

RESEARCH STATEMENT

Name

My research is motivated by what I see as the fragmented state of model-theoretic semantics. To date, this field has produced an array of highly specialized formal systems. Individually, many of these systems have reached a high level of accuracy and elegance. But despite shared assumptions, in combination they currently form an unwieldy whole, full of redundancies. The primary purpose of my research program is therefore to strengthen the empirical and formal connections between domains which are traditionally addressed by separate areas of research within formal semantics. My long-term goal is to weave these specialized threads back together into one coherent and theoretically parsimonious pattern, and to exploit this pattern to develop a compelling assortment of analyses spanning several areas of research.

My dissertation takes a step towards this goal by connecting and unifying a number of research domains under the general heading of distributivity. These domains are:

- (a) Plurality and mass reference;
- (b) Inner aspect and telicity;
- (c) Degrees and measurement.

Although some parallels between domains (a) and (b) have been noted previously, much current theoretical work considers phenomena in each of these domains separately. My dissertation makes the case that many linguistic phenomena have counterparts across these domains, and that analyses which ignore these connections are exposed to the risk of missed generalizations and duplication of efforts. I responded to this problem by building a formal bridge between domains (a), (b), and (c). I showed that this bridge allows a transfer of insights across the formal models that have been proposed for these domains.

The following two proposals represent possible directions my research could take which extend my prior experience and along which I feel confident to proceed in new directions such as pragmatics and crosslinguistic semantics.

Project 1: Pragmatic interactions with distributivity

This project proposes to explore the interface between distributivity and pragmatics. A general theory of distributivity, such as the one I have developed, should predict the level of granularity over which various constructions distribute. This is particularly challenging in the case of mass substances, time, and other non-atomic domains because they do not make a salient granularity level available. For example, the granularity of the units of time over which for-adverbials distribute is compatible with frequencies ranging from fractions of a second (1) to one generation and beyond (2):

- (1) To pause the program, create a script that will loop for 3600 milliseconds.
- (2) The Chinese people have created abundant folk arts and passed them on from

generation to generation for thousands of years.

The fact that the relative sizes of the intervals over which for-adverbials range can vary so dramatically poses challenges for existing theories of distributivity. One challenge is conceptual: many of these theories (with the notable exception of Schwarzschild 2006) were simply not conceived for domains where the salient level of granularity can vary, and it becomes necessary to determine how factors of saliency interact with semantics to determine the level of granularity. Another challenge is empirical: even though the examples above suggest that the constraint imposed by for-adverbials is very flexible, it is still possible for sentences to be unacceptable when there are insufficiently many intervals to distribute over. I am interested in building and testing predictive models that explain how pragmatic factors interact with semantic constraints to determine the relevant level of granularity in for-adverbials and other distributive constructions.

Project 2: Distance distributivity across languages and constructions

This project proposes to extend a generalized theory of distributivity to the phenomenon of distance distributivity, in which a distributive item appears in a different place from the argument or adjunct over which it distributes. As in the case of my dissertation, I propose to unify several phenomena under the same umbrella. I have identified constructions (d), (e), and (f) below as possible candidates for a unified treatment under the heading of distance distributivity. There is a large amount of research on each of these constructions in isolation, but to my knowledge they have not yet been treated together. This situation is analogous to the fragmented state of semantic research with respect to (a), (b), and (c) above, which my dissertation addresses. Again, I propose a strategy that consists of pursuing a unified treatment across domains.

- (d) Floated each
- (e) Split quantifier constructions
- (f) Pluractionals

Floated each (d) is the classical example of distance distributivity. It occurs in sentences such as *The boys_i bought two sausages each_j*. As Zimmermann (2002) documents in detail, a wide array of languages have counterparts to float each and their semantic behavior differs in subtle ways.

In split quantifier constructions (e), a quantifier appears in adverbial position, apart from the noun phrase over which it quantifies. In English, only a few items (e.g. all, each) take part in this construction (*The students have all left* vs. **The students have three left*), but many languages allow numerals and other items to appear in split position. There are at least two reasons for which it appears fruitful to extend a general account of distributivity to these constructions.

- First, split quantifier constructions are similar to distributive constructions in that they are incompatible with collective interpretations. For example, both in German and Japanese, the sentence *Three boys built a model boat* has a collective and a

distributive interpretation if three boys is translated as a nonsplit quantifier; in contrast, translations that split the numeral three from boys can only be understood distributively (Nakanishi, 2004). An analysis of split quantifiers as distributive would immediately explain this fact.

- Second, Nakanishi (2004) shows that the semantic properties of German and Japanese split quantifier constructions are subject to the same monotonicity constraint as measure constructions. This constraint rules out expressions such as three degrees Celsius of water as well as their German and Japanese counterparts, even when three degrees appears apart from water in these languages. My dissertation derives this constraint from general properties of distributivity. The link between monotonicity and distributivity is novel and unexpected by existing accounts of split quantifier constructions.

Finally, pluractionals (f) are items which impose a plurality requirement on events. Verbal affixes expressing pluractionality are crosslinguistically widespread; typically, they approximately have meanings such as “one by one”, “again and again” or “piece by piece”. As these translations suggest, most pluractionals go beyond simply requiring the existence of a plurality of events, because they also relate each event to a different individual, spatial region, or temporal interval. This behavior is typical of the kind of constructions I have analyzed as distributive. This suggests that extending the analysis to pluractionals might be promising. Syntactically, however, pluractional affixes are different from these constructions, because the argument over which they distribute is outside of their syntactic scope. In this respect, they are similar to split quantifier constructions, which also take scope over a larger constituent semantically than they do syntactically. It is in this sense that both split quantifier constructions and pluractionals exemplify distance distributivity. In spite of this similarity, there is currently no unified account of pluractionals and split quantifiers.

Distance distributivity poses a challenge for compositional semantics because the item that is responsible for introducing distributivity occurs inside the syntactic scope of the argument or adjunct over which it distributes. This makes it necessary to explain how the distributivity marker can access information which is outside of its scope. Since this is precisely the problem which Dr. Chris Barker of NYU and Dr. Ken Shan of Rutgers have addressed in their joint research on direct compositionality and continuations, I look forward to the possibility of joining forces with them.

Because the constructions (e) and (f) are not attested in English, their study requires crosslinguistic comparisons. In this respect, the scope of this research project would be broader than that of my dissertation, which has focused on English. This project would therefore combine empirical study with theoretical analysis, and could be scaled up depending on available resources. Data gathering and analysis would provide ample opportunities for undergraduate and graduate research.

Reference

- Nakanishi, K. (2004). Domains of measurement: Formal properties of non-split/split quantifier constructions. PhD thesis, University of Pennsylvania.
- Schwarzschild, R. (2006). The role of dimensions in the syntax of noun phrases. *Syntax*, 9(1):67–110.
- Zimmermann, M. (2002). Boys buying two sausages each: On the syntax and semantics of distance-distributivity. PhD thesis, LOT; Universiteit van Amsterdam.