Some questions on semantic universals

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The major goal of linguists working in the Chomskian tradition is to find the grammatical principles that isolate the subclass of all possible *human* languages from the class of all possible languages. This set of abstract grammatical principles then forms the universal grammar, and it is exactly the features of this universal grammar – which some linguists identify with our language faculty – that most syntacticians want to describe. The search for universals played traditionally a much less important role in semantics, but was taken up by Gazdar & Pullum for connectives, Barwise & Cooper and others for generalized quantifiers and by Zwarts for prepositions. Gazdar and Pullum tried to motivate why only 2 (or perhaps 3) out of 16 possible binary truth-functional connectives are actually expressed in short terms in natural languages, while people working on generalized quantifiers and on prepositions were looking for constraints to limit the enormous set of potential meanings that are predicted to be expressible by (simple) determiners, or prepositions.

The search for universals in semantics is interesting but there are enough reasons not to be completely satisfied with the results we have seen so far. First of all, semanticists have mostly been satisfied with *describing* the universals, not *explaining* them. One might claim, of course, that describing a universal is almost the same as explaining it, because the universal describes either part of the language faculty, or of the language or laws of thought. But even if that were true, one would still like to find an explanation of why the principles of the language faculty are the way they actually are. Most naturally, such an explanatory (or evolutionary) motivation should make use of notions like *utility*, *learnability* and *complexity*: we typically want to express those meanings in simple terms that are (i) useful, (ii) easy to learn and remember, and (iii) easy to use. In fact, Gazdar & Pullum's motivation for the existence of the two (or three) binary truth-functional connectives is very much along those lines. So, the first thing that I would like to see is that Manfred explains me why the simple determiner and prepositional expressions should be limited by the proposed universals (such as conservativity and permutation invariance) in terms of the utility, learnability and/or complexity of the meanings they express.

But Manfred should not be satisfied with such an explanation of already proposed semantic universals. He should search for more universals, and explain them as well. The search for semantic universals has been limited to very few categories of expressions, though the cardinality argument for finding such universals is valid for expressions of almost any type. For instance for expressions that express properties and relations. Gärdenfors suggested that all simple property denoting expressions denote *convex* sets. I believe that this constraint can be motivated, but only once we have an independently motivated structured meaning space. So, I would like to see for each property denoting expressions what its structured meaning space is (if this makes sense), and why so. Moreover, I would like to learn from Manfred whether there are similar constraints as, or preferences for, convexity, for *relation* denoting expressions, and whether convincing motivations for these constraints can be given. To give an example, the economist A. Rubinstein shows that linear orderings are optimal with respect to learning, in the sense that the minimal number of observations is required in order to learn the extension of the relation. Moreover, he shows that linear orderings are optimal in terms of *expressibility*: if you know that a set of objects stands in a particular relation R to each other, the best relation that this could be is a linear

relation, because then we can denote any element of the set in terms of R (plus the logical expressions) only. These results are interesting, but one wonders why most relation denoting expressions in natural languages actually do *not* denote linear orderings. I wonder whether it is possible to limit the set of all possible relation denoting expressions to those that we mostly see expressed in natural languages in terms of some simple constraints. If so, can Manfred please provide an (evolutionary) motivation for this?

The requested universals mentioned so far all involve specific lexical entries. But why be satisfied with that? More general questions about structures used can be asked as well. In syntax, for instance, it is very controversial what are valid universals, but about one proposed universal almost everybody agrees: the central role of *tree structures*. Words are organized into sentences by rules which group them into units ('phrases') of different sizes which nest inside one another. Of course, one might claim that assuming that all sentences should be analyzed in terms of tree structures is a methodological decision, but linguists typically consider it an empirical finding. If we opt for the latter alternative, this universal is very general (and still needs an evolutionary motivation). But I think semantics has universals of the same scale. Anyone working in formal semantics will agree with the following statement of Fred Landman (in Landman (1991)): 'It is not an exaggeration to say that, as far as ontology is concerned, semantics is the study of partial orders underlying the 'metaphysics of natural language'.' So one wonders whether a good motivation can be given for why partial orderings should be so important in the ontology of natural language. Perhaps this just comes down to the question why a qualitative notion of comparison should be so important for our way of thinking about the world. But not any answer to this question would suffice, because linear orders give such comparisons as well, and – as argued by Rubinstein – linear orders are even preferred.

References

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