Scientific ideology and scientific conduct
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Metaphors one lives by in the Minimalist Program

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In a nutshell[1]

Whether theoretical syntax shall ever pass the threshold of scientific disciplines is an open question. Presently, an 'Archimedean point'[2] – a shared set of cross-linguistically valid core facts whose coverage no theoretical high-flier could afford ignoring – is wanting and rhetoric rules. The Minimalist Program (MP) is the apt paradigm case for analyzing the role of scientific ideology[3] and its concurrent signs of pseudo-scientific conduct in empirical inquiries and theory development in grammar theory. The recipe for scouting a route towards science is not unbeknownst, though.

FIRST, theoretical syntax calls for theories that predict facts, rather than theories that top metaphors by metaphors. SECOND, the aim of *conclusively finding out* must eventually get priority over, and replace, *brilliantly speculating about*.[4] THIRD, broad scale empirical work must replace opportunistic data picking. FOURTH, an experimental branch of syntax is indispensable. A theory camp in the absence of, or isolated from, an experimental camp is bound to get stuck in speculations. FIFTH, the experimental branch that is called for is on the one hand 'experimental syntax' (Cowart 1997) and on the other hand the appropriate subdisciplines of cognitive science, namely psycho- & neurolinguistics and their pertinent findings.

1. A point to start from

The verdict (Chomsky 1995:387) that "*traditional grammatical and lexical studies do not begin to describe, let alone explain, the most elementary facts about even the best-studied languages"* has a partial ring. Who finds fault with '*not begin to describe*' is free to ask whether studies in the Minimalist Program have already begun *"to describe, let alone explain"* what deserves to be regarded as *"the most elementary facts*."

It is an elementary and uncontested fact about human languages that they have to be acquired before they can be competently used and that acquisition and use are reflexes of neurocognitive activities of the human brain that constitute a cognitive computational system for language. This system enables us to map speech sounds on meaning and vice versa in fractions of a second. The grammar of a language is an essential part of the 'software package' of this cognitive computational system.

It is true that traditional grammarians do not focus on the computational background when they describe grammatical properties of a language. They describe properties of the output of a system but do not explicitly take notice of the system that determines these properties. To understand these properties is to understand the system that determines them. In other words,

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[1] This draft version has already benefitted much from comments by Gisbert Fanselow, Stefan Müller, and Wolfgang Sternefeld on a more preliminary version. They, of course, must not be held responsible for any of my claims, conclusions or misunderstandings. Please, be aware that the genre of this paper is that of a *polemic*, that is, a *contentious* argument for establishing the *falsity* of a specific *theoretical* position and for improving on it.

[2] In Physics, Galileo's findings (e.g. on the time & speed relation of rolling or falling bodies, independent of the particular weight) were a minimal set of generalizations any future model had to be able to satisfactorily cover.

[3] "Scientific ideology" ≈ "The uncritical and stubborn adherence to a position, protecting it from confuting evidence by developing ad hoc hypotheses, clearly indicate an ideological conception." A pseudo-scientific system is one "that pretends to science but essentially lacks the requisite rational methodology." (Richards 1993: 103)

[4] "It does not make any difference how beautiful your guess is. It does not matter how smart you are, who made the guess, or what his name is – if it disagrees with experiment [or assessed experience]$_{HH}$ it is wrong." "In that simple statement is the key to science." (Feynman 1967:156).

grammarians ultimately have to join forces with cognitive scientists for accomplishing the cognitive turn. This insight has advanced in years but not in results.

Instead of joining forces with the dynamically developing cognitive sciences and their experimental disciplines, Generative Grammar went the way of splendid isolation. Where has it led? Methodologically, grammar theory still is where psychology started from more than hundred years ago, when data acquisition by introspection gave way to controlled experimentation plus rigorous data assessment.

On the empirical side, all we have is cross-linguistically sampled bits and pieces and on the theoretical side, since the beginning of the MP, the cart has been put before the empirical horse.[5] A set of premises (e.g. clone & merge & hide) with little or less direct empirical foundations got surrounded by an ever-changing belt of tentative auxiliary hypotheses in order to protect the premises against counterevidence (see appendix 1).

Dixon (2011:22), an outstanding example of a field-working linguist, re-emphasizes that "*the basic profile of a scientific discipline is to describe, to explain and then to predict*." Empirically verified predictions are the hallmark of a productive theory (Lakatos 1978:34) since "*a given fact is explained scientifically only if a new fact is predicted with it*." During the past twenty-five years, the previously ebullient vein of *predicted* and sufficiently *justified* properties of grammars has dried out. There has been a notable decline in the theory-geared output of novel and empirically *confirmed* insights in the two decades of the MP in comparison to a matching time span of the Principles & Parameter model.

In fact, the theoretical hard core of the MP principles which define its central negative heuristics (in Lakatos' terminology) systematically fails[6] for OV languages in precisely those respects in which they differ from English, claims to the contrary notwithstanding.[7] In confrontation with languages that are not English-like, that is, not strictly head-initial languages, central predictions turn out to be tangibly empirically inadequate (see e.g. Haider 2010 ch.1; 2013 ch.9, Haider & Szuscich 2013; appendix 2). The auxiliary hypothesis insourced from Kayne (1994)[8] – viz. *Universally, languages are like English, and if they seem to be different, their difference results from a derivational continuation of English-like structures* – is a bold speculation without unequivocal, independent empirical support and explanatory records (see appendix 2). In science, new insights start as bold speculations, too, but then they are put to test as rigorously as possible. Syntacticians speculate and postulate, like all theoreticians do. Sci-

[5] "[…] *it would be reasonable to expect the catalyst for the transition from GB to the MP to be a significant body of results that follow directly from minimalist principles, but are unavailable on any plausible version of GB theory. But we see nothing of the kind in the comparison between the MP and earlier avatars of transformational grammar. Why, then, are we witness to a mass rejection of the previous decade and a half of linguistic theory?"* (Lappin et als. 2000: 668).

[6] This is most evident for all MP accounts based on Kayne's LCA theory (see Haider 2013, ch.9) but also for any other account that assigns the *preverbal* arguments of OV languages to functional spec positions (s. appendix 2).

[7] Demonstrations of how to derive SOV from VO typically devise complex derivational scenarios but refrain from rigorous falsification trials (cf. J.W. Zwart's work on Dutch as SVO; see appendix 2).

[8] According to this conjecture, languages are universally head-initial, that is, 'SVO' just like English. Apparently strictly head-final languages like Japanese or partially head-final ones, like German or Dutch with a head-final VP, are alleged variants of SVO that merely shovel all their post-verbal material into pre-verbal positions, for whatever unknown reasons.

entists developed methods of testing their speculations; syntacticians merely compare them with their grammatical intuitions introspectively.

Theoretical syntax of the MP variety allegedly uncovers the "most elementary facts" of the human language capacity (as a neuro-cognitive capacity) in a theory of 'Universal Grammar' but bases its claims on *selected* data from a handful of historically closely related languages with identical syntactic characteristics, namely Indo-European SVO languages, abstaining from any experimental testing of testable consequences of the theoretical assumptions.

Testable questions or predictions *"would help cognitive scientists take Minimalist syntax more seriously*" (Edelman & Christiansen (2003:61). In fact, they do not take it seriously at all. The *programmatic maximality* of the theoretical pretense stands in sharp contrast to the *minimality* of *established* facts, and this is registered as a basic defect by neighboring fields.

2. Signs of a degenerative problem shift

With respect to roughly 40% of all human languages, namely languages with a head-final clause-structure, that is, clauses centered on a head-final VP, the MP displays unmistakable signs of a degenerative problem shift, in Lakatos' terminology. Most properties it predicts are not found and properties that are found have been predicted to be absent (appendix 2). As far as this is acknowledged at all,[9] the impact of this failure is compensated by interpolated ad hoc auxiliary assumptions.[10] These auxiliary conjectures needed for shielding the core of the MP against diverse adverse evidence from OV remain ad hoc since they in turn would require independent evidence for justification on the one hand and would have to prove successful for predictions they invite on the other hand. Productive programs produce solutions, degenerative ones produce problems that need to be tamed by patch-ups.

In the MP period, the style of argumentation has become largely affirmative and eclectic as if it was sufficient to produce an analysis compatible with the MP premises and illustrate it by some data that might loosely fit. Lakatos (1978:182), once more: "*The hallmark of empirical progress is not trivial verifications*", and 'refutations' are not the hallmark of empirical failure either "*since all* [research$_{H.H}$] *programs grow in a permanent ocean of anomalies*. *What really counts are […] unexpected, stunning predictions: a few of them are enough to tilt the balance*."

The past 20 years of the MP saw a wealth of "trivial verifications" by selective sampling of data mainly from VO languages, but no serious ambitions for rigorously testing the refutation robustness of novel theoretical assumptions by modus tollens argumentation (i.e. uncompromising falsification trials). The "*what really counts"* part is missing since none of the "unexpected, stunning predictions"[11] of MP turn out to be correct. A stunning prediction, for in-

[9] Selective apprehension is a way of avoiding embarrassing confrontations with counterevidence.

[10] Massive movement to the left, covert or overt, geared by freely postulated features that may be inserted or deleted; VPs may be evacuated and 'rolled up'; copies get deleted or spelled out; lexical items may be numerated or tucked in any time; and eventually you may throw in a new feature. Interestingly, all this is seen as part of the solution rather than the problem.

[11] I fail to be impressed, for instance, by the 'discovery' of '*backward control*' as a 'stunning' prediction since it presupposes an empirically invalid movement theory of control (see Haider 2014b and literature cited there). Potsdam & Polinsky's (2002) evidence from "at least two verbs (begin, continue)" (Alexiadou et als. 2010: 91) in the Caucasian language Tzez (with 15.000 speakers) for the spell-out of the *lower* copy of movement rather

stance, is the prediction of a basic homogeneity of syntactic structures across so-called types, namely the head-initial versus the head-final type. However, this prediction is unmistakably wrong (appendix 2).

Lakatos notes that in degenerating programs, theories are fabricated mainly in order to re-accommodate known facts. Not only in my view is this characteristic of the advancement of MP compared to the advancement of the P&P model in the G&B era, which has produced new insights with continuous empirical grounding. As Sternefeld & Richter (2012:267) already emphasized, MP followers tend to produce and continuously revise reinterpretations of a 'canonical' set of data (even without updating by removing known flaws), most of which have been discussed already in G&B, with changing prominence by freely adding or replacing auxiliary hypotheses. Nobody really keeps track of them since they are treated more like rhetoric scaffoldings than serious empirical claims.

The MP did not start out with the intention to solve a set of well-defined empirical issues that evolved from the preceding phases, but with the intention to start from scratch and re-conceptualize the theory on the basis of 'virtually conceptually necessary' premises.[12] The alarming fact is this: The MP has been neither able to deliver an accepted solution for any classical empirical problem, nor has it turned into a catalyst for novel insights.

Nobody can deny that the MP has not even accommodated core insights of the GB model. In about the time between 1970 and 1990, the focus of research had been on constraints on movement operations. There has been reached a consensus on a substantive set of facts and their empirically adequate description in terms of various conditions on extraction domains. The MP does not accommodate them.[13] In the GB framework, the Spec of any functional head above the VP and the domain preceding it was identified as the *unexceptional* region of opaque domains in clause structure. The empirical insights stand and the MP falls short and persistently ignores them. SVO-based accounts of OV crash precisely in this data area.

It should make MP devotees feel uneasy that in the MP-geared structure assignments for SOV clauses, any preverbal argument phrase is predicted to be an opaque phrase since OV arguments are assumed to be phrases in preverbal Spec-positions of functional heads (like T, Agr, Aspect, etc.). Therefore they are expected to behave like English subjects with respect to opacity. These predictions are wrong and nobody who investigates it carefully can overlook it.

With respect to the conditions on extraction domains, the MP got disconnected from the insights of the preceding theory stage, which is a toxic defect for a would-be productive scien-

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than the higher one started a hunting rally for 'backward control' stimulating a bidding game of throwing in (re-analysed) data selected from languages at hand (see also fn. 16 and 57).

[12] In logics or mathematics, this is a legitimate strategy for developing a calculus; in science, it is a perfect strategy for opening a game of complex notional analyses without empirical grounding.

[13] The crucial point is that the insights are *never* used as a ‚lever' in syntactic argumentation. MP analyses are not checked for compatibility with previous insights, and often they are incompatible. Müller (2009) eventually tried to capture CED-effects by specific auxiliary assumptions: "(i) All syntactic operations are *driven* by *features* of *lexical* items. (ii) These features are *ordered on lexical items*. […] (iv) Edge features that trigger intermediate movement steps can *only be added* before the phase head becomes inert." Features are *ordered*, *added* if required and *inserted* if deemed welcome: "The single most important assumption of the present proposal is that the timing of edge feature insertion is crucial." These auxiliary assumptions are far from evident and - what is crucial - the unsolved problems of the predicted but missing opacity effects in OV are not covered at all.

tific program. In the scientific progress of productive programs, insights of preceding stages regularly figure as subcases in the new program. It would have been a *stunning prediction* if it had turned out right that in OV, any phrase preceding a verb is opaque for extraction, and we would have understood the basic commonality and the particular difference between the predicted opacity of OV objects and the transparency of VO objects. Unfortunately, human brains do not bother handling OV clauses in the way the MP predicts.[14]

Today's Generative program, manifested in the MP, has a pervasive trait. The 'explanations' *precede* empirical surveying. To put it drily: "*I have a great solution! Where is a matching problem?*"[15] At least since the advent of the MP, this attitude has gained ground in the mainstream, namely the exclusive focus on formal properties of the model rather than on properties of coherent sets of empirical facts that ought to be modeled adequately.[16]

In great detail, intricate consequences of minimally different model variants are compared and illustrated with an eclectic sample of data as if we knew that the set of competing variants containes the 'correct' one and the primary task is to identify it. The argumentation often ends with the interpolation of additional but insufficiently founded auxiliary hypotheses whose only justification is their utility for conceptually streamlining the preferred model variant.

This predilection is understandable. To play with formalisms and trace their consequences through mindboggling mazes of derivations is the formally gifted mind's delectation. Especially for a novice, it is much easier to postulate some formal feature and play with it rather than produce a solid empirical generalization on new or insufficiently analyzed complex data. You would have to spend a lot of time on describing, organizing, analyzing, cross-linguistically comparing and eventually understanding partially what seems to underlie the puzzling properties of syntactic data patterns, without an ultimate guarantee of success.

In empirical disciplines, the exclusively deductive strategy does not work in isolation. Irrespective of how smart you are, you simply will not have any chance of drawing near a linguistic Kepler, not to mention Newton, unless you can build on the extensive empirical labor of linguistic counterparts of Brahe, Rheticus, or Regiomontanus, to name just a few. Theory construction presupposes solid empirical generalizations and these are still missing in syntax.

[14] It is easy to test this with infinitival clauses in German. It does not matter whether they are scrambled or not, they remain accessible for antecedent-gap relations across clause boundaries (see Haider 2010, and pertinent work on related issues cited there, from the late eighties onwards). This source of evidence is absent in Dutch since in Dutch, infinitival clauses are obligatorily extraposed (or topicalized). In situ, verbs cluster obligatorily.

[15] This is exactly the situation of mathematicians. Typically, mathematics provides solutions for formal problems before the respective applications have ever materialized in empirical findings, and they prove them. Einstein insourced Riemann's geometry for problems that Riemann could not anticipate as an area of application. In linguistics, we have no clear idea what the 'real' problems are. Therefore many grand 'solutions' will turn out to be pointless simply because the empirical conditions do not exist and many 'solutions' deal with short-lived formal details. But, if you have an MP-hammer, every problems looks like a nail.

[16] Here is an example: In the MP, *the copy theory of movement* is combined with a spell-out rule. One of the copies gets spelled-out. 'Backward control' came into play as a potential case of low spell-out. This has been a purely theory-driven idea, not a data-driven one. A data-driven analysis would recognize the parallels to the so-called *third-construction* in OV and seek an empirically adequate account in terms of a comprehensive analysis of infinitival complementation, without no justification for the spell-out of 'copies in the basement.'

In linguistics, the likelihood is very high that at present, we are still far from the level of any of the successful generalizations that Kepler had reached by the end of his life in astronomy, with his laws of planetary motion.[17]

The designer of MP has introduced a style of argumentation that might serve a logician or a mathematician, but not an empirical scientist. On the one hand, he adduced the 'argument from perfection', and on the other hand, the argument from 'virtual conceptual necessity'.[18] These arguments are familiar from theology on the one hand, and from logics on the other. Logicians devise and judge calculi in terms of necessity, perfection, and economy, but in empirical domains this does not have any utility, except as a rhetoric figure.

First, there is simply no evidence that computational capacities of an organic system, viz. the human brain, provide 'perfect' implementations of 'perfect' algorithms.[19] The highly exceptional grammar of English in the family of Germanic languages is a sufficient counter-example. Second, conceptual necessities are analytic truths and do not tell anything about reality by itself.[20]

In the old days, astronomy rested on virtual conceptual necessities, too: The motions were perfectly smooth, the moving bodies too, and the theory contained only virtually necessary assumptions: Celestial bodies had to move in circles as these are the *minimal* and *perfect* trajectories, with the immobile earth as the center of gravity. Deviations were apparent only since movement was epicyclical, that is, planets (literally 'rambler') move on a circle that moves on a circle that moves on a circle etc. Movement, according to Aristotle, was geared by a perfect cause, namely aspiration [sic!] since the movement of celestial bodies was driven by the desire to come closer to perfection – in order to check their strong *P(erfection)*-feature, as it were.

In one version of MP syntax (viz. the Kaynean one), every language is an SVO language, and if it does not appear to be one, this is apparent only, since all the 'universally' postverbally based items have moved to a preverbal position and produce the impression of OV. The phrases, like the Aristotelian stars, move by the aspiration to check some unknown features. From an outsider's vantage point, this may appear as speculative as the theories of ancient

[17] Kepler proceeded in a highly ideological manner too, but he was relentlessly accurate in empirically testing the predictions of his hypotheses. This way, he detected his laws without having looked for them. In *Mysterium Cosmographicum* he expounds his research faith: As Euclid has shown there are exactly *five* 'perfect solids' in three-dimensional space (in Keplers's view a reflection of the mystic Trinity), and there are exactly *five* visible planets. This could not be an accident. In a perfect universe there cannot be more than *five* planets if their orbits are each inscribed in a perfect solid. This yields a complete and virtually conceptually necessary answer for the number of planets and for the distances of their orbits. This is what Kepler tried to prove. The program turned out wrong, but the collateral empirical findings were substantive, due to his empirical rigor.

[18] Postal (2003) provides a lucid discussion of the shortcomings of this mode of argumentation.

[19] "[…] the foundational assumption of the MP rests upon an obscure metaphor rather than a precise claim with clear empirical content. […] The distance metric invoked in these speculations remains undefined and ungrounded in empirical considerations." (Lappin et als. 2000: 666).

[20] Here is a recent precedence case: For a physicist of the 19th century, it was *virtually conceptually necessary* that light needs a medium in which to propagate, namely the *luminiferous aether*. After all, light is a wave phenomenon and a wave is an oscillation that travels through matter. Einstein's theory from 1905 ("*On the Electrodynamics of Moving Bodies*") did not require an aether anymore. Unlike hard core MP followers, physicists question and test their assumptions thoroughly and change their concepts when experiments continuously do not confirm the hypotheses.

philosophers had been because its core components are dissociated from direct or indirect experimental observation, as they are taken to be encapsulated in a stipulated innate mental capacity called I-language whose mechanics is predesigned by FL (faculty of language).

One of the defining traits of MP is the idea that a mental grammar of a language is a mental assembling machinery (viz. move by copy & merge) with a kind of assembly production line on which items get carried along from one derivational operation point to the next one, while copied items from structurally lower positions are lifted into higher ones that are enriched with features whose management plays a decisive role.

These are all metaphors in an algebraic conception of grammar, as will be explicated in the following section, and suffer from the absence of decisive evidence for the hypothesis that the *mental* grammatical competence works indeed in an algebraic proof-theoretical mode that defines *'grammatical'* expression by *'successfully derivable'* expression.

3. Metaphors one lives by in the MP

Metaphors may serve as shortcuts when talking about complex or ill-understood phenomena ('island' constraints, 'bridge' verbs, 'floating' quantifiers, etc.), but anthropomorphic notions such as "procrastination", "greed", and "last resort" are insignificant except as terminological short-cuts for specific relations with a precise theory-internal meaning. In scientific use, concepts must be in a direct rather than a metaphorical relation to facts:[21]

"*It seems impossible to do science without metaphors.* […] *But the use of metaphor carries with it the consequence that we construct our view of the world, and formulate our methods for its analysis, as if the metaphor were the thing itself*" (Lewontin 2001:1263). "*The best way to protect ourselves against the damage of metaphors is to allow the models on which they are based to have as little specific content as possible while still allowing them to serve a constructive purpose*." (Lewontin 2001:1264). "*We might want to recognize that some scientific concepts are "a reality beyond metaphor", as Nobel laureate David Baltimore* […] *said*." (Ball 2011).

Let us assume that the MP is intended to be more than a narrative full of intriguing metaphors. If so, we have to take seriously what sounds like metaphors rather than ontological commitments. Scientific theories can't be grounded on metaphors, but in the history of science there is no shortage of pseudo-scientific metaphorical style.

In Aristotle's 'physics' an apple drops because of the principle of 'natural' movement, that is, a principle that makes the apple seek its 'natural' point of destination. As Köstler (1989:111) put it pitilessly, "*Aristotle divorced science from mathematics, ignoring weight, length, speed, duration or quantity. Instead of proceeding by observation and measurement,*[22] *Aristotle con-*

[21] "*Metaphors, and senslesse and ambiguous words, are like ignes fatui; and reasoning upon them is wandering amongst innumerable absurdities; and their end, contention, and sedition, or contempt*." (Thomas Hobbes, *Leviathan*. 1996: 36).

[22] Galileo Galilei criticized this by the words of Salviati: "I greatly doubt that Aristotle ever tested by experiment whether it be true that two stones, one weighing ten times as much as the other, if allowed to fall, at the same instant, from a height of, say, 100 cubits, would so differ in speed that when the heavier had reached the ground, the other would not have fallen more than 10 cubits." [1638. Discorsi e dimostrazioni matematiche, intorno à due nuove scienze].

structed, by that method of a priori reasoning[23] *which he so eloquently condemned,*[24] *a weird system of physics argued from notions and not from facts. He attributed to all inanimate objects a powerful strive toward an end, which is defined by the inherent nature or essence of the thing*." [Footnotes mine].

Köstler (1989:111) concluded that "*Aristotelian physics is really a pseudo-science, out of which not a single discovery, invention or new insight has come in two thousand years*." Its fatal defect was its metaphorical nature which was shielded against falsification by more metaphors. No part of it had been seriously put to empirical testing. It has blocked advances in physics for a millenium.[25]

The MP's metaphors cannot be scientifically put to test if they are regarded as metaphors. So let us take them seriously and browse some of the central metaphorical concepts in order to structure the subsequent discussion: First, there is a *principle of inertia* ("procrastination"). Nothing moves unless there is a *propelling 'force'*. The impulse for movement comes from features in a 'wrong' position. The feature either makes its carrier element move ('push-feature', as for instance a 'strong' agreement feature) or attracts a carrier element (probed by a 'drag-feature' as e.g. the 'strong' EPP feature that probes even into PPs for a potential lexicalizer of the structural subject position in English pseudo-passive constructions). Here is a list:

- In reality, there are diverse grammatical *features***.**
- In reality, these features need to be *checked.*
- In reality, the process of feature checking creates an *impulse* for movement.
- In reality, the impulse makes the candidate item *redouble*.
- In reality, *one of the doubles* is merged in a higher position
- In reality, the features come in *two kinds*: early-moving ones ('strong') and delayed-moving ones ('weak'), with the strong ones 'checked' *before* and the weak ones *after spell-out.*
- In reality, features are *finally identified* as (un)satisfactorily checked and this qualifies the representations they are part of as well-formed or not.

First and foremost, it is odd that a core component of the theory is feature management but the theoreticians abstain already *for two decades* of avid theory development from working out a theory of features and feature management. The MP does not provide any restrictions on admissible features and their handling. They are introduced paradigmatically, case by case, and for whatever syntactic purpose. What could be a feature and what could not is not explicated.

[23] One has to study the 'virtual conceptual necessities' of all things and not its ephemeral appearances. Plato had maintained that true knowledge could only be obtained by the eye of the soul (aperia), not of the body. He is one who argues from notions rather than from facts.

[24] Aristotle, *De caelo; de generatione et corruptione* (Köstler 1989, p.110 quotes Edmund Whittaker. 1946. Space and spirit. London p.113) "It is easy to distinguish those who argue from fact and those who argue from notions […]. The principles of every science are derived from experience."

[25] Liebermann's (2007:435) prophecy relates astronomical and syntactical theorizing in exactly this respect: "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."

Some of the features that figure in current theorizing are traditional features for grammatical traits (e.g. grammatical concord features like person and number or semantically imbued verbal inflection features of mood, tense and aspect), but there are also features with pragmatic content(topic, focus) or features that relate to argument structure (viz. theta-features)[26] and 'featurization' does not refrain even from computational features like the EPP feature, which codes for a structural property of sentences, that is, a property that requires something to be placed into the structural position that is otherwise reserved for the subject.

Nobody knows why clauses need a subject in a specific position and nobody knows why there should be an EPP feature, and it is surprising that anyone could regard the postulation of an EPP feature a satisfactory explanation of the alleged fact that clauses have subjects.[27] An EPP feature is merely a restatement of an ill-understood empirical issue in a technical notation. It is the explanandum, not the explanans. Nobody seems to be irritated by the narrow circularity: Clauses have subjects, because there is an EPP feature (= theoretical claim), and there is an EPP feature because clauses have subjects (= empirical claim).

Given the centrality of features in the model, the total lack of interest in the foundations of this basic analytic tool is striking. Let me draw an analogy. Assume that nuclear physicists postulate an intricate system of elementary particles that determine the structure of more complex units, viz. the atoms, but never tell how this system is organized and restricted.[28]

Let us continue with the bullet list, in the absence of a restrictive concept of what could belong to the inventory of grammatical features and what not. Whatever feature there is, it has to be 'checked' (unless it has been 'deleted'). We could regard this as a mere metaphor for talking about grammatical conditions that relate grammatical forms to grammatical functions, but the MP maintains to achieve more than syntactic storytelling; so we have to assume that 'checking' is something that can be assessed empirically.

What is it that checks a feature and how does it work? The theory only presupposes that it be done, but remains silent on the operational details. A phrase is said to be raised to the spec position of a functional head in order to have its feature checked by this head. This is a holistic description of a complex process but not its explication. MP re-invented feature grammar and checking,[29] but does not explicate it. A head is merely a head and not a feature-checker, even if it is a functional head. Obviously, there must be some feature-checking device in the grammar that does the job. How is this device organized and how does it work? MP merely postulates that there are features and that these features get checked and that problems arise when features are left unchecked. What is the empirical evidence for the presence of a feature checking device? The answer, at best, is an apologetic '*how else?*'

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[26] They are assigned without an "*upper bound on the number of θ-roles a chain can have*." Hornstein (1999:78).

[27] "The 'Extended Projection Principle' (EPP) has been […] a pervasive mystery since it was first formulated by Chomsky (1981)." Lasnik (2001: 356).

[28] An MP physicist might even proceed in the MP style and solve the unsolved puzzle of gravitation in grand style: There is a feature g (=gravitation) that needs to be checked. This would account for the recalcitrant action-at-distance property of gravitation. The famous Newtonian apple dropped merely as a consequence of its unchecked g-feature and something else miraculously checked it when the apple allegedly hit Newton's forehead.

[29] Feature checking by unification is the core concept of feature unification grammars (LFG, HPSG, CG, etc). The essential difference is this. These models have explicitely worked out the system of features and the mechanism of 'checking' (viz. unification). In the MP, these are merely presuposed and illustrated when applied.

For the time being, 'feature checking' is nothing but a metaphor, and it cannot be put to test empirically, just like any one of Aristotle's untestable metaphors simply because it is a metaphor. Feature checking is not a property of a grammar; it is claimed to be a property of a mental system that models our linguistic capacities as human language users. But the proponents do not tell how the very existence of such a particular ingredient of our mental model can be empirically assured. It is a hypothetical item and as long as there is no conceivable way of empirical (dis)confirmation, it is bound to remain a metaphor in a tale of grammars. There could be features but there could be just as well something completely different that produces roughly the same outcome and the initial probability for each of the numerous conceivable alternatives is indistinguishable from zero.

Here, a rhetorically apt and knowledgeable advocate might object that in hindsight, Gregor Mendel was right when he postulated hereditary 'features' in the absence of any idea of the system these 'features' are embedded in. This is true, but the insinuated parallel to MP would cut against the MP. Crucially, Mendel did not develop an *overly rich model* for which he would have lacked empirical evidence in order to account for his reproducible findings. He did what Wittgenstein (Tractatus 6.363) recommends: "*The procedure of induction consists in accepting as true the simplest law that can be reconciled with our experiences*." The assumption of a set of differentiated features (strong or weak, moving or stationary, LF-visible or not, inserted, inherent, deleteable, etc.) that gear an intricate but unspecified feature checking machinery via movement operations is not the formulation of a simple law for covering observed properties. It is a wild guess and its initial probability of being the correct guess is (indistinguishable from) nil.

Next comes a daring metaphor: *Features trigger movement*. How do they do this? Are they waving little flags that tell a rescue and movement squad that the item they are flagging ought to be pulled out and moved to a position with a matching flag? The interaction between features and movement is purely metaphorical: It is the invitation to imagine flagged positions and a process that could join the flagged items by movement and, importantly, to imagine that there is some device that looks around, compares the flags and takes care of the whole logistics. Nobody knows how this might work, and nobody tries to explicate it since it is felt to be a metaphor anyway.

The MP maintains the G&B metaphor of a quasi-mechanic causality of movement: If items move, there is a causal impulse; otherwise things are at rest. The metaphor was enriched when *feature movement* (Chomsky 1995) entered the scene. Some languages move feature-carrying phrases ('heavy traffic languages'); other languages move only the features, but not the phrases ('virtual traffic languages'). How do features move? Do they evaporate in thin air and come down like dew? Are they crawling across phrases up the tree like invisible ants? Did anyone ever observe a foraging flock of features?

The immediately connected question concerns the nature of movement. Is it real or metaphorical movement? A metaphor may be used in communicating a scientific statement but it is not a scientific statement by itself. So let us assume once more that 'movement' really means movement and proceed like scientists. We can try to observe or predict properties of real movement. If something moves, it moves by itself or gets moved by something else: Self-propelled, a locust moved across my car's window shield, my car was moved by a combustion

engine, and the waste bin it bumped into was moved by the impulse imparted by my moving car. But what moves a syntactic phrase when it allegedly moves?

Do not try the cheap excuse that movement is but a technical term of a computational characterization of the human grammar capacities.[30] If it is a 'computational step' then let us talk about the computational system and forget the metaphors. Why use a metaphor instead of addressing the 'real thing'? In the laptop I am using right now, depending on the level of description (viz. software- or hardware-oriented), pieces of information move right now while the spell-checker keeps track of my typing features. 'Information' moves theoretically and *physically* and this physical movement in the wirings of the electronic chip is carried out in electric circuits and this has testable effects. However, *what* has physically moved in the neuronal circuits of my brain in the very moment when I formulated this very wh-question? Would the clause-initial '*what*' have really *moved* in the preceding sentence? Neurotransmitters move between my synapses, and charges move along some of my axons, but does a *question word* move as well? If your preferred computational model of grammar involves genuine movement, you must tell me how your specific assumptions can be tested empirically since my preferred model of grammar is a pattern matching model, and neither physical nor theoretical movement is part of this model. It is not enough to tell the skeptic that movement would be a sufficient condition for covering certain abstract properties. What is essentially missing is evidence that movement is a neuro-cognitively *established* condition and that there is direct evidence for its constitutive components.

Let's be scientifically concrete. If something moves, it necessarily moves at a particular speed. If anything moves in the circuits of my laptop's central processing unit, its *speed* can be measured. Why is it so absurd to ask for instance whether wh-movement is slower or faster than raising the object to the subject position in the merge & move process that yields an English passive clause? After all, exactly this question had been raised at the beginning of the Generative enterprise half a century ago (see Fodor, Bever, Garret 1974, for an overview).

Perfetti (1981:153) summarizes "*As the 'psychological reality' of transformations became discredited, psychologists began to lose interest in linguistic structures, especially the more blatantly syntactic ones."* This was the beginning of the ongoing divorce of Generative theorizing and the experimental fields every theoretical branch of science needs as its indispensable companion, namely psycho- and neuro-linguistics in the case of grammar research.[31] Generative grammarians, like any other theory conceptualizers, are creative and unconstrained, which is ok, but it is not ok that their projecting of theories is not accompanied by an experi-

[30] "*I would like to emphasize that movement is a metaphorical term to describe a certain computational step that has nothing to do with the notion of movement employed in physics or in common usage*." Jairo Nunes (2008:3)

[31] Devoted fellow travelers of MP, like Marantz (2005: 430) testify an astounding self-perception: "*I perceive no gap between generative theory and psycho- or neuro-linguistic experimentation. If standard linguistic theory is nevertheless perceived as divorced from cognitive neuroscience, generative grammarians perhaps suffer from a public relations problem rather than a fundamental methodological confusion*" and "*when properly construed, all judgments of well-formedness and of possible sound/meaning connections are measured* [sic!] *behavioral data from experimental subjects. As such, the standard meat and potatoes of the theoretical linguist do not differ from the everyday bread and butter of other cognitive psycholinguists."* Wilhelm Wundt, who initiated the experimental turn in psychology more than hundred years ago, derided precisely the arrogance on the side of the introspectivists of his time. Psychology succeeded on 'bread & butter'; linguistics is methodologically still a hundred years behind, despite 'meat & potatoes' (see the self-observations on wh-in-situ in Dutch, appendix 3).

mental branch that filters out the empirically inadequate wild guesses and confirms the more likely findings. Theoretical physicists are grounded by their experimental colleagues. Theoretical syntacticians shy away from experimental findings and do not feel obliged to tell experimenters the crucial testable consequences of their theorizing and to honor the experimenters' results afterwards. Sampson & Babarczy's (2013: 296-319) criticism of this unscientific 'culture' is justly entitled "*Minds in Uniform - How generative linguistics regiments culture, and why it shouldn't."*

Data assessment based solely on biased (because of immediate stakeholder interests) *peer consent* does not count as legitimate in science. Edelman & Christiansen (2003:61) emphasize this point: "*Unfortunately, to our knowledge, no experimental evidence 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). Generative linguists typically respond to calls for evidence for the reality of their theoretical constructs by claiming that no evidence is needed over and above the theory's ability to account for patterns of grammaticality judgments elicited from native speakers. This response is unsatisfactory.*" Their conclusion on bankruptcy should sound an alarm in our theoretical ears and minds:

"*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 (or their successors that might have bought their debts) are declared bankrupt. In the sciences of the mind, this maxim translates into the need to demonstrate the psychological (behavioral), and, eventually, the neurobiological, reality of the theoretical constructs*." (Edelman & Christiansen 2003:61)

Why is it so absurd to honestly ask for the exact speed of syntactic movements? It is so absurd because the ontological status of movement does not play any role in the theory. 'Movement' is a metaphor and the attitude behind this assumption shifts the theory into the realm of metaphorical narratives. On the one hand, movement is invoked, and economy constraints are motivated by it but on the other hand, there is no way to find out whether movement is operating in reality. Its modes of operation would be completely inaccessible for empirical investigations. How can we be sure then that there is movement, given that there are other at least equally plausible models that do not stipulate movement processes? Let's nevertheless grant the possibility that something moves, but bear in mind that Galileo Galilei had solid, empirically testable reasons for his allegedly murmured "*Eppur si muove!"* and that MP syntacticians don't.

It is telling that grammars do not exploit the potential of a true movement system. In such a system – imagine the shifting operations on a big railway shunting yard – you could clear positions by movement before you use them for further movements. Exactly this possibility must be blocked by imposing restrictions like the principle of the cycle.[32] A representational approach gets the very same result for free: The path from the non-canonical position to the canonical one ('base-position') must not be obstructed by other elements. In a movement system, you would first move out a wh-item from the lower clause and then the Spec-position of

[32] In the MP, the 'cycle' is covered by the '*extension condition*' postulated by Chomsky (1995, ch.3). Movement steps must 'extend' the structure under construction. This is to preclude movement operations that operate within subtrees only that have been already passed in the construction process. Note that true movement operations would and should violate the cycle, if they existed in our mental grammar processing capacities.

the lower clause would be free for moving another wh-item into it. The result would be an ungrammatical sentence, violating the "wh-island" constraint. The movement theory does not capture this freely; it must be *forced* to do so by stipulating an extension condition. But, let's be at ease and move on.

Before a phrase moves, it doubles, like an amoeba. One of the twins moves, the other one stays and hides. In the predecessor model, the P&P model, movement was a façon de parler for filler-gap constellations. 'Movement' was merely a convenient metaphor for referring to structures with a particular property, namely a phrase in a position higher in the structure that had to be in a well-defined structural relation to an empty spot lower in the structure. You did not have to believe in movement. It was just a convenient way of describing a structure. In the MP, you have to believe in movement, since 'move by (internal) merge' is the essence of the theory. Movement by internal merge depends on moving a copy to its position of merger.

Movement is the movement of clones, viz. 'copies'. The copy-idea became more and more attractive when the movement metaphor got strengthened. When a phrase has moved, it has left its place of origin and is gone. But some of its properties still have to be computed in the original position. This is against the idea of movement, since, after all, the moved item has pulled out of its home territory. Relating it back by means of an antecedent-trace relation ('re-construction') would compromise the concept of movement. If there is an antecedent-trace relation, this is a sign of a *representational* relation. These relations would be computed on representations and do not require anything to really have *moved*.

The amoeba-nature of phrases that double and hide is far from being self-evident or 'virtually conceptually necessary' (see Postal 2003:600).[33] Therefore it is telling that the copy-idea[34] has *never* been uncompromisingly put to test although there is an easy-to-check prediction that separates a copy-hypothesis and an antecedent-trace hypothesis: copies are potentially complex, traces are not. A trace is just an empty position, but a copy is the full phrase underneath a magic hood that makes it inaudible and invisible. So, the simple question is this: Is every phrase in a displaced position (A´-position) *fully* reconstructable into its original position modulo grammaticality?

Empirically, the answer is a flat no (see Haider 2014a for details), and this should be the end of the 'copy theory' and all assumptions built on it since the copy is always an isomorphic clone of the moved item. There are clear cases of a 'moved' phrase that would not fit into its original position, and in fact there is no need that it fit. It is enough if it relates to an empty position which fits into the syntactic environment and mediates the syntactic flow of information in the 'chain'.

[33] It is begging the question if one claims that a copy mechanism is a necessary part of grammar because lexical items are copied from the lexicon before they get merged (Aoun, Choueiri, Hornstein 2001:399). If you build your system in such a way that lexical items are copied, then it is a necessary truth in your system that they are copied. It is far from clear, however, what kind of information is retrieved from the mental lexicon. It is a network and not a set of word files. Hence it is easy to risk a bet that there is no copying of sub-networks. How the information retrieved from the mental lexicon is packed is an open issue. 'Copying' is much too vague.

[34] Let us note in passing: Proliferation of copies violates economy. Traces are just empty positions but copies must be produced from items in the numeration set. This is overlooked, in the absence of a theory of economy.

What you need for an experimentum crucis is a language that is both OV and V2. In OV, subtrees of a VP may occur in a fronted position, and V2 provides an uncontested clause-initial Spec position. In the Germanic family there is no shortage of languages that lend themselves to testing. In fact, relevant facts are known for quite some time.[35] Here is a set of the relevant variants of a clause (see Haider (2010:18; 305) and Haider (2014a) for a more recent discussion) that amount to a movement paradox:

In (1a), the fronted VP contains a V2-complement clause. The intraposed position is not acceptable, neither in the fronted VP (1b) nor within the matrix clause (1c). Embedded V2 complements are licit only in the extraposed position (1d).

(1) a. [Einfach behaupten [er sei verrückt]] hätte sie nicht dürfen
[simply claim [he is mad]] would-have she not be-allowed-to
b.*[Einfach [er sei verrückt] behaupten] hätte sie nicht dürfen
[simply [he is mad] claim] would-have she not be-allowed-to
c.*dass sie nicht [einfach behaupten [er sei verrückt]] hätte dürfen
that she not [simply claim [he is mad] would-have-been allowed-to
d. dass sie nicht einfach [[behaupten hätte dürfen]$_{VC}$ [er sei verrückt]]
e. [Einfach behaupten er sei verrückt] hätte sie nicht [*~~einfach behaupten er sei verrückt~~] ~~hätte~~ dürfen.
f. [Einfach behaupten er sei verrückt]$_i$ hätte$_j$ sie nicht [e$_i$ e$_j$ dürfen]$_{VC}$

According to the copy conjecture, the fronted VP is a copy-clone of the hidden VP in the base position. This is impossible in this case. It is a fact of German that the main verb and the auxiliaries or quasi-auxiliaries obligatorily cluster. The verb cluster ("VC") in (1d) is compact. There is no room for the complement clause of the clone within the cluster.

The trace-account has a plausible answer, the copy account doesn't. The trace is an atomic, empty position. It relates the fronted V-Projection to a base position for a verbal entity (1f). The verbal cluster in (1f) consists of atomic elements only, two of which are empty positions. The fronted V-projection is related to a base position that determines the properties of the verbal head and is the hub for managing the argument relations. For details please consult chapter six of Haider (2010, ch.7.7.1; 2013, ch. 6.5).

(1a) is representative of a whole class of constructions with a fronted VP that contains extraposed material. (1a) merely is a context of obligatory extraposition.[36] Extraposition targets the right edge of a V-projection. If these topicalized VPs are put back into their alleged sites of extraction, the resulting structures become ungrammatical. This is fatal for the copy theory since it claims that there is a clone in the 'trace' position.

[35] Relevant data have been discussed in Haider (1990), a paper with 150 citations according to Harzing's PoP.

[36] It has been chosen in anticipation that 'PF movement' would be invoked as'excuse' for optional extraposition: Allegedly, extraposition is not part of narrow syntax. Again, this is a no go. Extraposition is relevant on LF (Haider 2010: sect. 5.3.10 and 5.3.5 'Evidence against PF movement'). Moreover, the argument does not depend on details of extraposition. In (i) and (ii), the subject of the clause is *es* ('it') and the clause that follows is predicated over the subject. Here, extraposition is obligatory, too.

i. [Es richtig erfasst, dass das nicht stimmt]$_i$ hat$_j$ nur einer e$_i$ e$_j$
ii.* dass es$_k$ nur einer richtig [e$_k$ erfasst dass das nicht stimmt] hat

Obviously, in (1a,e) and in (2a,b) this cannot be the case. The clone simply would not fit into the original position. But if a clause with an overt version of a clone is ill-formed, then the very same clause with a covert version cannot be derived either unless one is happy to argue in a fully circular style.[37] The structure with the copy is ungrammatical since the clone in the lower position yields an ill-formed structure.

(2) a.*[Gesprochen mit ihr] kann$_i$ er nicht [~~gesprochen mit ihr~~] haben ~~kann~~
[spoken with her] can he not --- have ---
b.*[Gesprochen haben mit ihr] kann$_i$ er nicht [~~gesprochen haben mit ihr~~] ~~kann~~

In a representational account with an antecedent-gap constellation, the syntactic structures of (2a) and (2b) are grammatical, of course, whence the acceptability of these utterances in German. They are grammatical because the trace is atomic and matches the grammatical requirement of the obligatory, compact verb clustering:

(3) a. [Gesprochen mit ihr]$_j$ kann$_i$ er nicht [[e$_j$] haben [e$_i$]$_{V°}$]$_{cluster}$
b. [Gesprochen haben mit ihr]$_j$ kann$_i$ er nicht [[e$_j$] [e$_i$]$_{V°}$]$_{cluster}$

The trace [e$_j$] in (3) is the trace of a verbal expression and moreover it is an *atomic*, empty verbal item. As an *atomic item*, the empty verbal category is compatible with the compactness requirements of the obligatory verbal cluster construction of sentence-final sequences of verb in German or Dutch (see Haider 2010:303) that does not tolerate intervening phrasal items. On the other hand, it relates a verbal projection in the clause-initial spec-position to a base position. The trace in the base position transmits the unsaturated lexical properties of the verb in the fronted V-projection to the verbal cluster (Haider 2013: 307).

In passing, this constellation is also the key for solving Pesetsky's (1995) puzzle, that is, the apparently conflicting evidence from movement and binding with respect to VP-final adverbials in English (Haider 2013, ch.6, sect. 5). He concluded that movement tells that the structures are *layered*, but binding tells that they are *cascading*. Obviously, this is a conflict that cannot be solved by assuming a kind of double structure assignment. The solution is simpler. The evidence from movement is misleading, since it rests on the tacit assumption that the moved phrases and its copy are homomorphic, which they are not. The 'copy' is not a copy; it is merely a 'trace', that is, an atomic empty position. As a trace, it is verbal and atomic and may combine with an adverbial.[38]

In the MP system, copies are not only left in the position of origin, but also at every intermediate position. One of these intermediate positions is the left edge of a 'phase'. Apparently, it went unnoticed that this is prone to produce ungrammatical structures, too. Here is an exem-

[37] It would be obviously circular if one maintained that copies are there but the restrictions are applied only to the spell-out candidates and not to the phrases underneath the magical hood.

[38] i. and [give the book to them in the garden]$_i$ he did e$_i$
ii. and [give the book to them]$_i$ he did [e$_i$ [in the garden]]$_{VP}$
In (ii), like in the final position of the fronted VP in (i), the clause-final PP is embedded in a VP ('cascading').
In (ii), 'in the garden' seems to have been stranded, hence it is deemed to be higher in the structure than the fronted VP. The 'must' is a must only if the fronted VP leaves its copy. If there is a trace, however, the residual VP is locally well-formed as a verbal item (viz. the trace) followed by an adverbial PP, just like in (iii)
iii. [stay [in the garden]]$_{VP}$.

plary case: English wh-constructions provide a similar kind of constellation as VP topicalization in V2, with preverbal adverbial phrases in combination with the 'edge effect':

(4) a. Everyone has [[much faster (**than his competitors*)] [reached his destination]$_{VP}$]$_{VP}$
b. [How much faster *than his competitors*]$_i$ has everyone [e$_i$ [reached his destination]$_{VP}$]?

(4a) illustrates the edge effect for adjuncts of head-initial phrases (Haider 2010:194; Haider 2013:143). In this case it is instantiated by an adjunct preceding the VP. For preverbal adjuncts of head-initial phrases only, the head of the adjunct must be adjacent to the phrase it is adjoined. This edge effect is absent in *spec*-positions (4b), of course. So we have to ask ourselves what is the point of departure for the fronted adverbial in (4b)? It is ungrammatical in the pre-VP position, because of the edge effect. So, it could be generated only at the end of the VP (5a), but then it would first have to move to the left edge of the VP before it could leave this VP. (5b) confirms that the adjunct is part of the VP. The left edge of the VP, however, is accessible for the adverbial phrase only *without* its post-head material (4a), because of the restriction exerted by whatever accounts for the edge effect:

(5) a. Everyone has reached his destination *much faster than anyone else before*
b. … and [reached his destination much faster than anyone else before]$_{VP}$ he has indeed

A *representational* account for this kind of derivational problem is sketched in Haider (2010a, sect. 7.7.1). The topicalized constituent is a (not necessarily maximal) V projection. It is related to an empty category in the base-position. The empty category is not structured or layered, but atomic. A trace in the pre-VP adjunct position would be compatible with the edge effect, a copy would not.

Let us turn now to a purely 'mechanical' issue namely the *impulse* that makes a phrase move as a consequence of checking requirements. In the MP, it is taken for granted that a phrase somehow 'feels' that it has to double & move once it does not receive the proper checking license or when it receives a call from a probing feature. So it 'decides' to move. But what is it that sets movement in motion, if movement is not a metaphor? Is it an invisible hand that grabs an item, lifts it, and drops it again in the required position? Is there a kind of automatic transportation system that is called in action or is it a metaphor after all? It must be the latter since no Generative syntactician bothers specifying details of the system of logistics that manages the transport.

Before the transport starts, the candidate for movement must be generated by cloning the phrase. At this point, a foreseeable counter-reaction is this: "Movement is but re-merger." An item is merged a second time, at a higher position, and this is technically referred to as 'movement'. Be aware that this is a metaphor used to explicate a metaphor. But even the metaphor is misleading. It is a *copy* of an item that is merged a second time since there is only a single item in the numeration set that feeds 'merger'. The item has been merged already and is part of the structure so far. So the cloned item ('copy') must be *truly moved* from the cloning site up to its re-merger site otherwise locality restrictions on movement could not be enforced.

As for copy-mechanisms, genetics has elegantly modelled the very same problem in biology. A piece of an information carrier (DNA) must be copied in order to move the information

from one part of a cell into another part. This is done by the messenger RNA. Then the copy is attracted and decoded by a ribosome.

Dealing with copying or cloning in a scientific style enables a geneticist to physically show you the RNA in the test tube, and the DNA too. What could an MP syntactician produce in the same situation? (S)he produces a metaphor, namely the invitation to imagine that an item gets copied. The copy is like a cloned twin of item of the numeration, and it gets moving while the 'original' stays (or vice versa?). It is not immediately evident that this is more than a metaphor. It is a fine story, but how do we know whether the fine story matches the reality?

And the metaphors go on. Some phrases are said to move in some languages but in other languages they stay, orphaned by their features that have moved instead. Obviously there are different degrees of feature adhesion (in the absence of any adhesion theory). This is THE elegant way of capturing language specific variations, as for instance the position of wh-phrases in languages like English or German versus languages like Chinese or Japanese. In a language like English, a wh-phrase is said to move overtly to the clause initial position, in Chinese only its features move to this position.[39] Sounds stunning, seems elegant, but is it so in reality?

In languages like Chinese, a wh-phrase stays in situ in declaratives as well as interrogatives. Does this mean that Chinese wh-constructions do not involve movement? No, says the MP (6). It means that Chinese moves something undercover. In English, wh-movement is overt, but in Chinese it is not. In Chinese, wh-phrases do not move overtly, only their features do. Sounds nice, but it is a metaphor again.

Features are 'invisible', so (6) is ambiguous. If no wh-feature is attached to *shenmo*, (6) is a declarative and obtains the construal (i.). If there is a phrase with a wh-feature, the feature moves either to the local spec or the spec of the matrix and the result is the construal (ii.) and (iii.), respectively.

(6) Ta zhidao wo mai-le *shenmo*
he know I buy-PERF *what/something*
i. He knows I bought *something*
ii. He knows *what* I bought
iii. *What* does he know I bought?

This seems to be an extremely economical way of handling movement. Hence, a legitimate question would be this: Which language – Chinese or English – is defective, given that only one implementation, viz. feature+phrase movement or feature-only movement can be an economic one. But, on the other hand, the two options cannot be regarded as mutually exclusive since they may coexist, as languages like German illustrate, and moreover the movement of phrases is clearly not subject to the same constraints as the movement of features.

In German like in English and in many other languages, in an interrogative clause, an interrogative phrase obligatorily takes the clause-initial position, as the contrast between (7c,d) in German nicely illustrates. The pronoun '*wen*' ('who'$_{Acc}$) in (7) is representative for a set of

[39] In earlier days, Chinese was called up as testimony for covert movement, the idea being that wh-items always move; in some languages before in other languages after spell-out, in violation of the extension condition in the case of indirect questions.

pronouns that can be interpreted as an indefinite pronoun when in situ (7a,c), but must be interpreted as interrogative pronouns in the fronted (7b) position (see Haider 2010 sect. 3.3)

(7) a. Er hat *wen* angerufen
he has *someone* ('whom') phoned-up (= He has phoned-up someone)
b. *Wen* hat er angerufen? (‚Whom did he call?' but not: ‚Someone he has called')
c. *Wer* hat protestiert als sie *wen* anrufen wollte?
who has protested when she *whom* phone wanted
d.*Wen_i hat er protestiert als sie e_i anrufen wollte?
whom has he protested when he phone wanted

In German, like in Chinese, an in-situ wh-pronoun can be construed as an indefinite pronoun (7a). In the fronted position (7b), however, it is obligatorily interpreted as an interrogative pronoun. An in situ wh-interpretation requires a c-commanding wh-pronoun that is licensed as an interrogative (7c). (7d) illustrates the familiar movement opacity of adjunct clauses. If it were true that (7c) involves movement (full or features only at LF) for the in-situ wh-item, then these movements are not affected by opacity. This should be the end of the movement metaphor for in-situ wh-phrases. 'Observable' movement is blocked by opaque domains. Hence unobservable movement must be constrained that way, too; if it is not, it is not movement. It means cheating oneself if one is happy with two sets of data that are claimed to be covered by the very same relation but differ in essential constraints imposed by this very relation.[40]

Wh-constructions with in-situ elements are powerful catalysts for analytic creativity. Chomsky (1995) contemplates that features may move instead of phrases, but in (2001b:6),[41] he tries to eliminate feature movement and replace it by direct construal, with no movement at all. Others maintain to have identified properties that justify at least one or two other options, namely *covert phrasal movement* (Pesetsky 2000, Nissenbaum 2000, Cheng & Rooryk 2002) and even covert *pied-piping movement* (Tanaka 1999), or overt null-operators that move instead of the in-situ wh-items (Watanabe 2001), with some analyses based on contradicting acceptability judgments even for English, as for Simpson (2000) versus Pesetsky (2000), concerning ACD constructions.[42]

The way syntactical theorizing handles wh-in-situ data is revealing in at least three respects, namely with respect to *data assessment*, to *theory tinkering*, and to *semantic neglect*. As for data assessment, far reaching conclusions are based on data whose sole judge is the author himself. In psychology and other branches of cognitive science, any paper would be turned down if the data assessment it depends on names introspection as its exclusive source and the methods section is missing.

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[40] For the very same reason, *Control* cannot be reduced to movement, contrary to Hornstein (2001):
i. Er verließ den Raum ohne [PRO ein Wort zu sagen] (‚he left the room without [a word to utter]')
ii. Er versteckte sich anstatt [PRO zu flüchten] (‚he hid himself instead-of [to flee]')
iii. Er schwieg [um PRO niemanden zu provozieren] (‚he remained-silent in order [to provocate nobody]')
Adverbials are opaque for movement, hence the obligatorily controlled adverbials (i.-iii.) are opaque.

[41] "*Let us assume so, understanding this to mean that there is no feature movement.*"

[42] i. *Who criticized which course that Mary did [VP]? (Simpson 2000)
ii. Which spymaster suspected which spy that Angleton did [VP]? (Pesetsky 2000)

In science, there is no '*But some informants can get it*' or '*The informant I consulted agrees*'. There is only '*put up or shut up*'. In cognitive science, rigid and replicable data acquisition and assessment methods are the heritage of a century of experimental research whose founding father was Wilhelm Wundt[43] (cf. Danziger 1980:244). If a cognitive science paper does not tell the reproducible details of the genesis of the data it adduces, it is justly turned down, but not so in linguistics.

Subjective observations are not data. "*Interpersonally observable evidence*" is the general standard in science (Sampson 2007:115). Subjective observations are turned into objective data once they have passed standardized checks. An essential criterion for checking is the separation of the analyzer and the source. The analyzer cannot be the only source of the data (s)he analyzes. In theoretical syntax, this methodologically completely illicit practice is the rule, not the exception, however. Data are not assessed and papers do not provide data assessment procedures. According to the ESF *Code of Conduct for Research Integrity*, this is clearly an inappropriate practice.[44]

Syntax papers, unlike psychology papers, typically do not have a 'methods' section (test methods, statistical analyses, test subjects) that describes the data acquisition for testing theoretical predictions that the paper is based on. Habitually, the source of introspective observations is the author of the paper.[45] This would be okay, if data assessment preceded or followed. It is not okay, however, that these subjective observations are routinely claimed to be representative for any arbitrary sample of native speakers. Here are two poor excuses:

> "*Everyone who is a native speaker of this language will admit that this … is a grammatical clause / a marked variant / a possible reading / …"* is a well-known attitude in linguistics, but it is unknown in science. Test subjects are tested and what they *will* do does not matter; only what they have done under controlled testing matters.
>
> "*Peers, who are native speakers of the given language, agree that this … is a grammatical clause / a marked variant / a possible reading / …"* Is this a reliable procedure for warranting data quality? It is not.

Except for evident & established cases[46] that need no re-testing, data must be assessed by means of a reliable method. Peer consent is not enough. Peers often do not agree, unless their

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[43] […] "*in one place he contemptuously likens the introspectionist to Baron Munchhausen attempting to pull himself out of the bog by his own pigtail*." For this kind of introspection, Wundt uses the German expression Selbstbeobachtung (*Selfobservation*) which he contrasts with Selbstwahrnehmung (*Selfperception*), as for instance in the case of reporting that a stove is hot, after having grilled one's palm.

[44] "*Many other forms of poor and inappropriate practices in science research deserve attention. These include poor data practices and inadequate data management, inappropriate research procedures, including questionable procedures for obtaining informed consent*, […] *improper research design and carelessness in observation and analysis, unsuitable […] reviewing and editorial derelictions*." The European Code of Conduct for Research Integrity. (p. 9). http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf

[45] This is non-toxic in one situation only, namely a situation in which all syntacticians are native speakers of the language and they all work on this language (as in Generative Grammar in the sixties and seventies) and agree. It would not work in general, and not for Tzez 'backward control', to name an example, and it would not work for arguments based on subjective measures that range from "*ok*" to "**" (Kayne 1984:157), via "?", "??", or even "???" (Pesetsky 2000:29) and "*".

[46] For example: The respective descriptive grammars note that in German, a clause with a passivized intransitive verb does not allow an expletive subject. In Swedish, an expletive subject is obligatory in this construction.

theoretical convictions strongly overlap, and peers tend to disagree when their individual theoretical convictions are endangered. Here is an instructive example (see Haider 2009:79 and appendix 3 of this paper). The simple question was this: Is an in-situ wh-subject acceptable in Dutch in a question with a wh-item fronted across it? Gisbert Fanselow took up the challenge and collected the judgments of twenty-two native Dutch syntacticians for ten test sentences. The results were as instructive as disenchanting:

Each of the ten clauses (see appendix 3) is accepted by at least 35%, up to 100%. More than half, precisely 55% do *not disqualify* the criterial sentences[47] with an in-situ wh-subject. In this situation it would be easy to partition the set of raters into opposite subsets. In one subset, *all raters* would accept the criterial sentences; in the smaller subset all raters would reject them. Linguists from each subset could write papers – and in fact they do – on Dutch superiority, reporting the full consent of several other syntacticians, and readily arrive at opposite conclusions based on opposite data judgments. You may guess the source of the calamity. People who are involved are biased, but science has developed methods for evading personal biases. Syntacticians, however, behave as if they were born objective observers.

Tinkering instead of backtracking is the second characteristic attitude: Someone produces an attractive guess, and others find out where it does not work. In science, the guess would be discarded or put into quarantine. In MP syntax, if a guess has been prominently propagated as a core premise, the counterevidence is quarantined instead.[48] For each case of contradicting data, a new subclass is defined; see Hornstein (2001), who browses the literature on construal and locates auxiliary assumptions for each exceptional sub-case. Nobody seems to reflect the arbitrary patterns of the final 'solutions' and realize that this cannot be the road to success. The scientific way is the way pursued in the sciences, namely unbiased empirical testing of hypotheses with the best methods available. 'Experimental syntax' (Wayne 1997) is still an extremely underdeveloped field.

Syntacticians are syntacticians and they insist on *syntactic* solutions even for problems that wisely ought to be handed over to semanticists since the phenomena concern *interpretations* rather than structures, distributions and formal dependencies. Syntax may be responsible for finding out the structural conditions that correlate with a change in interpretation, but the coverage of the resulting interpretations (e.g. of displaced quantifiers, binders, bindees, or mulitple wh-items) is the business of semanticists. This is the third aspect, '*semantic neglect*'.

It is characteristic of Generative Grammar's splendid isolation policy that it does not attempt to seriously cooperate with semanticists. It suffers from a semantic neglect. Syntacticians of the Generative camps feel free to trespass into, and tinker in, semantic territories, but they are not really interested in seriously exploring the interface that they claim to investigate by continuously cooperating with experts of descriptive and theoretical semantics. In this case they would have to take seriously the needs of 'the other side'.[49] On the one hand, MP claims to identify the semantic interface, namely the "*conceptual-intentional interface CI for what is*

[47] i. Ik weet niet wat *wie* gekocht heeft. ii. Wie weet wat *wie* gekocht heeft? (… what *who* bought has)

[48] The more comfortable an opinion, the higher the adhesion to it: "*Faced with the choice between changing one's mind and proving there is no need to do so, almost everyone gets busy on the proof*" (John Galbraith).

[49] There are exceptions, of course, who have tried to establish working relations between syntactic and semantic theorizing in research and teaching, but it takes more than one or two swallows to make an MP summer.

loosely termed thought" (Chomsky 2012:1), but on the other hand, nobody seems to be interested in joining forces with the experts for conceptual-intentional representations.[50]

In face of a differentiated and productive field of model-theoretic semantics, the understanding that the LF-representations as conceived in the MP have a chance to be regarded as semantic representations is shared only by MP inmates who avoid contacts with working semanticists. It is a drawback of the MP that it does not actively seek the cooperation with semanticists for developing an acceptable model of the syntax-semantics interface.

MP syntacticians claim that their structures are immediately interpretable at the interface (in the absence of a semantic model) but do not develop a minimally sufficient model, and on top of it they ignore the models developed by a whole field of contemporary semantics. This policy of ignoring is without parallel in the more mature sciences. You make a strong semantic claim but at the same time, you ignore the field that investigates what your claim would be about. How could one be so sure that one's MP model has any chance to work the way one imagines, if it is has not been tested by the experts of the respective field?

Let us return to the bullet list. Eventually, the move-by-merge moving belt delivers a representation and then there is the final quality check post. No uninterpretable feature must be left unchecked otherwise the representation counts as 'crashing'. There is an exit control for unchecked features. Representations with this defect are marked 'OUT'. Is this a scientifically meaningful statement?

It could be, if we had a theory of features and if we had an idea of the feature grammar and the feature checking system. For the time being it simply means on the one hand that copy & merge is deemed to apply as long as it is fed by features and on the other hand that 'ungrammaticality' is modelled in terms of unchecked features left at the end of the moving belt.

The moving belt metaphor used in the preceding paragraphs is way too simple, of course. The theoretical 'reality' is much more complex. Moving belts may split like rivers into deltas since the MP admits for trans-derivational constraints.[51] These are constraints comparing derivations in the same 'reference set', that is, derivations that start with the same set of primitives and finish with semantically equal structures. For instance, the *shortest paths* constraint[52] equals a priority measure for wh-items competing for the same position and covers a subset of what had become familiar as 'superiority' restrictions (Chomsky 1993; 1995). Other constraints in this family are *Merge over Move* (see below); *Procrastinate* Chomsky (1993; 1995)); *Preference Principle for Reconstruction* (Chomsky 1993)).

In the absence of a comprehensive theory of syntactic economy, some of these constraints appeal to highly divergent notions of 'economy' (cf. Motut 2010). The appeal to 'economy' subsumes (i) economy as reduced *distance* (shortest move), (ii) economy as reduced *length* of a derivation, economy as (iii) reduced *timing* (ASAP principle; Yang (1997), Collins (2001));

[50] Semantic has never been a field of Generative Grammar in the sense phonology was. 'Generative Semantics' is only remembered as a trade mark of a short-lived dissident movement in the history of Generative Grammar.

[51] Even though there is a tendency to dispense with trans-derivational constraints, the trans-derivational 'Merge before Move' constraint (see Chomsky 2001) is widely adopted.

[52] Chomsky (1993; 1995): If two derivations D_1 and D_2 are in the same reference set and the movement paths of D_1 are shorter than the movement paths of D_2, then D_1 is to be preferred over D_2.

(iv) economy as economic *cloning* (Merge over Move), or (v) economy as reduced *load* (lightest load principle, Hornstein (2009:52)). Needless to point out that there is no independent evidence from psycho- or neuro-linguistic investigations in support of any of these assumptions.

Let us briefly dwell upon the genesis of '*merge over move*' since it illustrates the typical casuistic approach of the MP. For English *there*-constructions, there are two equivalent derivational strands (8a,b), but only one of them leads to an acceptable sentence (8a).

(8) a. In the MP, there seems [~~there~~ to arise *a conflict* with the derivation of this clause]
b.*In the MP, there seems [*a conflict* to arise ~~a conflict~~ with the derivation of this clause]

In (8a), 'there' gets merged lower than in (8b). In (8b), the embedded subject moves up higher than in (8a). In each clause there is one moved clone and both clauses should be fine, ceteris paribus. In this situation, a trans-derivational constraint '*merge over move*' (MoM) is invoked for assigning priority to the derivation (8a). Instead of creating and moving a clone of an already merged item (8b), a new item is merged, namely '*there'*, a clone of which is moved afterwards.

This is an instructive case of déformation professionelle. If one thinks in terms of derivations one looks for solutions in terms of derivations. Without much ado, a representational account would simply point to the fact that the spec of the functional head '*to*' in English cannot accommodate a lexical NP unless it receives case from elsewhere.[53] If the lexical subject appears in the spec position of the infinitival complement in (8b), it is case-less and therefore ungrammatical. '*There'* could not transmit case since it is not in a local relation and '*seem'* is no ECM-verb.

It should be clear anyway that appeals to economy do not make sense without a clear notion of what is the limited resource (Haider 1997a). If your limited resource is *fuel*, driving at about 50 miles per hour is economical, but if your limited resource happens to be *time*, it is not, and you better speed up slightly above the speed limits and do not care for fuel consumption. Economy claims without a clear theory of resources and their limitations are pointless since economy is meaningful only relative to a limited resource. The limited resource defines what is economical.

In this respect, the economy discussions in MP are pointless. What is the limited resource that is at stake? Is it the complexity of *derivational* processes or the complexity of the resulting *representations*? In each case, complexity reduction will predict different preferences. But nobody knows which part would be the more costly one and whether it is so at all. Nobody did an experiment. Hence, it is easy to produce guesses that remain vacuous as long as they are not tested.

[53] The only instance with the lower subject 'overtly' preceding 'to' is an ECM-construction (i):
i. We expected [*there*$_{Acc}$ to a rise a problem] – We expected [a problem$_{Acc}$ to arise]
ii. There was expected [to arise a problem] – *There was expected [a problem to arise]
Note that in the examples of (i), there is no competition between merge and move, contrary to MoM.

As for trans-derivational constraints, they come into play only at the end of the assembly line since only derivations that 'converge' compete for trans-derivational perfection, that is, for having been assembled in the optimal way, as in the case of (8a,b). What this amounts to is not one straight assembly line but assembly lines that may bifurcate as often as they need, with each line delivering a representation for the same set of primitives the assembling process starts with. At the end of the delta of lines, the representations are checked by comparison and immediately discarded except for the winning economic candidate(s). This, by the way, is as ingenious as uneconomic a way of imposing economy.

But, it is a creative idea for several reasons. First, it is completely speculative. There is not the slightest piece of *immediate* evidence for it. Second, this kind of organization would be well-served by a quantum computation brain in which all possible derivational trajectories are in superposition as long as a final measurement forces the superposition to collapse. Quantum computation, however, is not the 'wetware' operating principle of our brains, it seems, or else we would be the perfect code crackers.

There is an experimental domain whose research results are robust and detrimental, though, namely the experimentally confirmed existence of garden-path constructions. It has been shown that our mental computer proceeds as if processing was deterministic and not parallel. We have to backtrack rather than switch from one candidate to the next one. Of course, one may justly object that the quality control at the end of the delta of an assembly line is not the equivalent of garden path management, which involves at least two independent reference sets and hence two separate assembly lines. This is all right, but my hunch, in the absence of any substantive experimental evidence, is this: If our brain provides the equivalent of a control system that manages trans-derivational constraints, this very system would easily manage the unraveling of garden path structures.

Third, there is an unintended consequence of these trans-derivational checks that seems to have gone unnoticed. If our brain really had organized linguistic computing in this way, namely by variably assembling items plus subsequent selection of a candidate at the end, this would amount to a hybrid amalgamation of a *representational* system with a *derivational* one. In principle, the derivational system would be completely uninteresting since it could generate freely (like unconstrained 'move alpha' or the free generation of candidates in syntactic Optimality Theory) any structure in a truly quantum computational style, as long as a 'converging' candidate is in the final set, and the selection system selects it.

The final control & selection system is *representational*, of course. It checks properties of the final products of the assembly lines and these products are representations. The fact that the properties of the final product are the effects of steps in the derivation does not make the selection 'derivational'. The selection checks representations. The properties that are checked may be the echo of derivations 'frozen' in the derivational outcome but that does not matter at this point.

So we would end up with a representational system subserved by a more or less freely spinning generation device. Ultimately, MP syntacticians seem to erroneously believe that they are dealing with exclusively derivational devices, but in 'reality' they deal with a representa-

tional checking system that backtracks on the properties of representations that the representations owe to their derivational history accumulated on the assembly line.

Again, all this is merely metaphorical. There is no need for disquieting oneself since nobody has ever seen the slightest evidence for the ontological reality of these far too detailed and too far reaching claims. It is but creative speculation and far away from scientific grounding – intellectually entertaining to some degree, but purely speculative for the time being.

Let me add that this view on derivations is extremely old-fashioned too. Since its beginning, the idea that grammar is a cognitive algorithm has been modelled in the style in which computational systems were modelled at the time when '*Syntactic Structures*' was published, namely as a linear sequence of derivational steps that connect an input (today: 'numeration') with the output (today: LF-representation). Neuro-linguistics and computer science have detected distributed and parallel computing quite some time ago (Gordon 1985). A large number of processing subsystems (modules) perform their computations in parallel. There is no strictly stepwise sequence of derivations.

Generative Grammar still sticks to the Von-Neumann architecture of computation of the very early days of computer science, with a processing unit that controls the *sequential* processing in numerous steps from input to output. It is an irony of history of our discipline that one of the prominent pioneers of the computational theory of formal grammars has become an impeding force by his persisting preference of an outdated strategy of computational modelling.

An immediate repercussion of the inappropriateness of a strictly sequential algorithm is the recourse to *Distributed Morphology*, for instance. Late insertion, a core property of DM, is the inevitable consequence of squeezing two distributed components that work in parallel into a linear sequence of derivational steps, namely the concatenative morphological system, which links the lexical network, morpho-syntactic marking and word formation, and the syntactic structure building system. "Anything goes, anywhere and anytime" is the desperate answer to the "nothing goes anymore" when two independent modules have to be squeezed into a mono-sequential interaction. The nearly unconstrained 'distributed' flexibility of DM is not the solution; it is the capitulation. What is distributed is not the morphology module but the processing architecture.

4. Things are never as bad as they seem

After having highlighted negative aspects, let us watch out for the positive side. Generative Grammar, I dare predict, will be remembered as a school of linguistic thought that for the first time in linguistics, successfully managed to focus syntacticians around the globe on a joint agenda and on a joint frame of reference. For the first time it was possible to communicate in a meaningful way about syntactic properties across language boundaries and meaningfully adduce and compare data from diverse languages. Before, this was the privilege of Indo-Europeanists (within their restricted research agenda and a naturally limited set of languages).

The P&P system has been a flexible model for systematically relating data from diverse languages in a meaningful way. The success of this phase of theory building was precisely due to the parametric flexibility of the model. It was a successful heuristics since it provided 'plasticity' combined with the obligation of providing substantive cross-linguistic evidence for any

parameter that was called for. The next step ought to have been the rigorous assessment of what might figure as cross-linguistically variable or invariable in this system, based on diverse settings of reliably assessed data.

Before a serious assessment (i.e. counter checking, re-assessment and re-modelling) could commence, the idea of a radical re-design required a re-boot from zero. The re-boot was the launch of MP in the early nineties. As a consequence of the radical re-partitioning of grammar, many of the well-substantiated findings of P&P (e.g. constraints on extraction domains) did not fit neatly and were dumped. The pendulum had swung from almost entirely derivational[54] (in *Syntactic Structures*) to almost entirely representational (in P&P) and back to almost entirely derivational again in the MP, but this time with a number of pre-set premises that have strongly invited 'counter-factual' epicyclical thinking. If data do not fit, preferably find a covert derivational loophole to make them fit or relegate them to PF or ignore them, as a last resort option, but do not touch the premises.

The exclusively theory-driven agenda of the MP is a severe and damaging drawback. History of science is full of examples of the failure of top-down approach to nature. The common inductive–deductive flow of information involved in developing theories successfully has been heavily biased towards a particular choice of theoretical premises in the MP.

MP papers are predominantly concerned with puzzling model variants rather than puzzling empirical issues. Cross-linguistic data fragments are organized primarily with respect to theory-dependent issues. A reader of this kind of papers has no chance to arrive at a coherent picture of the language-specific empirical issues. If you are not an expert in the language from which the data are drawn you have no chance to judge the reliability unless you start investigating this language. But, if you are an expert of, and native in, the given language, you are likely to re-discover Ebeling's principle.[55]

Second, data are presented in an entirely theory-dependent style and partitioning; they do not stand on their own. The discussion of aspects of theory building is constantly intertwined with the discussion of data analysis. Novel and insufficiently analyzed data are adduced for motivating novel theoretical claims. This is a toxic combination. A novel theoretical claim requires solid data. Novel data require a solid method of analysis and assessment. If one tries to simultaneously juggle with both, failures are predictable. This greatly reduces the sustainability of Generative papers.

Too often, the data selection is biased and eclectic. The various data areas are not presented independently,[56] in a theory-neutral way, before they are embedded in the theoretical argumentation. There is a theory-driven stock market for data. Data that support the momentary

[54] "*The grammar of L will thus be a device that generates all of the grammatical sequences of L and none of the ungrammatical ones*" (Chomsky 1957:13).

[55] "*The results of phonemic analysis are inversely proportional to the investigator's knowledge of the language*." (Ebeling 1960: 384). Same for syntax. The less familiar a language, the better the fit between data and theory.

[56] In quite a few cases they are merely insourced from other theoretical papers and the author has never analyzed them in detail in their full grammatical setting. Every now and then I see German as testimonial for properties I would never ascribe to German and I suspect that this may be true of other languages, too.

version of the theory are well received (e.g. alleged evidence for 'backward control'[57] in any odd language); counter-evidence is admitted only if 'accompanied by an attorney' and then it gets stored in the back of the basement, locked behind doors that name ad hoc auxiliary hypotheses. In short, this is a main reason for the MP's unimpressive performance in pioneering work on novel data areas in comparison to the P&P period, and on gaining firm ground with the aggregation of well-assed data that receive an insightful analysis.

These are collateral damages of a specific attraction of the MP, namely its attraction as a linguistic brainteaser. In logics and mathematics, and in formal syntax, too, bright minds succeed early in their career. Deductive mental power outranks longtime empirical experience. The crucial difference, however, is this: In logics and math, the findings are valid once they have been proven. In linguistics, they may be still wrong, even if their deduction from the premises at hand is proven, since the theory they are deduced from will always remain unproven. Unlike the formal disciplines logics and math, linguistics as an empirical discipline has to find out whether the premises it introduces are *empirically adequate* or not. There are no 'virtually conceptually necessary' contingent and contentful premises in an empirical discipline. Nature sets *contingent* premises and we have to find them out.

The MP pretends to be an empirical enterprise but proceeds as if it was sufficient to take arbitrary MP premises for given, enrich them, derive in great detail some intricate theorems, and find some linguistic data to illustrate them. This is not science but "*just a kind of play-acting at science*." (Chomsky 1959:39).

Let us take as example case the abandoning of head movement in the MP. Chomsky (2001a:37f.) decided on theory-internal grounds that head-movement should not be part of the MP scenario anymore. He concludes that "*a substantial core of head-raising processes may fall within the phonological component*" because head-movement is said to never affect interpretation: "*the semantic effects of head-raising in the core inflectional system are slight or non-existent, as contrasted with XP-movement*" (2001:37).

The statement is illuminating for at least two reasons. First, the MP does not provide any theory of PF movement. In the absence of a theory, PF movement is a kind of "*I dream of Jeannie*" effect. The PF genie nods and the verb moves. Why should exactly the *finite verb* move for phonological reasons in a V2 language? Phonology takes care of phonological properties, but head movement follows syntactical restrictions.

For instance, fronting the finite verb is blocked if it happens to be doubly prefixed (Haider 2010: 59). Each of the prefixes would have to be stranded separately and so they cannot be stranded properly. This is obviously not a phonological condition. Appeals to PF movement are rhetorical maneuvers for dumping embarrassing data, and they are rhetoric because 'PF-movement' has never been the subject of theory formation. It is a convenient label for dumping counterevidence as if the slogan were "Try hard to imagine that there is something like PF movement, then this is a virtually necessary case for it."

[57] The typical phenomena discussed as cases of '*backward control*' phenomena are predictable without invoking backward control: These phenomena are reflexes of the '*Third Construction*' (Den Besten & Rutten 1998) in the context of pro-drop VO or T3 languages with post-verbal subjects. This is a special type of a kind of clause union phenomenon (CP-seletion in alternation with VP-selection) that does not cry out for 'backward control'. It can be captured by admitting alternation between CP, TP and VP complementation for the same verb.

Secondly, the 'empirical' reason cited above for discarding head-movement may perhaps pass without counterevidence for English, but it is clearly wrong for the paradigm case of head movement, the Germanic verb-second phenomenon. The fronting of the finite verb is constrained by LF-dependent conditions (Haider 1997b, 2010:65). Fronting becomes deviant whenever the fronted verb contains material that is targeted by a scopal element like a comparative (9a) or equative (9b).

(9) a. dass der Wert sich (*mehr* als) ver*drei*fachte (in diesem Jahr)
that the value itself (more than) *tri*plicated [= *three*-folded] (in this year)
b. das der Wert sich (*so* gut *wie*) ver*drei*fachte (in diesem Jahr)
that the value itself (as good as) *tri*plicated [= *three*-folded] (in this year)

The verb '*verdreifachen'* (to triplicate) contains the target of the comparative (9a; 10a,b) or equative (8b; 10c,d), namely the value of the numerical value that the quantifier denoted by '*more than*' or '*as …as*" quantifies over. Fronting removes the verb out of the domain of the comparative or equative operator. The trace of the fronted verb is the trace of the lexical verb, but the target variable of the operator is part of the lexical make-up of the verb. Hence the trace cannot serve as a reconstruction mechanism for a subpart of the target.[58] Consequently, if the verb in (10) is fronted, either by head-movement (10a,c) or by phrasal movement (10b,d), the clauses become deviant if they contain an operator whose variable is related to a subpart of the fronted verb. This pattern is a general pattern, as (10e) illustrates. Fronting the comparative clause (10e) is ungrammatical; extraposing it would be ok.

(10) a. Der Wert ver*drei*fachte$_i$ sich (*mehr als) e$_i$ (in diesem Jahr)
the value *tri*plicated (= three-folded) itself (more than) (in this year)
b. Verdreifacht$_i$ hat sich der Wert (*mehr als) e$_i$ (in diesem Jahr)
tripled has itself the value (more than) (in this year)
c. Der Wert verdreifachte$_i$ sich (*so gut wie) e$_i$ (in diesem Jahr)
the value tripled itself (as much as) (in this year)
d. Verdreifacht$_i$ hat sich der Wert (*so gut wie) e$_i$ (in diesem Jahr)
tripled has itself the value (as much as) (in this year)
e.*[Als sie einnehmen konnten] haben sie weit mehr ausgegeben.
[than they earn could] have they much more spent
'They have spent much more than they could earn'

In English, only (10b,d) can be replicated, as an instance of VP fronting (11), since main verbs do not move in English, as is well-known.

(11) a. The value has more than tripled this year
b. (He said that the value would triple) and *tripled* the value has (**more* than/*as much as) this year

[58] Note that this is not compatible with the ‚move a copy' idea of MP. The copy would be equivalent to reconstruction. The comparative operator could bind its variable, independently of movement. But, there is no copy, merely an empty position that is related to the displaced head in the top functional head position, and the trace, unlike the copy, does not contain the target of the operator, whence the ungrammaticality.

Obviously, head movement is LF-sensitive, just like phrasal movement. Hence there is no reason to discard it precisely on the grounds that LF-effects are absent. It is advisable to raise the horizon of coverage above the level of English and closely related VO languages, especially if there are easily accessible data available.

The ban of head movement stimulated the search for Ersatz-solutions, but Ersatz is not the real McCoy. There is a proposal by Müller (2004) that promises to replace two separate movements (viz. head-movement of the finite verb and XP movement to the spec position) by a single movement, namely that of a 'vP' evacuated of all overt material other than the verb and a *single* constituent on the *left* edge of the vP. A sentence such as (12a) with the standard analysis (12b) would be reanalyzed as (12c).

(12) a. Diesen Satz muss man natürlich so analysieren
this sentence must one naturally this-way analyze
b. [[Diesen Satz]$_i$ [muss$_j$ [man natürlich e$_i$ so analysieren e$_j$]]]
c. [[Diesen Satz muss]$_{vP\text{-}i}$ [man natürlich so analysieren e$_i$]]

The fronted constituent in (12c) is a hollowed out ‚vP'. It must be hollowed since it must not contain more than one constituent plus the finite verb in order to mimic the fact that the initial position in (12a) is restricted to accommodate a single constituent. First of all, the hollowing-out constraint on fronted phrases would be an unprecedented constraint on a fronted phrase. In addition, a lot of auxiliary assumptions are needed for an approximate coverage of German data, which fails after all. Appendix 4 enumerates ten areas of counterevidence. Second, and crucially, the phenomena exemplified by German V2 are not unique. They are but a 'subspecies' of the pan-Germanic V2 phenomenon but the mechanism assumed for hollowing out the vP in German, viz. Scrambling, is not available for the Scandinavian V2 languages since they do not scramble. Here is an example from Swedish (13).

(13) a. Tidningar *läser* barnen inte [Swedish]
newspapers *read* children-the not
'Newspapers, the children don't read'
a. att barnen inte *läser* tidningar

In (13a), a fronted object precedes the finite verb. In the vP-fronting analysis, [$_{vP}$ Tidningar läsar] would have to be a vP-constituent, which it is not, simply because the object cannot precede the verb in the Scandinavian OV languages within a VP. The paper acknowledges the problem with some kind of hand waving remarks on additional auxiliary assumptions for circumventing it. The result would be an entirely different way of arriving at the same result as in German. Again, what is missing is the demonstration that the auxiliary assumptions are empirically adequate and work. Even if we disregarded the descriptive failure (see appendix 4), this account misses the essential generalization that V2 is a cross-linguistic property of Germanic languages (except for English).

Why are adherents of the MP happy with such proposals (e.g. Roberts (to appear)), however counter-intuitive and constructed[59] they may appear? They are attractive as long as they open

[59] Chomsky himself (1995:146) combined his idea with an explicit warning: "This may well be too strong a conclusion, raising a problem for the entire approach." And it does, indeed.

some way out of a haphazardly unwanted theoretical constellation. Empirically adequate data coverage is secondary; the primary concern is theoretical obedience. This is a basic problem in the whole enterprise. Psychologists tend to file this under 'confirmation bias'[60] in combination with an 'authority bias'.[61]

In the sciences, empirical generalizations have primacy over theoretical ones; in the MP this hierarchy is reversed. It is a scientifically unhealthy attitude of the MP that standards of empirical analysis are sacrificed for stipulated theoretical guidelines. As long as theoretical predilections receive unquestioned priority over consequent empirical analyses, the MP will remain nothing more than an amusing narrative full of misleading metaphors.

5. Summary of deficits

- ***Data assessment*** **deficit**: Theoretical syntax waives the need for rigorous data quality management. It still suffers from its birth as an offspring of philology. Philological descriptions can do without experimental methods since originally they are strictly corpus based and diachronic. In theoretical syntax, however, claims relate to domains of cognitive science. This calls for experimental methods that connect data properties to properties of their sources, viz. the language processing system of our brain. Currently, in the extreme case, it is accepted if somebody produces data from any odd language and starts theorizing. 'Producing data' would not be the problem; the problem begins when these data are handled as if they were well-assessed and representative. Too often they are not (see for instance the discussion on multiple wh-constructions in Dutch, appendix 3). Data assessment procedures are an essential part of quality management in the sciences. As long as theoretical syntax waives this requirement, it misses scientific standards and will not become an accepted partner of scientific disciplines (cf. fn. 44, ESF code of scientific conduct).
- ***Data organization*** **deficit:** Theories are a means of organizing data in a meaningful way. Before they can be modeled, they must be analyzed and organized in terms of their invariants and variants and in terms of their clustering and dependencies. It is this constantly accumulating body of well-analyzed data that reflects the empirical reality that the competing models intend to cover.

  Data must be organized in terms of their structural properties. If from the beginning, they are organized in the way a model interprets them, this amounts to a biased distortion. Committed theoreticians tend to organize their data in a way that supports the presently favorite viewpoint. This attitude favors a highly eclectic sampling of potentially unrepresentative data and biased generalizations over existing samples.

  Science has introduced a division of labor. There is a data mining side, and there is a data modeling side, and one is obliged to make clear at what side one is in each case. Confounding sides is a source of profound confusion. In the MP, there is no empirical

[60] Also called *Myside Bias*; this is the tendency to interpret information in a way that confirms or is at least compatible with one's hypotheses or beliefs.

[61] In everyday life, people in positions with authority are believed to generate better hypotheses and commit fewer errors, and therefore their opinions and contributions are given higher weight. In science, this mind set is ultimately counterproductive. Evidently, it is the sound argument that should count, not an ephemeral authority.

agenda, only a theory-serving one. Data selection is illustrative. Data serve as illustrations for wanted or unwanted consequences of a theory that necessarily rests on speculative premises.

Science works exactly in the opposite style. Theory driven research always carries the obligation of honestly putting to test a theoretical claim and to confirm or disconfirm it by testing its successful heuristics. Data-driven work is understood as an attempt to produce a *reliable* body of *representative* data that eventually represents all known aspects that are involved. An essential part of this work is rigorous data assessment.

- ***Theory assessment*** deficit: In the MP, theory development is an affirmative action. 'Virtually conceptually necessary' premises receive priority. The momentary favorite components of the theory are not questioned and empirically tested. The hallmark of progress in MP is trivial verifications by showing once more that one may sample data from yet another language that can be made to fit. The hallmark of science is not verifying by illustrating; it is *predicting* and scrupulously *checking* the predictions. And when predictions fail, the worse for the theory, and not for the data.

  In the MP, if core predictions fail there is always an ad hoc patch-up at hand. Serious empirical testing with robust cross-linguistic data generalizations has been replaced by devising a belt of protective auxiliary hypotheses without independently testing and justifying them. In other models, the theory assessment has already become an issue, for instance in HPSG (Müller in press).

- ***Experimental*** deficit: Every mature science has a theoreticians' camp and an experimenters' camp. Theoretical syntax fosters the illusion that it can do both at the same time, with a caricature of an experimental design (see Marantz's opinion, fn. 31).

  Theoretical syntax of the MP kind, claims to be the discipline that models a specific aspect of a cognitive capacity, namely the capacity for processing linguistic structures, but tries to produce a theory of this cognitive capacity (as part of the ensemble of human cognitive capacities) without ever checking it experimentally. It is impossible to uncover the structure of a black box by sampling and analyzing some of its outputs (see *Cricks's problem*, discussed in Haider 2009). You have to find ways of peeping into the black box. Psycho- and neuro-linguistics provide means and methods for this but the theoreticians do not take up this opportunity. Theoretical syntax pretends to be an integral part of the cognitive sciences but does not respect the rules of the cognitive sciences. The interdisciplinary give & take should be the rule:

  "*We believe it would be in the best interests of linguistics and of cognitive science in general if the linguists were to help psychologists like ourselves to formulate and sharpen the really important foundational questions, and to address them experimentally*. (Edelman & Christiansen 2003:61).

- ***Scientific conduct*** deficit: Rhetoric, how persuasive it may be, cannot replace demonstrative data-based argumentation. Conflicting data must not be ignored or downplayed and cannot be outweighed by a biased sample of data whose sole purpose it to protect an endangered principle by means of an auxiliary assumption. When empirical

findings are in conflict with a theory, the theoretical principles cannot be maintained by ad hoc interpolating some auxiliary assumptions without independent evidence. As scientists we know that our momentary theoretical hypothesis are wrong, but we do not know whether they can be improved or not. So we have to find out where they are wrong.

- **Deficit in the scientific mindset:** The first loyalty of the scientist is the loyalty to his object of inquiry. In first place, the scientist's role is a testing combination of witness, barrister and judge in the trial 'theory T_x against nature'. The MP has way too many biased judges, careless witnesses,[62] and opportunistic barristers. There is a detrimental preponderance of opportunistic papers over broadly descriptive & analytic ones. As long as data are sorted in terms of the presently fashionable theoretical predilection, the 'scientific trials' will resemble show trials, and science will take place elsewhere.
- **Responsibility deficit** (Peter-Pan-syndrome): The mainstream Generative Grammar movement is a movement that seems to intentionally evade becoming adult and mature. Whenever a set of premises has been pursued approximately up to the age of puberty, it is intentionally abandoned[63] and the game starts again with a new set of premises (see: Chomsky 1965–1982–1995). Integration of previously worked out analyses is not a necessary part of the game. The MP, by the way, is already an overaged teenager by now.
- **Orientation deficit:** Well-assessed facts should always count more than the grandeur of any idea as long as it palpably lacks sufficient empirical support. There is no shortage of short-time grandeur, but there is always a shortage of well-assessed facts. In other words, the herd instinct that is served by an Aristotelian shepherd should be traded in for a more self-confident style of research in the Galilean style of scientific enlightenment:

  'Enlightenment' is the [*syntactician's*$_{HH}$] *emergence from self-imposed immaturity. Immaturity is the inability to use one's understanding without guidance from another. This immaturity is self-imposed when its cause lies not in lack of understanding, but in lack of resolve and courage to use it without guidance from another. Sapere Aude!*"
  [Immanuel Kant's definition of enlightenment from 1784, with *"syntactician's*" inserted].

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[62] In court and in science a witness has to tell the truth, the *whole* truth and *nothing* but the truth. A subset of data is not the whole truth, and a theory-internal motive is not a truth either.

[63] In the documentation movie from 1992 – „*Manufacturing of consent: Noam Chomsky and the media*" – there is a single but telling remark on linguistics, namely, that it is necessary to change premises every 10 years in order to keep the field alive: "*If I still believe what I believed 10 years ago, I assume the field is dead*." In the sciences, there is an incremental body of believe-worthy knowledge. In Generative Grammar, beliefs are short-lived and freely changing independently of empirically gained insights.

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Appendices 1 – 4

Appendix 1. Ad hocness[64] - Insufficiently justified assumptions

- Postulation of diverse *features* (including features that directly interact with structural computation, as the EPP feature) in the absence of a theory of grammatical features.
- Postulation of *diverse* constraints that appeal to notions of *economy* in the absence of a theory of grammatical economy and an experimentally testable model.
- Postulation of diverse *movement* operations (*clone & move* phrases and/or features) in the absence of an empirically well-assessed theory of *copy*-movement.
- Postulation of *syntactic PF-movement* in the absence of a theory of PF-movement.
- Postulation of *LF-properties* in the absence of a theory of LF that has been shown to meet the minimal criteria of adequacy for semantic representations (compositionality and inferencing properties in a model-theoretic implementation).
- Postulation of *UG-status* for diverse principles whose empirical motivation rests on syntactic properties of a handful of diachronically related SVO languages in the absence of, and *contrary* to, evidence from typologically different languages.

[64] According to Scott (2011:37) "a hypothesis is ad hoc when disconfirming evidence leads scientists to accept that hypothesis into their theory even though the core of the theory, in combination with auxiliaries and the evidence, does not entail the hypothesis." Bamford (1993: 335): "Popper defines an *ad hoc* hypothesis as one that is introduced to immunize a theory from some (or all) refutation but *which cannot be tested independently*."[ital..HH]

- Postulation of *translocal* and *transderivational constraints* that presuppose the simultaneous computation of possible alternative derivations plus a choice function for identifying the most economic one, in the complete absence of a neuro-cognitively minimally assessed theory of the postulated mental capacity for monitoring & controlling the derivational histories of informationally encapsulated computations.

Appendix 2: In OV, the core predictions of the MP *systematically* fail

Table 1: The LCA predictions (Kayne 1994) embodied in the MP fail. BBC-predictions (Haider 1992, 2010, 2013) hold. LCA-predictions shared by MP are indicated by a subscript

LCA predictions (empirically unsupported)	**BBC predictions** (empirically supported)
1.$_{MP}$ In OV, preverbal phrases are in Spec positions and therefore *opaque* for extractions like a preverbal VO subject. Hence in OV, all *preverbal arguments* are predicted to be opaque.	In OV, preverbal phrases are *transparent* for extraction since they are in the domain of their selecting head, and therefore transparent like postverbal objects in VO.
2.$_{MP}$ *Scrambling* places phrases into preverbal Spec-positions and thereby makes them opaque for extractions.	Scrambling is adjunction within the directionality domain of the head. Scrambled phrases remain transparent for extraction.
3.$_{MP}$ OV and VO languages are expected to display the '*EPP-effect*'.	The 'EPP-effect' is a phenomenon of head-initial phrases and absent with head-final ones.
4. *Diachronically*, an SOV language develops out of an SVO language. SVO is the universal structure that gets masked by massive phrasal fronting.	Diachronically, SOV and SVO are inverse settings. Typically, the OV or VO grammar develops out of a T3 grammar, by fixing the directionality of heads.
5.$_{MP}$ *Edge effect* is not admitted: *Adverbials* and modifier phrases (e.g. adnominal *attributes*) are phrases in Spec-positions and behave syntactically like phrases in spec positions.	Edge effect is admitted: Adverbial and attributive phrases are adjoined to the phrases they modify. The edge effect immediately correlates with directionality, viz. with head-initial.
6. 'Immobile' items remain in a *postverbal* position.	'Immobile' items remain at the directionally canonical side of the head they are dependent on, i.e. preverbal in OV, postverbal in VO.
7.$_{MP}$ *No adjunction.* Spec-head-complement is the universal building scheme. Adjunction structures are neither admitted for phrase-to-phrase, nor for head-to-head adjoining. Multiple specs or multiple phrases per spec are required.	Adjunction is a standard structural configuration. Adverbial or attributive phrases are instances of phrase to phrase adjunction. Verbal clusters are instances of head-to-head adjunction. Multiple adjunctions are predicted.

8.$_{MP}$ No *lexically* specifiable *directionality*. Cross-categorial linearization differences are differences in terms of fronting items. *Example*: Clause-final complementizers are clause-initial, but their complement has been fronted.	Directionality values are lexically specifiable. Cross-categorial linearization differences may be differences in terms of the directionality value. *Example*: Lexical complementizers with the directionality value 'regressive' are clause-final.
9.$_{MP}$ *No nominalizations* of the series of verbal heads in either VO or OV, since they are heads of stacked VPs in each case.	Nominalization of verbal clusters in OV are nominalizations of the same series of verbal heads that project stacked VPs in VO.

Appendix 3: Unreliable peer judgments – the case of 'Superiority' in Dutch

Table 2: Judgments of 22 native Dutch syntacticians (see Haider 2009:79). The data have been elicited and shared by Gisbert Fanselow.

	1 ik weet niet wie wat gekocht heeft	5 ik weet niet, wie wat an wie gegeven heeft	6 ik weet wie wat gekocht heeft	4 ik weet niet wat wie aan wie gegeven heeft	3 ik weet niet wat welke leraar gekocht heeft	9 wie weet wat wie gekocht heeft voor zijn zusje	7 wie weet wat wie gekocht heeft	2 ik weet niet wat wie gekocht heeft	8 ik weet niet wat wie gekocht heeft voor zijn zusje	10 wie weten al welke boeken deze studenten hebben gekocht, maar wij weten nog niet, wat wie precies heeft gekocht
1	+	+	+	+	+	+	+	+	+	+
2	+	+	+	+	+	+	+	+	+	-
3	+	+	+	+	+	+	+	+	+	+
4	+	+	+	+	+	+	+	+	+	+
5	+	+	+	+	+	0	+	+	-	0
6	+	+	+	+	0	+	+	-	0	-
7	+	+	+	+	0	+	+	0	0	-
8	+	+	+	+	+	+	0	0	0	0
9	+	+	+	+	+	0	0	0	-	-
10	+	+	+	+	+	-	-	0	0	+
11	+	+	+	+	+	-	-	-	-	0
12	+	+	+	+	-	+	-	-	-	-
13	+	+	+	0	+	-	+	-	-	-
14	+	+	+	0	0	0	0	0	-	0
15	+	+	+	0	-	0	0	0	-	-
16	+	+	+	0	0	-	-	0	-	+
17	+	+	+	0	-	-	-	-	-	-
18	+	+	+	0	0	-	-	-	-	0
19	+	+	+	0	0	-	-	-	-	-
20	+	+	+	0	-	-	-	-	-	0
21	+	+	+	-	-	-	-	-	-	-
22	+	+	+	-	-	-	-	-	-	-

Glosses of the stimulus sentences, by their number:

(1) I know not who what bought has
(2) I know not what who bought has
(3) I know not what which teacher bought has
(4) I know not what who to whom given has
(5) I know not who what to whom given has
(6) I know who what bought has
(7) Who knows what who bought has?
(8) I know not what who bought has for his sister
(9) Who knows what who bought has for his sister?

(10) We know all which books these students have bought, but we know not yet what who exactly has bought

Evidence for the inoperativeness of 'Superiority' in Dutch can be located by corpus search. Here are five specimens:

i. Een goede tool toont je bovendien duidelijk ***hoeveel wat*** kost: overnachtingen, huurauto, …
http://blog.bcdtravel.nl/blog/2013/07/30/wat-zijn-de-voordelen-van-online-boeken/

ii. Iemand die weet ***hoeveel wat*** gaat kosten bij hoeveel Ugl?
http://www.flitsservice.nl/phpBB/overige-en-niet-verkeer-gerelateerd/borreltabel-t77176.html

iii. Maar ik heb duidelijk geen idee ***wanneer wat*** nu precies wordt geïncasseerd.
http://geldofleven.blogspot.co.at/2013/09/grip-op-financien-een-beetje-kwijt.html

iv. Bediening heeft geen idee ***wat wie*** moet doen, http://www.iens.nl/restaurant/1313/amsterdam-roses-cantina/recensie?pagina=3&perPagina=50&score=2

v. Geen idee ***waar wie*** deze kado doos voor ons besteld heeft
http://www.zwangerschapspagina.nl/zwanger-worden-clubs/200254-stoppen-de-pil-273.html

Appendix 4: Ten testimonies against V2 as remnant vP-movement

What follows are nine empirical arguments from German and one from V2 SVO languages in general against swapping the standard *head-movement* analysis of Germanic V2, i.e.

$[XP_j\ [V_{fin\text{-}i}\ [\ldots\ e_j\ \ldots\ e_i]]]$

for an analysis in terms of fronting a *single* phrase, namely a partially evacuated vP:

$[[_{vP}\ XP\ V_{fin}]_i\ [\ldots\ e_i\ \ldots]]$ (Müller 2004).

- **$[t$ +V2$]_{vP}$ conflicts with *opacity*** (because the vP analysis of (1) involves extraction out of a phrase in the clause-initial Spec of the embedded clause.

(1) [*Mit wem*$_i$ hat]$_*$ sie behauptet **[[***e_i habe***]**$_{Spec}$ [er telefoniert]]?
[with whom] has he claimed [has he phoned]

The trace (or the copy) of the fronted PP is in an opaque domain, viz. in a phrase in the top Spec position of the embedded clause. So, the clause ought to be deviant, but it is not.

Note 1: Extraction out of phrases in the spec position of a V2 clause (2c) is deviant (Haider 2010:80). (2a) is extraction out of an embedded scrambled clause. (2b) is long-distance extraction out of the embedded finite clause that contains the scrambled infinitival clause that contains the extraction site. In (2c), the infinitival clause is fronted to the spec position of the embedded finite clause. As expected, extraction becomes deviant when starting from a phrase in a spec position.

(2) a. Was$_i$ hat [ihr e_i zu erklären] keiner riskiert?
what has [her to explain] nobody risked
b. Was$_i$ hat sie behauptet [$_{CP}$ e_i [$_{C'}$ habe [ihr e_i zu erklären]$_j$ [keiner riskiert]]]
what has she claimed [her to reveal] [had [nobody risked]]]
c.*Was$_i$ hat sie behauptet [$_{CP}$ [ihr e_i zu erklären]$_j$ [$_{C'}$ habe [keiner e_j riskiert]]]
what has she claimed [her to reveal] [had [nobody risked]]]

Note 2: „*hat sie behauptet*“ in (1) could not be analyzed as a parenthesis since it does not match the illocutionaly force of an interrogative clause (2a). It is the run-off-the-mill long-distance dependency construction (PP extraction out of an object clause).

(3) a.*Mit wem, so hat sie *behauptet*, habe er telefoniert?
with whom, so has she *claimed*, has he phoned
b. Mit wem, so hat sie *gefragt*, habe er telefoniert?
with whom, so has she *asked*, has he phoned

If ‘hat sie behauptet in (2b) was parenthetical (with deleted ‘so’), it would be as deviant as (3a).

- ***Was*-wh-construktion**

‘*Was*’-wh-construction, a wh-phrase is fronted to the local spec position. Every higher clausal spec position is filled with ‘was’ (what):

(4) a. [*Was* meinst]$_*$ du [*wen* man verhaftet hat]?
[what think] you [whom one arrested has] (Who do you think one has arrested?)
b. [*Was* meinst]$_*$ du [*was* sie glaubt [*wen* man verhaftet hat]]?
[what think] you what she believes whom one arrested has

In (4), 'what' serves as a wh-expletive for clausal spec positions. It is grammatical only in these positions and ungrammatical anywhere else. Therefore, the sequence '*was meinst*' in (3a,b) cannot be a fronted vP. '*Was*' would not be licit within a vP.

Furthermore, the clause-initial wh-item must c-command the lower copies and the locally fronted wh-item, which would not be the case if it were part of vP. This can be seen in the wh-copy-construction. Instead of *was*, a copy of the wh-phrase is placed in each spec-position:

(5) a. [*Wen* meinst]$_*$ du [*wen* man verhaftet hat]?
[whom think] you [whom one arrested has] (Who do you think one has arrested?)
b. [*Wen* meinst]$_*$ du [*wen* sie glaubt [*wen* man verhaftet hat]]?
[whom think] you whom she believes whom one arrested has
'who do you think she believes one has arrested?'
c.*[*Wessen Sohn*] meinst du *wessen Sohn* sie glaubt *wessen Sohn* man verhaftet hat
whose son think you she believes whose son one arrested has
'whose son do you think she believes one has arrested?'
d.*[Gegen *wen*] meinst du *gegen wen* sie glaubt *gegen wen* wir hier demonstrieren?
[against whom] think you against whom she believes against whom we here demonstrate

If 'wen meinst' in (5a,b) was a vP, these clauses should be as deviant as (5c,d), since 'wen' would not c-command the lower copies. This is ungrammatical as (5c,d) exemplify.

- **And in combination with ‚*was-für*'-Split**

(6) a. Was^i sagte sie [was^i_j habe] er [e$_j$ für Argumente] dafür vorgebracht?
what said she what has he [for arguments] for-it produced
'what kind of arguments did she say he produced in favour of it'
b.*Wer sagte [dass die Polizei *was*$_i$ damals [e$_i$ für Argumente dafür] vorgebracht hat
who said that the police *what* then [for arguments for it] produced has

The lower ‚*was*', which is part of the DP '[*was für Argumente*]' is ungrammatical in any other position than the spec-position of a clause since it does not scramble (6b). In (6a), ‚was' would have to be part of the vP. In the clear cases, this is ungrammatical, but (6a) is fully acceptable. Hence, the vP-fronting analysis cannot be the adequate analysis.

- **Extraposition sites are on the right edge only but not phrase-internal**

(7) a. [Argumente konstruieren, *die keiner widerlegen kann*] würde man müssen
[arguments construct who nobody can refute] would one have-to
b.*ob man [Argumente konstruieren, *die niemand widerlegen kann*] müssen würde

In vP-analysis of (7a), the relative clause would be internal to the vP. This would be ungrammatical sind the sequence of verbs ‚*konstruieren müssen*' ist compact. In the standard analysis, as bracketed in (7a) the extraposed clause is at the right edge of the fronted VP.

- **IPP-construction (obligatory *infinitive* instead of *past participle*)**

If a modal would end up preceding an auxiliary that selects a participial form (8c,d), the IPP construction applies instead: The participle-selecting auxiliary is fronted and the modal takes the infinitival form (8a,b). Dutch has an analogous construction.

(8) a. dass er sie nicht *hätte* sehen sollen
that he her not *would-have* see shall$_{Inf.}$ (that he should not have seen her)
b. dass er sie nicht sehen *hätte* sollen
that he her not see *would-have* shall$_{Inf.}$
c.*dass er sie nicht *sehen gesollt hätte* unacceptable in standard German
that he her not see would-have shall$_{Inf.}$
d.*dass er sie nicht [*sehen sollen hätte*] unacceptable in standard German
that he her not [see shall$_{Inf.}$would-have]

In standard German,[65] (8d) is deviant, but (9) is completely innocuous. This follows from the standard analysis, which is bases on (8a). The verbal cluster [sehen sollen] is fronted to the spec position and the finite verb 'hätte' is head-moved. In the vP-analysis, (9) should be as deviant as (9d), which is not the case.

(9) [Sehen sollen hätte]$_*$ er sie nicht
[see shall$_{Inf.}$ would-have] he her not

A Google search [Aug. 1st, 2014] for '*hätte wissen müssen dass*' (would-have know must$_{Inf.}$ that) and its variants produced the following confirming results:[66]

(10) a. „*hätte* wissen müssen dass" 872.000 hits
b. "wissen *hätte* müssen dass" 8980 hits
c. „wissen müssen *hätte* dass" 8 hits
d. „wissen gemusst *hätte*" 0 hits

Both, (10a) and (10b) are standard German patterns. (10b) is more frequent in Southern German and Austrian standard usage. The pattern (10c) is an acceptable pattern only in dialects, for instance in Southern-German and Austrian dialects. (10d) is ungrammatical.

- **[V_1 + V-finit$_3$] sequences**

In German, the lowest verb in the verb cluster (and alternatively any sub-cluster) may be fronted to the clause initial spec position (11a,c).

(11) a. [Gefragt$_3$ könnte$_1$]$_*$ er jemanden haben$_2$
asked could he somebody have
b. dass er jemanden gefragt$_3$ haben$_2$ könnte$_1$
c. [Gewusst$_3$ bräuchte$_1$]$_*$ das keiner zu haben$_2$
known needed this nobody have
d. dass das keiner gewusst$_3$ zu haben$_2$ bräuchte$_1$

[65] There are regional dialects though, that use this variant. Dialect users sometimes overgeneralize it (see 10c).

[66] „*hätte* fragen sollen ob" (would-have ask ought-to whether; 'should have asked whether') : 6850. „fragen *hätte* sollen ob": 73. „fragen sollen *hätte* ob": 0. „fragen gesollt *hätte* ob": 1.
„*hätte* sagen dürfen dass": 1350. „sagen *hätte* dürfen dass": 6. „sagen dürfen *hätte*":0, „sagen gedurft *hätte*": 0.

In the vP-fronting analysis of V2, the fronted verb plus the finite verb would be predicted to form a grammatical subconstituent, which is not the case (as indicated by the asterisk following the bracket):

(12) a.*dass das keiner [gewusst$_3$ bräuchte$_1$ zu haben$_2$]
that this nobody known needed to have
b.*dass er jemanden [gefragt$_3$ könnte$_1$ haben$_2$]
that he somebody asked could have

The sequences (11a,c) are unspectacular results of two instances of fronting, namely fronting to spec and head-movement, in the standard analysis. However, there is no grammatical source for a vP that could be fronted as the vP-fronting analysis would have it. Consequently, (10a,c) are predicted to be ungrammatical in the vP-fronting analysis, which is not the case.

- **Expletive 'es' in Spec**

In German, the expletive for a declarative with no phrase fronted to the initial spec position is ‚es'. In a given clause, it is ungrammatical in any other position. In the paper, this is acknowledged. The auxiliary hypothesis that is produced in order to save the vP analysis is *begging the question*: '*es*' is inserted in order to check an '*es*'-feature: "Therefore, I will make the more specific assumption that German C$_{[*V*]}$ *may optionally* have a feature [*expl*], which can only be matched by the expletive *es* and thereby ensures that the latter cannot be preceded by another item in its minimal CP" (Müller 2004:192). There is no independent evidence for this assumption. It is an example of Popper's notion of 'ad hoc' (see fn. 61).

- **The scope of quantifiers in the clause initial spec position**

If the quantifier is part of a fronted VP, its scope domain is the VP. If the quantifier is not embedded, it can get wide scope. In the vP analysis, any clause-initial quantifier is embedded. Hence, the scope domain of 'jeden Politiker' (every politician$_{Acc.}$) is predicted to be narrow only.

(13) a. [Jeden Politiker haben]$_*$ *mehr als zwei* Leibwächter versucht, davon abzuhalten, ...
every politician have *more than two* bodyguards tried to prevent-from
b. [Jeden Politiker davon abzuhalten …] haben *mindestens zwei* Leibwächter versucht
[every politician from-it prevent …] have *at least two* bodyguards tried
c. [Jeden Politiker abgeschirmt] haben mindestens zwei Leibwächter
[every politician safeguarded] have at least two bodyguards

Since in (13b,c) the scope domain of the quantifier is the fronted phrase, the vP-Analyse predicts this for (13a), too. This is a wrong prediction. In (13a), but not in (13b,c), wide scope is possible and this follows from the standard analysis but not from the vP analysis.

- **Und what principle would guarantee that the vP must be completely hollowed out rather than pied-piped?**

The standard analysis captures the V2 property straightforwardly. Since the spec-position accommodates a single phrase only (14a,b), the finite verb follows a single phrase and (14c) is ruled out immediately. In the vP-fronting analysis, the '*Edge Domain Pied Piping Condition'*

(EDPC; Müller (2004) takes care of this.[67] It "*permits vP movement only if vP is reduced to its edge domain*." This is wishful thinking rather than an explanation. Without independent evidence, *EDPC* remains a phantasy acronym without any empirical content.

(14) a. $[_{vP}$ Jeden e_i beeindruckte$]_*$ er mit dieser Analyse$_i$ nicht
everyone$_{Acc}$ impressed he with this analysis not
b. $[_{vP}$ Mit dieser Analyse beindruckte$]_*$ er nicht alle
with this analysis impressed he everyone$_{Acc}$ not
c.*$[_{vP}$ Alle mit dieser Analyse beindruckte$]_*$ er nicht
[everyone$_{Acc}$ with this analysis impressed] he not

Note that the derivation of (14b) requires two instances of evacuation, since the PP is not the edge-phrase in the base order. The object must be scrambled out and then the PP must be shifted to the edge. Immediate counterevidence for the edge condition comes from split-NP constructions. Let us figure out a vP fronting analysis for (15a), starting from a base order as in (15b).

(15) a. $[_{vP}$ Argumente dafür hat$]_*$ er [keine guten e_i geliefert]
arguments for-it has he no good(ones) produced
b. dass er $[_{vP}$ keine guten Argumente dafür geliefert] hat

In order to arrive at a EDPC-obedient structure of the vP, NP-splitting would have to take place clause-internally. This produces nothing but strongly deviant variants (16a,b), however.

(16) a.*dass er [Argumente dafür hat]$_i$ keine guten e_i geliefert
b.*dass er [keine guten]$_i$ geliefert$_j$ [e_i Argumente dafür e_j hat]

Moreover, (17a) would be the perfectly hollowed out vP, but the resulting clause is gibberish. The variant (17b) is fine in German, but it is an imperfect specimen of a hollowed out vP. The standard analysis predicts the acceptable patterns, the vP analysis the unacceptable ones.

(17) a.*[Keine hat] er dafür gute Argumente geliefert.
b. [Gute Argumente hat]$_*$ er dafür *keine* geliefert

- **V2 is predicted to be unavailable in VO languages**

What is proposed for handling V2 in German must hold for V2 in general, that is, for V2 in other languages as well. The core hypothesis is the idea that V2 equals the fronting of a hollowed out vP. This amounts to an exotic case of remnant-VP-fronting. It is exotic because of the restriction that exactly the edges must be preserved while the rest is evacuated. The phenomena for which remnant-VP formation has been claimed 'peel' the VP like an onion and each subpart qualifies for fronting. Scandinavian languages do not allow any variant of remnant-VP formation. If a VP is fronted to the clause-initial position, it is the entire VP.

It is a fact of all V2-languages that the phrases preceding the finite verb may vary. Any well-formed constituent of the clause may appear in this position (arguments, adverbials, predica-

[67] Note that the ‚V2-property' of Germanic languages is turned into an EDPC property. If this were true, languages should differ as to the obligatory fronting of VPs in declarative clauses. There would be the 'V2' languages that are constrained by the EDPC, and on the other hand there would be languages that front a full vP. Alas, confirming typological data are missing.

tive phrases, etc.). This is true for German or Dutch, as well as for Norwegian or Danish, to name just a few languages. But, neither Norwegian nor Danish would provide the syntactic means for hollowing out a VP. In fact, English suffices for a demonstration, too, since English is V2 in interrogative clauses with a finite auxiliary. Under the vP-fronting hypothesis, the examples in (18) would receive the structure assignment indicated by the bracketings:

(18) a. [[Who$_i$ would$_j$]$_{*vP}$ [these arguments e$_j$ convince e$_i$]]?
b. [[Who$_i$ would$_j$]$_{*vP\text{-}k}$ [you e$_j$ assume these arguments to be likely to convince e$_i$]]?
c. [[How implausible would$_j$]$_{*vP\text{-}i}$ [you e$_j$ assume these assumptions to be e$_i$]]?
d.*[[How implausible$_i$ would$_j$ [e$_j$ assume these assumptions to be e$_i$]]$_p$ you e$_p$]?

In English as well as in the continental Scandinavian Germanic languages, there is simply no canonical way of forming a vP such that it could be correctly fronted in order to derive (18a-c). First, an object (18a,b) or an adverbial (18c) would have to stop at the left edge of a phase that contains 'would' at the right edge. This is impossible, since 'would' always has a right-hand complement in these clauses. Second, the sequence of wh-expression plus 'would' must be pulled out and fronted. However, this would produce a pied-piping effect, resulting in (18d). There is no licit way of getting rid of the 'tail' of embedded sub-constituents of the fronted vP.

In sum, there is neither need nor empirical support for replacing the phrase movement plus head movement analysis of V2 by a theoretically 'superior' analysis in terms of a single movement operation, namely the fronting of a vP constituent. First, there is no phenomenon that the vP-fronting analysis captures, but the head-movement analysis could not. Secondly, central predictions of the vP-fronting analysis turn out to be emprirically wrong. The allegedly theoretically superior analysis turns out as an inferior one empirically. The standard account in terms of A'-movement to the spec-position of a functional head that accommodates the minimal finite verb prevails.