

ONE GRAMMAR IN 7.164 VARIANTS? – Confessions of a veteran syntactician

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Abstract¹

How I, an early adopter and ardent supporter of Generative Grammar, became disillusioned and alienated out of dissatisfaction with the orthodox “confessional” stance of the MP, for reasons of scientific conduct. Confessions in four cases at hand.

1. Autobiographical beginning

Fifty-four years ago, I was seventeen and entranced by a weekly program on Austrian radio entitled “*Magazin der Wissenschaft*” (‘magazine of science’). For two consecutive Sundays, the topic² was an exciting new linguistic theory by a certain Prof. Chomsky that set the scene abuzz, as I learned in this radio report. My mind was immediately made up. After graduating from Gymnasium (≈ high school) in the following year, I would immediately study Generative Grammar. As luck would have it, this was precisely when the Department of General Linguistics was launched at Vienna University, with a “Generative Week”. The series of presentations – Wolfgang Dressler on Generative Phonology and Morphology, Lyle Jenkins on Generative Syntax, Thomas Perry on Generative Semantics – were in English and my enthusiasm was just as strong as my difficulties with understanding of what was being said. Anyway, I had not the slightest doubt that a fascinating new world was waiting for me to be discovered.

Back then, in the early 70ies, the only way to study in the humanities in Austria was to do a doctorate. This meant that one started from scratch as a first-year student at a university and graduated with a dissertation after 6 years – or dropped out. As someone who knew he was a hillbilly, I was afraid I wouldn't be able to academically keep up. So, I forced a dense program on myself, ranging from Chinese studies to philosophy (of science) and logics, in addition to the linguistics curriculum.³

At that time, there were hardly any traces left of the Vienna Circle or Karl Popper but there was a group on analytic philosophy that tried to build on the great days of Viennese language philosophy. This guided me in particular to Popper, Lakatos, Feyerabend, and to a background in logics and philosophy of science in general. In hindsight, this was to become the seed of my later discomfort with the MP.

Well equipped, I enthusiastically set out to model German within the nascent P&P theory. It worked, as a network of young “neogrammarians” soon had formed in the German-speaking university scene in Southern Germany, Switzerland and Austria. For more than a decade, everything was going perfectly until there came the capricious and out-of-the-blue expulsion from paradise. The mastermind of the Generative enterprise had gradually grown weary of (the lack

¹ “7.164 languages are in use today.” <https://www.ethnologue.com/insights/how-many-languages/> Sept. 26, 2024.

² Engraved in my mind: “*This picture was painted by a real artist.*” vs. “*This picture was painted by a new technique.*” – Same surface structure, different ‘deep’ structures, mesmerised teenager.

³ During my studies, the most influential tutorial eye-openers from an international faculty, in a series of half-year visiting professors (invited & contracted by Prof. Dressler), each one with three classes, were (alphabetically): Henning Andersen, Renate Bartsch, Östen Dahl, Arnold Evers (2x), Ilse Lehiste, Edith Moravcsik (2x), Jerry Sadock, and Bob Wall. Lyle Jenkins made sure that a copy of every Chomsky paper arrived in Vienna as soon as it left the typewriter and that its content entered my head at least halfway intelligibly.

of headway of) his theory, changed his mind from one paper to the next, and discarded it in favor of a radical new start – with optimal chances for this successor theory to inevitably share the fate of the previous “best” theory.

The P&P model had opened up prolific empirical fields. The parameter concept worked sufficiently well as a frame of reference for organising and comparing language data from all over the world, even if the theory had come to a halt in the tunnel-view search for a unified account of filler-gap relations. What was offered instead – the MP – was a profound disappointment for me, right from the start.

When I read the draft of the first MP paper, I remember, I immediately thought that I had been biased before and that, contrary to my earlier intuition, the man who wrote this must have a lot of well-hidden humour and self-mockery. What I read was what you had to do if you wanted to withdraw in style from a field that you had founded and dominated, I thought. You roll up the (red) carpet saying “Carry on, I'm off.” What an impressive, elegant, and nevertheless tongue-in-the-cheek step back, I said to myself.

But this was a blatant error since my original idea about the personality had not been mistaken at all. No doubt, as I have come to realise soon, what I had read was meant seriously and was not a subtly ironic gesture from a brilliant mind on his way to retirement in one of his fields of excellence. From that moment on, it was absolutely clear to me that I could *not* go along with this change of ‘philosophy’ because it would lead nowhere. Looking back, three decades of ifs and buts, features and labels, are an impressive testimony to the non-performance of the program.

The decision was as clear to me as my initial decision to engage in Generative Grammar. I felt disappointed and appalled. Theoretically it was old hat and empirically it was well on the way to getting lost in the arbitrariness of juggling with cheaply available elements, so-called features and functional heads of *any* kind, as something that supposedly controls dense traffic above and *preferably* below surface, without any compelling empirical checkups and confirmations being in sight and many years of wasted time ahead.

What the MP propounded as a novel idea was old hat because it was exactly what I recalled from seminars in logics, namely the formal architecture of a logical calculus and the idea of a minimalist calculus. According to the ‘innovative’ scheme, grammars are to be modelled in terms of a syntactic algebra, defined as a calculus, with the MP narrowly trailing the definition of calculi: *Atomic elements* (called ‘*numeration*’) are assembled into formulas by *formation rules* that join basic items into well-formed formulas. This is external ‘*merge*’. Then, *transformations* map these formulas on other formulas. In the MP, this is ‘*internal merge*’. A formula is well-formed if there is a correct derivation of this formula in the calculus.⁴ Replace ‘formula’ by *phase* or *phrase* or *linguistic structure* or something similar and you have the unspectacular core of the MP.

⁴ "A formal system (also called a logical calculus) consists of a *formal language* together with a *deductive apparatus*. The deductive apparatus may consist of a set of transformation rules (also called inference rules) or a set of axioms, or have both. A formal system is used to derive one expression from one or more other expressions." ('Formal Systems', Wikipedia, accessed Jan. 21, 2018).

Here is my subjective picture of a brilliant mind that is not so much interested in boring details, but strives for the truly grand design. He must have realised that he could not become a founding figure in the manner of Charles Darwin because there is still a lack of broad data coverage of reliable quality in syntax. Therefore, Newton would be a more suitable role model. After all, the insights Kepler had gained from Tycho Brahe's Mars data, together with what Galileo had found out by his experiments, had sufficed for THE great theory. Why not make English the linguistic equivalent of Mars, supplemented by selected Italian ingredients?

This is the point where a perfect match seemed to be in reach for Chomsky's mathematical mind, who values elegant, ethereal algorithms much more highly than clumsy models of a far too complex reality, or as Einstein formulated it: "*He [a mathematician] has shown little psychological insight. Mathematicians are often so. They think logically, but they lack an organic connection.* (1934. Einstein Archives 35-150).

Undoubtedly, Chomsky has always been a brilliant designer of calculi but equally brilliant is his indifference to the question of whether nature has deigned to implement his brilliant designs. For a logician, such a difficulty does not exist, but for a linguist – more often than not – it is the fatal moment for many temporarily favoured hypotheses. But whenever things get tight in the Generative dominion, there is *always* a theoretical loophole that is accepted only because it saves the momentarily favoured principles (see LF pied-piping, below).

Chomsky is born a logician (apart from his destiny as a political moralist) who has ended up in an empirical discipline, although he seeks universal and eternal truths (of virtual conceptual necessity), uncontaminated with "dirty" contingencies. Every time the linguistic reality is not as elegant as the current version of the theory would have it, he entered a cycle that starts in a provisional mending mode and ends in an axiomatic fix. A prototypical example is the explanation of the *mandatory-subject* property of English (and *similar* languages). Firstly, there was the sober observation that English sentences have an obligatory subject. "*There is compelling evidence that the subject of a clause is obligatory in English and similar languages.*" (Chomsky 1981: 40). Next, EPP entered the scene and before long it transformed into a feature of an axiom that requires a universal EPP-feature to probe into structures in order to associate with something that "checks" it somehow.

EPP is presented as a universal, but languages with the EPP property are in the minority among the 7163 (plus English). In EPP languages, every sentence must have a subject and if there is no argument available for the subject function, a sentence is ungrammatical unless an expletive functions as dummy subject. Let's note, however, that for purely structural reasons, all these languages are [S[VO]] languages. In SOV, VSO and T3 languages, sentences may be subjectless; see Haider (2010) and (2015). What is the theoretical response in the MP (and before)? Here it is. In apparently subjectless sentences there is a subject in the form of an undercover "*empty expletive subject*" (section 2.1 below). Why on earth would all SOV languages resort to undercover expletives?!

What we are expected to believe is too far away from the scientific etiquette that I familiarised myself with during my education in the philosophy of science. Over the course of time, the ideas about the derivational procedures have become more and more detached from scientific standards. It is therefore not surprising that scientists can do without Generative linguists in

their research teams. This sounds harsh, but Generative linguistics has successfully marginalised itself in the scientific community. It has withdrawn into the cocoon of a hermetic theory. The current state of the field that I once cherished so much is in a situation that does not amuse me. It resembles that of a sect.

- ✿ Generative grammarians do not play a significant role in *cognitive science* and *brain research* although UG allegedly is a core part of the *operation mode* of the brain in language processing,⁵ the ironical point being, that Chomsky is the originator of the cognitive turn. The MP has virtually no points of contact with the neuro-cognitive reality of language and is not suitable for modeling it therefore.

- ✿ Generative grammarians do not play a significant role in *behavioral genetics* although UG is allegedly *genetically represented*.

It is amazing in this context to read Haworth et al. (2010: 1112) on “*the heritability of general cognitive ability*.” More amazing than the content of the paper is the fact that not a single linguist has been involved in the team of *twenty-four(!)* specialists from behavioural genetics, genomics, functional genomics, human development, psychology, and psychiatry. Language abilities evidently do not play a role in behavioural genetics.

The claims of Generative linguists are rightly ignored by geneticists because of their lack of empirical substance, even if it is a fact that many innate capacities are involved in language acquisition and use. UG theory claims that the essentials of the neuro-cognitive grammar system with crucial details of operation are innate and govern the child’s build-up of grammar by innately-primed learning. Otherwise, the complex Generative machinery could not be acquired. The experimental confirmations are wanting. The theory is in default.

- ✿ Generative grammarians do not play a significant role in linguistic *AI* although UG allegedly determines the *program packages* for the grammars of natural languages.

My first professorship was at the University of Stuttgart, in 1987, in cooperation with the recently founded department of machine-based language processing. Soon, a joint research initiative (“SFB”) was founded, funded and branded as “Linguistic foundations of computational linguistics.” I was accepted in the team in spite of my Generative specialisation, which was a minority position in a team of LFG- and HPSG-specialists. Today, an MP expert would no longer stand a chance because her/his expertise, which is nowadays perceived as highly esoteric, is demonstrably dispensable.

- ✿ Generative grammar has become a dried-up well. MP has not produced any breakthroughs on an empirical level, neither in individual languages nor across languages. What was already known is merely being re-packaged and ‘re-featured.’ A theory is scientifically significant only if it is able to generate predictions of relevance. It is time to move on, but many key players lack judgment.

What I missed most was and still is – the situation has not improved since then – a testable linkage between theory and facts. *“Unfortunately, to our knowledge, no experimental evidence*

⁵ Already in the early days, Perfetti (1981:153) summarised the final separation of generative and experimental psycho- and neurolinguistics as follows: “*As the ‘psychological reality’ of transformations became discredited, psychologists began to lose interest in linguistic structures, especially the more blatantly syntactic ones.*”

has been offered to date that suggests that merge and move are real (in the same sense that the spatial frequency channels in human vision are)." (Edelman & Christiansen 2003:61). It should be kindly pointed out that this kind of deficiency has been steadfastly ignored in the past 25 years, thereby marginalising linguistics as a potential member of established fields of science. Generative linguists, for example, define their own ideas of biolinguistics and are ridiculed by biologists for doing so; see Finlay (2009: 261).

The drive of moving away from scientific demeanor is mainly the result of loyalty to an esprit de corps in close association with a too pronounced cognitive bias, the confirmation bias. This is the tendency to search for, interpret, favor, and recall data in a way that confirms or supports one's prior beliefs,⁶ an attitude that in scientific matters goes together with the Rosenthal-effect.⁷ An orthodox Generativist is a loyal believer rather than a dutiful skeptic.

In my perception, the scene has become increasingly postmodern. Postmodern science is not so much science than a kind of activity that masquerades as science. Linguistic data is seen as a fascinating playground for derivation games, and it is not the empirically most *adequate* modelling that is preferred, but rather the virtuoso use of fashionable theoretical tools. In his 1974 CalTech commencement address, Richard Feynman coined the wonderful characterisation of such academic activities as "cargo cult science". *"They follow all the apparent precepts and forms of scientific investigation, but they're missing something essential."* The missing essential is the scientific attitude, or what Immanuel Kant called the "restless striving" to "get to the bottom of things."

Any reader is kindly invited to (re-)read Medawar's "Advice to a young scientist." Medawar (1979: 70-71) contrasts a Galilean approach, driven by critical experiments, and an Aristotelian, viz. conceptually driven, affirmative approach. An Aristotelian experiment "is contrived to demonstrate the truth of a preconceived idea. [...]. Joseph Glanvill, in common with many of his contemporary fellows of the Royal Society had the utmost contempt for Aristotle, whose teaching he regarded as major impediments to the advancement of learning: 'Aristotle ... did not use and imploy Experiments for the erecting of his theories: but having arbitrarily pitch'd his Theories, his manner was to force Experience to suffragate, and yield countenance to his precarious Propositions!'"

Let me repeat what I have written elsewhere (Haider 2018) "A Galilean approach is driven by the desire to conclusively discriminate between competing accounts. In doing so, it "either gives us confidence in the view we are taking or makes us think it in need of correction" (Medawar 1979: 71). Research in the Galilean style is powered by the relentless drive of finding out what really accounts for the observed facts. Rigorous 'stress tests' for favored hypotheses are a central component of scientific research and successful theory development.

Research in the Aristotelian way starts from a preconceived idea – "virtually conceptually necessary" assumptions – and selects facts mainly in order to convince others of the 'coolness'

⁶ G. B. Shaw: "The moment we want to believe something, we suddenly see all the arguments for it, and become blind to the arguments against it." Many orthodox generativists are willing believers rather than rational scientific skeptics, who should know that science is driven by doubt, not by acclamation.

⁷ Rosenthal & Fode (1963) showed that researchers are biased to find evidence for their preferred hypotheses and to neglect counterevidence by disesteem.

of the idea. Stress tests are avoided and if ‘stressing’ data cannot be ignored, the theory is unconditionally shielded against them by ad hoc auxiliary assumptions.”

Not only MIT linguists have proclaimed the Galilean attitude as the proper path for grammar theory, which it is, but in reality, Generative Grammar has become an Aristotelian enterprise, with the same kind of loyal audience that has supported mistaken Aristotelian descriptions of nature for more than a millennium,⁸ even threatening dissenters with the stake in past eras. In this respect, at least, things have gradually improved.⁹

In the Galilean constitution, the loyalty of scientists lies with the facts, while obedience to theoretical dogmas is of secondary importance. In the Aristotelian conduct, the dogmatic view is in the foreground and the facts must submit to it. If theory and facts do not match, the Galilean scientist distrusts the theory; the Aristotelian distrusts the facts. Since the beginnings of modern science, scientists have aligned themselves with the Galilean camp.

Let’s go back to grammar and take up the “feature checking” idea, for instance. This sounds like a combination of a technique and a rediscovery of the unification concept familiar from unification grammars, but the execution – in clear contrast to unification grammars – remains on the level of a *façon de parler*. A mechanism is merely postulated, but not detailed. Papers may claim that “a feature is checked” and something “probes” but nobody tells how checking is implemented in a grammar system and how the operations of “probing” & “checking” are carried out under real life conditions. If you think that it is enough to assume that some mechanism exists once you name it, you could as well believe in grammatical demons performing the job.

Imagine, I submitted an MP-inspired paper on gravitation to a physics journal.¹⁰ Bodies with mass are associated with gravitational features that must be checked. The G-feature is the theoretical side of the – yet undetected – covert graviton. G-feature checking explains why apples drop, why the earth travels around the sun, why a pendulum swings, and why springtides occur at sun-moon conjunctions.

This is pure claptrap, of course, but the speculative narrative of feature checking in the MP, on the other hand, still sees itself as scientifically justified, in spite of the absence of any presentable theory of features (What is a possible feature and what not?) and without worked-out and experimentally checked procedures.¹¹ As for me, I am apparently too narrow-minded to appreciate the scientific gain of rephrasing earlier insights as feature talk.¹²

⁸ His well-known statement, for instance, that flies have four legs can be found in natural history texts for more than a thousand years despite the fact that a small recount would have sufficed.

⁹ But outside linguistics, for example at the University of Sussex, a professor can be dismissed nevertheless if she insists that humans are not able to change their biological sex because it is genetically determined. Luckily, gender is no battle ground as far as grammar is concerned.

¹⁰ Her is the abstract (by ChatGPT): “*This study presents the G-feature as the essential moment of a theoretical framework that underpins gravitation. G-feature checking is the underlying principle governing gravitational behaviour. By investigating the G-feature, we are able to enhance our understanding of gravity’s mechanisms and their implications for both classical and modern gravitational theories.*”

¹¹ “*It is common in minimalist literature to assume many of the distinctions [...], without due care in questioning the addition of new first order or second order features into the system. It seems to us that a concentration on what might constitute a more minimalist theory of features is necessary [...].*” (Adger & Svenonius 2011).

¹² Hedgehogs have spines, for genetic reasons. This has not led zoologists to claim that there is a spine feature in need of being checked, and that hedgehogs luckily do this on the outside of their skin, rather than inside.

The lifetime of a generation of researchers is certainly not enough to conclusively find out how one of the highly complex cognitive systems that evolution has shaped is organised. However, this attitude would be too indifferent. Even several lifetimes invested in disoriented research would not change the malaise, even if the empirical methods were not as outdated as in the MP.

- Generative theory-building still¹³ works with *introspectively* collected data as the major data source. Consequently, the researchers produce *data they need* for their theory, they select the data that fit (and declare data that do not fit as unfit or marginal). This is not so much a problem in clear cases, but data at the frontier of research are often less clear.
- Generative theory-building works with *very small samples* (of languages) and without (randomised) *control groups* (of other languages). Typically, the researcher is at the same time her/his own data-judgement source.
- Generative theory building steadfastly proceeds in an affirmation mode, without controlled falsification checks. If others present contradiction data, the falsification effect of these unwanted data is customarily blocked by auxiliary assumptions that themselves have no independent confirmation; see chapter 9 in Haider (2013) for a detailed discussion of a representative case. Not a single piece of the empirical counter-evidence presented there has ever been taken up, let alone dispelled. The ‘cool’ claim continues to be unabashedly carried on, namely that SOV languages are strange SVO languages with sentences in which everything moves from the back to the middle (see subsection 2.4), without *any* compelling empirical basis. Just for fun, it seems.
- Generative theorising is prone to pursue misleading or irrelevant research questions because a non-contingent theory cannot distinguish non-contingent questions from relevant ones. “*It has become increasingly difficult to prove individual analyses, to prove them wrong, or to confront them in a meaningful way with counterarguments or supporting evidence.*”¹⁴

2. Some of the many non-performing loans – in four subsections

“*Putting forward a theory is like taking out a loan, which must be repaid by gleaning an empirical basis for it; theories that fail to do so are declared bankrupt.*” (Edelman & Christiansen 2003: 61). The following sections discuss four precarious areas as examples of the cause of aversion that has gripped me ever since. In each case, the MP theory is in default.

- Trans-derivationally operating features (EPP) and expletive emptiness
- Functional heads such as „Voice”
- Universals of wh-movement with LF pied-piping as excuse
- Linearisation of structures vs. structuring of linearisations

In today's Generative Grammar, grammatical relationships are preferably reified in terms of structures and features and combinations of both in the form of functional heads. The following two subsections present exemplary cases, namely the EPP feature and the hypothetical functional head named “voice.” In my opinion, both belong to the realm of theoretical ideas that

¹³ More than 100 years after psychology has abandoned introspection as a legitimate source of data.

¹⁴ From the Linguistlist announcement of the conference “*Generative Syntax in the Twenty-First Century: The Road Ahead*” (Athens, May 28-30, 2015). The conference has had no noticeable impact since then.

have been denied grammatical incarnation in our empirical linguistic world.¹⁵ Next comes “undercover pied-piping” as an unbeatably funny idea, followed by a demonstration of how to put the cart before the horse in matters of linearisation.

2.1 A trans-derivational feature (EPP) and expletive emptiness

The fact that sentences in languages with an [S[VO]] sentence structure obligatorily have subjects has been elevated to a linguistic universal in Generative Grammar already in the 80ies, in contrast to the unmistakable empirical counter-evidence from the majority of languages, that is, all the languages that are not [S[VO]]. The merely asserted fact is “explained” as the effect of an *every-sentence-has-an-obligatory-subject*-feature, abbreviated as EPP-feature that needs to be “checked”. It is a successor of the EPP constraint (= *extended projection principle*) of the P&P days. What is naively assumed to be captured by a harmless feature is in fact the outcome of a complete theory of sentence structures (Haider 2015). Only one of the cross-linguistically observed sentence-structure types gives rise to the necessity of a grammatical subject, namely the [S[VO]] type. Without such a theory, the EPP is merely a circular description. Sentences display an EPP feature because they have an obligatory subject, and they have an obligatory subject just because of their EPP feature.

One thing must be emphasised here, however: A theory is a pitiable theory if it has nothing better to offer for the question of why the sentence structure of an [S[[VO]]] language has an obligatory subject slot than a feature that requires a subject – the technical version of “*Because it is so.*”

I can’t help but my mind refuses to accept that anyone could *seriously* believe this, mistaking a rhetorical pose for an explanation. In essence, the EPP feature would have to function as a *trans-derivational* supervisor. Every grammar has to take care that the obligatory subject position in a finite [S[VO]] sentence is not left empty otherwise this sentence will be disqualified (like the English passive of a bare intransitive). The question of who or what is the responsible “caretaker” remains a matter of discretion, unfortunately.

Should I feel a characteristic itch in my head if I utter a sentence with an orphaned and unchecked feature? A causal chain is merely presupposed but not detailed any further. It is not a substance-related feature, as for instance an agreement feature, but an *operational* feature. Nobody seems to be interested in how the whole thing actually works. It is not an atomic feature but more like a computing chip or a master gene in genetics. It is able to distinguish between lexical items in the subject position and a variety of *empty* things, such as a null subject (*pro*), a *PRO*-subject, the subject of an imperative, and the absence of any of these forms of emptiness. Only in the latter case, the alarm buzzer is activated and something in the I-language logistics system passes something on to the subject position which includes even an empty expletive (!). A charming idea that is unfortunately closer to imaginary toy worlds than to any linguistic, let alone (neuro-)cognitive reality.

Amusingly, the entry suggested first for “EPP” by a popular search engine is ‘*endpoint protection platform*’. This is a neat rendering of what the feature has to achieve in the grammar system.

¹⁵ German offers a nice concept, namely *Hirngespinnst*. This is something that has no equivalent in the external world and that the brain has woven together like a spider its web. Not even a fly will ever be caught in it.

At the “endpoint platform”, i.e., at the “spell out” point of a finite sentence in a [S[VO]] language, the structurally defined subject position must not remain radically empty. Norwegian provides an instructive illustration [Taraldsen (1979), Lødrup (1991)]. In Norwegian, being an [S[VO]] language like English, the absence of a *grammatical* subject is not tolerated (1a). Passive cancels the subject argument of the active version. So, either the position is filled with an expletive item (1b), or any other available candidate is fronted as filler for the otherwise empty position (1c, d).

- (1) a. *(at) -- ble klistret frimerker på brevet. Norwegian
 (that) were pasted stamps on letter_{DEF}
 b. (at) *det* ble klistret frimerker på brevet.
 (that) *EXPL* was pasted stamps on letter_{DEF}.
 c. (at) *brevet* ble klistret *noen frimerker* på
 (that) letter_{DEF} was pasted some stamps on --
 d. (at) *frimerker* ble klistret på brevet.
 (that) *stamps* were pasted -- on letter_{DEF}

Evidently, there is no deterministic grammatical trigger at work in (1). If there is an item available for fronting to the empty subject position, it may be fronted or *instead*, a dummy can be used to lexicalise it. Who decides? The feature or the speaker? If the feature decides, who forwards the decision to the speaker?

Of course, nobody is discouraged from thinking up complex scenarios, but nobody is obliged to believe them either. I take the liberty of being a fact-based dissenter. The simpler hypothesis is sufficient. The grammar of a language is a knowledge system that – as an *outcome* of successful grammar acquisition – provides the speaker/listener with (recursively combinable) *structural templates* of the *forms* of messages to be produced and received. The speaker/listener of Norwegian (just like any learner of any [S[VO]] language) has acquired sentence-structure *templates* with obligatory subject slots. Norwegian does not provide subjectless templates. So, a speaker takes care of filling the subject slot.

The templates available to a German speaker, on the other hand, do *not* contain (obligatory) structural subject slots. An obligatory slot they contain is the clause-initial slot of a V2-clause structure in finite declarative clauses. And this slot is also filled with any available material (2), or, as in Norwegian, with an expletive for the sentence-initial functional specifier position, which of course is not a subject position (2e).

- (2)a. *Auf den Brief* wurden Briefmarken geklebt.
 on the letter were stamps pasted
 b. *Briefmarken* wurden auf den Brief geklebt.
 c. *Briefmarken geklebt* wurden auf den Brief.
 d. *Auf den Brief geklebt* wurden Briefmarken.
 e. *Es* wurden Briefmarken auf den Brief geklebt.
 EXPL were stamps on the letter pasted

Here we are at the very position where the Generative ‘*fall from grace*’ has happened, as I experienced it. The orthodox view seems to be this. If the sentences of English and several other languages like English have a mandatory subject, this cannot be an accident. So, let’s be bold

and go for the bold idea: *Every* sentence of *every* language has a subject. English confirms this, and so do Danish, French, Italian, Norwegian, Occitan, Portuguese, Spanish and Swedish, to name a few languages. *Every* one of these languages, except German. This language behaves strange. It is a 9:1 outlier, therefore.

Imagine we consulted Laplace’s rule of succession.¹⁶ What are the odds that the next language we (randomly) sample will have the very grammatical property? In our context, the number of successes s is 9. The total number n is 10. So, $s+1 = 10$, $n+2 = 10+2 = 12$. Therefore, $P = 10/12 \approx 0,8$. We may interpret this as the probability of 80% for our next language to be an EPP language, or 20% with two languages in total that do not fit. Of course, the calculation is biased, because the items in the sample are not really randomly chosen. Nevertheless, should we be content with a generalisation that covers 80% at most if we suspect it to be universal?

In such an everyday situation in research, some opt for the affirmative and others for the defensive way. The former believe that their generalisation is fundamentally correct and will work in *all* languages. The latter are sceptical and take the findings as an indicator that the generalisation is wrong. An ‘affirmer’ believes in the theory and assumes that something has been overlooked which, on closer inspection, would demonstrate that the favoured axiom is *not* invalidated, neither by German nor by any other language. In not too long a time it would have turned out that the affirmative languages make up 25% at best, namely [S[VO]] languages only.

However, what orthodox Generative grammarians opt for culminates in a questionable claim: German – contrary to appearance – is an EPP language. Speakers obligatorily resort to a subject expletive, but not the easily available lexical one, viz. *es* (‘it’). They insist on inserting an *expletive null subject* instead.¹⁷ As required by the axiom, German sentences end up with their obligatory subject. With amazement we learn that German speakers trick the guardians of grammatical virtue by substituting something empty for a lexical expletive.¹⁸

What an astute insight! If there is apparently nothing there, there is still something imperceptible, and above all it saves the threatened axiom. This reminds me of being in a dark room searching for a black cat and someone telling me that the cat has dematerialised but her grin still is there, as an “empty expletive (Cheshire) cat”. Luckily, my metaphorically worded aversion can be turned into a testable argument about Romance languages (see next page).

For a would-be science, it is remarkable that the relevant – albeit negative – facts have been known from the beginning (Haider 1990), but did not at all dissuade the enthusiastic protagonists of the “expletive null-subject”-idea from their preferred conviction. The cognitive bias responsible for this, as Watzlawick (1976) has demonstrated, is as follows. In a confrontation between a simple (but accurate) solution to a complex problem and a highly sophisticated and differentiated (but inaccurate) one, people prefer the more ‘sophisticated’ solution. In our case, the simple solution is this. A sentence with a verb that does not provide an argument does not contain a subject. If no expletive is admitted, this indicates that there is no structural position

¹⁶ Laplace’s rule of succession: $P(X_{n+1} = 1 \mid X_1 + \dots + X_n = s) = \frac{s+1}{n+2}$.

¹⁷ Here is a fun random aside you can check out yourself. Feed DeepL with “expletive null subject” and the suggested German translation is “Schimpfwort ohne Subjekt (‘swear word without subject’).

¹⁸ Here is another candidate for an axiom of the same kind: *Every singular common noun in every language has an article. If an article is missing, Helbig & Buscha’s (1988: 321) grammar has an answer that always strikes me as amusing: “The use of article words is obligatory. This also applies to the zero article.”*

to be filled. The MP-preferred solution, however, is this: If there appears to be no subject, there still is a subject, but it is an undercover one. It is empty AND expletive. This account stands out as tall for its impressive sophistication as for its failure.

German is said to make use of an “empty expletive” in a sentence such as (3), and every time when I read this term, I feel as if I were the child in the fairy tale “The Emperor's New Clothes”. Many syntacticians do not appreciate that the following question is ill-posed because of an unsatisfied presupposition. *What is the subject of clause (3)?* The unsatisfied presupposition is the existential presupposition, namely that “there is something functioning as the subject of sentence (3)”.

- (3) dass nicht gelacht werden durfte¹⁹
 that not laughed be might
 ‘that it was not allowed to laugh’

Imagine, I joined the position of classical grammarians of German and insisted that (3) has no subject at all, which I do indeed, and an MP-believer insisted that there is a subject position filled by an empty expletive. Would I need to reply more than the following?

“Ok, you sincerely believe that there is a structural subject position that must not remain empty and the only way to prevent this is to assume that there is an empty expletive that is assigned to this position as a filler. In other words, something empty prevents a position from remaining empty. So, please show me how we can find out that the position is filled rather than empty. How do you identify the presence of an empty expletive in (3)?”

Am I the only one whom such a disputation reminds of the charm of medieval scholastic discussions about the number of angels a needle point can possibly hold? It's hilarious, at least to me, since the empirical situation is as clear-cut as it could be. Long-serving syntacticians know the facts but they do not seem to bother them. Here they are once more.

All Romance standard languages are [S[VO]] languages. So, the subject axiom applies to them. It is generally known that they can be divided into two groups with regard to the pronominal null subject property (\pm pro-drop). In French (4), the standard passive can be applied to intransitive verbs, which are thereby deprived of their only core argument, functioning as the subject. An expletive subject pronoun viz. *il* (‘it’), is therefore obligatory.

- | | |
|---|----------------------------------|
| (4) a. <i>Il fut dansé, sauté, ballé.</i> ²⁰ | French |
| it was danced, jumped, ballroomed | |
| b. <i>Il a beaucoup été fumé dans cette salle</i> | Gaetone (1998: 124) |
| it has much been smoked in this room | |
| c. <i>Il a été dormi dans ce lit</i> | Rivière (1981: 42) |
| it has been slept in this bed | |
| d. <i>qu'il a été procédé à cette arrestation</i> | <i>Le Figaro</i> , Sept. 7, 2016 |
| that it has been proceeded to this detention | |

¹⁹ <https://www.freitag.de/autoren/klaus-raab/das-lachen-in-den-zeiten-der-merkel-aea>

²⁰ Jean de La Fontaine (Contes I.I, 518).

- e. *Il* a été opté pour cette solution²¹
it has been opted for this solution.

As expected and predicted, the omission of the expletive subject *il* in (3) would make these sentences ungrammatical. Moreover, every syntactician is, or should be, familiar with what happens to pronominal subjects in a Romance null-subject language such as Italian. They are set to null. Therefore, what we are bound to predict for the counterparts of (4) in a pro-drop language like Italian, Portuguese or Spanish is trivial, namely, that in the Romance pro-drop languages, the standard passive can be applied to intransitive verbs, just like in French. The counterpart of French *il* would have to be dropped in the same way as weather-verb subjects are dropped and serve as an empty expletive. This is as clear as it is empirically false and any reasonably knowledgeable syntactician knows this. Intransitive passive is ungrammatical in (Romance) pro-drop languages (5).

- | | | |
|---|------------|---------------------------------------|
| (5) a. *È stato ballato in questa sala.
has been danced in this hall | Italian | (n.b. intransitive <i>ballare</i>) |
| b. *È stato dormito in questo letto.
has been slept well in this bed | | |
| c. *Fue trabajado duro aquí.
was worked hard here | Spanish | |
| d. *Foi trabalhado muito aqui.
was worked much here | Portuguese | (n.b. intransitive <i>trabalhar</i>) |

What is even more incomprehensible for me, therefore, is the fact that in the hierarchy of kinds of null subjects,²² the empty *expletive* null subject is always presented as contained within grammars with *referential* null subjects. Every pro-drop language is expected to have empty expletive subjects and therefore, to passivise intransitive verbs, too. The fact that the passive of intransitive verbs is ungrammatical in *every* Romance pro-drop standard language²³ is simply disregarded.²⁴ Moreover, this is true for any [S[VO]] pro-drop language. No facts to the contrary have been reported in the literature to my and Google’s best knowledge.

This is the place where a Nobel laureate in physics has to have his say, accompanied by another laureate in medicine: “*It does not make any difference how beautiful the guess is. It does not make any difference how smart you are, who made the guess, or what his name is – if it disagrees with experiment, it is wrong. That is all there is to it*” (Feynman 1967: 156). “*Excess of confidence in the rightness of their own views is a sort of senile hubris, as offensive in older scientists as excess of hubris in the young.*” (Medawar 1979: 54).

²¹ From a list of examples with passivised intransitive verbs: <http://gabrielwyler.com/page479.html>

²² Rizzi (1982:143), Roberts & Holmberg (2010):

“*Expletive null subjects* ⊂ partial null subjects ⊂ *consistent null subjects* ⊂ discourse pro-drop”

²³ To my knowledge, there is at least one Italian regiolect, Venetó, that has grammaticalised an locative *adverb* (‘there’) as an expletive and consequently admits intransitive passive. I am grateful to Cecilia Poletto (p.c.), who is native in this language, for certifying it: i. *Z’è stà parlà de ti* (‘*There* has been spoken about you’)

²⁴ I remember the very discussion with Anna Cardinaletti on one of our joint lunch walks at the 1985 Salzburg Summer School. When confronted with (i), her reaction was to point to the construction in (ii):

i. *È stato parlato di te. has been talked about you	ii. Viene parlato di te. comes talked about you.
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The crucial point is that the standard passive (i) is indisputably ungrammatical and that (ii) is not a standard passive but an impersonal construction with a semantically empty argument of ‘venire,’ cf. *It has come to this*.

There is an instructive parallel in the history of astronomy. It is about an anomaly that preoccupied astronomers in the 19th century. The small precession difference – 43 *seconds* of arc per century – of the perihelion of Mercury did not follow from Newton’s laws. Its final explanation had to wait until Einstein’s relativity theory. Urbain Le Verrier, who had successfully predicted a new planet before, namely Neptune, as the source of an anomaly in the orbit of Uranus, presented an explanation. Having proven the reliability of his methods with the spectacular discovery of Neptune, he announced he had identified a planet even closer to the sun, which he named Vulcan, as the source of the anomaly of Mercury. He was completely right with Neptune but completely wrong with Vulcan. During the nineteenth century, astronomers continuously convinced themselves that Vulcan must exist, because there must be something interfering with Mercury’s path on the basis of Newton’s laws. No definitive observation was ever recorded.

The parallel to our linguistic case lies in the postulation of something based solely on a theoretical extrapolation, but it ends immediately when we compare the extremely high reliability of the axioms of Newton’s theory with the extremely high unreliability of the axioms of Generative Grammar as a basis for plausible extrapolations. If there is reliable counter-evidence to an unreliable claim, then the problem is with the claim rather than the data.

2.2 Raising one’s voice against “Voice” (and the like) as a functional head

Passive, which in abs-erg languages is traditionally called anti-passive,²⁵ is nothing else than *the grammars’ way of licensing the omission of a subject argument*. The rest is trivial as it follows from independently motivated grammatical conditions that also apply in active sentences (see Kiparsky 2013: 7).

“Passive voice” is my first and foremost candidate for an anthology of misinterpreted, distorted, and misunderstood linguistic terms. Typically, the communicative effect is confused with grammatical causality.²⁶ Even an encyclopaedia of linguistic terms offers a definition in terms of the effect rather than the grammatical causality.²⁷ The definitions do not capture the grammatical core of passive (and its counterpart in abs-erg-languages, called anti-passive; see Haider 2021a). The grammatical aetiology of the (anti-)passive is easy to understand once one has realised that arguments that function as grammatical subjects, unlike objects, cannot be omitted without grammatical ‘permission’. Here is a simple demonstration. Each *object* of *forgive* can be freely omitted (6a), but the very same argument of the verb that can be freely omitted in (6a) becomes mandatory if it is a subject (6b).

- (6) a. *(Life) never forgives (you) (anything).
 b. *(You) are not forgiven (anything).

Generative Grammar has struggled with the passive since the P&P times. The management of the argument structure (cf. projection principle) did not follow elegantly. Even an affix was

²⁵ Silverstein (1976: 140), the namesake, has noted this right from the beginning: “*Ergative systems have an analogous construction, here termed as antipassive, which has all the properties of the passive, as Kuryłowicz, again saw.*” See Haider (2021a) for details.

²⁶ Britannica: “Passive voice in grammar refers to a construction where the subject of the sentence is the *recipient of an action* rather than the *doer*. In passive voice, the focus is on the action and the object receiving the action, rather than on the subject performing it.”

²⁷ Glottopedia: “*Passive is a construction in which the logical object shows up as the grammatical subject, while the logical subject is not expressed at all or shows up in an adjunct by-phrase.*”

suspected to represent the omitted subject argument. But, “*for just where concepts are lacking, a word comes in at the right time.*”²⁸ Coincidentally, passive is called “passive voice” in English. This invites the naïve inference that there must be something like “*voice*” that comes in at least two versions, namely ‘passive’ and ‘active.’ Born in the mind of a medieval philologist²⁹ with a penchant for categorisation, the undead concept now haunts Generative Grammar. ‘Voice’ lends itself to be mistaken for a functional category, ‘incarnated’ as a functional head, and this is what some people think indeed.

We would probably smile if someone insisted that a sentence is a passive sentence because its voice is passive. In modern diction, we learn that a sentence is passive because the voice feature of the eponymous functional head of the clause is valued “[+passive]”. The gain is as profound as the empirical evidence for such a functional head, which ranges between absent and negative. Please forgive me for not commenting on why there is supposedly also a functional feature “active” that is necessary for turning any sentence into an active sentence by setting the functional voice-head features to this value. I’m not impressed by a feature [+middle] either. Needless to add that there is no compelling distributional evidence for such functional heads.³⁰

Where are the clear cases, pray? Let’s assume there is a grammar that defines an affix for subject-omission, as for instance the affix “-ur” in Latin. What if we learned that Latin grammarians would have marvelled at the fact that finite verbs with this suffix occur (most often) in the same position as infinitival verbs with a form that has the same effect on the argument structure as “-ur” (viz. passive infinitive)”. These grammarians would then have justly associated this position with the locus of passivisation. Where are these languages? No such language is known although it is predicted to be the best approximation to UG-conformity. There is no compelling positive evidence, neither for Latin, nor, for instance, for the Swedish *s*-passive, but there is enough evidence to the contrary.

In German, for example, verbs are known to be ‘mobile’. The finite verb is fronted in V2 clauses, auxiliaries are fronted less far in IPP constructions. Here is an example from Thomas Mann, one of the masters of German writing style:

- (7) dass er für ihn nicht *hatte* die Firma am Leben *halten wollen* (Th. Mann, *Buddenbrooks*)
 that he for him not *had* the company alive to-keep wanted
 ‘that he had not wanted to keep the company alive for him’

This example shows that the auxiliary *hatte* (had) may be moved far into the so-called mid-field. So, if we passivise the sentence, it is natural to expect that the passive auxiliary, in its inherent urge to unite with the functional passive-head, will do the same. But it does not.

²⁸ Johann Wolfgang Goethe, *Faust I*: “*Nur muß man sich nicht allzu ängstlich quälen; denn eben wo Begriffe fehlen, da stellt ein Wort zur rechten Zeit sich ein.*“

²⁹ This terminology seems to go back at least to 1450: <https://languageelog.ldc.upenn.edu/nll/?p=1227>

³⁰ A recently posted document (Kallulli & Roberts 2024) may serve as an example of the affirmative working mode. It elevates the functional head labelled *voice* to the head of a *family* consisting of passive, middle, anticausative, reflexive, and active. No one will deny that there are family resemblances as described in traditional grammars. On the other hand, it is definitely not enough to set a handful of assumptions and show that the desired properties would follow from them (although “*participial passives are a systematic exception for reasons that remain unclear*”). The main shortcoming remains the objective absence of any “checking movements”, i.e. the predicted distribution effects emanating from functional heads. Without sufficiently corroborated premises, any such modeling remains but a beautiful “would’t-that-be-loverly” moment.

Fronting it in analogy to (7) is ungrammatical. But the situation gets even worse for the voice-head believers. The passive auxiliary can take a free ride to the clause initial spec-position in V2-clauses, together with its companions in the verb cluster, as in (8):

- (8) [Geändert *werden* müssen] hätte es bereits im Juni.³¹
 [changed *been* shall_{Inf}] had it already in June
 ‘It should already have been changed in June’

The familiar excuse for such a disobedient checking behaviour as in (8) is cheap. The passive auxiliary verb moves, but it only does so undercover. It travels covertly to its checking destination. Unfortunately, the proponents of incognito travel do not tell us how we can check in the relevant cases whether such trips were actually carried out successfully. As for (8), how could the passive auxiliary get into, or escape out of, its phrasal cage in the spec-position and step down to the functional head with whom it is bound to join? And, more importantly, why would the auxiliary not travel overtly in German (and virtually all other languages) although the logistics would be freely available.

What is “passive” then? Passive is any *systematically* available grammatical device that neutralises the otherwise obligatorily present subject candidate of a verb (and turns it into an *optional* and oblique item). The grammar of German provides four instances, some of which can also be combined in “double passive”, that is, the passivising of a passive sentence, with elimination of the derived subject, too (Haider 2024). Again, the voice idea is helpless. The functional voice-head would be already checked by the first instance of the passive without room being left for a double passive unless the MP admits the possibility of cloning functional heads. This would be a typical rescue option, since in the absence of a theory about what a potential functional head or a potential functional feature is, anything goes anyway.

If there were a God who implanted UG in our brains, it would be a malevolent (but playful) God who preferably misguides the syntacticians who believe in him. For me, Einstein’s view is more attractive. “*Nature*”, he concluded, “*hides her secrets because of her essential loftiness, but not by means of ruse.*” Those who see an essential loftiness in the supposed hide-and-seek game of functional heads are free to go on with it, but I must apologise for not accompanying them. Too many empty miles for a hypothesis that will be ignored after a while because of evident empirical unproductiveness and evidently false implications. And finally, the unrecognisable gain of insights is not worth the cost of shutting out the mass of counter-evidence, because closing one’s eyes at it does not make things disappear even if children think it will.

2.3. Covert pied piping³²

Another top favourite of mine in the category hide-and-seek is “covert pied-piping of wh-clauses” as a desperate attempt of immunising one’s belief in covert wh-movements against contradictory data. Here, too, the stumbling block is the empirically unsupported desire for a universal “law,” this time in the area of interrogative constructions.

The best of all possible grammatical worlds seems to be one out of the following two. Either each wh-item moves or each one remains in its base position. What we see, however, are *three*

³¹ https://www.parlament.gv.at/dokument/XXVII/NRSITZ/222/A_-21_06_56_00300698.html

³² This subsection draws on Haider (2018), sect. 2.1.

optimal worlds. In some languages, wh-phrases (may) stay in place (cf. Japanese), in other languages they are all shifted (cf. Slavic), and finally we see a combination of one element shifted and the others in-situ.

Only in the eyes of an orthodox Generative beholder, however, there emerges a clear picture of an elegant universality hidden in the data. Each and every wh-expression is fronted, but at different stages of a derivation. Chinese moves every wh-item *covertly*, Bulgarian is the opposite, moving every item *overtly*, and English moves only one overtly and all the other covertly. Sounded great, sounded elegant, and would have deserved to be examined thoroughly. Then it would have turned out that regrettably, the idea is one of the many candidates for the graveyard of beautiful scientific ideas that die prematurely.

Covert wh-movement in fact never should have become a workable hypothesis. It should have become clear soon that the distribution of in-situ wh-items does not match the predictions of the covert movement hypothesis and that auxiliary assumptions could not plausibly save the hypothesis. The truly unsurmountable obstacle was and still is this. In-situ wh-items are acceptable (9a,c) and lead to acceptable interpretations even if they occur in contexts that are undoubtedly opaque domains for wh-movement, such as adverbial clauses (9b) or relative clauses (9d).

- (9) a. Who would have to leave the meeting room [before we start discussing *what*]?
 b.**What_i* would he have to leave the meeting room [before we start discussing *e_i*]?
 c. Who has praised syntacticians [who criticise *what*]?
 d.**What_i* did they praise syntacticians [who criticise *e_i*]?

In this empirically challenging situation, which proponents of undercover syntax have acknowledged, too (cf. Huang 1995:158), the straws to clutch at is a conjecture, namely a pied-piping hypothesis for covert movement, published for instance in *Linguistic Inquiry* and other MIT Press publications. Contrary to appearance, covert wh-movement respects opacity contexts, given an auxiliary hypothesis which is as follows. Covert movement *pied-pipes* the whole opaque clause to Spec-C, but only if the wh-item contained in the opaque clause is an argument and not an adjunct [sic!]. Adjuncts would not qualify for triggering pied-piping for whatever reason and therefore they remain subject to opacity.

First, these assumptions are far from plausible or evident. If there existed a *covert* pied-piping option for wh-arguments ‘imprisoned’ in wh-movement islands, we had to expect this option also for *overt* movement in at least one language but the evidence is clearly negative. You may try it out with (9a,c). In the absence of any overt parallel, the assumption remains hypothetical at best.

Second, and crucially, data such as those in (10) show that there is no argument vs. adjunct asymmetry for in-situ wh-elements. These data are representative of OV languages. The alleged argument-adjunct contrast inspiring a pied-piping excuse simply does not exist. In each case in (10), the in-situ wh-item is an adjunct and the containing clause is an adjunct clause, too. The inevitable prediction for the MP would be that all these sentences are ungrammatical because covert movement would violate an island constraint and pied-piping would not apply to adjuncts. The prediction is evidently wrong.

- (10)a. Wieviel muss man bezahlen [wenn man es *wie lange* mietet]?
 how much must one pay [if one it *how long* rents]
 ‘What is the price in relation to the length of the rental period?’
- b. Wie lange muss man warten [bis der Wasserspiegel *wie hoch* ansteigt]?
 how long must one wait [until the water level *how high* rises]
- c. Wer war Zeuge, [als sie dich *weshalb/aus welchem Anlass/wann* beleidigte]?
 who was witness [when she you *why/because of which cause/when* insulted]
- d. Wer hat jeweils gelacht, [während sie *weshalb/aus welchem Grund* geweint hat]?
 who has in-each-case laughed [while she *why/for which reason* cried has]?

The covert-movement idea singles out adjuncts because of the exceptional behavior of ‘why’ and ‘how’ in VO languages. So, this idea could only survive in a linguistic biotope of SVO syntacticians since only in VO languages, in-situ wh-tokens of ‘why’ and ‘how’ are unacceptable in any clause. This fact provided a pretense for positing an argument versus adjunct asymmetry for covert pied piping. In SOV, in situ wh-adverbials of any kind are fully acceptable and normal; for details see Haider (2010, ch. 3).

In sum, the theoretical concept ‘covert movement’ does not stand the tests in its empirical core domain, namely wh-in-situ. Straightforward predictions turn out to be empirically wrong. The auxiliary hypothesis for neutralising the falsifying data – LF pied-piping – is falsified, too. It is empirically inadequate (i.e. wh-arguments or wh-adjuncts may occur in-situ in wh-islands) and ad hoc since no compelling *independent* evidence has been produced.

If a hypothesis fails in clear cases, then the hypothesis is discredited. In the MP camp, clear cases of counter evidence are discredited instead. Eventually, for wh-items, covert movement was tentatively replaced by feature-movement (Chomsky 1995). It is not the wh-phrase that moves covertly but only its wh-feature. However, covert movement as a theoretic tool was not cancelled. In the absence of a feature theory, invoking the term ‘movement’ for ‘feature-movement’ is merely an equivocation. If feature-‘movement’ violates movement constraints, feature-‘movement’ is not an instance of movement. In-situ wh-items do not move, neither overtly nor covertly. This is what the immediate evidence tells. The MP is silent on movement constraints although they were core issues in the previous model. They no longer play a role as they are not compatible with the MP. Scientific theories do not develop in this way.

2.4 The relationship between linearisation and structure

In Generative theorising, syntacticians have been thinking for 25 years about how to get from symmetrical mergers to asymmetrical structures and their linearisation. The latter should be a trivial task. Any first semester student can linearise phrase structures (i.e. topologically ordered directed acyclic graphs) after a few minutes of instruction. On the other hand, how long does it take – on average – for students to be eventually able to state the ‘correct’ phrase structure of exactly this sentence? Ask three professional Generativists and you will get at least four different structures.³³

The mapping of linear orders onto structures is the non-trivial task that grammar theory has to deal with. How does the MP propose to solve it? In a completely unbelievable way. Generative

³³ Ask three physicists about the structure of a chromium atom and expect a single answer: The nucleus consists of 24 protons and 28 neutrons. 24 electrons successively occupy the available electron shells (rings).

grammar characterises the ability of speakers to produce well-formed utterances as an ‘on-line’ process of theorem proving. A given expression is grammatically well-formed if it can be derived in a well-formed way. The ‘proof’ is the derivation. If an expression is ungrammatical, the proof fails.³⁴

“Intuitively, the proof “begins” with axioms and each line is added to earlier lines by rules of inference or additional axioms. But this implies no temporal ordering. It is simply a description of the structural properties of the geometrical object “proof.” The actual construction of a proof may well begin with its last line, involve independently generated lemmas, etc.” (Chomsky 2007: 6).

Speakers would have to be introspective observers of the outcome of their mental theorem proving when they monitor the production of their own utterances. As hearers, they would be diligently engaged in theorem proving in confirmation that the incoming utterances have been digested correctly. Once again, I am far from being overwhelmed. Completely overwhelmed, however, am I by the fact that someone could seriously assume that something like this could work because there is not the slightest evidence for it. Nobody has bothered to find out whether this is a psycho-linguistically feasible³⁵ task at all and whether our brain really supports a mental capacity of higher ‘grammatical algebra,’ with an effectively working theorem-proving component.

As research on vision has revealed, our brain is excellent in *pattern* management (representation, feature extraction, classification, matching, storage, and retrieval) but inefficient in rule following. The former is a ‘geometric’ capacity, not an ‘algebraic’ one, as the latter. Generative grammar insists on a rule-following algebra, for reasons far away from the empirical underpinning. MP revives the basic idea from the *Aspects* era that grammatical competence is program-based serial computation, running on an innate chip called UG. This was understandable, but only then – when computer science came into being – but it is old-fashioned today, with massive parallel computing and the success of AI-based language processing.

Chomsky's merge idea is a case of reverse engineering. In processing a linguistic expression, you build up its structure step by step. Then you compare it with your input or output, respectively, and check whether the serialisations match. However, our linguistic talent is not theorem-proving and we do not build up structures step by step bottom-up.

Under a far too narrow horizon, Generativists praise structure dependency as a supposedly unique property of languages and misunderstand what they see, namely the effect of “chunking” in human information processing. Our brain works highly efficient when it applies *chunking*³⁶ (cf. Miller 1956, Gobet & Lane 2012, Norris & Kalm 2021) but is much less efficient when it has to apply operations on unstructured, linearly organised bits and pieces. The simple

³⁴ And if a competent speaker fails to arrive at the proof of a grammatical expression, (s)he is probably entangled in a garden-path situation. What is entirely missing is the proof of the operational efficiency of the general assumption. Why can we be sure that our brain effectively supports a theorem-proving device of this complexity given our well-demonstrated lack of talent in other, but similar, situations of theorem proving?

³⁵ Labelle (2007) argues that human (and even more so: juvenile) short-term memory capacities are by far too limited for computing the complex processes that current Minimalist model presupposes.

³⁶ Chunking involves recoding the input into a more efficient code in the same ‘vocabulary’ (see Norris & Kalm 2021:9).

inversion of a list of, let us say 7 items, is a computation that is very easy to program³⁷ but very hard to carry out mentally. No grammar uses list inversion of terminals as a grammatical rule although it is *conceptually* much simpler than structure-based conditions.

Chunking is a domain-general capacity that is operative in virtually all modalities of human information processing, such as vision, action planning, event perception (Lashley 1951, Martins et. al. 2016), and – no surprise – also in language processing. So, we should not be amazed at all that grammatical rules operate on *categorised chunks* (aka phrases) rather than on serial properties of linear sequences of terminals.³⁸ Recursion, another ‘hot’ topic of UG advocates, is just another way of describing chunks that contain chunks of the same category. Since chunks may consist of chunks, recursion of chunks is an expected formal property of sufficiently powerful information processing systems.

The supposedly innate “merge” operation is chunking turned upside-down. Chunking works in such a way that larger units are *perceived* (rather than *generated* piece by piece) as complex units consisting of smaller or atomic units. Structure processing is *not* reverse engineering based on a structure-generating merge operation. Structure processing is *pattern detection*, not *structure generation*. “Merge” is merely the operational mimicking of pattern detection. Structures are not generated. They are *projected* over strings in the language in-take. Consequently, in language out-put, strings are organised in such a way that well-formed structures can be projected on them.³⁹ “Merge” is a highly misleading operational metaphor for inverted structure projection.⁴⁰ It is a legacy of Chomsky’s early days at the MIT.

Linearisation is the data format with epistemological priority. Its order relation is one-dimensional, namely “follow” and “precede.” Grammar defines the mapping of (1-dimensional) linear (phonological) arrays onto categorised (2-dimensional) chunks aka phrases and vice versa. Phrases are hierarchically organised box-in-box structures, thus 2-dimensional. A grammar is the dimension-management system that is necessary to relate 1D representations to 2D representations and vice versa. Crucially, this is a matter of pattern matching rather than verbal algebra.

Trivially, what children cannot acquire cannot become part of their grammar. So, reception clearly takes precedence over production. As a speaker you are free to “merge” anything, but if no one can follow you, you will realise that you have a problem. Merging is *private*, linearisations are *public*. Grammars are acquired from the public side.

The MP tends to downplay serialisation (i.e. linear ordering) and thereby overlooks, for instance, the punctuation effects of the head positions for chunking (see Haider 2015). “*Structure*

³⁷ In Prolog, a simple command like “reverse ([a,b,c,d,e,f,g], Results)” yields the inverted list [g,f,e,d,c,b,a]. Our brains evidently do not provide a list-reverse function.

³⁸ As an aside: According to Dirlam’s (1972) mathematical analysis of efficiency, the “*most efficient chunk size*” is three or four items per chunk. This, by the way, is an answer to the vexing question why verbs typically have only three or four arguments at most (although logically, predicates could have any number of arguments).

³⁹ In this perspective, in MP diction, syntax would completely reduce to spell-out, which it does, but only at the structure-to-phonology interface.

⁴⁰ Here is an obviously wrong consequence: The derivation of structures by ‘merge’ has to start at the deepest point, the foot position, which is the end of the clause. However, the human parser does not postpone analysis to wait until a clause or a complex sentence is finished but it would have to, otherwise merge could not start. Processing starts where an utterance begins, not where it ends. Structure projection starts at the beginning.

trumps linear order.” (Chomsky et al. 2019). Cross-linguistically variant serialisation is seen as a (disturbing) complication that distracts from the clarity of the syntactic architecture of a clause. This is a misjudgement of the facts.

Let me briefly refer to a particularly blatant example. There are still quite a few (native SVO) Generative syntacticians – Moro & Roberts (2024), for instance – who, in all seriousness and unimpressed by empirical evidence to the contrary, believe that head-final structures are derived (‘rolled-up’) from head-initial ones.⁴¹ In a paper on linearisation, in which SOV is treated only in passing, SOV sentences are proclaimed without further ado as sentences whose objects and everything else that would follow the verb move to the left, as a consequence of “roll-up”,⁴² a “repair mechanism” for a beautiful theory.⁴³ Needless to add, that such papers have an exclusive focus on theoretical considerations, unencumbered by empirical facts; a pretended three-star menu but nowhere a kitchen.

Serialisation and structure are the two sides of the same coin, each side connected with an interface, namely phonology and semantics. A grammar is an algorithm of dimension mapping, back and forth, that is, 1D-linearisations (sound) onto 2D-structures (propositions) and vice versa, in effective and efficient ways. Cognitive evolution of grammars has sieved out less adapted versions. What we see today, cf. Haider (2021bc), is the result of ongoing evolutionary processes that began around half a million years ago, as the archaeological (Richter et al. 2017) and genetic evidence (Stringer 2016) shows.

3. The shaping of grammar – an ongoing process

This brings us to the last (in this essay), but not least important, neglect of the MP theory. MP is ahistorical, which is a profound defect. Grammars are products of human cognition and human cognition is a product of evolution, which is a process over time, and so is the cognitive evolution of grammar systems. Nothing in grammar theory makes sense except in the light of cognitive evolution (Haider 2021b,c). Grammars are not the externalisation of an innate UG, which incidentally would also have to be explained as a product of (biological) evolution. Grammars evolved, but not by *biological* evolution. They evolved by *cognitive* evolution, that is, variation & selection (plus drift and transfer) on the level of cognitive entities (the cognitive ‘language app’), starting at a “*Me Tarzan, you Jane*” level more than 300.000 years ago. As far as the spatial distribution is concerned, this most likely happened in many of the (fairly isolated) areas where hordes of our early ancestors roamed and dwelt. In other words, monogenesis (the biblical “lingua adamica”) is highly unlikely. There is not the slightest indication, neither genetically nor linguistically, see Haider (2021b,c).

⁴¹ “*The maximal iteration of Move Y will cause roll-up to iterate as the structure is built. This will give rise to fully harmonic head-finality.*” Moro & Roberts (2024: 8). Why would such languages exist at all if head-initial structures are fundamental? And why would syntacticians fall for the idea that a majority of languages prefer volte-facing instead? A quarter of a century of MP-theorising has not been enough to clarify the basic issues of head complement serialisation – a case of perfect imperfection.

⁴² “Roll-up” is like *epicyclic movement* in ancient astronomy. Universally, everything moves in recursive circles, that is circles on circles and so on. Liebermann’s (2007: 435) harsh prophecy hits the nail on the head: “*In short [...] the linguistic enterprise, like the Ptolemaic astronomical theory, will in time be regarded as fruitless an exercise in logic and disjoint from reality.*”

⁴³ This is in perfect congruence with Aristotelian thinking: All the rotating spheres that supposedly drag the celestial bodies around the earth activate their capacity to rotate in order to be a simple and actual substance; see *Metaphysics* Λ.6-7). Proios (2020: 349).

We can recognise now much better than in the early days of Generative Grammar that there is not *one* (master) grammar with 7164 variants. In fact, the grammars of the 7164 languages currently documented have grammars in which the differences rather than the similarities stand out. Similarities have several interdependent sources. One obvious source is descent from the same predecessor language.⁴⁴ The other two sources are evolutionary. *Convergent evolution* is the source of many features that have become visible as typologically prominent characteristics. It accounts for the similarities between languages of different origins, as they have been shaped by evolution in the same neurocognitive ‘habitat.’ The most important source is *cognitive evolution itself*, which has shaped every grammar from its primitive beginnings hundreds of millennia ago to the present day.

Grammar theory, as a part of cognitive science (in its self-image), would do well to quickly end its ‘splendid isolation’⁴⁵ and, after many aberrations, finally join the network of neighboring sciences in a serious way - methodologically and theoretically. Human cognition is a product of evolution. Any theory about the human grammar systems is incomplete and inadequate without an evolutionary basis in the unfortunately still underdeveloped field of *cognitive evolution*, that is, evolution operating on cognitive systems (rather than biological systems).

With the next generation in my mind, the final word goes to an outstanding scientist, Max Planck (1955: 22), with an excerpt from his “scientific autobiography”: „*Eine neue wissenschaftliche Wahrheit pflegt sich nicht in der Weise durchzusetzen, dass ihre Gegner überzeugt werden und sich als belehrt erklären, sondern vielmehr dadurch, dass die Gegner allmählich aussterben und dass die heranwachsende Generation von vornherein mit der Wahrheit vertraut gemacht ist.*“ [English version, with best wishes for a long life for all involved. Truth is patient]:

“A new scientific truth does not tend to assert itself in such a way that its opponents are convinced and declare themselves lectured, but rather in that the opponents gradually die out and the rising generation is familiarised with the truth from the outset.”

Since I started autobiographically, I will end the same way. During my entire time at the department in Vienna, there was a note above the desk in the secretary's office that read: “*If you can't convince them, confuse them.*”⁴⁶ Looking back, this seems to fit in well with my image of the MP.

⁴⁴ Diachronic research tells us that in diachronic changes, divergence is the dominant outcome, as predicted by evolution in general (see the Romance or the Germanic languages). UG theory wrongly predicts convergence.

⁴⁵ George Eulas Foster, January 1896: “*In these somewhat troublesome days when the great Mother Empire stands splendidly isolated in Europe.*” Same for Generative Grammar, not only in Europe.

⁴⁶ This maxim is attributed to Harry S. Truman, but thanks to Google, I learn that he used it to rebuke the unscrupulous tactics of his opponents. [<https://quoteinvestigator.com/2013/12/02/confuse-them/>]

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