

THE UNPLOUGHED FIELD: SPECULATIONS ON A FORMAL APPROACH TO CHARTED AND UNCHARTED TERRITORY

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TÓM TẮT

Trong bài viết này, chúng tôi cố gắng để xuất một quan điểm về việc hiểu cấu trúc câu tiếng Việt dựa trên các nguyên tắc cú pháp phổ niêm và khung lý thuyết loại hình học tạo sinh. Phương pháp này có thể được coi là một sự hòa giải giữa hai trường phái ngôn ngữ học, hình thức luận và chức năng luận: một mặt, chúng tôi chấp nhận một số cơ chế cốt lõi của hình thức luận chính tông như cách tiếp cận cú pháp đối với khái niệm "c-command" (tạm dịch là quan hệ chỉ huy thành tố), một mặt, chúng tôi chia sẻ với chức năng luận cái ý tưởng rằng cấu trúc câu cơ bản được hình thành chủ yếu bởi ý nghĩa mà người nói muốn truyền đạt. Cuộc thử nghiệm tư duy này sử dụng ví dụ từ những ngôn ngữ khác nhau về loại hình học, trong đó tập trung vào các ngôn ngữ có trật tự Động-Chủ-Tân (Động từ đứng đầu câu), đặc biệt là tiếng Ireland hiện đại.

Từ khóa: ngữ pháp tạo sinh, loại hình học, tầm tác động và thành tố, các ngôn ngữ có động từ đứng đầu câu.

ABSTRACT

In this paper, I try to make a case for understanding Vietnamese phrase structure in terms of universal syntactic principles, introducing the framework of generative typology. This approach can be viewed as offering a rapprochement between conventional formalist vs functionalist research paradigms: whilst adopting several core mechanisms of mainstream generativism, including especially a syntactic construal of scope relations ("c-command"), the approach nevertheless shares with functionalist approaches the idea that underlying phrase structure is largely shaped by the meaning that speakers intend to convey. This thought experiment uses examples drawn from a variety of typologically distinct languages, with a focus on Predicate-Initial ('VSO') languages, Modern Irish, in particular.

Keywords: generative grammar, typology, scope and constituency, predicate-initial languages

“...Between my finger and my thumb/The squat pen rests/I’ll dig with it.”

(Seamus Heaney, *Digging*, 1966)*

I. INTRODUCTION/MÓ ĐẦU

People, even more than languages, are shaped by local circumstances: by their place – sometimes, their failure to find a place – within a given geographical, intellectual, or cultural community, and by that community’s relationships to others around it. This is the Structuralist premise. Had I been born anywhere else in the English-speaking world, or at a different time, with a different attitude to foreign languages, with a less ambivalent view on Standard English, had I gone to a different graduate school, I would be presenting a very different paper here. Much more likely, I wouldn’t be in academia at all: I was supposed to become a lawyer. But I was born and raised in Northern Ireland, around the time of the euphemistically named “Troubles” (1969-1998), with a congenital love of languages, a certain distrust of Standard English, and an implacable desire to get away. After high school, educational opportunities allowed me to escape: first to Cambridge, where I studied Modern & Medieval Languages – home of theoretical ambivalence and equanimity (a school in the tradition of “if it’s Tuesday, it must be glossematics”, Pullum 1984); then to London, to study Philosophy & Psychology of Language (with hardly a tree-diagram in sight, but many thought experiments and case studies of acquired aphasias); thence to Los Angeles, where I studied for my PhD at the University of Southern California. At USC in the late 80s, as in many departments at the time, there was a low-intensity academic war going on between formalists and functionalists, with each side courting prospective PhD students: my first graduate advisor, Osvaldo Jaeggli, who had been educated by Jesuits in his home country, told me half-jokingly that it was “a battle for souls.” I think he was joking, anyhow. At all events, I was persuaded then – and remain so today – that the ‘generativist enterprise’ provides us with an important and valuable set of heuristics for describing natural language grammars, and for probing the limits of grammatical variation. And so I committed to write my PhD dissertation using the version of the generative framework known as “GB” (Government & Binding Theory, Chomsky 1981). Ironically, given my desire to escape the north of Ireland, I chose to study Modern Irish syntax, and spent the next five years working on the intricacies of Irish clause structure. I also worked on Irish English (aka. Hiberno-English), a topic to which I have recently returned (Duffield, in press.).

And, throughout my career, my intellectual and moral guides have been my compatriots, both from the West of the province: the incomparable poet Seamus Heaney, and the equally

incomparable linguist and mentor, James (Jim) McCloskey. Jim is originally from Derry, but most of his career has been a faculty member of UC, Santa Cruz, in the United States. The work of both of these men – as well as their passionate responsibility to the essence of language – have directed my own research in equal measure.

Over the last 30 years, I have worked towards an understanding of Vietnamese clause structure, specifically, the cartography of the IP domain in Vietnamese (what Germanists call the *Mittelfeld*). Through a series of papers and presentations, and with the help of colleagues – Trang Phan and Tue Trinh, in particular (Duffield *et al.* 2019) – I have offered initial sketches of Vietnamese phrase structure with respect to a wide range of grammatical categories (including tense, grammatical aspect, modality, and negation); see Duffield (1998, 2001, 2007, 2010, 2011, 2013, 2017, 2019, 2022). This work has inspired other generative researchers to address many of the same issues, and led them to offer insightful critical revisions, such that as a research community we have a much more sophisticated and informed view of the pre- and immediately post-verbal syntax of Vietnamese than was available even five or ten years ago; see esp. Phan (2023).

‘Sophisticated and informed’, that is, in the context of a particular theory (let’s call it **Generative Typology**). As I present this discussion, I am keenly aware that my audience shares few of the assumptions that support such analyses, and will have little sympathy for the kinds of questions I am pursuing answers to. This at least has been the reaction to virtually every previous presentation that I have made in Vietnam over the years. Given that, the main purpose of this paper is to make a case for my approach to language description and classification: not so much a defense of mainstream generativism – for I am no longer in the mainstream of anything – more a demonstration that a deductive approach along generative lines can do some interesting work. As with Seamus Heaney and his pen, I have no other way to work at this point: “...*Between my finger and my thumb/The squat pen rests/I'll dig with it...*”

The intended focus of this paper was going to be the neglected area to the left of the IP domain, at the very top of the clause: what has come to be known as the ‘left periphery’ (Rizzi 1997, 2002),¹ and which subsumes the German *Vorfeld*. The “unploughed field” of the title. Specifically, within

¹ It is called the “left periphery” because the empirical base of generative grammar mostly comprises languages with right-branching phrase structures (top-left to bottom-right). Such languages include English, Italian and French: had Chomsky or Rizzi been a native-speaker of Japanese or Korean (with left-branching syntax), we would likely now be investigating the *right* periphery, and reverse orders of functional categories. In hierarchical terms, however, not much would be different.

the camp I represent, there is an urgent need to gain a better appreciation of a set of dynamic, multifunctional, grammatical categories on the left edge of the clause, including the so-called ‘complementizers’ {*rằng*, *liệu*}, the ‘topicalizer’ {*thì*}, the ‘relativizer’ {*mà*} and the ‘copular linker’ {*là*}. Understanding how these particles and their associated arguments interact – as well as how they should be distinguished from their “Standard Average European” counterparts – is crucial to achieving a complete picture of Vietnamese phrase structure.

However, any adequate discussion of that topic involves a considerable number of background assumptions and references, not to mention an arcane technical vocabulary, neither of which we share. And so instead I would like to try to motivate the general approach I have taken, to explain why I believe in a narrow construal of grammar, tightly constrained by formal principles.

II. RESEARCH METHODS/PHƯƠNG PHÁP NGHIÊN CỨU

In place of an actual experiment, I present a thought experiment, with predicted as opposed to actual results. I leave it to the more empiricist audience members to construct their own data sets.

2.1. *Experimental Set-Up: “Pick any sweet”*

Let us start with a very simple metaphor. Consider a bag of sweets (US. candy), like the one illustrated in Fig. 1. below:



Fig. 1. A bag of sweets.

For the purposes of this experiment, suppose that each type of sweet represents a different lexical or grammatical category {N, V, A, D, T, ASP, NEG, C, P, etc.,}; furthermore, assume that sweets associated with the same “participant role” or “syntactic function” have the same color. Some sweets will be transparent, invisible almost, but they will have the same shape and flavor as their colored counterparts, where flavor stands for grammatical interpretation.

Let’s also assume that to form a complete set – to express a grammatical sentence – each bag must contain (minimally): one sweet representing the clausal subject, and one representing a predicate head – plus any object sweets just in case the head is transitive. In addition, a viable bag must contain an expression of polarity (+/-), one of temporal anchoring (\pm PAST), and one of illocutionary force (indicating whether the collection as a whole should be interpreted as a declarative, interrogative, exclamation, or imperative).

Assume that these are essential ingredients of grammatical sentences, whatever your preferred theory – albeit some ingredients may be colorless.² Simple observation and induction suggests that after the age of two, no fully-fledged grammar permits sentences that consist only of subject-predicate tokens (bare propositions). The old Hollywood movie notwithstanding, utterances like “*Me, Tarzan! You Jane!” may be fully interpretable, but they do not count as sentences in any natural language.

Now let’s assemble ten bags containing the eight or so constituent elements listed in (1), drawing vocabulary elements from English, Vietnamese, and any eight other natural language varieties. (Take your pick.) Example (2a) represents the abstract logical form of the sentence to be expressed. Immediately, it should be noticed that this form of predicate calculus places the polarity and temporal operators (\neg , PAST) in separate formulae, repeating the core predicate-argument structure (proposition); it also treats the indexical expressions THE and THAT as primitives.³ Examples (2b)

² In typical cases, only a few of the lexical sweets will be transparent. However, in cases where the clausal interpretation is entirely recoverable from the immediately preceding discourse, most of the sweets may be transparent; for example, in cases of VP-Ellipsis and Sluicing (*She mentioned that she had instructed someone to bring the documents, but she didn’t say who [.....].*)

³ See Duffield (in prep.). While it is possible to express tense and polarity within a single formula e.g. PAST(NEG(READ, the_woman, that_book))), this would imply LFs for languages that order Tense above Negation different from those that select the opposite order. The intention here is to put the ordering (linearization) into the syntax proper, keeping LF as a universal level of representation. This is what the conjunction may achieve.

and (2c) illustrate the natural language translations of (2a) into English and Vietnamese, respectively:

1.
 - a. PRED1: READ
 - b. PRED2: INTERESTING
 - c. SUBJ: (THE_)WOMAN
 - d. OBJ: (THAT_)BOOK
 - e. IND1: THE
 - f. IND2: THAT
 - g. POL: \neg
 - h. TENSE: PAST

2.
 - a. $\neg(\text{READ}(\text{THE_WOMAN}, \text{THAT_BOOK}) \wedge \text{INTERESTING}(\text{THAT_BOOK}) \wedge \text{PAST}(\text{READ}(\text{THE_WOMAN}, \text{THAT_BOOK})))^4$
 - b. (The) woman did not read that interesting book.
 - c. Người phụ nữ đã không đọc cuốn sách thú vị đó.

So, ten bags, each with a capacity for the ca. eight constituents that comprise the local translations of (2a). Let's now drop in these sweets in any order, then shake up each of the bags so that the contents are well mixed. Assume that every constituent is of roughly equal size and weight, so that none is intrinsically more likely than any other to settle to the bottom. Now offer one of the bags to the person sitting next to you, and have them – without looking inside - pick out the sweets one by one, starting from the most accessible, at the top of the bag, working down to the bottom, and laying the sweets out in sequential order, from left to right.⁵

⁴ It is crucial to stress that these are “pre-sentential” LF constituents, not independent sentences: although two of the conjuncts may contain the same proposition (READ(THE_WOMAN, THAT_BOOK)), neither is realized until they are unified into a single sentence (the ‘initial symbol S’). Hence there is no contradiction between $\neg(\text{READ}(\text{THE_WOMAN}, \text{THAT_BOOK}))$ and $\text{PAST}(\text{READ}(\text{THE_WOMAN}, \text{THAT_BOOK}))$, since the first formula lacks FINITENESS and the second POLARITY: until these are unified, there is no assertion involving the embedded propositions. Note that I use the symbol \wedge to link the formulae, to try to avert confusion with normal logical conjunction, which links independent sentences.

⁵ For purposes of exposition, I'll start with right-branching languages, for which the linearization rules are more straightforward: *modulo* linearization, these generalizations work for left-branching languages as well, since I will be



Fig. 2. DALL.E’s three attempts at “...a small striped paper bag”

A word in passing about these illustrations, which were created using the DALL.E AI. As pretty as they look, and as fast as they were generated, the software interpreted my instructions in Fig. 3. in a way that no human would, regularly misapplying the scope of the predicate “striped”. Without an implicit theory of constituency, this is what you get.

“A hand picking boiled sweets out
of a small, striped paper bag,
each sweet labelled with a part of
speech (Noun, Verb, Tense
Marker, etc) ”

 Nigel x DALL-E
Human & AI

Fig. 3. Text Instructions to DALL.E

Now, it should be clear that, were these ordinary bags of ordinary sweets, the probability of regularly finding the same sequences would be vanishingly small. The statistically-minded may wish to consider the probability of obtaining virtually the same sequence of eight constituents, within ten trials. The fact that English and Vietnamese display near identical surface word orders – except for the position of the demonstrative {that, đó} – is remarkable, to say the least; it is also, of course, what makes Vietnamese so very attractive to the English-speaking learner!

We don’t find this kind of coincidence with regular bags of candy, in the normal world of contingencies. However, in the world of syntax very similar first-to-last orders – more precisely, *top-to-bottom* orders – are far from rare. Indeed, given the right theory, they are fully predictable.

concerned with relative height and relative proximity to core lexical heads, rather than absolute linear order. Time permitting, I’ll address so-called ‘non-configurational languages’ (Hale 1978) in the discussion period.

III. RESEARCH RESULTS/KẾT QUẢ NGHIÊN CỨU

3.1. Grammatical Shuffling

The first point to observe is that – before any sweet is picked from a bag – a statistical miracle will have taken place at the shaking stage. Unlike normal shaking, which produces further entropy, ‘grammatical shuffling’ takes an unordered set and groups items by color, with the subject and object modifiers cohering around their respective head nouns, such that no object modifier will ever be closer to the head of the subject expression than to its own head noun, and *vice versa*.

In addition, in many bags finite tense elements will have become fused to the main predicate (V+T), producing a blended color; in other bags, where the Tense element is colorless, it is the polarity element that fuses with the predicate (V+Neg); in still others, negation, tense and verb may fuse with one other (Neg+T+V). Let’s call this fusion process **Head Merger**.



Fig. 4. Normal vs. Syntactic Shuffling, and Head Merger.⁶

⁶ Fig. 4., showing DALL.E’s failed attempts at quantification (4a), (4b). The very explicit text instructions required DALL.E to generate “A picture of nine boiled sweets in a transparent bag: two green sweets, one blue sweet, one red sweet, one purple sweet, four brown sweets. All of the sweets of the same color should be next to one another.” DALL.E was then asked to illustrate Head Merger: “exactly six boiled sweets in a row: the first red, the second blue, the third purple, the fourth with blue and purple stripes, the fifth with red and purple stripes, the sixth with red and blue stripes”. Fig. (4c) was its best attempt.

Thus, whilst a random bag of real sweets will look like that in Fig. 4a, grammatical shuffling will produce something more like Fig. 4b; also, some bags will contain a few “fused” constituents, like those in Fig. 4c. From an examination of these figures, it becomes obvious that DALL.E is challenged by the problem of quantification, in addition to its problems with local predication. Again, these are not interpretations available to human parsers.⁷

Now I suppose that any adequate theory of word order, whether formal or functionalist, must incorporate some principle of **Semantic Coherence**, in order to ensure that modifiers are locally/spatially associated with their respective heads; in no language do the strings in (3a) and (3b) receive the same interpretation.

3. a. Người phụ.nữ **đã không** **đọc** cuốn sách **thú.vị** **đó**.
- b. Người phụ.nữ **thú.vị** **đó** **đã không** **đọc** cuốn sách.

Also, in spite of the fact that some modifiers, such as ‘floated quantifiers’, can be found at some distance from their head noun, in positions predicted by generative theory, I assume that this is not what crucially distinguishes the generative-typological approach from its functional counterparts either. Though here once more DALL.E’s cousin, ChatGPT, fails in theoretically interesting respects. This is shown by the contrast in (4) between the translations into French, Italian, and Japanese on one hand, and Vietnamese, on the other (the first three languages all tolerate floated quantifiers, Vietnamese doesn’t):

4. a. **Les femmes ont toutes lu ce livre intéressant.**
the women have all.FEM.PL read that book interesting
‘The women have all read that interesting book.’
- b. **Le donne hanno letto tutte quel libro interessante.**
the women have read all.FEM.PL that book interesting
‘The women have all read that interesting book.’
- c. **女性たちはみなその面白い本を読みました。**
josei-tachi wa mina sono omoshiroi hon o yomimashita.

⁷ It has long been observed that very young children sometimes have problems in interpreting quantified noun-phrases (e.g. “the second striped ball”): see e.g., Matthei (1982). However, as shown in Crain & Fodor (1989), such errors are easily remedied by providing a clearer training context: no child would consider Fig. (4a) a valid representation of the text description that DALL.E was given to work with.

woman-PL TOP all that interesting book OBJ read-PAST

‘The women have all read that interesting book.’

d. **Những phụ nữ** đã đọc **hết** cuốn sách thú vị đó.

(does *not* mean: “The women have *all* read that interesting book”.)

For full disclosure, here is the relevant part of our discussion:

The screenshot shows a conversation between a user and a large language model (LLM) about the translation of English sentences into Vietnamese. The user asks about the translation of "All of the women arrived at the hotel" and receives the response: "Tất cả phụ nữ đã đến khách sạn." The user then asks about "All of the women read that interesting book" and receives the response: "Tất cả phụ nữ đã đọc cuốn sách thú vị đó." Finally, the user asks how to say "The women have all read that interesting book" and receives the response: "Những phụ nữ đã đọc hết cuốn sách thú vị đó." The LLM consistently uses the quantifier 'tất cả' (all) instead of 'tất cả' (some/all).

In Vietnamese, "All of the women arrived at the hotel" can be translated as:
"Tất cả phụ nữ đã đến khách sạn."

What about "All of the women read that interesting book"

In Vietnamese, "All of the women read that interesting book" can be translated as:
"Tất cả phụ nữ đã đọc cuốn sách thú vị đó."

Now, how do you say "The women have all read that interesting book"

In Vietnamese, "The women have all read that interesting book" can be translated as:
"Những phụ nữ đã đọc hết cuốn sách thú vị đó."

Here again, for AI models it is approximate linear adjacency rather than constituency that determines the selection of the quantifier (thus, *hết* is chosen in place of *tất cả*). Humans don't parse this way. Whilst these errors remind us of the crucial importance of constituency, I will now focus on the behavior and distribution of the “non-lexical” categories: Negation, Tense, and on the ways in which these interact with the main predicate, and/or fail to attach to other items. I'll suggest that it is these latter interactions that most forcefully demonstrate the advantages of the generative-typological approach over its functionalist alternatives.

So, let's now start to draw sweets out of the bags.

3.2. The Draw

From what has been observed over decades of typological research – especially from work in the Greenbergian tradition (Greenberg 1963) – it is possible to predict the following sequences of visible⁸ constituents, with “overwhelmingly more than chance frequency”:

1. Green sweets (SUBJ) will precede brown sweets (OBJ), *unless* the object phrase is additionally marked as a Topic or Focus element (*cf.* 5a-d) below, or bears “+WH” features (in languages with ‘wh-movement’);
2. Purple colored sweets (main predicates) may be the first visible element, but only if these have been pre-merged with Tense or Polarity elements, such that negation or tense, or both, also precedes the SUBJ phrase (*cf.* 6a-d, 7a-d): purple/blue or purple/red/(blue) sweets, only. Unalloyed purple sweets (unmerged predicates) are never found clause-initially, leaving negation and tense in clause-medial position: *[PURPLE-GREEN- GREEN-BLUE-RED].
3. Unmerged Tense will never intervene between the predicate and its (non-topicalized) object – or between the verb and any expression of grammatical aspect (ASP), if ASP is projected: *V-T-ASP, *ASP-T-V (e.g., *..không đang đã đọc cuốn sách đó)
4. Demonstratives may fuse with other indexicals, or appear unmerged. In their unmerged form, they must appear peripheral to the noun phrase that they modify: that is, they must not intervene between the head noun and other associated modifiers (*cuốn sách đó thú vị); moreover, determiners, but not demonstratives, may merge directly with the noun head;⁹
5. In principle, unmerged Tense and Polarity elements are unordered with respect to one another. However, both of these functional categories must (i) *precede* all other lexically-related grammatical categories, (ii) *follow* markers of illocutionary force and topic markers, in right-branching languages.

Let us take each of these points in turn. I shan’t dwell on the first, which incorporates a restatement of Greenberg’s Universal #7, since there are many plausible explanations for canonical

⁸ It should be noted that in virtually every bag, the first sweets to hand will be invisible: these are the Illocutionary Force markers. This was to have been the focus of this presentation, now precluded by time constraints.

⁹ This is no more than a principled restatement of the first part of Greenberg’s Universal #20 "When any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite." As for the second part of Greenberg's "the exact opposite" N-A-DEM is also predicted: the "same order" N-DEM-A is predicted only in cases of N/DEM merger; see Duffield, (in prep.), for discussion.

$S < O$ preference, functionalist explanations among these. I would suggest, however, that only a formal account can explain this tendency in non-circular terms (i.e., in terms of the ‘1-Arg’-hypothesis (Duffield 2022: *cf.* ‘little v’, Hale & Keyser 1993): otherwise, SUBJECT means little more than ‘most prominent argument’; see McCloskey (2001)).

In this regard, it’s worth pointing out that non-canonical object-fronting is subject to distinct formal constraints in different languages, while the subject expression in OVS is marked in exactly the same way as in the corresponding canonical structures. For example, although O-S order in German V₂ constructions is derived by movement to a syntactically more closely-integrated position than is the case for Vietnamese or Japanese (topicalization): in all of these languages, object-fronting is restricted to root (or pseudo-root) contexts; initial subjects show no root/non-root asymmetry.

- 5. a. Cuốn sách thú vị đó, (**thì**) người phụ nữ (đã) không đọc.
- b. i. Das interessante Buch **hat** die Frau nicht gelesen.
ii. *Das interessante Buch die Frau hat nicht gelesen.
iii. Das interessante Buch, die Frau hat's nicht gelesen.
iv. *Er glaubt, [daß [das Buch hat die Frau nicht gelesen]].
- c. i. その面白い本 **は/*を、女性が** 読んでいません。
sono omoshiroi hon wa/*o, josei ga yondeimasen.
ii. 女性 **が** その面白い本 ***は/を** 読んでいません。
josei ga sono omoshiroi hon *wa/o yondeimasen.
iii. その面白い本 **は** 彼は その女性が 読んでいないと信じています。
sono omoshiroi hon wa, kare wa sono josei ga yondeinai to shinjiteimasu.
iv. *彼は その面白い本 **は** その女性が 読んでいないと信じています。
kare wa sono omoshiroi hon wa, sono josei ga yondeinai to shinjiteimasu.

Having briefly considered the $S < O$ preference, and concomitant restrictions on $O < S$ order in SO languages, I will now turn attention to the other ordering principles given in 2-5 above. Time constraints preclude any comprehensive discussion, so I will concentrate attention on the next on the list. (Given three hours rather than 30 minutes of your time, I would happily provide evidence in support of all of these claims; moreover, I’d explain why these claims are not independent of

one another, but rather are corollaries of more basic theoretical principles. But 15 minutes are all I have left.)

So now consider the second principle, which describes that minority of languages – roughly 10%, or one bag in 10 – in which the subject phrase (if overt) is not the first phrase out of the bag, namely, predicate-initial languages. This principle can be seen as a more precise formulation of two of Greenberg's Universals, #6 and #16, which are reproduced here, for convenience:

#6: "All languages with dominant VSO order have SVO as an alternative or as the only alternative basic order."

#16: "In languages with dominant order VSO, an inflected auxiliary always precedes the main verb. In languages with dominant order SOV, an inflected auxiliary always follows the main verb."

Before considering some data, there are several points to observe. First, it is striking that $\frac{1}{3}$ of Greenberg's generalizations concerned with typology (#1...#6), and $\frac{1}{5}$ of the generalizations that are specifically concerned with syntax (#7...#25), reference VSO order – the other referenced order is SOV; this in spite of VSO order accounting for only 12% of the world's languages. By contrast, there are no universals, either absolute or implicational, that follow from SVO order. (One plausible reason for this, proposed most famously by Kayne (1994), is that *all* languages are underlyingly SVO:¹⁰ if true, then logically SVO cannot define a sub-type of itself).

The second point to observe is that the term VSO is quite literally a category error, since “verb” is a label for a lexical *category*, whereas S and O designate grammatical *functions*. There are no “VSO languages” any more than there are “NVO languages” – even if predicates are typically realized as verbs, and subjects are typically noun-phrases. It just happens that verbs are characteristically fused with Tense and Negation elements, whereas adjectives and nouns typically resist such fusion. In some theories, of course, this is true by definition.

So now, Greenberg's Universal #6 misses the point, namely, that the SVO orders found in some dominant VSO languages invariably involve the uninflected alternant of the verb; in all such cases, tense and negation are carried by a clause-initial auxiliary, or else merged with a complementizer elements at the clausal periphery. There are no VSO languages (or any predicate-initial languages)

¹⁰ Actually S-v-V-O: see below.

in which the verb is inflected for Tense or Negation in SVO contexts. Consider the following examples from Irish and Tagalog, respectively:

6. a. Ní léigh an bhean an leabhar suimiúil sin.
 NEG read.PAST the woman the book interesting DEM
 ‘Người phụ nữ *đã* không đọc cuốn sách thú vị đó.’
- b. Ní raibh an bhean ag léamh an leabhair suimiúil sin.
 NEG be.PAST the woman PROG read the book interesting DEM
 ‘Người phụ nữ không *đang* đọc cuốn sách thú vị đó.’
- c. Hindi nagbasa ang babae ng interesanteng aklat na iyon.
 NEG read.PAST the woman the interesting book REL DEM
 ‘Người phụ nữ *đã* không đọc cuốn sách thú vị đó.’
- d. Hindi nag.ba.basa ang babae ng interesanteng aklat na iyon.
 NEG read.CONT the woman the interesting book REL DEM
 ‘Người phụ nữ không *đang* đọc cuốn sách thú vị đó.’

The Irish examples (6a, 6b) illustrate the finite/non-finite alternation: where the auxiliary (*raibh*) immediately follows negation in (6b), the uninflected verb follows the subject. By contrast, Tagalog lacks pure tense auxiliaries, and so fuses tense and aspect morphemes on the finite verb,¹¹ which invariably precedes (non-pronominal) subjects. The point here is that there are no alternating VSO languages in which it is the *uninflected* form that is initial, with the finite alternant appearing in clause-medial position. Logically, this is a possible alternative; grammatically, it isn't. (Of course, there *are* languages in which both inflected and uninflected forms of the predicate appear medially in surface order: these are exactly the ‘elsewhere’ SVO class, to which both Vietnamese and English belong.)¹²

¹¹ The non-finite (citation) form of the Tagalog verb ('to read') is *masa* (magbasa)): fusion with functional categories involves both infixation and initial consonant mutation /m/ → /n/).

¹² And Irish too, once we think about it more closely: V_{FIN} SO languages are really T [S (V) O] languages, with verb-raising.

We are nearly ready to set out a solution that derives the restrictions in (1) and (2) – indeed (1) through (6), from first principles. But first let's critically consider Greenberg's Universal #16. This generalization correctly states that in dominant VSO languages, auxiliaries always precede the verb they are associated with, as illustrated in (6b). However, what it fails to mention is that in the alternative SVO constructions in such languages, the auxiliary consistently precedes all other constituents (with the possible exception of clausal negation); that is to say, there are no dominant VSO languages with alternative S-AUX-V-O orders. Notice that this point is independent from the previous one, at least given Greenberg's view of categories, since for him, the position of auxiliaries need not be correlated with the position of inflected verbs. In other words, for 'atheoretical Greenbergians' the complementary distribution of tensed auxiliaries and tensed verbs must remain a phenomenal coincidence. (Not so for generativists, as we'll see directly. Indeed, this complementary distribution sits at the foundation of generative grammar, namely, Chomsky (1957: *Syntactic Structures*), the work that forms the basis of all subsequent progress in understanding how phrase structure grammar works; see especially Emonds (1970), Pollock (1989).

The whole discussion of this section can be summarized as follows: (among right-branching language varieties) there are no 'VSO' languages, there are only T-SUBJ or SUBJ-T languages. In the next section, I will argue that even this categorization is too open: T-SUBJ is the only possible underlying order.

IV. DISCUSSION & INTERIM CONCLUSION/BÀN LUẬN VÀ KẾT LUẬN TẠM THỜI

4.0 Towards a formal account

The explanation I will offer may surprise those who imagine generative syntax to be composed of arcane, autonomous rules. Such rules exist of course – the 'ECP', the 'EPP', the 'Extension Condition', the 'Superiority Condition', to name only a few that have cast their spell over the years – but at least the version of generative grammar I'll present here is grounded in the idea that the function of syntax is to convey compositional meaning,¹³ more specifically, meaning as expressed in first-order predicate calculus, as well as to convey non-propositional, indexical information – in the most efficient way compatible with the prosaic requirements of linearization. (If we could

¹³ It could be argued that this view of underlying phrase structure owes more to Generative Semantics than to mainstream generative syntax. Whether or not this is true, it is hardly the first attempt to identify underlying structure (d-structure) with LF directly, rather than by the more conventional cyclical progression; see e.g., Brody (1995).

communicate through telepathy, we wouldn't need word-order rules: there is no phonetic sequence in the thought "I love you", yet in the natural language translations of that thought, some word order is a matter of practical necessity. Thus, syntax mediates between the instantaneity of the thought and the linear flow of phonemes, in the uttering of that thought).

4.1 From LF to underlying structure: Scope & Constituency

So let us return now to the formulae in (2a), repeated here for convenience, and consider the most economical way of expressing those semantic constituents in natural language syntax:

2. a. $\neg(\text{READ}(\text{THE_WOMAN}, \text{THAT_BOOK}) \wedge \text{INTERESTING}(\text{THAT_BOOK}) \wedge \text{PAST}(\text{READ}(\text{THE_WOMAN}, \text{THAT_BOOK})))^{14}$

I will assume that the optimal translation will be one that best conforms to the following overarching principle of isomorphic scope (ISP):

Isomorphic Scope Principle: in the absence of intervening factors, semantic scope relations at the level of LF are directly reflected in the underlying phrase structure of natural language syntax; in other words "semantic scope" implies "syntactic scope".

Syntactic scope is formalized as 'asymmetric c-command' (see Reinhart 1976, Chomsky 1981, and subsequent work). It comes in two versions: (i) *external* scope, where an operator takes scope over/modifies a whole phrase; (ii) *internal* scope, in which a modifier is interpreted as affecting only a sub-part of the phrase, typically only the head. See Figs. (5a) and (5b), respectively. In either case, the operator/modifier should c-command "all and only" the lexical material with which it is construed.¹⁵

¹⁴ To stall confusion, this representation is not intended as a specifically "English LF" (supposing that were even a coherent notion): I suppose that this LF is the interpretation of every natural language translation of this thought, no matter the pronounced form.

¹⁵ In the present case, external scope involves a *head* operator operating on a *phrase*, while internal scope, the modifier is a *phrase* c-commanding a *head*. Of the other logical options, one is ruled out by the principle of Exhaustive Endocentricity – there must be a unique phrase-internal head (Duffield 2022). However, it is quite possible for phrases to take external scope: I suppose that this is the correct analysis of non-restrictive relative clauses, and of the antecedent clauses of conditionals, for instance. Notice that it may also be possible to dispense with the internal/external distinction given a multi dimensional analysis of predication and indexicals, by which (THAT_BOOK) and INTERESTING (BOOK) are treated as arguments on different underlying planes to be unified through PF linearization. This clearly takes us beyond the scope of this paper, however.

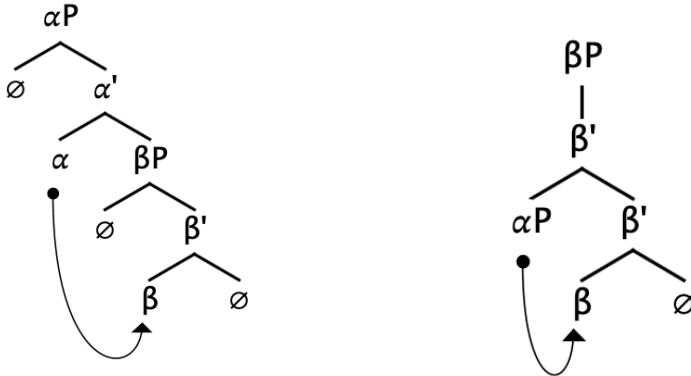


Fig. 5. Scope as c-command. Fig. (5a), external scope; Fig. (5b), internal scope.

In the case of the realization of (2a) in any natural language, the ISP has three immediate consequences for underlying structure:

- A. the two semantic operators, Negation and Tense, must c-command the proposition p they modify ($\neg p$, PAST p): since p includes all of the lexical content of (2), T and Neg must c-command the predicate and its arguments, including the subject;
- B. the indexical expressions, THE and THAT, must c-command the entirety of the noun phrases that they modify; however, neither expression may c-command any other lexical material;
- C. the predicate INTERESTING, often expressed as an adjective, should c-command the noun that expresses BOOK from within the noun-phrase (internal scope); it must not c-command any phrase with which it is not construed; likewise, the arguments expressing THE_WOMAN and THAT_BOOK must c-command the predicate they are construed with (again, they must not c-command any other lexical head).

Notice that these principles make exclusive reference to *hierarchical relationships* between constituents: c-command does not care about linear precedence. Nevertheless, as has been discussed repeatedly in the history of generative grammar, the syntactic calculus allows us to derive linearization constraints from hierarchical ones.¹⁶

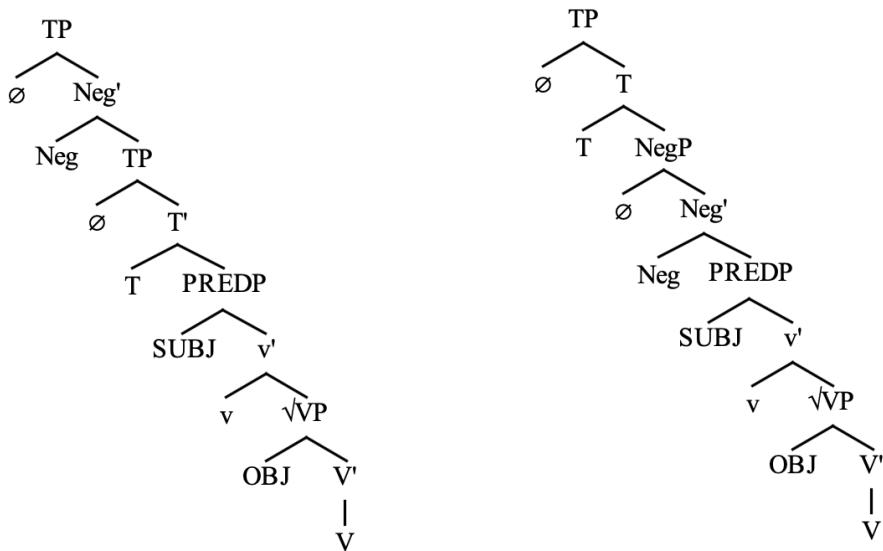
¹⁶ And *vice versa*, given some additional principles (Kayne 1994, 2021).

4.2. Deriving Constituent Order

4.2.1. Clausal Word-Order

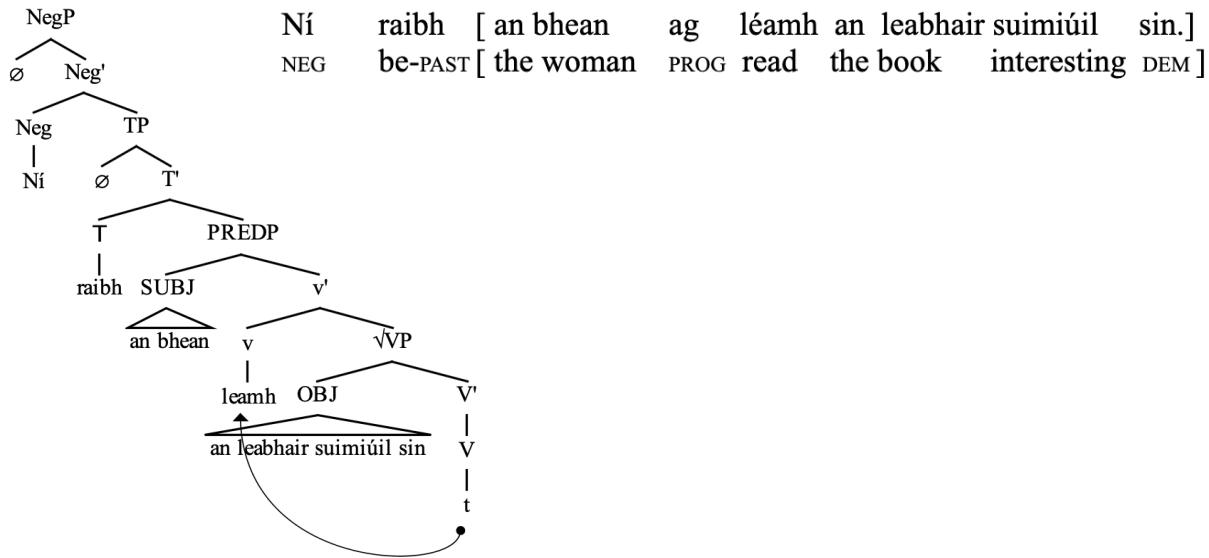
It's now time to consider a range of possible realizations of (2a) consistent with the corollaries A-C above. The most economical expression of (2a) will be one that maps the conjunct formulae linked by \wedge onto a single structure, thus eliminating repetition. With respect to *clausal word-order*, this produces the grammatical underlying variants in (7a)-(7d), whilst excluding those (8a)-(8d), amongst others – as ungrammatical.¹⁷

7. a. NEG-T-{SUBJ; OBJ-V}, T-NEG-{SUBJ; OBJ-V}: (-)



¹⁷ As always, the situation is more complex than these analyses might suggest, since there is compelling evidence for Irish, (and other T[SVO] languages) that the SUBJECT raises out of the predicate phrase (McCloskey 1994, 1996, *et seq.*): in a forthcoming paper, Duffield (in press.), I show that NOM Case is licensed by a supervenient Aspect head. However, the point remains that the SUBJECT does not raise above T, in contrast to “surface SVO” varieties, such as Vietnamese and English.

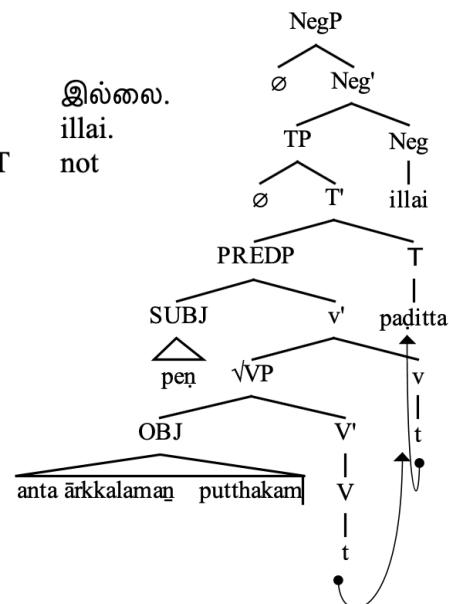
b. NEG-T-{SUBJ; V-OBJ} (e.g. Irish)



c. {SUBJ; OBJ-V}-T-NEG (e.g., Tamil)

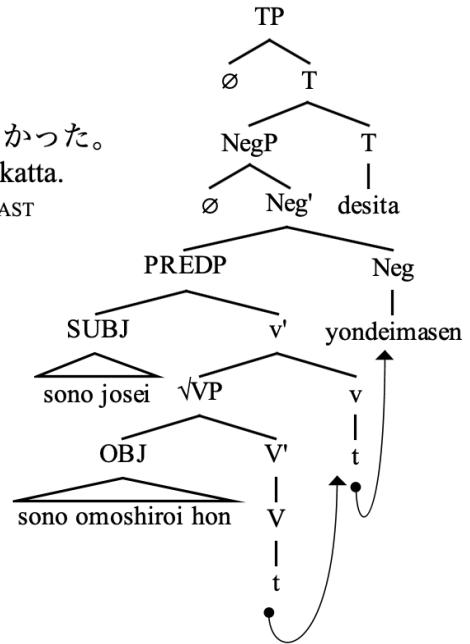
பெண் அந்த ஆர்க்களமான புத்தகம் படித்த
pen̩ anta ākkalaman̩ putthakam
woman that interesting book read.PAST

இல்லை.
illai.
not



d. {SUBJ; OBJ-V}-NEG-T (e.g. Japanese)¹⁸

その女性、 その おもしろい 本 を 読んでなかった。
 sono josei, sono omoshiroi hon o yonde.na.katta.
 that woman that interesting book ACC read.not.PAST



8. Excluded underlying orders:

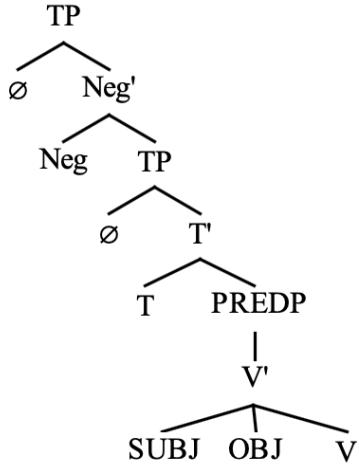
- (i) *SUBJ-T-NEG-V-OBJ;
- (ii) *SUBJ-{NEG/T}-V-OBJ;
- (iii) *T-SUBJ-V-NEG-OBJ;
- (iv) *T-SUBJ-OBJ-NEG-V;
- (v) ...

The absence of either alternant in (7a) as a surface order is due to the obligatoriness of {V-v} merger. The reader might ask why V needs to be split in this way, such that the lexical verb read has only a THEME argument, with the AGENT argument the woman being licensed by a separate v head (responsible for creating transitive verbs); *cf.* the “1-Arg” hypothesis, see Duffield (2022). Why couldn’t the predicate phrase contain an unordered set of modifiers, equally distant from the predicate head, as in (9)? One answer is that this is required to guarantee AGENT<THEME order

¹⁸ In fact, there is good evidence that definite noun-phrases (both subjects and objects) universally raise out of the Predicate Phrase with which they are initially associated. In some languages this movement may be invisible, either because the movement is string-vacuous or because it is covert – no deletion of the lower copy. This obligatory movement can be argued to follow from B: if definiteness induces indexicality, arguments will need to move to take scope over the Event head (*cf.* Travis 1994, 2010). Further discussion is clearly beyond the scope of this paper.

cross-linguistically, even in languages without SUBJ raising. Otherwise, if the clausal SUBJECT position were vacant universally, as we propose, there should be nothing to prevent a language in which (in active sentences) the utterance “the interesting book read the woman” means that the woman read the interesting book.

9.



Binary branching, in other words, seems to be “axiomatic by induction”, given the observed facts of natural language.¹⁹

If the only possible underlying orders are those in (7b)-(7d), then what should we conclude about right-branching languages in which the subject precedes Tense or Negation; for example, English and Vietnamese, which exhibit the prohibited underlying order (8i), or French and Italian, which exhibit the order in (8ii)? The only logical conclusion that follows from a deductive theory is that the subject must have raised to the left of T in these languages. If the premise of ‘VP-internal subjects holds,’ there is no other logical alternative. The question then becomes why this movement is necessary. (As I stated earlier, this latter question is amenable to a number of possible answers, including functionalist solutions.)

¹⁹ A point to observe, in passing, is that in this framework there are no ‘VO’ or ‘OV’ languages underlyingly, since the lexical root verb is always in the same position relative to the OBJ regardless of surface order. The VO/OV contrast is derived by verb-raising to functional heads, which may be initial or final. At the level of lexical-thematic categories, then, there is no parametrization, *contra* Travis (1984). Arguably, the same applies to all argument-taking heads, including nouns and prepositions.

4.3 Interim Summary

I must stop here, as I have exhausted my time and – in all likelihood – your good will. Had I more of both, an extended version of this paper would show how the theory extends to the treatment of indexicals, as well as non-finite and non-declarative expressions. But that must be for another day. For now, if I have persuaded you that it's more rewarding to view syntax in hierarchical terms ('first out of the bag'), than in terms of linear strings (left-right, right-left), then my job is done.

Go raibh mile maith agaibh!

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