	2PL	>	-be	-be
12(PL)	>	-no?	-no?	12(PL)	>	-n	-n

and 2PL morphemes, spelling out the features shown in (36a) and (36b) respectively. In the COMPOSITE paradigm, however, one morpheme (*/-be/*) covers both 1PL and 2PL; that is, */-be/* spells out only the features shared between 1PL and 2PL (cf. (36c)).

- (36) a. [+sp, -sg] ⇔ */-niʔ/* (SUFFIXAL: 1st person plural)
 b. [+addr, -sg] ⇔ */-nee/* (SUFFIXAL: 2nd person plural)
 c. [+part, -sg] ⇔ */-be/* (COMPOSITE: 1st & 2nd person plural)

The pattern is consistent with an impoverishment rule that neutralizes the 1st vs. 2nd person distinction in [-sg] contexts (note that the distribution of */-be/* is exactly parallel to that of /γ/ in the toy paradigms from the last section). However, stating the rule precisely would take us too far astray as it would require a detailed discussion of the status of 1st person inclusive forms (which are affected differently by the rule). Nonetheless, it can be easily shown that the impoverishment rule operates also outside intransitive contexts by looking at the Arapaho transitive animate agreement paradigms in Table 5 (objects (o) are grouped together: the left column in each paradigm shows the singular forms while the right column shows the plural ones).¹³

Notice, first of all, the striking difference in the amount of syncretism between the SUFFIXAL and COMPOSITE paradigms: the former consists of ten morphemes, while the latter consists of only four morphemes (one of which is *-∅*). Additionally, note that except for */-noni/* in the SUFFIXAL paradigm all suffixes in the two transitive paradigms are also found in the intransitive paradigms (see Table 4). Turning to

¹³ It should be kept in mind that at this point we are only looking at the number of feature distinctions expressed and this paper should not be taken as a final analysis of the Arapaho agreement paradigm. For instance, we leave for future work the particular interactions between the thematic roles of the arguments referenced by the agreement morphemes and their status in the *Person/Gender hierarchy* (see footnote 6).

the distinction between 1PL and 2PL, note that it is also neutralized here in the COMPOSITE paradigm: in the SUFFIXAL paradigm the 1PL vs. 2PL contrast is pervasive for both subject and object marking, while in the COMPOSITE paradigm /-**be**/ marks all 1PL/2PL objects, as well as some 1PL/2PL subjects. This indicates that the impoverishment rule neutralizing 1PL vs. 2PL also affects the transitive animate forms. Furthermore, there is also evidence for the impoverishment rule in (35) (i.e. [π] deletion in singular contexts) in the transitive animate forms: note that in Table 5 all the cells where both subject and object are singular, all person distinctions are completely neutralized in the COMPOSITE forms but not in the SUFFIXAL forms.

What is crucial in relation to both the Arapaho intransitive and transitive forms (and other forms not presented here) is that COMPOSITE paradigm suffixes never express more ϕ -feature distinctions than their SUFFIXAL counterparts. This pattern is consistent with impoverishment rules applying only in the COMPOSITE contexts and never in SUFFIXAL contexts. Recall that in Algonquian COMPOSITE contexts always match contexts where V2 is found in Germanic (see Sect. 2). A natural way to constrain the impoverishment rules would then be to somehow tie them to V-to-C movement. In fact, under the assumption that morphological rules can only be conditioned by elements within the same maximal projection (Bobaljik 2012), this is fairly straightforward: the rules only need to have C as the conditioning environment (in addition to the relevant ϕ -features). If the verb (including T) moves to C, thus creating a complex head with C, the verb's ϕ -features can be affected by a rule conditioned by C (no maximal projection intervenes between C and ϕ), as illustrated in (37a). If the verb does not move to C, as illustrated in (37b), the same rule cannot apply.

$$(37) \quad \text{a. } \checkmark \phi \dots]_{T^0 C} \quad \text{b. } \times \phi \dots]_{TP C}$$

Recall from the last section that having fewer morphemes in one of the paradigms is not yet conclusive evidence for impoverishment—it could be that the two paradigms are completely independent from each other. What needs to be shown is that the suffixes of the COMPOSITE paradigm consistently express fewer distinctions than their SUFFIXAL counterparts in other languages where the two paradigms are found. In that case, the existence of impoverishment can explain a generalization that would otherwise be missed if the two paradigms were completely independent from each other. We show that the pattern does in fact extend beyond Arapaho in the next section.

3.2.3 Neutralization in other Algonquian languages

We consider here data from three additional Algonquian languages: Ojibwa (Valentine 2001), Plains Cree (Wolfart 1973) (both Central Algonquian), and Nipmuck (Gustafson 2000) (Eastern Algonquian). Including Arapaho, we thus consider languages from all three main branches of Algonquian. For ease of exposition we only focus on the Animate Intransitive paradigms, presented in Table 6 (the SUFFIXAL paradigm suffixes are listed on the right and the COMPOSITE paradigm suffixes on the left),¹⁴ although the transitive paradigms do not contradict our generalizations.

¹⁴ For similar reasons as with the Arapaho paradigm (see footnote 12), we leave out 3rd person obviative, proclitics, and theme signs. Note also that further morphological segmentation of the suffixes might be

Table 6 Variation in Animate Intransitive verbal agreement forms across Algonquian

Language:	SUFFIXAL			COMPOSITE	
		SG	PL	SG	PL
(A) Ojibwa	1	-yaan	-yaang	-∅	-min
	2	-yan	-yeeg	-∅	-m
	12		-yang		-min
	3	-d	-waad	-∅	-wag
(B) Plains Cree	1	-yaan	-yaahk	-n	-naan
	2	-yan	-yek	-n	-waaw
	12		-yahk		-naw
	3	-t	-cik	-w	-wak
(C) Nipmuck	1	-yan	-yank	-∅	-emen
	2	-yan	-yaakw	-∅	-emen
	12		-yakw		-emen
	3	-t/-k	-hetit	-w	-wak

Notice that all three languages crucially express fewer feature distinctions in the COMPOSITE paradigm, with some variation in how general the loss of distinctions is. The variation is expected, since impoverishment can target different ϕ -features or be triggered in the context of different ϕ -features. What is striking is that all the cases of neutralization are localized to the COMPOSITE paradigm.

Like in Arapaho before, we see cases here of person distinctions being lost in the singular. In the SUFFIXAL paradigms, both Ojibwa and Plains Cree have a three-way person distinction with singular forms, whereas in the COMPOSITE paradigms the situation is different: (i) in Ojibwa, all person distinctions are neutralized (just like in Arapaho); and (ii) in Plains Cree, the distinction between 1st and 2nd person is lost, and a more general morpheme **/-n/** takes over for both (just like the plural **/-be/** morpheme in Arapaho). While Nipmuck shows no loss of distinctions in singular forms, only allomorphy with the 1st/2nd person morpheme (**/-yan/** vs. **-∅**), the pattern is still consistent with our claims, since the suffixes in the COMPOSITE paradigm do not express more distinctions than their counterparts in the SUFFIXAL paradigm.

The neutralization is also found with plural forms—again, just like in Arapaho. In all three languages, the SUFFIXAL paradigms have four plural suffix forms, whereas the COMPOSITE paradigms of two of the languages have fewer plural forms: (i) in Nipmuck, all person distinctions are lost, leaving a single plural form (**/-emen/**); and (ii) in Ojibwa 1PL exclusive and inclusive forms become syncretic (**/-min/**). Plains Cree maintains all person distinctions in the plural, but uses different morphemes in

possible. The sources differ on segmenting out the **/-k/** (Plains Cree), **/-k(w)/** (Nipmuck), and **/-g/** (Ojibwa) as a separate PL marker in the SUFFIXAL paradigms, and similar cases can be identified in the COMPOSITE paradigms. For instance, Cook (2008) notes that 3PL in the COMPOSITE paradigm in Plains Cree can be further segmented into a 3rd person **/-w/** morpheme and a plural **/-k/** morpheme—this would mean that the plural **/-k/** morpheme is found in both SUFFIXAL and COMPOSITE paradigms. Another example of the possible underlying connection between the two paradigms in Plains Cree comes from the vowel length distinctions that are present in the plural participant forms of the SUFFIXAL and are retained in the corresponding morphemes in the COMPOSITE. Although such further segmentation could potentially provide additional evidence in favour of our single paradigm analysis, we leave this open for future research.

the two paradigms. This is similar to the singular forms in Nipmuck, in that the same amount of distinctions is expressed with different morphemes.

Crucially, no language introduces a new morpheme in the COMPOSITE paradigm that would lead to expressing *more* distinctions in the COMPOSITE paradigm than in the SUFFIXAL paradigm. To be more precise, a counterexample to the proposed analysis would be if, for instance, in Nipmuck the COMPOSITE paradigm would have two different overt morphemes for 1SG and 2SG, whereas the SUFFIXAL forms would be the same (*/-yan/*). To our knowledge, such a ‘reverse’ pattern is unattested in any Algonquian language with the COMPOSITE/SUFFIXAL alternation.

Like their counterparts in Arapaho, the Ojibwa, Plains Cree, and Nipmuck agreement suffixes thus also consistently express fewer ϕ -feature distinctions in the COMPOSITE paradigm. This fits nicely with an impoverishment analysis, but would have to be seen as coincidental under any analysis that treats the suffixes in the two paradigms as entirely unrelated to each other. We therefore take this morphological generalization as evidence for our analysis where the COMPOSITE paradigm is derivationally related to the SUFFIXAL paradigm via impoverishment. But recall that this is only part of our proposal; we are making the stronger claim that the trigger for the impoverishment is specifically the creation of a verbal complex that includes the C head, created as a side effect of V-to-C movement. We further motivate this particular approach by pointing out that the same impoverishment patterns can result from V-to-C movement in languages with transparent V2 effects.

3.2.4 Person Neutralization in Dutch V2 contexts

The relevant correlation between V2 and impoverishment of agreement paradigms is found in Standard Dutch (Zwart 1997, Ackema and Neeleman 2003, Bennis and Maclean 2006) and numerous other varieties of Dutch (Don, Fenger and Koenenman 2013).¹⁵ Standard Dutch examples illustrating both the V2 and the agreement asymmetry are provided in (38). When the verb is in an embedded clause, as in (38a), we find an overt agreement morpheme. This agreement morpheme is changed to a null one when the verb is in V2 position and the subject follows the verb, as seen in (38b).

- (38) a. ...*dat* je met je zusje naar de snoepwinkel loop-t. [non-V2]
 ... that you with your sister to the candy.shop walk-AGR
 ... ‘That you walk with your sister to the candy shop.’
- b. Met je zusje loop-Ø je naar de snoepwinkel. [V2]
 with your sister walk you to the candy.shop
 ‘You walk to the candy shop with your sister.’

By looking at micro-variation and verbal paradigms in 267 Dutch varieties, Don et al. (2013) show that in 97 varieties the changed agreement patterns differ in the relevant V2 contexts (i.e. when the subject follows the fronted verb in C; see footnote 15).

¹⁵ The relevant agreement alternation occurs in a specific type of V2 contexts: only when the subject follows the verb. However, what is important for the discussion at hand is the fact that the alternation can only occur when the verb is in C and that it yields a loss of ϕ -feature distinctions with agreement suffixes, just as in Algonquian. The precise analysis of these facts is not important for this paper, but see Zwart (1997), Bennis and Maclean (2006), Fuss (2005), Don et al. (2013) for competing analyses.

Table 7 Variation in verbal agreement forms across Dutch dialects

Dialect:	baseline agreement			changed V2 agreement	
		SG	PL	SG	PL
(A) Maasbree, Arcen	1	-∅	-e	-∅	-e
	2	-s	-t	-s	-e
	3	-t	-e	-t	-e
(B) Spijkerboor	1	-∅	-en	-∅	-en
	2	-en	-t	-∅	-en
	3	-t	-en	-t	-en
(C) Bovensmilde, Giethoorn	1	-e	-en	-e	-en
	2	-en	-t	-∅	-∅
	3	-t	-en	-t	-en
(D) Gistel, Poelkapelle	1	-en	-en	-∅	-en
	2	-t	-t	-∅	-∅
	3	-t	-en	-t	-en

Crucially, they show that in all these cases the changed agreement paradigm is a more impoverished paradigm. Some illustrative paradigms are shown in Table 7. The left-hand side of the table illustrates the baseline agreement suffixes, while the right-hand side of the table shows the changed V2 agreement suffixes.

The dialects differ in how general the impoverishment is, but the impoverishment is crucially always localized to the changed suffixes—just as it was localized in Algonquian to the COMPOSITE paradigm suffixes. The first group of dialects in Table 7, (A), only has impoverishment in one context: the /e-/ suffix used for 1/3PL in the baseline spreads to 2PL, resulting in complete person neutralization in the plural. Group (B) shows more general impoverishment: all 2nd person contexts are affected: in the singular, the baseline three-way person distinction becomes a two-way one, and in the plural, we find the same complete loss of person distinctions as in group (A). Group (C) is different in that it shows number neutralization: the changed forms lose the distinction between 2SG and 2PL. Finally, there are dialects with a more complex pattern, such as those in group (D). While on the surface, these look like a counterexample, because there appear to be more morphemes in the changed agreement suffixes, it's important to note that the additional morpheme is **-∅**. Don et al. (2013) show that **-∅** is in fact not a new morpheme, but the absence of an agreement morpheme resulting from the impoverishment.¹⁶

For all cases of alternating agreement patterns in Dutch, the changed agreement forms are either more impoverished than their baseline counterparts or maintain the same feature distinctions as their baseline counterparts. For example, for groups (A) and (B), the person distinctions in the plural are neutralized, and for group (D) the distinction between first and second person singular disappears. Even though it seems like there are in some cases more suffixes, as in (C), this new suffix is always **-∅** and

¹⁶ The analysis can be extended to the distribution of **-∅** in the other groups (see Don et al. 2013 for details), and in fact potentially to all the cases of **-∅** in Algonquian; which would mean that there is even more impoverishment in COMPOSITE paradigms than suggested above. However, motivating the extension of the analysis to Algonquian is not possible here for space reasons, and also not crucial for our proposal.

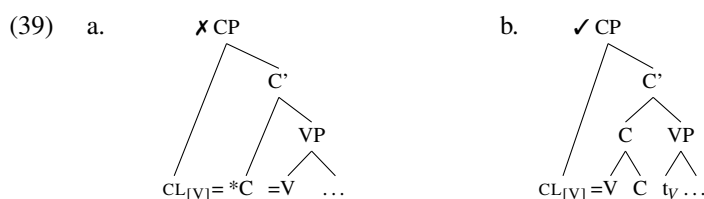
never a new overt morpheme. This means that in all cases, we could argue that φ -features are consistently being impoverished in the relevant V2 contexts. Thus, for Dutch, the fact that the verb moves to the head of CP is not only indicated by word order, but also by the variation in agreement morphemes on the verb.

The evidence is thus converging from different sides: (i) the COMPOSITE agreement paradigm is found in Algonquian in the clausal contexts where V2 is found in Germanic, and (ii) the morphological processes that affect verbal agreement suffixes in the COMPOSITE paradigm in Algonquian can also affect verbal agreement suffixes in V2 contexts in Germanic. Finally, there is also the argument from morphological locality: the clausal properties, related to the C head, which condition the realization of agreement morphemes of the verb, should only be able to do so when the verb is sufficiently local to C. Assuming Bobaljik's (2012) approach to morphological locality, this condition can be met when the verb is in C. All of this points to COMPOSITE agreement being the morphological reflex of V-to-C movement. The interesting conclusion is that, while the presence of verb movement in Algonquian is not reflected through word order changes as in the Germanic languages, it is reflected solely through very specific changes in the realization of agreement morphemes.

But recall that the changing forms of the suffixes are not the only difference between the SUFFIXAL and the COMPOSITE paradigms. In the next section we also consider the presence/absence of the agreement proclitic and argue that its presence in the COMPOSITE paradigm is also a morphological reflex of V-to-C movement.

3.3 Spelling out the proclitic

The second kind of morphological evidence for V2-style V-to-C movement in Algonquian comes from the agreement proclitic. The logic behind this argument is similar to the impoverishment one. Verb movement is predicted to potentially affect the appearance of elements whose realization depends on a local verbal host, such as verbal clitics. We argue that pronominal clitics situated in SpecCP in Algonquian require a phonological and syntactic host in order to be spelled-out. These clitics require their host to be of category V. The movement of the verb to C thus is a prerequisite for cliticization. If a clitic requires a local verbal host, then an intervening morphosyntactic element of category C will prevent cliticization, (39a), whereas head movement of V-to-C may void the intervention and thus feed cliticization, (39b).



Recall that the proclitic is only found in the COMPOSITE paradigm across Algonquian, i.e. according to our analysis, when the verb moves to C. Consider for instance the Wampanoag examples in (14) repeated below as (40) (the clitic is in bold).

- (40) a. **ku=** nâw -uk -uwô -pan -eek COMPOSITE
 2= see -INV -NON1PL -PRET -PL
 ‘They saw you_{pl}’
- b. ... nâw -uquy -âk -up SUFFIXAL
 see -INV -2PL -PRET
 ‘... (if/when/...) they saw you_{pl}’ (Wampanoag; Richards 2004)

There is a consensus in the literature on the status of the pre-stem agreement morpheme in Algonquian (Halle and Marantz 1993, Brittain 2001a, Richards 2004; Cook 2008, Branigan 2012, Oxford 2014): these morphemes, as shown below, are clitics both morphosyntactically and phonologically. Positioning of the Algonquian clitics in the structure has not been very controversial either: they are commonly believed to be situated in the CP domain (Halle and Marantz 1993; Richards 2001; Branigan 2012). Finally, as noted by Branigan (2012), the fact that there can be no more than one such clitic in a clause suggests that the clitic occupies a specifier position, rather than being adjoined. As such, we also treat the pronominal clitic as located in SpecCP and as becoming part of the verbal complex post-syntactically through morphological merger (*m-merger*; see Marantz 1984, Embick and Noyer 2001).

Similarly to clitics in other languages, pronominal proclitics in Algonquian exhibit a higher degree of prosodic independence when compared with inflectional suffixes. This is evident from special phonotactic behaviour of these clitics (see, e.g., Newell and Piggott 2014). At the same time, these clitics are prosodically deficient: they do not satisfy the minimal word requirement and thus need a prosodic host. Clitics in Arapaho exhibit phonological sensitivity to their host which is not observed for prosodically independent morphemes: person clitics harmonize in backness with the vowel in the first syllable of the following stem. Compare the form of the 2nd person clitic preceding the stem with a back vowel in (41a) to the form of the same clitic before the stem with a front vowel in (41b).

- (41) a. **ho=tous-**îhi?
 2=how-named
 ‘What is your name?’
- b. toot-**he=**hii-tisee
 where-2=IMPF-come.from
 ‘Where did you come from?’

Regressive backness harmony never applies across two independent prosodic words in Arapaho (Cowell and Moss Sr. 2008), showing that pronominal proclitics constitute a single prosodic domain with their host for the application of vowel harmony.

On the syntactic side, crucially, agreement clitics in Algonquian require their host to be verbal (see also Richards 2001 and Branigan 2012 for identical assumptions). It is crosslinguistically common for clitics to exhibit special selectional requirements on the morphosyntactic category of their host. Consider, for instance, Spanish object proclitics which must be adjacent to a verbal host, as illustrated by the data in (42); the clitic-verb order in Romance is also generally analyzed as the result of the clitic left-adjoining to a functional head dominating the verb (see, e.g., Kayne 1991).

- (42) a. nunca **lo=**vio
 never 3SG=see.1SG
 ‘I never saw it.’
- b. ***lo** nunca vio
 3SG never see.1SG
 ‘I never saw it.’ (Ordóñez 2012)

Crucial for our analysis is the assumption that merger of the clitic is a strictly local morphological operation (Marantz 1984, Embick and Noyer 2001); i.e. the clitic can only merge into the verbal word if the clitic and the verb stand in a local relationship, specifically, when they are respectively a specifier and a head of X in an XP. Thus m-merger of the clitic from SpecCP onto the verbal complex can only take place when the verb moves to C, illustrated in (43b,c). Recall that we assume, following Roberts (2010), that when the verb moves to C, the C head must have verbal ([V]) features, which is why C is then also an appropriate host for the clitic.

- (43) a. **héí=hoow-noohob-éiʔí**
 2=NEG-see-3PL>2SG
 ‘They don’t see you_{sg.}’
- b.
- c. m-merger:

In the absence of V-to-C movement (in the SUFFIXAL paradigm), the clitic is adjacent to C, but the C head does not satisfy the appropriate category requirement for the host (also C does not have a [V] feature; see Roberts 2010); that is, C does not contain the verbal complex, so it is not verbal. The verb satisfies the right category requirement, but it is not local enough since there is an intervening maximal projection between V and the clitic. Thus, in the absence of V-to-C movement, the clitic cannot attach itself to the verb, resulting in SUFFIXAL agreement, as illustrated in (44).

- (44) a. **n<on>óóhob-éinóni**
 <IC>.see-3>2
 ‘They see you_{sg.}’
- b.

Clitics in other languages exhibit a similar behaviour, and are spelled-out as clitics only if there is a local host of the appropriate kind. Interestingly, there is cross-linguistic variation in how the absence of the (syntactic or phonological) host is dealt with. For instance, clitics might be required to be expressed as prosodically independent words when no appropriate host is available (cf. restrictions on the clitics in English, Anderson 2005). In other cases, movement has been postulated to provide a stranded clitic with a host (e.g. clitics in Greek dialects, Condoravdi and Kiparsky 2002; or clitics in Bulgarian, Pancheva 2005). In Algonquian, clitics which lack an appropriate host fail to be pronounced altogether. This repair might seem unique, but can in fact be found in other languages as well. For instance, the possessive clitic /s/ in English only surfaces when there is a proper (phonological) host. In the absence of

a proper phonological host, the possessive clitic is not pronounced: e.g. with singular nouns ending in a sibilant: *the species' traits* vs. **the species's traits*, or *the dogs' food* vs. **the dogs's food* (the non-pronunciation strategy is also used in Basque with ungrammatical clitic pronoun clusters; see Arregi and Nevins 2012:78).¹⁷

It is worth noting that one could imagine a reverse analysis, i.e. that the clitic surfaces when the verb does not move to C. If this were the case, one might imagine the clitics to originate lower in the structure adjoining either to the verb in situ or when the verb moves as high as T. This however would result in the clitic occurring in both the COMPOSITE and SUFFIXAL paradigm contrary to the facts. Under such analysis, the only way of precluding the clitics from appearing in both paradigms would be to stipulate a clitic deletion rule conditioned by the V-to-C movement. Such stipulation, however, is not grounded in crosslinguistically attested patterns and thus should be dispreferred. Branigan (2012), alternatively, suggests that the pronominal clitics of the COMPOSITE paradigm originate in the CP domain but become part of the verbal complex when V does not move to C. This, however, goes against the robust crosslinguistic generalization outlined above, namely that clitics require their syntactic host to be structurally close and their phonological host to be linearly adjacent.

We have demonstrated that the syntactic and phonological behaviour of the clitics observed in Algonquian is highly comparable to the behaviour of clitics crosslinguistically in that one of the distinctive properties of this class of morphemes is their requirement of a local host of an appropriate kind. Importantly, we argue that the presence of elements whose realization depends on a local verbal host (verbal clitics) can be used as a diagnostic for the position of the verb in the structure, and thus can be used to detect verb movement in polysynthetic languages.¹⁸

4 A few notes on alternative analyses

In this section, we consider two alternative analyses that have been proposed for the COMPOSITE/SUFFIXAL agreement alternation in Algonquian. We show these analyses can not be straightforwardly extended to all the different patterns of distribution

¹⁷ Algonquian pronominal clitics in our analysis are not spelled-out in the absence of a proper syntactic host. This may be linked to the fact that clitics and suffixal agreement may reference the same arguments, i.e. the features expressed by the clitics and the ones expressed by the agreement suffixes are not in complementary distribution (see for example Trommer 2006). This is similar in some Dutch and Flemish varieties, where subjects can be doubled as clitics, and the verb can both express agreement and the subject clitic (van Craenenbroeck and van Koppen 2002, 2008). In Algonquian, even when the clitics fail to be spelled-out, agreement in the suffixes accounts for all the necessary agreement features.

¹⁸ Importantly, the two means of detecting verb movement in polysynthetic languages—allomorphy in the agreement suffixes and the presence of the proclitic—are in principle independent of each other. This is best illustrated by another outlier within Algonquian: Blackfoot (Frantz 1991). In Blackfoot, proclitics surface with both SUFFIXAL and COMPOSITE agreement. It would, however, be inaccurate to state that Blackfoot lacks the distinction between the two agreement paradigms since the distinction can clearly be seen in the agreement suffixes. It has been argued that the proclitic in Blackfoot is situated lower in the structure compared to other Algonquian languages, namely, evidence has been put forward for situating them in SpecTP (Bliss 2013, Ritter and Wiltchko 2014, Bliss and Gruber 2015). This is consistent with our analysis, where the verb always moves at least as high as T, so the clitic in Blackfoot should always be able to the verb. The additional V-to-C movement is then identifiable only from the agreement suffixes.

between the two paradigms—in particular, the Arapaho pattern—and fail to capture the neutralization asymmetries in the agreement suffixes.

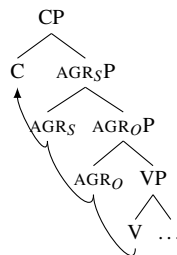
4.1 V-to-C movement yields SUFFIXAL agreement

An influential alternative analysis of the COMPOSITE/SUFFIXAL alternation, interestingly, assumes the exact opposite correspondence between verb movement and agreement: SUFFIXAL agreement occurs with V-to-C movement and COMPOSITE agreement occurs in its absence (Campana 1996, Brittain 1997, 2001a, Branigan 2012). The main evidence for this view provided by Campana (1996) is based on the cross-linguistic tendency for movement to result in impoverished agreement (see references in Section 3.2), and the claim that SUFFIXAL agreement is the more impoverished paradigm that marks fewer feature contrasts (because the proclitic is not present).¹⁹

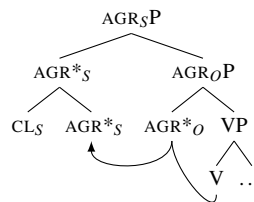
But this characterization is only valid if we compare the agreement paradigms globally across the whole array of agreement morphemes—remember that the COMPOSITE paradigm is comprised of more individual agreement morphemes than the SUFFIXAL paradigm. Crucially, as we saw in Section 3.2, the individual agreement morphemes are in fact more impoverished in the COMPOSITE agreement paradigm. As we saw above, our proposed analysis derives the local impoverishment in the COMPOSITE paradigm while keeping the syntax constant across COMPOSITE and SUFFIXAL agreement clauses (aside, obviously, from the V-to-C movement); which we take to be a desirable result, given that there are no clear differences in argument licensing across the two paradigms. In contrast, in Campana’s (1996) analysis the agreement differences are attributed to differences in the syntax, specifically, government configurations between the arguments and agreement heads.

Brittain (1997, 2001a) offers another alternative (see also Branigan 2012 for a theoretically updated take on her approach), where COMPOSITE agreement is associated with the lack of CP and consequently the lack of a landing site for V-to-C movement. The two configurations that result from this are illustrated in (45).²⁰

(45) a. SUFFIXAL:



b. COMPOSITE:



¹⁹ Campana (1996) also discusses word order tendencies in Montagnais as additional evidence; e.g. 89% of clauses where the subject precedes the verb have COMPOSITE agreement and 11% have SUFFIXAL agreement. To the extent that tendencies can be considered tests for the position of the verb, recall that COMPOSITE agreement in Montagnais occurs in many more syntactic contexts than SUFFIXAL agreement. There is no indication that this was controlled for in the corpus study.

²⁰ Brittain (1997) argues that the verb movement involves long head movement, skipping the AGR heads, while Brittain (2001a) assumes it involves successive-cyclic head movement, as in (45a).

When CP is present, the verb moves to C, as shown in (45a), while when CP is absent, the verb only moves to the highest AGR head, as shown in (45b). The difference in the realization of agreement is attributed to: **(a)** the AGR heads in the two paradigms being different elements (indicated by ‘*’ in (45b)), and **(b)** the AGR* heads being featurally deficient—the clitic fills in for the missing features as a last resort.

In this approach, the two paradigms are not derivationally related and the AGR heads have distinct sets of features in the syntax. But recall from Section 3.2 that the suffixes of the COMPOSITE paradigm across Algonquian systematically show morphological behavior consistent with being derived via impoverishment from the suffixes of the SUFFIXAL paradigm. Additionally, as noted above, the agreement alternation does not affect syntactic argument licensing in any way. Furthermore, in Brittain’s analysis, V-to-C movement and the selection of AGR heads are not causally related; both are independently linked to special, presumably language-specific, “conjunct” features on C and V. Note that in our analysis, the verb itself is the same across both paradigms—all variation is restricted to the feature content of C, following the approach to V2/inversion of Roberts (2010, 2012), Biberauer and Roberts (2016).

Brittain’s motivation for encoding the SUFFIXAL/COMPOSITE agreement alternation in terms of the presence or absence of CP respectively stems from the idea that the CP domain is crosslinguistically associated with focus, questions, and embedded clauses, which are contexts where SUFFIXAL agreement occurs in the CMN language complex. However, V2 is also crosslinguistically associated with the CP domain, and the distribution of COMPOSITE agreement in Algonquian closely matches that of V2/inversion in Germanic (see Section 2.1); this should be at least an equally valid crosslinguistic parallelism to use as a motivation for the presence of CP. Recall also that, in Arapaho, questions—clauses Brittain associates with the presence of CP—require COMPOSITE agreement, which Brittain attributes to the absence of CP.

Furthermore, as discussed by Bogomolets (2018), there is evidence from Arapaho that all clauses in the language project a CP. Bogomolets shows this on the basis of the distribution of *Initial Change* (IC), a morpho-phonological process pervasive across Algonquian which has been analyzed as a complementizer altering the phonological realization of the verb (see Costa 1996 and references there). For Arapaho specifically, Bogomolets analyzes IC as an infix originating in C and marking a clause as [+realis]. The IC-infix is incompatible with any other C-related elements, among others: question particles, wh-questions, and other overt complementizers. This complementary distribution indicates competition between IC and C-related elements, which is straightforwardly explained if IC itself is also a C-related element. This competition, importantly, spans across matrix and embedded clauses, suggesting that CP is always projected in Arapaho. Crucially, IC in Arapaho is also in competition with COMPOSITE agreement.²¹ This is illustrated in (46), where IC surfaces in the neutral affirmative matrix clause in (46a), whereas no IC surfaces in the corresponding interrogative clause in (46b).

²¹ In Algonquian languages with the more basic distribution of SUFFIXAL and COMPOSITE agreement, the distribution of the IC morpheme is also different. However, it has been argued independently that in those languages IC must be positioned in the head of CP as well (Brittain 2001a, Brittain and Dyck 2006). Moreover, it holds across the family that IC is in complementary distribution with COMPOSITE agreement, as our analysis would predict.

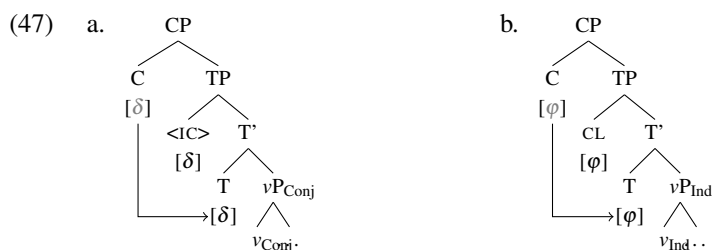
- (46) a. **b<e>etée**-noo [IC] b. **koo=ne=betée**? [no IC]
 <IC>.dance-1SG Q=1SG=dance
 ‘I am dancing.’ ‘Am I dancing?’

The complementary distribution of IC and COMPOSITE agreement can be straightforwardly explained by our analysis: the verb being in C is simply another competitor for the C-slot, making IC and COMPOSITE agreement, which is the result of V-to-C movement incompatible. Our analysis therefore does not face the problems that a Brittain-style analysis faces with the Arapaho facts, where COMPOSITE agreement unexpectedly occurs in the contexts Brittain associates with CP. Given that there is no direct evidence to the contrary (apart from Brittain’s take on the agreement alternation), we can assume the universality of CP across all clauses in the rest of Algonquian, which is fully compatible with our analysis.

4.2 In-situ analyses of the COMPOSITE/SUFFIXAL agreement alternation

There are also analyses of the Algonquian agreement alternation that assume the verb never moves to C (Bruening 2001, Lochbihler and Mathieu 2016). Bruening (2001) does not offer a derivation of the alternation, but only discusses evidence from Passamaquoddy meant to show that the verb never moves to C (which we look at below), whereas Lochbihler and Mathieu (2016) propose an analysis based around the mechanism of C-T feature inheritance (Richards 2007, Chomsky 2008).

The primary concern of Lochbihler and Mathieu (2016) is the complementary distribution of Initial Change (IC; see above) and the agreement proclitic (CL), which they analyze as T inheriting different features from C: if C hosts discourse related features (δ ; see Miyagawa 2010), their transfer to T licenses IC, as shown in (47a), whereas if C hosts φ -features, their transfer licenses CL, as shown in (47b).



The distribution of the proclitic can thus be derived without appealing to verb movement. However, we know that the COMPOSITE/SUFFIXAL alternation also involves changes in suffixal agreement. In order to explain them, Lochbihler and Mathieu invoke different lexical specifications of v (marking it as “independent” or “conjunct”) which condition the spell-out of the agreement suffixes and select for the appropriate type of C. Note here the similarity with Brittain (1997, 2001a), where the agreement alternation is also lexically encoded on the verb. As discussed in numerous places

above, such lexical encoding of the alternation is not only redundant, but it also invokes an apparent Algonquian-specific category. Given that our analysis can do without this stipulated category, it should be favored over those analyses that require it.

But what is the actual evidence that the verb in Algonquian is never in C? Since we argue that with SUFFIXAL agreement the verb is actually not in C, we will only look at what we consider the strongest potential counterexamples for COMPOSITE agreement surfacing when the verb is in C. Bruening (2001) gives a number of Passamaquoddy examples where a COMPOSITE agreement verb is preceded by a wh-word and another NP element; two are shown in (48) (note the boldfaced proclitic).

- (48) a. Ma=te k-wewitiham-ol-u [*tama* tatwikhikon **k-toli**-kisi-pcitahka-n]
 NEG=EMPH 2-remember-1/2-NEG [where letter 2-LOC-PERF-send-N]
 ‘I don’t remember where you sent a letter.’
- b. *Kegsey* Pil **kt-it-oq** ketuw-aqosom-a-sk?
 what Bill 2-[RR]say.to-INV <IC>.FUT-cook-APPL-2CONJ.INV
 ‘What did Bill tell you he was going to cook for you.’
 (Passamaquoddy; Bruening 2001:149, 175)

In Bruening’s configurational analysis of Passamaquoddy, the non-wh NP (argued to be neither a topic nor a focus²²) is located in SpecTP and the wh-word is in SpecCP, so the verb, which follows both, by this reasoning cannot be in C. However, questions in Passamaquoddy generally require SUFFIXAL agreement. The pattern in (48) only occurs when so-called *relative root arguments* (see Rhodes 2006) are questioned. Despite the name, this class of elements is comprised of various adjuncts (of location, time, manner, degree, etc.) and characterized by special pre-verbal marking; e.g. *toli* in (48a), unless the verb inherently needs a relative root argument; e.g. *it* in (48b).

The fact that this pattern is restricted to a narrow class of left peripheral material is reminiscent of the phenomenon of *Verb Third* (V3), where otherwise well behaved V2 languages exceptionally allow more than one XP before the fronted verb. What is allowed to precede the verb in addition to the usual fronted XP is generally a very restricted class; e.g. aboutness topics or frame setting adverbials. The examples in (49) show V3 with a fronted wh-word (cf. (48)) preceded by an aboutness topic.

- (49) a. L liber *chi* **l-tol** pa?
 the book who 3.DO-takes Q
 ‘As for the book, who is taking it?’ (Rhaetoromance; Poletto 2002:231)
- b. Rameshan *kyaa* **dyutnay** tse?
 Ramesh.ERG what gave you.DAT
 ‘As for Ramesh, what is it that he gave you?’ (Kashmiri; Bhatt 1999:107)

The standard explanation for the exceptional V3 pattern is that aboutness topics and some adverbials can obviate the V2 requirement due to being base-generated in the

²² Some caution should be taken here. Recall that Algonquian languages are of the head-marking type, so non-pronominal arguments like the pre-verbal NPs in (48) are used only for emphasis or disambiguation (similarly to overt subjects in null subject languages). It is thus reasonable to assume that the arguments in question, although not strongly topical or focal, are not entirely information-structure neutral.

CP domain (Haegeman 2000, Poletto 2002, Roberts 2004, Holmberg 2015). Passamaquoddy may involve a different version of this strategy: the *wh*-adverbial element is base-generated in SpecCP, above the fronted NPs. This has a precedent in analyses that attribute the exceptional behavior of specific *wh*-adverbial elements to base-generation in SpecCP (see Rizzi 1990a on ‘why’ in French; Rizzi 2001 on ‘why’/‘how come’ in Italian; McCloskey 2002 on ‘why’/‘what reason’ in Irish; Bromberger 1992 on ‘why’ and Collins 1991 on ‘how come’ in English; and Ko 2005 on ‘why’ in Korean, Japanese, and Mandarin). If relative root *wh*-words in Passamaquoddy are base-generated in SpecCP, this explains not only the “V3 pattern” but also why relative root questions require COMPOSITE agreement even though *wh*-movement in the language usually yields SUFFIXAL agreement on the verb.²³

This argumentation, of course, assumes Bruening’s (2001) configurational analysis, and recall that the premise for our study is the identification of V-to-C movement in polysynthetic languages under the assumption that Algonquian languages are of this type. Nevertheless, the discussion above shows that even within a configurational analysis, Bruening’s examples are not problematic for the current analysis. In fact, examining the exceptional behavior of relative root questions in terms of V3 may even help us better understand them in future research, and—in line with the philosophy laid out in the introduction—doing so without invoking language-specific categories.

5 Concluding remarks and looking beyond Algonquian

We began this paper by reflecting on typological studies as a key tool for discovering the limits of language variation. As a test case, we compared two seemingly family-specific phenomena—V2 and Conjunct/Independent Order—and showed that both can be analyzed as resulting from the same underlying mechanism, V-to-C movement, but yielding different surface results due to independent grammatical differences. In case of polysynthetic languages like the Algonquian languages, V-to-C movement is only reflected in the morphology of the verb, by affecting the form of agreement suffixes and by feeding the cliticization of the agreement proclitic. We thus provide an analysis that reduces what is commonly assumed to be a family-specific phenomenon to the interaction of multiple universally available grammatical processes: head-movement, impoverishment, and cliticization.

An additional take away message is that it is possible to detect verb movement purely through morphological alternations on the verb—provided that we carefully consider a number of factors: (i) the syntactic contexts in which the relevant type of verb movement occurs in the languages where it does affect word order, (ii) the nature of morphological processes involved and constraints that apply to them, and

²³ A potential complication is that long-distance relative root questions are possible in Passamaquoddy. However, at least superficially, these look exactly like the long-distance “*wh*-agreement” configurations in Kinande (Bantu) (i.e. verbal morphology that co-varies with specific *wh*-words surfaces on both the matrix and embedded verbs), which Schneider-Zioga (2009) convincingly shows do not involve long distance movement, but base generation; they show none of the island sensitivity and reconstruction effects characteristic of *wh*-movement. The island sensitivity and reconstruction data required to establish that Passamaquoddy relative root questions also do not involve successive-cyclic *wh*-movement are not provided by Bruening (2001), so a further study is needed to establish whether the similarity is only superficial.

(iii) whether or not the same morphological processes can be observed in languages where the relevant type of verb movement affects word order.

Finally, our paper can be seen as a response to the challenge Holmberg (2015) issues at the end of his paper: “*And in languages of the head-marking type, as analysed in Jelinek (1984) and Baker (1996), where all lexical (non-pronominal) arguments are externally merged as adjuncts to CP, linked to null proforms in argument positions within IP, any effects of [V-to-C movement and XP-fronting], insofar as these properties could ever (co-)occur in such languages, would be very hard, indeed, to detect.*” We showed that at least the V-to-C component of V2 *can* be detected. Of course, nothing in our discussion above requires that the grammatical factor obscuring V-to-C movement must be polysynthesis. In fact, we would like to end our paper with a brief discussion of another case our findings might relate to: VSO languages.

VSO orders are in principle compatible with the verb being either in C or T. In fact, older generative analyses of VSO in Irish often did make explicit parallels to V2 in Germanic, attributing the word order to obligatory V-to-C movement (Deprez and Hale 1986, Stowell 1989), but this view has since been abandoned for modern Irish (for discussion and references, see McCloskey 1996, Carnie et al. 2000). However, there is good evidence that Old Irish did in fact exhibit a verb movement alternation similar to the one discussed above for Algonquian, accompanied by almost identical morphological consequences (Carnie et al. 2000).

In Old Irish, the verb bears *absolute* agreement morphology when in absolute first clausal position, as in (50a), which differs from the *conjunct* agreement morphology it bears when it was preceded by a complementizer (which includes question and negation complementizers), as shown in (50b), or a so-called preverb particle.

- (50) a. **Beirid** in fer in claideb. [absolute]
 carries.3SG the man the sword
 ‘The man carries the sword.’
- b. Ní { beir / *beirid } in fer in claideb. [conjunct]
 NEG { carries.3SG.CONJ / carries.3SG } the man the sword
 ‘The man does not carry the sword.’ (Old Irish; Carnie et al. 2000:45)

We follow here the analysis of Carnie et al. (2000): absolute agreement results from a morphological change triggered by C when the verb is also in C, while conjunct agreement results from verb only moving to T when another element in C. This effectively mirrors our analysis of the Algonquian agreement alternation. Furthermore, the fact that we see different C-related elements in complementary distribution with each other and the verb in C also mirrors the distribution of different C-related elements and COMPOSITE agreement in Arapaho (see Sect. 4.1; Bogomolets 2018).

Further evidence for the placement of the verb in C in Old Irish comes from object enclitic placement. The clitic always follows whichever is the first element in the clause, which means either the verb with absolute agreement, as in (51a), or complementizers and preverbs, as in (51b) (again with the negative complementizer).

- (51) a. Bertaig-th =i [absolute + enclitic]
 shake-3SG =3SG.M.O
 ‘He shakes him.’

- b. Ní =m accai. [conjunct + enclitic]
 NEG =1SG.O (PV.)see.3SG.CONJ
 ‘She does not see me.’ (Old Irish; Carnie et al. 2000:51)

As Carnie et al. (2000) point out, the distribution of the enclitic can be straightforwardly explained by assuming that it always cliticizes to whichever element is in C. This again mirrors our analysis of Algonquian, where the appearance of the agreement proclitic is sensitive to the presence of the verb in C. There is further phonological evidence from Old Irish supporting the V-to-C analysis of conjunct verb forms: when the first element in the clause is not the main verb, it cannot interact phonologically with the elements following it, including the main verb (i.e. it does not trigger phonological mutations or affects the calculation of stress). This suggests that the first element resides in a different syntactic domain than the material following it; that is: it is the sole element in C.

If our analysis and research program are on the right track, the Algonquian and Old Irish agreement alternation cases are underlyingly the same: morphological alternations driven by V2-style V-to-C movement. Independent differences between these languages give the phenomenon a distinct appearance on the surface. Of course, we are dealing here with only one further example of parallelism, but it is one that serves well as a proof of concept. The hope is that more relevant cases can be found that will show whether this is a fruitful research program.

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