

**Lucas Champollion. 2017. *Parts of a Whole: Distributivity as a Bridge Between Aspect and Measurement*. Oxford: Oxford University Press. xvi + 312 pp.**

**Imola-Ágnes Farkas\***

Lucas Champollion's *Parts of a Whole: Distributivity as a Bridge Between Aspect and Measurement* is one of the most recent titles in the *Oxford Studies in Theoretical Linguistics* series. The novelty value of the book is that it presents a unified theory of several core concepts that lie at the syntax–semantics interface. More specifically, it offers a uniform account of three semantic domains that are usually studied and viewed separately and independently of each other: distributivity, aspect and measurement. Although the existence of a parallelism between, for instance, aspect and measurement has long been known, the proposal that distributivity is a bridge that links aspect and measurement has not been put forth before. Therefore, the present study emphasizes the idea that it is precisely the theoretical unification of these three individual areas that can expand the previous research on each of them, can shed new light on a number of old problems and hence provide new answers to them, and can reveal their true nature as, after all, the three domains are part of a whole.

As far as the structure of the book is concerned, we remark that the eleven chapters are organized in such a way that they gradually reveal the intimate relationship that exists between these seemingly disparate natural language phenomena. They start with the presentation of the theoretical framework and the constructions that participate in the analysis (Chapter 1 to Chapter 3), after which they turn to the proposal itself: Chapters 4 through 6 deal with the telic/atelic opposition, Chapter 7 turns to measurement in natural language, Chapters 8 and 9 provide a comprehensive analysis of distributivity in natural language, and, before closing the book with Chapter 11, Chapter 10 brings together several strands of research on phenomena related to the semantics and pragmatics of collectivity and cumulativity. The sections and subsections offer the reader a step-by-step guide to the fundamental claim that, on the one hand, these phenomena involve a set of basic semantic operations applying across different dimensions of events, substances and individuals, and, on the other hand, if a predicate applies to something, it also applies to its parts along some dimension and down to a certain level of granularity.

The book opens with some introductory sections such as *Contents* (v–viii), *General preface* (ix), *Acknowledgments* (x–xv) and *Abbreviations* (xvi).

The first chapter, *Overview* (pp. 1–9), states, first and foremost, the central claim of the entire book, which is that ‘a unified theory of distributivity, aspect, and measurement for natural language is feasible and useful’ (2017: 1). These few pages are a useful guideline when reading this book as they present and explain the metaphor of *strata theory*, the main guiding idea on which the book is based, give a brief overview of the chapters and offer a set of suggestions regarding the way in which the book should be read. As this is not a complete tabula introduction to mereology or distributivity, this section also contains the list of articles and books readers should be familiar with before digging deeper into the next chapters.

Chapter 2 (*The stage*, pp. 10–60) sets the stage by providing a clear overview of some of the relevant issues in the theoretical background assumptions and presenting the framework on which strata theory is built. This review chapter is intended as a starting point not only for the present book but also for any other study on algebraic semantics and mereology as it attempts to sum up the current state of understanding these (and other related) phenomena, summarizes works

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\* Babeş-Bolyai University, Faculty of Letters, Department of English Language and Literature, farkas\_imola\_agnes@yahoo.com.

within the area previously published by others and identifies gaps in the research by evaluating and comparing (some of) the studies published so far. It starts with a careful explanation of the notational conventions used throughout the book, after which it provides a general introduction to the conceptual and mathematical underpinnings of algebraic semantics and mereology not only by presenting and discussing the classical extensional mereology but also by relating it to set theory. It then discusses the primitive objects within various ontological domains: individuals, substances, spatial and temporal intervals, events, various sorts of degrees and numbers. These domains are interconnected by a variety of relationships such as (i) theta roles, which map events to individuals; (ii) trace functions, which map events to their spatial and temporal location; (iii) measure functions, which map individuals, physical objects and events to degrees; (iv) unit functions, which map degrees to numbers; and (v) cardinality functions (partial functions), which map sums that consist of singular individuals onto the number of singular individuals of which they consist. The remainder of the chapter covers topics related to various types of linguistic constituents: the noun (together with the count/mass distinction, the singular/plural opposition and the status of measure and group nouns), the semantics of verbs, distributive and non-distributive NPs, directional *to*-PPs, as well as their modes of composition.

Chapter 3, *The cast of characters* (pp. 61–69), presents the three ‘protagonists’ of the book: *for*-time adverbials as in *run for ten minutes* (the domain of aspect), pseudopartitives as in *ten pounds of books* (the domain of measurement) and adverbial constructions with *each* as in *the boys each walked* (the domain of distributivity). Based on the theoretical background provided in Chapter 2, these few pages serve as a useful starting point for the syntax and semantics of these constructions and their constituents. The general presentation of the properties of these structures is balanced by the skeletal LF representation of each of them, which creates a symmetry among the three domains, i.e. the three parts that form a whole.

In the following chapter, entitled *The theory* (pp. 70–100), the author explores and develops strata theory, the main guiding idea on which the book is based. He emphasizes the idea that disparate natural language phenomena such as aspect, plurality, cumulativity, distributivity and measurement can and should be given a unified analysis, and it is the intended purpose of the book to attempt to offer such an analysis. To this end, the author first presents an outline of different concepts associated with the word *distributivity*, and the way distributivity can be seen as a property of predicates, quantifiers and pairs of constituents. Then he turns to another notion, namely *distributive constructions* and proposes that the above three structures be viewed as instances of this construction. The introduction of the terms *Key*, *Share* and *Map* proves to be important as they are the components of a distributive relation. Despite the constraints imposed by adverbial-*each* constructions, temporal *for* adverbial structures and pseudopartitives on their constituents, the author focuses on unifying them into one single restraint as ‘the fundamental parallel across distributive constructions emerges when we put the properties ... side by side’ (2017: 93). This single constraint is expressed using the notion of *stratified reference*. The last section of the chapter discusses the compositional implementation of the Distributivity Constraint by relying on the LF representation of the above three structures.

The chapter entitled *Minimal parts* (pp. 101–116) is a brief description of the so-called minimal-parts problem. The author not only presents this phenomenon in eventualities (verbal domain) and substances (nominal domain) but also discusses some previous attempts that have been put forth to solve this problem (Dowty 1979, Hinrichs 1985, Moltmann 1989, 1991, Link 1991, and Borik 2006). The solution proposed here is in terms of stratified reference, which solves some of the problems of Dowty’s (1979) subinterval property but also makes the right predictions as far as the interaction between the verbal predicate and the length of the interval denoted by the complement of the *P for* is concerned.

The next chapter (*Aspect and space*, pp. 117–138) goes beyond the traditional view of aspect and telicity by extending their usage in the temporal domain to include the spatial domain as well. This gives rise to two kinds of aspect and, consequently, (a)telicity: spatial and temporal. As for the relation between them, both the subregion-based approach and the strata-based approach have been implemented in several ways in the literature (cf. Krifka 1998 for the former approach and Dowty 1979 for the latter). When comparing and contrasting the two, the author points out aspects that emphasize the conceptual superiority of the strata-based approach over the subregion-based approach as it can capture the distinction between temporal and spatial aspect in *for*-PP sentences such as *push carts all the way to the store for fifty minutes* (temporal *for*-adverbial) and *push carts all the way to the store for fifty meters* (spatial *for*-adverbial).

Chapter 7 (*Measure functions*, pp. 139–154) investigates and formalizes measurement in natural language. It starts by reviewing the constraints pseudopartitives impose on the measure function (*five pounds of rice* versus *\*five pounds of book*, *thirty liters of water* versus *\*thirty degrees Celsius of water*, etc.), which are to be found in *for*-adverbials as well (*five hours of running* versus *\*five miles an hour of running*). The presentation of the previous accounts of pseudopartitives (namely Krifka 1998 and Schwarzschild 2006) sheds light on the distinction between extensive and intensive measure functions. Interestingly, but not unexpectedly, several measurement-related constructions turn out to be sensitive to a number of oppositions that can be characterized by using strata theory, stratified reference and the Distributivity Constraint. The concluding section draws connections to previous chapters and explains the linguistic relevance of the difference between extensive measure functions like volume and intensive measure functions like temperature (see also above).

The topic of Chapter 8 is the theory of covert distributivity (*Covert distributivity*, pp. 155–192). It focuses on the distinction between lexical and phrasal distributivity, as well as on the debate over distributivity being atomic or non-atomic. With respect to the two distributivity operators (the atomic distributivity operator *D*, as discussed in Link 1987; and the non-atomic distributivity operator *Part*, as presented in Schwarzschild 1996), the author suggests a reformulation of the classical definition of these distributivity operators (for instance, in their original formulation these distributivity operators distribute only over the subject and no other argument positions) and proposes to expand their use into the temporal domain. This proposal proves to be superior to all the other alternative proposals as reformulation involves couching the *D* and *Part* operators within strata theory, and equipping them with its granularity and dimension parameters. When this latter parameter of the reformulated *Part* operator is set to time, the result induces a so-called co-variation of indefinites over salient stretches of time. In a nutshell, then, the main contribution of this chapter is a unified theory of covert atomic and non-atomic distributivity, over individuals and over temporal intervals, at the lexical and phrasal level.

As a natural continuation of the previous chapter, Chapter 9 (*Overt distributivity*, pp. 193–238) is about another type of distributivity. Overt distributivity (as in *the girls each wore a black dress*), in sharp contrast to covert (or silent) distributivity (as in *the girls wore a black dress*), is cross-linguistically expressed with an overt adverbial or adnominal such as the English *each* and the German *jeweils* ‘every/each’. Keeping in mind that the term *D operator* stands for distributivity operators that always distribute over atoms and the term *Part operator* stands for distributivity operators that distribute over non-atoms, we can easily see that overt and covert distributivity share many similarities: in both cases, some elements can only distribute to atoms (*each*, the overt version of the atomic distributivity operator *D*), while others can distribute to salient non-atomic entities (*jeweils*, the overt version of the non-atomic distributivity operator *Part*). In other words, the variation in these two overt distributivity elements consists in their distribution over atoms or over salient non-atomic entities. As proved by the body of the chapter, the English distributivity element can only distribute over pluralities that have been explicitly

mentioned, while the German distributivity element can also distribute over domains (spatial or temporal occasions) that have not been explicitly mentioned. Although the main focus is on these two Germanic distributive items, the analysis is supported with examples from a wide variety of languages ranging from Albanian to Telugu, the distributive items of which all pattern either with English (by being the overt versions of Link's D operator) or with German (by being the overt version of Schwarzschild's Part operator).

Chapter 10 (*Collectivity and cumulativity*, pp. 239–268) is connected to the previous chapter as it is concerned with the relationship between *every* and *all*, both of which are called distributive items just like *each*. The theory of *all* developed here treats this word as a distributive item in some respects (*all*, similarly to *every* and *each*, is incompatible with *numerous*-type of predicates) and as a non-distributive item in other respects (*all* is compatible with *gather*-type of predicates, *every* and *each* are not). These differences between *all*, on the one hand, and *every* and *each*, on the other hand, are translated into those differences which are due to whether they require predicates to be distributive all the way down to atoms or only down to subgroups. Furthermore, it is the Distributivity Constraint imposed by *all* and the granularity parameter of stratified reference that provide the means to account for the two, seemingly contradictory features of this quantifier. Towards the end of the chapter, before turning to some open questions, the author devotes one section to *all* and *for* Ps, and states that cumulative reading is blocked in sentences involving *all* and *for*-time adverbials. This equivalence is explained via stratified reference, with the remark that while atelicity is stratified reference along some spatio-temporal dimension, distributivity is stratified reference along some theta role.

The last chapter of this monograph, entitled *Conclusion* (pp. 269–279), evaluates the final conclusions of the book, summarizes the main insights of each chapter and proposes some issues for future research.

The book closes with *Appendix: Distributivity operators as repair strategies* (280–282), *References* (283–304) and three indexes: *Index of languages* (305), *Index of people* (306–309) and *Index of topics* (310–312).

As a reviewer, I must first emphasize the fact that this well-written book has an excellent structure and organization. Although, inevitably, the discussion in most (if not all) chapters is rather technical in nature, it is easy to follow the material as each and every chapter has an introductory section and a summary, and, in addition, there is a chapter-by-chapter synopsis both in the first and in the last chapter of the monograph. The individual chapters, through the way in which they are connected, gradually unfold and bring out the intimate connections between the domains of distributivity, aspect and measurement, the three parts of a whole.

A further merit of the book is that the claims are based on a large number of genealogically unrelated, typologically distinct and geographically diverse languages (cf. especially the discussion on *each* and *jeweils* 'every/each' in Chapter 9). They are meant to support the theoretical concepts and assumptions, thereby, making the book attractive to both researchers and practitioners.

In conclusion, this is a welcome addition to the growing number of research dedicated to the domain of aspect and measurement, especially if we take into consideration the fact that they can and should also be viewed from the perspective of distributivity.

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