Cross-linguistic insights in the theory of semantics and its interface with syntax

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Abstract This paper highlights a small selection of cases where cross-linguistic insights have been important to big questions in the theory of semantics and the syntax/semantics interface, irrespective of whether the consumers and beneficiaries of the insights had an interest in the specific languages that the insights were based on, per se. The selection includes the role and representation of Speaker and Addressee in the grammar, mismatches of form and interpretation motivating high-placed silent operators for functional elements, and the explanation of semantic universals, including universals pertaining to inventories, in terms of learnability and the trade-off between informativeness and simplicity.

Keywords ...

The first time I witnessed linguistic examples beyond English being invoked as relevant to the philosophy of language was at a 1977 conference on Speech Act Theory and Pragmatics. The following segment of Vendler (1980, 287-288) corresponds closely to what the speaker said:

> "These three classes (factives, half-factives and nonfactives) may represent a linguistic universal operating beyond the confines of the English language, or even the whole Indo-European group. There is a surprising proof of this assumption taken from Hungarian. This language, which is less "lexical" than English, uses the same verb-root *mond* (meaning, roughly, *say* or *tell)* in all three frames. Non-factivity is achieved by putting an emphatic pronoun, *azt*, in front, factivity by adding the perfective prefix *meg-*. In the absence of both, the verb seems to be half-factive. Accordingly, for example,
>
> Azt mondta, hogy Bécsbe ment
> (that he said that to Vienna he went)
>
> is compatible with a claim of falsity: *de hazudott (but he lied).* Now this form cannot take the equivalents of the *wh's:*
>
> *Azt mondta, hogy hova ment
> (that he said that where he went)
>
> The factive form, *megmond* takes the wh-equivalents, and excludes falsity:
>
> Megmondta, hogy hova ment
> (he said that where he went)
> *Megmondta, hogy Bécsbe ment de hazudott.
> (he said that to Vienna he went but he lied)
>
> The bare form appears to be half-factive
>
> Mondta, hogy Bécsbe ment de hazudott.
>
> but
>
> *Mondta, hogy hova ment de hazudott"

Admittedly, such linguistic expansion of the philosophical horizons was not a general occurrence: it was thanks to Zeno Vendler's being born and raised in Hungary, and the conference's taking place at Dobogókő, Hungary, organized by Ferenc Kiefer. (After he uttered those example sentences, Vendler continued his talk in his long-dormant native language without noticing that he was doing so. Members of the audience chuckled and protested that they were not following.)

Of course, the subsequent five decades have seen a breakthrough. Sophisticated analyses of semantic phenomena of languages from all over the world, often based on fieldwork, now abound in conferences and journals. In this short note I will not try to take an inventory. Instead, I will look at a small selection of cases where, I believe, cross-linguistic insights have been important to big questions in the theory of semantics and the syntax/semantics interface, irrespective of whether the consumers and beneficiaries of the insights had an interest in the specific languages that the insights were based on, per se.

Since semantics is often considered even more thoroughly universal than syntax and other components of grammar, it may be initially dubious that looking beyond a couple of well-researched languages can be particularly urgent and useful. I argue that it is urgent and useful, even if every discovery that we make in this way were to find some discernible reflection in our distinguished object language (English! English!). First, sometimes the clues that English offers are so subtle that they do not easily catch the theoretician's fancy. Finding that other languages make the same thing glaringly visible may reveal that it is a big deal. In such cases, the cross-linguistic insight prompts us to ask theoretical questions that might remain unasked otherwise. Second, sometimes just one or two languages already reveal that what we have on our hands is a big deal, but what a good analysis of it should be remains elusive. Larger-scale semantic typologies that rely on targeted and fine-grained investigations have been able to bring us much closer to solving such theoretical puzzles.

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One class of phenomena that "exotic" languages have put on our plate relate to the representation of the context (Speaker, Addressee, Location, Time, etc.) in grammar. Let me begin with a low-hanging fruit. Kaplan (1989) posited that the semantic value of an indexical is fixed solely by the context of the actual speech act, and cannot be affected by logical operators. He famously declared that context-shifting operators would be "monsters," which do not and could not exist in natural languages. Typologists had known, however, that Amharic possesses shifted indexicals (Anderson and Keenan 1985, Leslau 1995), and based on this, Schlenker (2003) mounted a forceful campaign for monsters. Schlenker's theory inspired field work and theoretical analysis on other indexical-shifting languages, for example, Zazaki. Now, indexical shift in Amharic and Zazaki do not work identically, and they also do not exhaust the logical space. Schlenker (2011) conscientiously summarizes a dizzying array of possibilities that remain unsettled. Does context shift as a whole, or piecemeal? What indexicals shift together? Is *de re* blocking at play? and so on. Deal (2020) goes on to develop a theory that offers answers to

these questions and related ones. Deal's shifty operator theory follows Anand & Nevins (2004), Anand (2006), Sudo (2012), Shklovsky & Sudo (2014) and Park (2016) in major respects; but critical to the project is a set of implicational hierarchies abutted by nearly 20 languages, Deal's own field work on Nez Perce featuring prominently in the analysis. So, the case of indexical shift illustrates both how cross-linguistic insights can force us to reckon with a theoretical possibility (the monsters that Kaplan abhorred) and guide us towards a theory that is coherent but accounts for systematic variation (subsuming the sorry situation of English and other well-studied languages that lack indexical shift).

Another major strand of the "Speaker and Addressee in the grammar" literature originates in Ross (1970) and Katz & Postal (1964). One critical component is the Performative Hypothesis (which has by now been revised to the Speech Act Phrase Hypothesis); another is the observation that the role played by the speech act participants with respect to the main (root) clause is replicated by the role played by the matrix clause participants with respect to the *that*-complement clause. In this case English provided the fundamental insights, and served to expand them to predicates of personal taste (Stephenson 2007). However, the strictly morpho-syntactic nature of the representations was established based on a much wider range of languages by Speas & Tenny (2003), Haegeman & Hill (2013), Zu (2018), Dayal (2020), and Miyagawa (2022), among others. As one example, languages from Basque to Jingpo to Japanese exhibit allocutive agreement. Here the verb bears standard-issue grammatical markers which, however, connect it to the (always unpronounced) Speaker or Addressee, as opposed to the subject of the verb's own clause; allocutivity often indicates the given speech act participant's relation to the regular subject. While those cross-linguistic facts have their own interest for morpho-syntax, from our point of view their significance is that they eliminate the possibility that the role of Speaker and Addressee should perhaps be attributed to pragmatics or relegated to esoteric semantics; they are placed squarely in the grammar.

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Moving on to another territory, Carlson (1983, 2006) made the astonishing proposal that functional elements themselves are meaningless. Functional meanings are carried by features or phonetically null operators that appear on the phrases over which they scope, and their effects percolate down to heads in order to receive expression, in one way or another. The proposal is prompted by his generalization that functional elements often present mismatches in form and interpretation that lexical elements do not. There is a learning problem if the learner is supposed to figure out functional meanings from what he/she hears. Carlson's proposal has been borne out by important chunks of the syntax/semantics interface literature, pulled together in Szabolcsi (2017). Now, some of Carlson's examples involve English (plural concord in *these doors*, presence vs. absence of the definite article in expressions like *in (the) hospital*, *on (the) radio*), and some of the explicitly or implicitly supporting pieces are also based on English, e.g. the feature-checking theory of quantifier scope in Beghelli & Stowell (1997). So the mismatches motivating Carlson are in evidence in English. But many of the critical

phenomena that drive home the magnitude of the problem come from European languages other than English, and non-Indo-European ones. Consider negative concord in Romance and Slavic in the approaches of Zeijlstra (2004) and Chierchia (2013), and quantificational particles in Baltic Slavic, German, Spanish and Japanese (Kratzer & Shimoyama 2006). Kratzer (2005) writes,

> "That speakers of Latvian, German, or Spanish ... perceive the pronouns and determiners of the *kaut-*, *irgendein* or *algun* series as existentials would no longer mean that those expressions are ... existentials. Their existential look would be the overt expression of syntactic agreement with propositional [∃], the true carrier of existential force. Those indefinites might have an uninterpretable but pronounced [∃] feature, then, that must enter an agreement relation with a[n]... interpretable feature that happens to be unpronounced."

Likewise, predicate logic clearly points to the operations shared by *every, each, all, both, and, too, also* (i.e. conjunction) on the one hand and by *some, or, either* and interrogatives (i.e. disjunction) on the other. But the motley crews of distinct items in English do not force one to find these underlying operations in the compositional semantics and investigate their status. By contrast, the systematic presence of a specific particle in first set (Japanese *mo*, etc.) and another in the second set (Japanese *ka*, etc.) prods us to ask these questions.[1] Furthermore, the English paired connectives *both_and* and *either_or* consist of two distinct particles. By contrast, the Japanese equivalents *mo_mo* and *ka_ka*, alongside the similar reiteration of identical particles in other languages, force us to confront the fact that while the meanings of the larger constructions are conjunctive (or disjunctive), the individual particles cannot be conjunction (or disjunction) operators. What we have is much like the multiplicity of n-words in negative concord, one of Carlson's exhibits, where those n-words cannot be carriers of negation. The above phenomena raise the general compositional question of what the building blocks of operator meaning are. See Szabolcsi (2015, 2018) and much related literature on these topics.

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Recent years have seen a burst of research directed at explaining semantic universals with reference to learnability or communicative efficiency. Seeking an elegant explanation for a semantic universal is a time-honored project; consider the classical case of why simple determiners are conservative. Keenan & Stavi (1986) proved that the three Boolean operations applied to the relations [[some]] and [[every]] (possibly restricted by extensional adjectives) produce just the set of conservative determiners, and conversely, all conservative determiners can be so

[1] The Japanese vs. English contrast recalls Vendler, "[Hungarian] which is less "lexical" than English, uses the same verb-root *mond* (meaning, roughly, *say* or *tell)* in all three frames." What Vendler means is that English offers multiple lexical items where other languages may employ a single morpheme aided by a variety of syntactic or morphological devices.

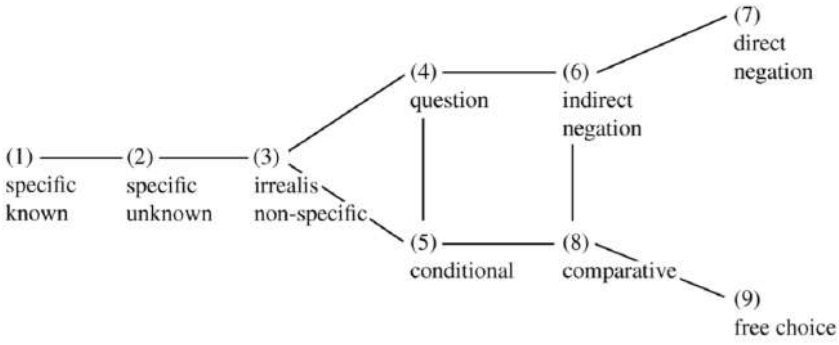
produced. Fox (2002) proposed that Trace Conversion, independently necessary in the copy theory of movement (where movements include Quantifier Raising), produces the correct results if the determiner is conservative and a presupposition failure otherwise. Both explanations are insightful and principled (although perhaps appealing to different sets of linguists). However, the conservativity universal as well as its two explanations are very specific; the explanations would not easily extend to other semantic universals or serve as routinely applicable methodological models. The learnability approach, often using artificial learners with specific computational properties, potentially provides such a model. The idea is that there is a correlation between how learnable a property is and how wide-spread, even universal, it is. To single out two examples, Chemla, Buccola & Dautriche (2019) apply the approach to the monotonicity of simple determiners and extend it to connectedness (convexity, known as continuity in early Generalized Quantifier Theory). Steinert-Threlkeld & Szymanik (2019) investigate monotonicity, quantity (logicality, or isomorphism-invariance), and conservativity. Incidentally, they conclude that conservativity is not explainable by learnability and must have some other source; so, on that count, we have not made new progress.

Two important features of both the learnability and the communicative efficiency approaches are that (i) they look for kinds of explanation, as opposed to specific explanations, and (ii) they extend models that were originally proposed for the content-word vocabulary to the logical vocabulary. An additional novel feature of the communicative efficiency approach is its focus on *why certain inventories* of semantic devices are lexicalized to the exclusion of others, as opposed to why an individual property is prevalent. Two of the giants on whose shoulders the latter enterprise is standing are Larry Horn and Martin Haspelmath.

Horn's (1972) classical theory addressed the question why, of corners of Aristotle's square of opposition, many languages lexicalize AND, OR, and NOR, but NAND is systematically absent. Building on Horn (1972), Gazdar (1979) and Katzir & Singh (2013), Uegaki (2021) generalizes the question. What inventories are lexicalized at all, and why, considering all Boolean connectives inside and outside the square, and including inventories with possibly smaller semantic coverage than the square? Uegaki follows the informativeness/complexity trade-off model proposed in Kemp, Xu & Regier (2018) for kinship, color, folk biology, number, and spatial relations. He argues that the attested inventories are Pareto-optimal, given scalar implicature, further restricted to commutative, non-trivial connectives. "[A]n inventory L is Pareto-optimal with respect to informativeness and complexity iff we cannot find another inventory L' that is as simple as L but is more informative than L nor another inventory L'' that is as informative as L but is simpler than L." (Uegaki 2021, p.11). The model that he specifically implements predicts just four such inventories: {OR}, {AND}, {OR, AND} and {OR, AND, NOR}, and these are indeed cross-linguistically attested.

Denić, Steinert-Threlkeld & Szymanik (2021) apply the same notion of Pareto-optimality to a very different domain, Haspelmath's (1997) semantic maps of indefinite pronouns. Based on a closely documented set of 40 languages, selected from a wider sample of 100, Haspelmath recognizes 9 distinct functions that are

lexicalized by indefinite pronouns. The functions form an implicational map in the sense that each item must lexicalize a contiguous subset of those functions.



Haspelmath's map of functions of indefinites.

The construction of the implicational map and its instantiation in 40 languages represents a major achievement whose results have been a treasure trove and a source of inspiration for decades. Especially interesting and provocative is the fact, pointed out by Haspelmath, that each of the 40 languages instantiates the map differently (with inventories of at most 7 distinct pronouns). Haspelmath proposes a theory of features and adds some auxiliary constraints to the main contiguity constraint to characterize the attested inventories.

In order to analyze and compare the inventories in terms of the simplicity/ informativeness trade-off, Denić and colleagues undertake the non-trivial task of translating Haspelmath's functions, some of which are purely semantic while others encode syntactic distribution, into a set of 6 flavors and adjudicate the assignment of multi-functional items to flavors. They conclude that natural languages optimize that trade-off in their indefinite pronoun inventories, and some of the cross-linguistic variation is due to the languages finding different solutions to the problem of optimization. "This suggests that the simplicity/informativeness tradeoff optimization may explain some of Haspelmath's universals. A question that remains for future work is to find out which of Haspelmath's universals can be explained with the tradeoff optimization: it is conceivable that only a proper subset of them can, and that the rest need a different explanation." (p. 23 of 26).

From the angle of theoretical insights offered by cross-linguistic research in semantics, this last line of research is particularly interesting in that it suggests a way to rethink existing major results and to place them in a new, unifying perspective. We should hope for many happy returns of the day.

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