Parts of a whole: Distributivity as a bridge between aspect and measurement

Lucas Champollion

Final preprint, as submitted to the publisher on June 15, 2016

Contains table of contents, introduction, and conclusion

Contents

Acknowledgments

This book is a substantially revised and extended version of my dissertation, Champollion 2010b, which introduced the framework of strata theory centered around the notion of stratified reference. It incorporates subsequent work as described below.

The story of this work begins in the summer of 2008. I had been a graduate student at the University of Pennsylvania for four years, and I was just about to finish a summer internship at the Palo Alto Research Center (PARC). Partly due to its proximity to Stanford University and Silicon Valley, PARC was a great place to do research at the intersection of linguistics and computer science. Among other things, I had been trying to hack some notion of aspect into the natural language semantic pipeline they were running at the time. I enjoyed this task: I could feel like the real computational linguist that part of me has always wanted to be, and still read semantics papers all day long. Then my supervisors, Cleo Condoravdi and Danny Bobrow, asked me if I wanted to move to the West Coast and turn my aspect project into a dissertation there. None of us knew back then what it would be about and how much computer science there would be in it. In the end, there is none in it at all. I'm deeply grateful to Cleo and Danny for the trust and enthusiasm with which they embarked on this project with me.

Cleo was the natural choice as my dissertation advisor, and I haven't regretted that choice a single time. Perhaps most importantly for me, she left me the freedom to take this enterprise in whatever direction I wanted. This is not to say that she was ever disinterested or not fully engaged, despite her many responsibilities at PARC. Cleo kept offering patient encouragement throughout the many unexpected turns this work took, and she always had the right amount of clear advice at the right time. She introduced me to the PARC and Stanford communities, and over the course of numerous hiking trips, also to the beauty of the Bay Area.

I'm deeply grateful to the chair of my dissertation, Aravind Joshi. He has been unerringly supportive as he sponsored my first stay at Penn as an exchange student, and later on as I found my way through graduate school between formal language theory and formal semantics. He selflessly supported my decision to

move away from Penn and from his own research agenda.

The other members of my dissertation committee were Maribel Romero and Florian Schwarz. Maribel drew me right into semantics from the very first class I took with her at Penn in 2004. Her classes were the best I ever took. Her approach to semantics might well shape my own work more than I know. Like everyone else, I looked on in amazement as she changed jobs, moved across the ocean to Konstanz, founded a family, became department chair, and kept an eye on my dissertation all at once. I am grateful to her for her generous help. There's no way to sneak a flawed linguistic argument past her, though I'm sure this book contains many that she has long given up on trying to correct.

Although Florian Schwarz joined Penn and the committee only shortly before the dissertation was completed, he worked his way into the project with remarkable speed and made an impact on it, especially by challenging the way I originally characterized stratified-reference constraints as presuppositions. I thank him for numerous detailed comments and for his enthusiastic approach to the enterprise. It was a great pleasure to have him on the committee.

Tony Kroch served on the dissertation committee for a good year or so. I'm grateful that he did, and I'm glad he stayed around even after he officially left. I thank him for giving me the benefit of the doubt early on, for encouraging me to be bold, and for not thinking that his efforts were lost on me. Tony never made a secret of his opinion when he thought I was headed the wrong way, and given my personality, I think he deserves credit for that.

I have a lot of people to thank for teaching me linguistics, engaging with my ideas, and making sure that writing the dissertation and this work was not a lonely business. It would be impossible to thank everyone, and if you feel unjustly omitted from what follows, you most likely are.

The late Ellen Prince took me seriously when I was still green behind the ears, and I hear she put in a good word for me when I wanted to join Penn. I regret not having spent more time with her.

My Master's degree advisor, Mitch Marcus, has been supportive throughout my time at Penn, and it is largely thanks to his and Aravind's efforts that I could navigate the gap between linguistics and computer science.

I am grateful to my fellow graduate students at Penn from 2004 to 2010, particularly Aviad Eilam, Keelan Evanini, Eva Florencio Nieto, Jonathan Gress-Wright, Catherine Lai, Lucy Lee, Laia Mayol, Jean-François Mondon, and Josh

Tauberer. They plowed through the endless coursework with me, endured my island violations, and never lost patience with my unending hunger for grammaticality judgments. It's been great living with my linguist roommates Ariel Diertani, Jonathan Gress-Wright, Laurel MacKenzie (now my colleague at NYU), Laia Mayol, and Satoshi Nambu at 4400 Spruce St. I especially thank Satoshi for helping me print and submit the dissertation while I was in Europe. I thank Yanyan Sui for being who she is, for giving me a glimpse of Chinese, and for showing me the many ways how to open an orange. Jeeyoung Kim, Angela Lee and her Highness Leslie Williams of Sansom Place helped me get away from linguistics once in a while and made sure I didn't take myself too seriously.

I am grateful to the faculty and administrators at the linguistics department at Penn, particularly to Gene Buckley and Amy Forsyth, for their support and for making it possible for me to spend time at PARC and Stanford. I also thank Penn for supporting me through a Benjamin Franklin fellowship, a Dissertation Completion fellowship, and various travel grants.

Coming to Penn in the first place wasn't easy, and many people prepared and supported me on the way. I thank my teachers, especially my high school English teacher, Peter Schneider. At the University of Freiburg, Udo Hahn introduced me to computational linguistics, recommended Penn to me, and spent a great deal of his time helping me get there. I'm grateful to the German Academic Exchange Service (DAAD) for financing my first year of studies at Penn. I thank the Studienstiftung des deutschen Volkes for their support as well.

Moving on to California, I gratefully acknowledge PARC for providing me with a stipend and an office. Many thanks to the linguists who were working at PARC while I was there, especially to Danny Bobrow, Cleo Condoravdi, Ji Fang, Lauri Karttunen, John Maxwell, and Annie Zaenen.

I met Liz Coppock at PARC when she was working on spatial aspect. Through working with her, I was eventually led to the ideas in Chapter 6. I'm grateful to her for her comments on that chapter and for many conversations on semantics. Scott Grimm was also at PARC and at the Stanford linguistics department when I was there and offered comments and generous help on pseudopartitives (Chapter 7) and other topics. Also at Stanford, I thank the faculty, especially Johan van Benthem, Paul Kiparsky, Beth Levin and Chris Potts, for giving me opportunities to sit in their classes and to present my work. I'm grateful to Eric Acton, David Clausen, Alex Djalali, Jason Grafmiller, Chigusa Kurumada, Sven Lauer, Jack

Tomlinson, and my other friends at the linguistics department for many fun and thoughtful conversations. I thank Penn and Stanford for letting me take part in the exchange scholar program, which was highly beneficial to this work.

I finished the dissertation in 2010 as a postdoc at the university of Tübingen, where Sigrid Beck, Fritz Hamm, Gerhard Jäger have been fostering a lively research environment with help from their wonderful administrators, Sonja Haas-Gruber and Beate Starke. I am grateful to all of them and to the linguist friends I made there, particularly Nadine Bade, Vera Hohaus, Anna Howell, and Sonja Tiemann. Sveta Krasikova had unfortunately already left Tübingen by the time I arrived, but she was still there often enough to give me valuable comments.

I applied for my current position at NYU with a research program based on the dissertation. I have pursued it since I joined the department in 2012. This book summarizes its current state, and I believe it is a stable foundation for future theory-building. I am grateful to the remarkably talented students here and to my semanticist colleagues, Chris Barker, Philippe Schlenker, and Anna Szabolcsi, for the vibrant research environment they have created and for many conversations involving various aspects of this work. For helping me in many ways, I am also grateful to the staff, particularly Aura Holguin, Mike Kennedy, Teresa Leung, and Eddie Quiles. Among my nonsemanticist colleagues, I owe special thanks to Chris Collins for his encouragement and for his detailed comments on Chapters 8 and 9. Among the students, I am especially grateful to Hanna Muller and Linmin Zhang for helping me run web surveys that I occasionally used to confirm (or in one case, as described below, to disconfirm) assumptions I had made in 2010 about the meaning and acceptability of various sentences. In this connection, I thank Michael Yoshitaka Erlewine and Hadas Kotek for providing the open-source software package *Turktools* to the semantics community (Erlewine & Kotek 2016).

I have benefited from many discussions in graduate seminars about this work that I taught at NYU in 2013 and 2014, and in summer school courses that I taught at ESSLLI 2012 and at the 2015 LSA summer institute. Teaching these courses was incredibly inspiring, and I am very grateful to the students who took part in them. Some of the changes in this book originated in discussions in these courses. I owe special thanks to Jeremy Kuhn, who took part in the second NYU seminar and who subsequently presented his work on the word *all* as Kuhn 2014. Jeremy's influence is reflected and acknowledged throughout Chapter 10.

I published an overview of strata theory as a target article in the open peer review journal *Theoretical Linguistics* (Champollion 2015c). I thank Manfred Krifka for encouraging me to write that article, and I am indebted to him and to Hans-Martin Gärtner for their help as editors. I am grateful to the authors of the responses to that article (Corver 2015, Doetjes 2015, Link 2015, Piñón 2015, Schwarzschild 2015, Syrett 2015). These responses prompted me to introduce a number of refinements to the theory, as described in detail in my reply article (Champollion 2015b). This book has been updated to reflect these refinements.

A precursor of Chapter 4 was published as Champollion 2009. Two handbook articles, Champollion to appear and Champollion & Krifka to appear, are based in part on the dissertation. While preparing them, I have drawn primarily on the background material in Chapters 2 and 4. This has led to revisions to the text, some of which I have incorporated back into this book. The presentation in Chapter 7 draws in part on Section 4 of Champollion 2015b and on Section 3 of Champollion 2015c.

Chapters 1, 2, 3, 4, 6, and 7 have been only lightly changed, mostly to improve presentation. Chapter 5 has been partly rewritten. I have removed discussions of frequency adverbs that was tangential to its main subject, and of a generalization (labeled the "sufficiently-many events" observation) based on subtle gradient judgments that I have since then tried and failed to reproduce experimentally in collaboration with Hanna Muller and Linmin Zhang. I have expanded the section describing my account.

Chapter 8 has undergone significant expansion and changes compared with the dissertation, leading to its publication as an article in the open-access journal *Semantics & Pragmatics* (Champollion 2016a), which is reprinted here with slight modifications. A closely related proceedings paper, Champollion 2013, is not included in this book, but its contents are referenced at the appropriate places.

Chapter 9 is based on work I carried out at the University of Tübingen and at NYU after the dissertation was completed. Its main ideas have appeared as a short proceedings paper (Champollion 2012). Just as the previous one, this chapter has been published in its current form as a *Semantics & Pragmatics* article (Champollion 2016c) and is reprinted here with slight modifications. For their help with the text of Chapters 8 and 9, I am grateful to the journal editors, particularly Kai von Fintel and Kjell Johan Sæbø, and to the journal reviewers, particularly Malte Zimmermann.

Chapter 10 is based on Chapter 9 of the dissertation. It has undergone substantial revisions and expansions, described in the main text. A part of this chapter overlaps with Champollion 2015c; another one is about to appear as a short proceedings paper, Champollion 2016b. Significant parts of the chapter are new and not included anywhere else. The original chapter contained an extensive discussion of dependent plurals, most of which has been cut because it is only marginally related to strata theory.

Chapter 11, the conclusion, has been rewritten from scratch and substantially expanded to include a chapter-by-chapter summary of the book. Some of the suggestions for future work have previously appeared in Champollion 2015c.

Over the last eight years, many linguists have taken the time to converse or correspond with me about various aspects of this book. Many thanks to Alan Bale, Justin Bledin, Adrian Brasoveanu, Benjamin Bruening, Dylan Bumford, Seth Cable, Gennaro Chierchia, Ivano Ciardelli, Chris Collins, Ashwini Deo, Carmen Dobrovie-Sorin, Jean Mark Gawron, Justyna Grudzinska, Zsófia Gyarmathy, Robert Henderson, Petra Hendriks, Paul Hovda, Sonia Kasianenko, Chris Kennedy, Manuel Križ, Manfred Krifka, Daniel Lassiter, Chris LaTerza, Lisa Matthewson, Jon Ander Mendia, Alice ter Meulen, Friederike Moltmann, Oleg Neroslavsky, David Nicolas, Hazel Pearson, Maria Mercedes Piñango, Chris Piñón, Adam Przepiórkowski, Floris Roelofsen, Uli Sauerland, Remko Scha (†), Roger Schwarzschild, Chung-chieh Shan, Alexander Williams, Yoad Winter, Kata Wohlmuth, Linmin Zhang, Ziren Zhou, Thomas Ede Zimmermann, and Eytan Zweig. Likewise, I thank audiences at the 2009 workshop on Construction of Meaning at Stanford, at the 2009 CHRONOS conference on tense, aspect, and modality in Paris, at the 2010 Penn Linguistics Colloquium, at the 2011 workshop on distributivity in Stuttgart, at the 2011 Amsterdam Colloquium, at the 2014 Cornell workshop in linguistics and philosophy, at the 2013 conference on Semantics and Linguistic Theory at UC Santa Cruz, at the 2015 North Eastern Linguistic Society conference at Concordia University, at the ZAS Berlin, at the Universities of Connecticut, Dublin (Trinity College), Frankfurt, Göttingen, Konstanz, Los Angeles (UCLA), Maryland, Munich (Center for Mathematical Philosophy), Paris 7, Potsdam, Toruń, Tübingen, Utrecht, Warsaw, and Yale, for their feedback.

For native speaker judgments, I thank Meike Baumann, Renée Blake, Isaac Bleaman, Heather Burnett, WooJin Chung, Ivano Ciardelli, Chris Collins, Liz

Coppock, Masha Esipova, Hana Filip, Stephanie Harves, Daði Hafþór Helgason, Hildur Hrólfsdóttir, Gianina Iordăchioaia, Zack Jaggers, Sonia Kasianenko, Mike Kennedy, Songhee Kim, Sverrir Kristinsson, Jeremy Kuhn, Chigusa Kurumada, Luciana Meinking Guimarães, Yohei Oseki, Roumyana Pancheva, Adam Przepiórkowski, Leonor Remédio, Floris Roelofsen, Bujar Rushiti, Kjell Johan Sæbø, Todd Snider, and Gunnar Ingi Valdimarsson.

At Oxford University Press, I thank Lisa Eaton, Julia Steer, and Vicki Sunter for their help throughout the process, as well as the series editors, David Adger and Hagit Borer. I am grateful for the detailed reviews of the manuscript by Stefan Hinterwimmer and by an anonymous reviewer. I have benefited from them while preparing this book.

I've greatly benefited from Vera Hohaus' many knowledgeable comments on Chapters 1 through 7, and from Anna Howell's and Todd Snider's careful proofreading of the entire manuscript at various stages. I thank Vera Zu for her help with the bibliography, and Adina Williams for preparing the index. I gratefully acknowledge a Grant-in-Aid by the NYU Center for the Humanities in support of the publication of this book. I also thank Scott Collard, Jill Conte, April Hathcock, Monica McCormick, and Michael Stoller at the NYU libraries for assisting me in the publishing process.

For their hospitality and much more over the last eight years as this work took me around the world, I'm grateful to many friends of mine: in Philadelphia, Julia Deák, Aviad Eilam, Catherine Lai, and Michela Tincani; in Austin, Liz Coppock; in Berlin, Uli Sauerland and Kazuko Yatsushiro; in Paris, Catherine Collin and my aunts and uncles from the Champollion family, Elisabeth, Ginou and Hervé; in Portland, Svitlana Antonyuk-Yudina and Vadym Yudin; in Vienna, Gregor and Monika Rot; in Tübingen, Anke and Frank Tochtermann; in Neuchâtel, Sveta Krasikova and Ventsislav Zhechev; in Amsterdam, Galit and Adar Weidman Sassoon; in Warsaw, Justyna Grudzinska; in Moscow, Nadia Antonova, Petya Volyak, Masha Tsyurupa, Nick Gribakin, Natasha Korotkova, Vanya Kapitonov, and Ania Grashchenkova. At an early stage in the development of this project, Arnim von Stechow provided generous advice and a chance to take a step back and examine my ideas from the ultimate birds-eye perspective, in his mountain hut high up in the snow-covered Swiss alps.

And most of all: meine Mutter, mon père, Tuğbacım. I don't know how to thank you. But still: thank you.

1

Overview

The central claim of this book is that a unified theory of distributivity, aspect, and measurement for natural language is feasible and useful.

1.1 Introduction

I claim that a number of natural language phenomena from the domains of aspect,[1] plurality, cumulativity, distributivity and measurement, which are currently treated by separate theories, are in fact intimately related. Previous accounts of these phenomena either fail to generalize appropriately, or live on as limiting cases of a system presented here under the name of *strata theory*. This system is not a radical reorientation of the grammar. By subsuming and building on previous characterizations, strata theory retains much of what has been formerly gained, and provides a unified framework in which new correspondences are drawn between existing concepts.

The road to this claim starts with four semantic oppositions which are closely associated with the domains under consideration. These are the telic-atelic opposition, which is central to the study of aspect; the singular-plural opposition and the count-mass opposition, which are central to the study of plurality and measurement; and the collective-distributive opposition, which is central to the study of distributivity. These oppositions can be formally related to one another. This, in itself, is not a new insight. It has long been known that there are

[1] *Aspect* is used in the literature to refer to many different things. Throughout this book, I use the term to refer to what has been variously called inner aspect, lexical aspect, temporal constitution, actionality, or aktionsart, as opposed to the phenomenon referred to as outer aspect, grammatical aspect, or viewpoint aspect. Broadly speaking, I understand inner aspect as referring to the telic-atelic opposition, and outer aspect as referring to the imperfective-perfective opposition. Outer aspect is not discussed in this book.

close parallels between the singular-plural and the count-mass opposition (e.g. Link 1983) and, likewise, between the count-mass and the telic-atelic opposition (e.g. Bach 1986). That these formal parallels can be extended to encompass the collective-distributive opposition has not been explicitly mentioned as far as I know, but it is not difficult to do so.

The nature of the parallelism between all these oppositions can be described intuitively in terms of boundedness. Singular, telic, and collective predicates are delimited or bounded in ways that plural, mass, atelic, and distributive predicates are not. Making formal sense of the parallelism therefore amounts to characterizing the difference between boundedness and unboundedness. How to do this is one of the central questions which strata theory proposes to answer. I call it the *boundedness question*.

Answering the boundedness question amounts to specifying what it means for a predicate to be atelic, distributive, plural, or to have mass reference. It is not obvious that there should be a single property that is shared by all these predicates. As this book shows, however, it is indeed possible to isolate such a property. The identity of this property can be determined by analyzing a number of nominal and verbal constructions which all have one thing in common: each of them is sensitive to one of the semantic oppositions listed above. These constructions are *for*-adverbials, which distinguish atelic from telic predicates (1); pseudopartitives, which distinguish plurals and mass nouns from singular count nouns (2); and adverbial *each*, which distinguishes distributive from collective predicates (3). I refer to them collectively as *distributive constructions*.

(1)	a.	John **ran** for five minutes.	*atelic*
	b.	*John **ran to the store** for five minutes.	**telic*
(2)	a.	thirty pounds of **books**	*plural*
	b.	thirty liters of **water**	*mass*
	c.	*thirty pounds of **book**	**singular*
(3)	a.	The boys each **walked**.	*distributive*
	b.	*The boys each **met**.	**collective*

These three constructions form the empirical basis of this book. However, they probably represent only a small sample of distributive constructions. For example, true partitives and comparative determiners accept the same classes of

nouns and of measure functions as pseudopartitives do (Schwarzschild 2006). For present purposes, it is enough to focus on the three distributive constructions above, firstly, because they cut across the domains of distributivity, aspect and measurement, and secondly because each of them is regarded as central to its domain in the sense that any theory of it must account for its behavior. More concretely, *for*-adverbials are regarded as the prime diagnostic of atelicity (Verkuyl 1989); *each* is the standard example of a distributive item (Link 1987b); and pseudopartitives are arguably the most prominent place in which natural language shows its sensitivity to formal properties of measurement (Krifka 1998, Schwarzschild 2006).

The novel angle of this book consists in considering the constructions in (1) through (3) as parts of a whole. Previous work has produced separate theories to account for the behavior of each of these constructions and for the phenomena that they exemplify. The resulting theories are often more limited in scope than they could be. For example, work on distributivity has focused on how best to formalize distributive readings, rather than on extending the notion of distributivity. Likewise, the study of aspect has concentrated entirely on temporal phenomena, and the study of measurement in natural language has focused largely on mass terms, partitives, and comparatives. This development has obscured the view on the common properties of these constructions. However, this problem is not inherent in the approaches encoded in these theories. Once the connection between distributivity, aspect, and measurement is made formally explicit, it is easy to connect many existing theories to each other, and to extend them to domains beyond the ones in which they have traditionally been applied. One can then combine the strengths of each account, and synthesize them to extend their empirical coverage. This is the motivation behind this book.

The presence of distributive constructions in every one of the domains of interest makes it possible to place strata theory on a solid empirical foundation, because these constructions allow us to operationalize the boundedness question. Instead of asking abstractly what it is that atelic and distributive and mass and plural predicates have in common with each other, we can search for the property that the bold constituents in the grammatical examples in (1a), (2a), (2b) and (3a) have in common, to the exclusion of the ungrammatical examples in (1b), (2c), and (3b).

In order to express generalizations over distributive constructions, I will

deploy a common terminology. As is explained in more detail in Chapter 4, *Share* refers to the constituent whose denotation is distributed over the parts of the referent of the other constituent, which is called the *Key*. For example, (1a) distributes *ran* (Share) over *five minutes* (Key); (2b) distributes *water* (Share) over *thirty liters* (Key); and (3a) distributes *walk* (Share) over *the boys* (Key). I assume that these components are related by certain functions such as the function *runtime* in (1a), the function *volume* in (2b), and the thematic role *agent* in (3a). I use the term *Map* for these functions, since they always map entities (such as events or substances) associated with the Share to entities (such as intervals, degrees, or individuals) associated with the Key. These terms and relationships are illustrated in Table 1.1.

Table 1.1: A bridge from distributivity to aspect and measurement

Construction	Example	Key	Share	Map
Adverbial *each*	The boys each walked	the boys	walk	agent
For-adverbial	John ran for five minutes	five minutes	John ran	runtime
Pseudopartitive	thirty liters of water	thirty liters	water	volume

This approach results in new takes on a large and diverse number of linguistic phenomena, which are brought together here for the first time in one and the same theoretical picture.

The rest of this chapter outlines the intuition behind strata theory (Section 1.2), gives a brief overview of the contents of the rest of the book (Section 1.3), and closes with a set of suggestions regarding the different ways in which readers could navigate through the book (Section 1.4).

1.2 The central metaphor

The guiding idea behind this book is that the constructions illustrated in (1) through (3) exclude bounded predicates through a parametrized constraint which is introduced into distributive constructions through certain words such as *for*, *of*, and *each*. This constraint is formulated in terms of a higher-order property, *stratified reference*. This property requires a predicate that holds of a certain entity or event to also hold of its parts along a certain dimension and down to a

certain granularity. Dimension and granularity are understood as parameters which distributive constructions can set to different values.

The dimension parameter specifies the way in which the predicate in question is distributed. Different settings of this parameter allow one and the same predicate to be atelic but not distributive, or vice versa. When the dimension parameter is set to time, stratified reference applies to atelic predicates, as in (1). When it is set to a measure function like weight or volume, stratified reference applies to mass and plural predicates, as in (2). When it is set to a thematic role like agent, stratified reference applies to distributive predicates, as in (3).

The granularity parameter specifies that the parts in question must be either atomic or simply smaller in size than the whole, as measured along the dimension. This parameter accounts for the differences between distributive constructions over discrete (count) domains, such as adverbial-*each* constructions, and those over domains involving continuous dimensions, such as *for*-adverbials and pseudopartitives.

The names *dimension*, *granularity*, and *stratified reference* are derived from a visual metaphor, which I develop here. I stress that I use this metaphor only for the purpose of conveying the intuitions behind strata theory. It does not have any formal status, it does not occur in the formulation of the theory, and it is not claimed to have any psychological or cognitive reality—unlike, for example, the diagrams in the cognitive grammar literature (Langacker 1986).

The metaphor is based on the idea that individuals, substances, and events occupy regions in an abstract space. The dimensions of this space include the familiar spatial and temporal dimensions as well as any measure functions and thematic roles that happen to be defined for the entity. (To understand a thematic role as a dimension, we assume that the individuals that correspond to these roles are ordered in an arbitrary but fixed canonical order, such as the alphabetical order given by their first and last names.) An object whose weight is large corresponds to a region with a large extent along the weight dimension. An event whose agent is a plural entity corresponds to a region with a large extent along the agent dimension, while an event whose agent is singular corresponds to a region which is not extended along the agent dimension at all. A temporally and spatially punctual event whose thematic roles are all singular entities corresponds to a point. A temporally and spatially punctual event that has plural entities as its agent and theme corresponds to an infinitely thin rectangle that is extended

along the agent and theme dimensions.

Consider the old intuition that any atelic predicate has the subinterval property (Bennett & Partee 1972). This property says that whenever a predicate holds at an interval *t*, it also holds at every subinterval of *t*, all the way down to instants. Put in event semantic terms, a predicate like *run* is atelic because we can "zoom in" to any temporal part of a running event to find another running event. We cannot do that with a telic predicate like *run to the store*, because any temporal part of an event of running to the store that does not include the end point (the store) does not itself qualify as running to the store. In the metaphor, the subinterval property translates to the following picture: any event in the denotation of a predicate that has the subinterval property can be divided into infinitely thin layers that run perpendicular to the time dimension and that are also in the denotation of this atelic predicate. This gives rise to the well-known "minimal-parts problem": Strictly speaking, there are no instantaneous running events, for example. If the subinterval property is to have any viable chance, it must therefore be amended so that the event layers are constrained to be thinner than the whole event, but do not have to be infinitely thin. Formally, this effect is achieved by adding a granularity parameter to the subinterval property. I call these layers *strata*. This name is chosen to remind the reader of geological strata, the layers of rock which can be observed in geological formations in places such as the Grand Canyon. A geological stratum can be just a few inches thick (though not infinitely thin) and extend over hundreds of thousands of square miles. This aspect is mirrored in the theory, where strata are constrained to be thin along one dimension, but may be arbitrarily large as measured in any other dimension.

The metaphor I have used to describe the subinterval property involves layers or strata rather than points or pebbles, because the subinterval property does not constrain any dimensions other than time. This feature is not accidental. While the relevant parts of running events must be short, or thin, in the temporal dimension, they may have plural entities as agents or themes, they may be extended in space, and so on. This view leads to a natural generalization. Normally, geological strata are horizontal, but due to geological movement, they can also be oriented along another dimension. For example, they can run vertically. Similarly, I have introduced the concept of temporal strata as resulting from dividing an event along the temporal dimension, but we can also imagine spatial or "agental" strata—subevents that are constrained based on their spatial extent or based on

their number of agents. Once this step is taken, the atelic-telic opposition can be related to the collective-distributive opposition in a Neo-Davidsonian setting. Distributive predicates require any event in their denotation to be divisible into strata that are constrained to have atomic thickness on the dimension of the appropriate thematic role. For example, any plural event in the denotation of a predicate like *smile* or *read a book* must be divisible into strata that have atomic agents and that belong to the denotation of the same predicate. Lexical predicates like *smile* have this property due to world knowledge, and phrasal predicates like *read a book* can acquire it through a modified version of the distributivity operators known from Link 1987b and Schwarzschild 1996. Collective predicates like *be numerous* do not satisfy stratified reference on the thematic role of their subjects, because their subjects can be plural entities whose parts are not themselves numerous.

1.3 Overview of things to come

This section briefly previews the contents of the remaining chapters of the book. A more extended summary is found in Chapter 11. Section 1.4 below offers a set of suggestions regarding the different ways in which readers could navigate through the book.

Chapter 2, *The stage*, presents a distilled picture of the crucial issues in the theoretical background assumptions and develops the framework on which strata theory is built. This framework is essentially a synthesis of the work by Lønning (1987),Link (1998a), Krifka (1998), Landman (2000), and others. Its mathematical foundation is classical extensional mereology, which is presented and discussed at length. The overview in this chapter is intended as a reference point for future researchers and spells out the relevant background assumptions as explicitly as possible, especially in the case of choice points where the literature has not yet reached consensus on a preferred analysis. Issues discussed in this chapter include the meaning of the plural morpheme, the question whether the meanings of verbs are inherently pluralized, the formal properties of thematic roles, and the compositional process.

Chapter 3, *The cast of characters*, presents the three constructions listed in (1) through (3) above (*for*-adverbials, pseudopartitives, and adverbial *each*) by means of some typical examples. Building on the foundations laid out in Chapter 2,

this chapter develops a baseline theory for the syntax and semantics of these constructions and their constituents, keeping things symmetric across domains as much as seems reasonable so that the parallels drawn in subsequent chapters are not obscured more than necessary. The chapter discusses various properties of these constructions and introduces simplified Logical Forms for them that provide a scaffold on which the theory in the rest of the book is built.

Chapter 4, *The theory*, presents stratified reference as an answer to the boundedness question. The parallelism between the telic-atelic, collective-distributive, singular-plural, and count-mass oppositions is captured in a unified framework. After giving a brief overview over the empirical phenomena that have been discussed under the rubric of distributivity, the notion of stratified reference is gradually developed as a generalized notion of distributivity. It is then used to formulate a single constraint that explains each of the judgments in (1) through (3), and to predict distributive entailments of lexical predicates via meaning postulates.

Chapter 5, *Minimal parts*, is about the minimal-parts problem: Some eventualities and substances fail to distribute at very small scales because they have parts that are too small to satisfy certain mass terms and atelic predicates (Dowty 1979). Focusing on atelic predicates modified by *for*-adverbials, the chapter discusses some previous attempts to solve the problem before discussing a novel solution in detail. It is shown that stratified reference not only avoids problems that infinitely small parts cause for proposals based on the subinterval property and related notions, but also makes the right predications as far as the interaction between the respective predicate and the length of the interval denoted by the complement of *for* is concerned.

Chapter 6, *Aspect and space*, models the relation between temporal aspect (*run for an hour*/**run all the way to the store for an hour*) and spatial aspect (*meander*/**end for a mile*) previously discussed by Gawron (2009). The chapter shows that *for*-adverbials impose analogous conditions on the spatial domain and on the temporal domain, and that an event may satisfy stratified reference with respect to one of the domains without satisfying it with respect to the other one as well. This provides the means to extend the telic-atelic opposition to the spatial domain. The chapter argues in some detail that stratified reference is in this respect empirically superior to an alternative view of telicity based on divisive reference (Krifka 1998).

Chapter 7, *Measure functions*, explains the linguistic relevance of the difference between intensive and extensive measure functions, as illustrated by the pseudopartitives *thirty liters of water* and **thirty degrees of water* (Krifka 1998, Schwarzschild 2006). Subsuming these previous accounts, stratified reference correctly predicts the monotonicity constraint: such constructions disallow measure functions that generally return the same value on an entity and on its parts.

Chapter 7, *Measure functions*, explains the linguistic relevance of the difference between extensive measure functions like volume and intensive measure functions like temperature, as illustrated by the pseudopartitives *thirty liters of water* vs. **thirty degrees Celsius of water* (Krifka 1998, Schwarzschild 2006). Subsuming these previous accounts, stratified reference correctly predicts the monotonicity constraint: such constructions disallow measure functions that generally return the same value on an entity and on its parts. For example, in order for **thirty degrees Celsius of water* to be acceptable, it would have to describe a water entity whose parts are colder than itself; but there are no such entities. Stratified reference relativizes unboundedness to just one dimension or measure function at a time. This makes it possible to account for examples like *five feet of snow* even though not every part of a five-foot snow layer of snow is less than five feet high.

Chapter 8, *Covert distributivity*, considers how verb phrases such as *build a raft* optionally acquire a distributive interpretation, and reformulates the covert distributivity operators of Link 1987b (the atomic D operator) and Schwarzschild 1996 (the nonatomic Part operator) in terms of the two parameters of stratified reference. By varying the granularity parameter, the difference between atomic and nonatomic views of distributivity is captured and clarified. By varying the dimension parameter, these distributivity operators are extended to the temporal domain and used to explain why indefinites in the syntactic scope of *for*-adverbials tend not to covary with them (*?John found a flea on his dog for a month*, Zucchi & White 2001).

Chapter 9, *Overt distributivity*, explains the crosslinguistic semantic differences between distance-distributive items such as English *each* and German *jeweils* by treating them as overt versions of the atomic and the nonatomic distributivity operator respectively. The proposed analysis explains why *jeweils* can distribute over salient occasions and why this is never possible for *each* (Zimmermann 2002b). It also accounts for the fact that distributive determiners can

take part in cumulative readings with items outside of their syntactic scope, and for their ability to interact with nondistributive event modifiers (Schein 1993, Kratzer 2000, Champollion 2010a).

Chapter 10, *Collectivity and cumulativity*, accounts for differences within the class of collective predicates, as exemplified by the contrast between *all the students gathered* and **all the students were numerous* (Dowty 1987, Winter 2001), for the limited ability of *all* to take part in cumulative readings, and for its ability to license dependent plurals (Zweig 2009). Stratified reference is used to formulate meaning postulates that capture the fact that predicates like *gather* give rise to distributive inferences to subgroups, and to formulate the semantics of *all* in terms of a subgroup distributivity requirement.

Chapter 11 concludes the book by summarizing its main insights and results. A detailed chapter-by-chapter summary provides a birds-eye view of strata theory and stratified reference. The summary highlights the conceptual and theoretical moves as well as their empirical payoff. It contrasts the property-based perspective on stratified reference introduced in Chapter 4 and developed in Chapters 5 through 7 with the operator-based perspective that is central to Chapters 8 and 9, and it sketches how both perspectives come to play in Chapter 10. The book concludes with a list of open problems and suggestions for further research, including a brief discussion of connections to other frameworks such as cognitive and conceptual semantics.

1.4 Ways to read this book

This book presupposes graduate-level knowledge of theories of formal semantics of natural language, as can be found in various textbooks such as Heim & Kratzer 1998. Although this book is self-contained, readers who are new to mereology and algebraic semantics may find it useful to consult the following handbook articles: for an introduction to classical extensional mereology and an overview of algebraic semantics, Champollion & Krifka to appear; and for an empirical overview of distributivity along with collectivity and cumulativity, Champollion to appear. These articles overlap in part with this book but they go into more depth on certain issues, such as aspectual composition in the case of Champollion & Krifka to appear and psycholinguistic findings as well as crosslinguistic facts in the case of Champollion to appear.

Readers who are already familiar with these topics, or who are chiefly interested in the linguistic issues discussed in the book, may want to skip Chapter 2 and come back to it for clarifying questions that come up as they read further.

Champollion 2015c, a target article, provides a self-contained overview of the theory in this book, and can be read as such, especially when taken together with some amendments to the theory described in the last section of the reply article, Champollion 2015b. The theory in this book has been updated to take these amendments into account.

Everyone unfamiliar with these papers who would like to understand just one or two parts of the book should start by reading chapters 3 and 4; the chapters following these two are modular. Readers who are particularly interested in just one of the topics covered in this book—aspect, measurement, and distributivity—may find it useful to concentrate on the following parts: For aspect, Chapters 5 and 6, and Section 8.6; for measurement, Chapter 7; and for distributivity, Chapters 8, 9, and 10. The detailed chapter-by-chapter summary in Chapter 11 may be helpful as a way to get a bird's-eye perspective on the theoretical and empirical coverage of the book.

11

Conclusion

This chapter concludes the book by summarizing its main insights and results in a chapter-by-chapter summary (Section 11.1) and by offering some suggestions for further research (Section 11.2).

11.1 Chapter-by-chapter summary

In this book, I have developed a new approach to the semantics of distributivity, aspect, and measurement, three domains which are traditionally addressed by separate areas of research within formal semantics. By triangulating between these domains, I have arrived at a unifying perspective from which I made theoretical and empirical contributions to the study of the formal semantics of natural language.

My main theoretical contribution, introduced in **Chapter 1** and laid out throughout the book, is the notion of *stratified reference*, a concept that requires a predicate that applies to an entity—be it a substance, an event or a plural individual—to also apply to the parts into which this entity can be decomposed along some dimension and down to some level of granularity. The concept is general enough to subsume a wide range of previous proposals, yet formally precise enough to make testable predictions and to transfer insights across traditional boundaries. The resulting framework, *strata theory*, is intended as a bridge that spans a number of semantic oppositions: singular/plural, count/mass, telic/atelic, and collective/distributive. While it has often been observed that these semantic oppositions are similar, and proposals have been made to bring some of them under the same umbrella, this work is the first one to propose a fully unified account. Intuitively, the concept that underlies each of these oppositions is the difference between boundedness and unboundedness. Singular, count, telic, and collective predicates are all delimited or bounded, in ways that set them apart

from plural, mass, atelic, and distributive predicates. When it comes to formally describing what boundedness amounts to, characterizations in the semantic literature have tended to be limited to one domain: aspect, distributivity, or measurement only. Stratified reference provides a characterization that works in all of these domains. It builds on the same background assumptions as many previous theories and frameworks based on classical extensional mereology and algebraic semantics (Lønning 1987, Link 1998a, Krifka 1998, Landman 2000). These theories and assumptions are presented in explicit and distilled form in **Chapter 2**, with a focus on areas in which no consensus has been reached, such as the meaning of the plural morpheme, the question whether the meanings of verbs are inherently pluralized, the formal properties of thematic roles, and the compositional process. This chapter is intended as a reference point for future researchers and as an introduction to the relevant parts of the formal semantic literature.

My main empirical contribution is the observation that a large class of nominal and verbal constructions impose analogous unboundedness constraints on a predicate denoted by one of their constituents. A representative selection of what I have called *distributive constructions*—namely *for*-adverbials, pseudopartitives, and adverbial *each*—is described in **Chapter 3** and onwards. The chapter includes simplified Logical Forms for these constructions that provide a scaffold on which the theory in the rest of the book is built. Distributive constructions give us an empirical handle on the conceptual question of how to characterize unboundedness. For example, the fact that *for an hour* can modify the unbounded predicate *eat apples* but not the bounded predicate *eat thirty apples* makes it possible to constrain the space of options for formal definitions of unboundedness by studying the algebraic properties of these and related predicates (Krifka 1998). Stratified reference emerges from a systematic investigation of these constructions and of previous theories that account for their behavior within the framework of algebraic semantics.

Since unboundedness is a property of predicates, and since predicates are properties, it is natural to think of unboundedness as a higher-order property. Indeed, previous work in algebraic semantics has used higher-order properties such as cumulative or divisive reference to characterize different facets of unboundedness (Link 1998a, Krifka 1998, and others). Such properties are a useful stepping stone towards a formal characterization of unboundedness, but they

are too rigid to provide a nuanced understanding of the differences between these facets. For example, distributivity and atelicity can both be seen as facets of unboundedness; but one and the same predicate can be atelic without being distributive or vice versa, or distributive with respect to one thematic role but not another. **Chapter 4** presents stratified reference as a formalization of unboundedness and as a means to capture the parallels between the semantic oppositions in a uniform way. After giving a brief overview over the empirical phenomena that have been discussed under the rubric of distributivity, the notion of stratified reference is gradually developed as a generalized notion of distributivity. It is then used to formulate constraints that capture the behavior of distributive constructions and meaning postulates that predict distributive entailments of lexical predicates.

Two factors make it possible to identify a single formal property that describes unboundedness in all its facets. The first factor consists in using the same descriptive terms for constituents that behave analogously across syntactically and semantically distinct distributive constructions. The terms *Key* and *Share* from the literature on distributivity turn out useful for this purpose, as does the newly coined term *Map*. The second factor is the combination of a common approach in semantics—namely, using higher-order properties—with a common approach in syntax—namely, using parameters. This leads to the conceptualization of stratified reference as a *parametrized higher-order property*. Stratified reference builds on the basic intuition behind algebraic semantic accounts, namely that atelicity, distributivity and related concepts can be defined in terms of a predicate applying to the parts of an event or entity, but generalizes it by adding parameters that allow us to explicitly model varying dimensions and granularities. These parameters turn out to provide an appropriate middle ground between rigidity and flexibility that captures the ways in which distributive constructions differ without losing track of their common core. Following Piñón 2015 and Schwarzschild 2015, I have taken a further step away from ordinary higher-order properties by restricting stratified reference to the parts of a single entity x, rather than requiring it to apply to all entities to which the predicate applies. In effect, these moves made stratified reference into a relation that is higher-order on its predicate argument and on its two parameters and first-order on its entity argument. However, since its purpose is still conceptually close to higher-order properties, I will refer to it as the property-based perspective on

stratified reference:

(1) **Property-based perspective:**
$$\text{StratifiedReference}_{\textit{dimension, granularity}}(\text{Predicate})(x) \stackrel{\text{def}}{=} x \in {}^{*}\lambda y.\left(\begin{array}{l}\text{Predicate}(y) \wedge \\ \text{granularity}(\text{dimension}(y))\end{array}\right)$$

The *granularity parameter* allows us to model the varying amounts to which distributivity will reach down to subparts in distributive constructions: to atoms or small subgroups in some cases, and to contextually salient levels of granularity in others. This parameter is motivated in part by the need to account for the minimal-parts problem, as was done in **Chapter 5**. This problem arises from the fact that some eventualities and substances fail to distribute at very small scales because they have parts that are too small to satisfy certain mass terms and atelic predicates. This is a challenge for characterizations of atelicity that look at all smaller events (as in the case of divisive reference, Krifka 1998) or intervals (as in the case of the subinterval property, Dowty 1979). Nondivisive atelic predicates such as *waltz* and *pass on from generation to generation* make it necessary to relativize these concepts, for example by equipping them with a minimal-length threshold so that they ignore what happens at very short intervals below this threshold.

By making a virtue out of necessity and elevating this threshold to a central part of the theory—the granularity parameter—it becomes possible to avoid the minimal-parts problem. Different settings of the parameter lead to nuanced predications concerning the interaction between the respective predicate and the length of the interval denoted by the complement of *for*. By varying the parameter, we may use stratified reference both to describe the length of the smallest events that count as waltzing or passing on from generation to generation, and to describe the requirements that *for*-adverbials impose on the properties they modify. I did not fully recognize these two tasks as conceptually distinct until the response articles to Champollion 2015c, particularly Piñón 2015 and Schwarzschild 2015, helped me realize it. If a *for*-adverbial is like a sieve and the events in the denotation of the predicate it modifies are like grains of sand, the first task amounts to describing the size of the grains, and the second amounts to describing the size of the holes in the sieve (Champollion 2015b). As a part of the description of the constraint imposed by *for*-adverbials, stratified reference

describes the size of the holes. This is what Chapter 5 focuses on. As a component of meaning postulates that describe what we know about predicates, stratified reference can describe the size of the grains that pass through the sieve. Some predicates like *waltz* will be fine-grained, other predicates like *pass on from generation to generation* will be more coarse-grained.

The *dimension parameter* captures the view that unboundedness may occur in time, in space, or along a measure function or a thematic role. Because of its traditional focus on cross-domain generalizations, mereology-based algebraic semantics lends itself well to a formal implementation of this view. In particular, various functions can be treated as of one and the same kind: thematic roles such as *agent* and *theme*, measure functions such as *temperature* and *volume*, and event properties such as *runtime* and *spatial extent*. As we have seen in **Chapter 6**, the latter parallel makes it straightforward to account for analogies between temporal measure adverbials (such as *run for an hour* vs. **run all the way to the store for an hour*) and spatial measure adverbials (such as *meander for a mile* vs. **end for a mile*) previously noted by Moltmann (1991) and Gawron (2009). More generally, the dimension parameter captures the fact that a distributive construction will typically impose only one kind of unboundedness at a time. For example, the fact that temporally unbounded predicates can be modified by temporal *for*-adverbials even when they contain a spatially bounded constituent (as in *flow from the jar to the floor for ten minutes*) is unsurprising on this view, and differences in interpretation between temporal and spatial *for*-adverbials (as in *push carts all the way to the store for fifty minutes* versus *for fifty meters*) find a natural explanation.

Theories of aspect are typically not designed as ways to explain what is wrong with measure constructions like **three degrees of water* or **three pounds of book*. However, relevant connections have occasionally been noted (Krifka 1998, Schwarzschild 2006). The parallel becomes intuitive once we think of the verb phrase *run for three hours* in connection with the pseudopartitive *three hours of running*. **Chapter 7** has exploited the formal parallel between the domains of aspect and measurement developed in Chapter 4 to explain the linguistic relevance of the difference between intensive measure functions like *temperature* and extensive ones like *runtime*. Treating the two constructions as semantically equivalent made it possible to push the limits of theories designed for only one of the two domains to which they are traditionally seen as belonging. Stratified

reference correctly predicts that distributive constructions disallow measure functions that generally return the same value on an entity and on its parts. For example, just as *run for three hours* requires *run* to apply to temporally shorter parts of the event to which *run* applies, **three pounds of book* would require *book* to apply to lighter parts of the entity to which *book* applies, and **three degrees Celsius of water* would require the existence of colder parts of the entity to which *water* applies. The fact that stratified reference relativizes unboundedness to just one dimension or measure function at a time made it possible to subsume the insight of Schwarzschild 2006 and to account for examples like *five feet of snow* in spite of the fact that not every part of a five-foot snow layer of snow is less than five feet in height.

Throughout this book, I have used stratified reference for various purposes: to characterize the distributivity constraint in those constructions that impose it; to specify meaning postulates for words that exhibit distributivity down to various levels of granularity; and as a formalization of atomic and nonatomic distributivity operators. Starting in **Chapter 8**, I shifted from viewing stratified reference as a parametrized higher-order property to viewing it as a parametrized unary distributivity operator on predicates:

(2) **Operator-based perspective:**
$$\text{StratifiedReference}_{\textit{dimension, granularity}}(\text{Predicate}) \stackrel{\text{def}}{=} \lambda x.\, x \in {}^{*}\lambda y. \left(\begin{array}{l} \text{Predicate}(y) \wedge \\ \text{granularity}(\text{dimension}(y)) \end{array} \right)$$

Since the two definitions sketched in (1) and (2) are equivalent, the move from the property-based perspective to the operator-based perspective is largely conceptual. The main difference results from whether stratified reference is implemented as a presuppositional requirement or as a predicate modifier. In both cases, the dimension and granularity parameters can be instantiated in whatever ways may be appropriate for different constructions and theoretical assumptions. Varying the value of the dimension parameter amounts to distributing over various thematic roles and spatiotemporal dimensions. Varying the value of the granularity parameter amounts to choosing between distributing over atomic entities like singular individuals and nonatomic entities like pluralities and temporal intervals. Chapter 8 exploited the operator-based perspective to synthesize and expand previous accounts of how verb phrases such as *build a raft*

optionally acquire a distributive interpretation by covert distributivity operators. In particular, the differences between the atomic operator in Link 1987b, Roberts 1987, the nonatomic operator in Schwarzschild 1996, and their generalizations in Lasersohn 1998b, can be modeled and clarified by shifting the values of the dimension and granularity parameters. Furthermore, setting the dimension parameter to *runtime* made it possible to transfer the notion of covert distributivity as a verb phrase shifter into the temporal domain, and making the granularity parameter anaphoric to a salient predicate helped export Schwarzschild's claim that nonatomic distributivity requires salient covers to that domain. This resulted in a new perspective on the puzzling scopal behavior of indefinites and numerals in the scope of *for*-adverbials, including the fact that indefinites in the syntactic scope of *for*-adverbials tend not to covary with these adverbials (*?John found a flea on his dog for a month*, Zucchi & White 2001).

The operator-based perspective on stratified reference naturally led to postulating a formal connection between covert and overt distributivity. This made it possible in **Chapter 9** to analyze distance-distributive items across languages as overt versions of distributivity operators, as suggested by Link (1991b) for the case of *each*. The granularity parameter, along with the notion of an anaphoric cover from Schwarzschild 2006, made it possible to account for the crosslinguistic variation between those distance-distributive items that only exhibit atomic distributivity, such as adverbial and adnominal *each* in English, and those that also distribute over salient nonatomic entities such as time intervals, such as adverbial and adnominal *jeweils* in German. Essentially, these two items were treated as overt versions of the atomic and the nonatomic distributivity operator respectively. The typological correlation between atomic distributivity and ability to be used as a distributive determiner observed by Zimmermann (2002b) turned out to be expected once the operator-based perspective was extended to distributive determiners such as *each* and *every*. Because stratified reference always provides access to the sum event and not just to its parts, this extension immediately explained why these determiners can participate in nondistributive phenomena with items outside of their syntactic scope, such as cumulative readings and nondistributive adverbial modifiers (Schein 1993, Kratzer 2000, Champollion 2010a).

The property-based and the operator-based perspective on stratified reference, as well as both the dimension and the granularity parameter, all came into

play in **Chapter 10**, whose main focus is on explaining the behavior of *all* with respect to different collective predicates, such as *all the students gathered* versus **all the students were numerous* (Dowty 1987, Winter 2001). The impetus for this chapter came from the startling observation by Zweig (2009) that a noun phrase headed by *all*, such as *all the safari participants*, can lead to a cumulative reading when it combines with a verb phrase that contains an unbounded argument, such as the dependent plural in *saw zebras*, but not when the verb phrase contains a bounded argument, such as *saw thirty zebras*. The search for a formal property that sets these two predicates apart was facilitated by the property-based perspective. My guiding intuition was that *see zebras* is to *see thirty zebras* what *eat apples* is to *eat thirty apples*; however, the second pair captures the telic/atelic opposition while both expressions in the first pair are atelic. Stratified reference allows us to model this situation as a difference in settings of the dimension parameter. *Eat apples* but not *eat thirty apples* distributes down the time dimension; *see zebras* but not *see thirty zebras* distributes down the agent dimension. Stratified reference instantiated with *time* is atelicity; stratified reference instantiated with *agent* is distributivity. If *for*-adverbials test for atelicity, *all* tests for distributivity.

While a traditional view on distributivity might lead us to expect that *all* is synonymous with other distributive items such as *each*, the fact that different items set the granularity parameter to different values leads us to expect otherwise. The fact that *all* but not *each* is compatible with collective predicates that exhibit subgroup distributivity finds a natural explanation in the assumption that *all* is a coarser sieve than *each*, in line with the characterization of *gather*-type predicates as subgroup distributive (Dobrovie-Sorin 2014, Kuhn 2014). Stratified reference was also used to formulate meaning postulates that capture the fact that *gather*-type predicates give rise to distributive inferences to subgroups. Finally, the distributive operator from Chapter 8 helped account for cases in which *all* appears to take away the collective interpretation of a predicate that can normally be interpreted either distributively or collectively.

11.2 Future work

This section, adapted in part from Champollion 2015b,c, sketches some broader implications of strata theory and connections to other domains of linguistics.

Any theory of distributive constructions needs to specify the constraint that

these constructions impose on their constituents (the nature of the sieve) as well as the reason these constituents satisfy it (the nature of the grains that pass through the sieve). In the case of one-word predicates, I have used stratified reference to formulate meaning postulates that describe their grain size. As we have seen in Chapter 8, complex predicates can also be characterized with respect to whether or not they satisfy stratified reference. A full account of aspect and distributivity in these cases will need to be complemented by a theory of how a given complex predicate ends up having or not having stratified reference. Certain overt modifiers, such as adverbial *each* and *together*, can determine whether the predicate that they modify is understood distributively or collectively. The question of how complex predicates end up being collective or distributive is analogous to the question of how complex predicates end up being atelic or telic, a process also known as aspectual composition (e.g. Krifka 1998). Stratified reference allows us to think about the effect of *each*, *together* and distributivity operators and about aspectual composition as two sides of the same coin.

This also means that we can link problems that affect accounts of these processes. For example, Doetjes (2015) correctly notes that stratified reference does not rule out incremental-theme verbs whose themes are downward-entailing modified numerals, such as (3a). That modified numerals pose problems for algebraic accounts of aspectual composition has been noticed many times (Egg 1994, Eberle 1998, Naumann 1999). Stratified reference has this problem in common with the subinterval property, which it is meant to generalize. Cumulative reference does not fare any better because an analogous problem occurs with upward-entailing modified numerals (3b). Doetjes therefore proposes combining stratified reference with cumulative reference, following Landman & Rothstein (2012b). This will rule out both types of examples as desired, but unfortunately not (3c), discussed by Zucchi & White (2001). Likewise, the contrast in (3b), discussed by Mittwoch (1982), remains unexplained.

(3) a. #He drank at most thirty glasses of water for three hours.
b. #He finished at least three books for three hours.
c. #John drank { some / a quantity of } milk for an hour.
d. John {ate / #ate something } for an hour.

This kind of behavior is puzzling for most if not all algebraic theories of aspect, including strata theory. The noun phrases that cause the sentences in (3) to sound

odd seem to behave for the purposes of these theories as if they were quantized, at least along the relevant (temporal) dimension. An early feature-based theory of aspectual composition, Verkuyl 1972, grouped modified and unmodified numerals together by assigning both of them a [+SPECIFIED QUANTITY] feature, while bare plurals and mass nouns carried a [-SPECIFIED QUANTITY] feature. Algebraic notions like quantization, stratified reference, and the subinterval property are meant to make such features superfluous. But in noun phrases like the ones in (3), the effects of these two systems come apart (Verkuyl 2005, fn. 3). A similar issue is discussed by Schwarzschild (2015) in connection with the word *line*. Other problematic predicates include *twig*, *rock*, and *sequence*. A helpful but ultimately inconclusive discussion of possible ways to address this problem is found in Zucchi & White 2001. Similarly, as discussed in Chapter 10, a number of collective predicates that are incompatible with *all* but that are still subgroup distributive, such as *be a group of less than five*, would be expected to be compatible with *all* under the account I have discussed here (Kuhn 2014). Finally, the constraint against cumulative readings of *all* described in Chapter 10 also rules out a cumulative reading when the verb phrase contains a delimited but nonquantized object (*All the linguistics majors dated several chemistry majors*, Zweig 2009). If a solution to these problems emerges in one domain, we may well be able to adapt it to the other domain.

If this book is on the right track, distributivity is ubiquitous. We just need to recognize it when it presents itself in unusual ways. I have made the case for this idea using *each*, *all*, *for*-adverbials and pseudopartitives. Now that we know what we are looking for, it should be easy to find more distributive constructions. Here are some possible places to look:

German and Japanese split quantifier constructions, in which a quantifier appears in adverbial position apart from the noun phrase over which it quantifies, are similar to adverbial-*each* distributive constructions in that they are incompatible with collective interpretations, and they are similar to pseudopartitive constructions in that their measure functions are subject to the same monotonicity constraint (Nakanishi 2004).

As discussed in Ursini 2006, directional prepositional phrases can be modified by measure phrases when they are unbounded (*three miles towards the beach*), but not when they are bounded (**three miles to the beach*). This points towards the possibility that this is a distributive construction. The measure

phrase in these examples might be a Key, and its directional prepositional phrase a Share.

For-adverbials are not the only examples of aspectually sensitive constructions. As noted in Karttunen 1974, Hitzeman 1991, 1997, *until* is also sensitive to the atelic-telic distinction. The same appears to be true for *since*, though the situation is more complicated here. In English, *since* requires the Perfect, which is often analyzed as introducing an Extended Now interval (Dowty 1979, von Stechow 2002a). This muddles the picture, but once we move to German, where the equivalent *seit* does not require the Perfect, we see the correlation emerge:

> An Extended Now Perfect modified by *since α* may embed any aktionsart. German perfects modified by *seit α* may have these readings, though they are a bit marked. In contrast to English, *seit α* may combine with simple tenses as well, but then it behaves differently. The aktionsart modified must be a state or an activity. (von Stechow 2002a)

The theory of the behavior of indefinites in the scope of *for*-adverbials presented in Chapter 8 can be extended to other modifiers that do not or not easily induce covariation of indefinites in their scope. In particular, habitual or generic sentences show analogous scopal effects to *for*-adverbials (Carlson 1977, Kratzer 2007). This is illustrated in the examples in (4), taken from Krifka, Pelletier, Carlson, ter Meulen, Chierchia & Link 1995, 39f.

(4) a. Mary smokes cigarettes / *a cigarette.
b. Mary smokes cigarettes / a cigarette after dinner.

Just like in the case of *for*-adverbials, singular indefinites can covary with habitual operators when a salient level of granularity is provided (see also Rimell 2004).

(5) a. Yesterday, Mary smoked cigarettes / *a cigarette for an hour.
b. Last month, Mary smoked cigarettes / a cigarette after dinner for a week.

This fact suggests that the generic quantifier might carry a stratified reference presupposition, and that it might be appropriate to fold strata theory into a more

general theory of imperfective and generic/habitual sentences such as the one proposed in Deo 2009 for English and Gujarati and extended to *for*-adverbials in Deo & Piñango 2011. Similar effects to the ones in (5) hold in Hindi (Ashwini Deo, p.c.), which is close to Gujarati. For more discussion and for a synthesis of Deo & Piñango 2011 and the present account, see Champollion 2013.

Other potential applications can be found in morphosyntax. Strata theory may help explain how boundedness is marked by semantic case in Finnish (Krifka 1992, Kiparsky 1998), by perfective prefixes in Slavic (Filip 2000), and by accusative adverbials in Korean (Wechsler & Lee 1996). Throughout this book, I have assumed that singular count nouns are interpreted as involving reference to singular entities but not sums. This was necessary in order to explain the contrast between *five pounds of books* and **five pounds of book*, and it is justified in English by the corresponding contrast in numeral phrases (*five books* vs. **five book*). Other languages, like Hungarian and Turkish, require nouns to be morphologically singular when they combine with numerals, and also when they are used as substance nouns in pseudopartitives. From the point of view of the present theory, this leads to the view that singular nouns in these languages and constructions can be interpreted as involving reference to sums. Theories that adopt this view (Farkas & de Swart 2010, Bale, Gagnon & Khanjian 2011) are compatible with the view developed here. This may be seen as an advantage for them over theories that reject this assumption (Ionin & Matushansky 2006).

I have focused on pseudopartitives like *three liters of water*. As noted by Schwarzschild (2002, 2006), true partitives like *three liters of the water* and comparatives like *more water* are subject to the same constraint on measure functions as pseudopartitives. An extension of the present account to true partitives is straightforward if we assume that the constituent *of the water* has divisive reference, stratified reference, or whatever is the relevant property of the substance nominal of pseudopartitives. However, the assumption that the *of*-PP has divisive reference is not uncontroversial: Ladusaw (1982), and many accounts that follow him, adopts it but Matthewson (2001) argues against it.

While I have shown that the behavior of a large number of constructions can be reduced to one principle (namely, sensitivity to stratified reference), I have not addressed the question why this principle exists and why these constructions are sensitive to it. In formal semantics, this is not the kind of question that is typically answered, or perhaps even answerable. There is no agreement on

whether it even needs to be answered. On the one hand, for the purposes of comparing formal semantic theories to each other, formal semantics usually pays attention to something similar to Chomskyan explanatory adequacy: "If a number of highly complex and apparently unrelated facts are reducible to a few simple principles, then these principles explain these facts" (von Stechow 1984a). On the other hand, we need not confine ourselves in this way: "we can seek a level of explanation deeper than explanatory adequacy, asking not only what the properties of language are but also why they are that way" (Chomsky 2001).

I do not know why there should be any constructions in language, let alone so many of them, that are sensitive to stratified reference or to the various properties it captures. To answer this question, it may be worth looking for explanations in domains other than formal semantics, such as first-language acquisition. Stratified reference may conceivably help first-language learners distinguish the functions of different constructions. For example, learners must distinguish constructions that specify the quantity of a substance or event, such as pseudopartitives, from superficially similar constructions that specify non-quantity-related properties, such as attributive constructions (*three-pound strawberries*). Attributive constructions do not impose stratified reference and are therefore compatible with intensive measure functions, as illustrated by *three-degree water* (Schwarzschild 2006). Apart from sometimes misinterpreting the number word in pseudopartitives as referring to cardinality of a relevant set of objects, four-year-olds tend to correctly distinguish pseudopartitives from attributives (Syrett 2013). Similarly, various studies have suggested that children are sensitive to the atelic-telic opposition as early as three years old, raising the question of how much of it is innately specified (Crain 2011). If something like the boundedness-unboundedness opposition is among the building blocks of the language faculty, then we might expect that children access it early on, and possibly that a child will learn different constructions that involve this building block at the same age.

Another kind of explanation, as well as another avenue for further research, may be found in linguistic theories that study conceptual linguistic knowledge and the mental patterns and representations in which it is organized, such as cognitive semantics (Talmy 2011) and conceptual semantics (Jackendoff 1996). The metaphor I have used to explain stratified reference, namely that individuals, substances, and events occupy regions in an abstract space whose dimensions include thematic roles and measure functions as well as spatial and temporal

dimensions, is reminiscent of the theory of conceptual spaces in Gärdenfors 2007. The words that introduce stratified reference constraints, such as *for*, *until*, *of*, *each* and *all*, belong to closed-class categories such as prepositions and determiners. Cognitive semantics has found that closed-class categories are highly constrained in the range of conceptual categories they can express. The relevant conceptual category in this case would be boundedness. While cognitive semantics is sometimes seen as opposed to formal semantics, this does not have to be so (Krifka 1998, Zwarts & Verkuyl 1994). We can make use of formal semantic techniques such as the ones I have developed here, and assume that expressions are interpreted by elements of conceptual structures rather than entities in the real world. The present system may then be seen as a step towards a model-theoretic characterization of such frameworks.

Appendix: Distributivity operators as repair strategies

At various places in this book, I have assumed that the distributivity operators D and Part can act as repair strategies that shift the meanings of predicates so that they satisfy constraints imposed by distributive constructions. I have assumed that this is possible because the output of a distributivity operator has stratified reference with respect to any granularity level that is at least as coarse as the granularity parameter of the operator.

Here I prove a theorem that justifies this assumption. The guiding intuition behind the proof is based on the idea that the granularity parameter of a distributive construction acts as a threshold on the thickness of the strata to which the Share predicate is required to apply. Distributivity operators ensure stratified reference by applying the predicates that they modify to entities that are small enough to satisfy these thresholds. Therefore the output of the distributivity operator will satisfy stratified reference whenever its own granularity setting is fine enough. To put it differently, we may think of a distributive construction as representing a sieve, while a distributivity operator produces sand to be sent through that sieve. If C is the granularity level of the operator and C' is the granularity level of the construction, then the sand will be fine enough to pass through the sieve whenever $C \subseteq C'$.

A sieve that is coarse enough for a grain of sand to pass through should of course also be coarse enough for any part of that grain to pass through. Given this kind of reasoning, it makes sense to instantiate the granularity parameter on the distributive construction with a predicate that has divisive reference (see Section 2.3.5). I have implemented this assumption in all distributive constructions (see Section 4.6).

The following theorem refers the D and Part operators repeated here from Chapter 9, and to the definitions of universal and restricted stratified reference repeated here from Chapter 4:

(6) **Definition: Event-based D operator**

$$[\![\mathrm{D}_\theta]\!] \stackrel{\text{def}}{=} \lambda V \lambda e.\ e \in {}^*\lambda e' \left(\begin{array}{l} V(e') \wedge \\ \mathrm{Atom}(\theta(e')) \end{array} \right)$$

(Takes an event predicate V and returns a predicate that holds of any event e which can be divided into events that are in V and whose θs are atomic.)

(7) **Definition: Event-based Part operator**

$$[\![\mathrm{Part}_{\theta,C}]\!] = \lambda V \lambda e.\ e \in {}^*\lambda e' \left(\begin{array}{l} V(e') \wedge \\ C(\theta(e')) \end{array} \right)$$

(Takes an event predicate V and returns a predicate that holds of any event e which can be divided into events that are in V and whose θs satisfy the contextually salient predicate C.)

(8) **Definition: Universal stratified reference**

$$\mathrm{SR}_{d,g}(P) \stackrel{\text{def}}{=} \forall x [P(x) \rightarrow x \in {}^*\lambda y \left(\begin{array}{l} P(y) \wedge \\ g(d(y)) \end{array} \right)]$$

(P has universal stratified reference along dimension d with granularity g if and only if any x in P can be divided into one or more parts in P that are each mapped by d to something in g.)

(9) **Definition: Restricted stratified reference**

$$\mathrm{SR}_{d,g}(P)(x) \stackrel{\text{def}}{=} x \in {}^*\lambda y \left(\begin{array}{l} P(y) \wedge \\ g(d(y)) \end{array} \right)$$

(P stratifies x along dimension d with granularity g if and only if x can be divided into one or more parts in P that are each mapped by d to something in g.)

Here is the theorem along with some relevant corollaries:

(10) **Theorem: $\mathrm{Part}_{\theta,C}$ leads to universal stratified reference**

$\forall V \forall \theta \forall C \forall C' [C \subseteq C' \rightarrow \mathrm{SR}_{\theta,C'}(\mathrm{Part}_{\theta,C}(V))]$

(When the Part operator, coindexed with thematic role θ and with granularity threshold C, is applied to any predicate, the result has universal stratified reference with respect to θ and any C' that is at least as coarse as C.)

(11) **Corollary: $\mathrm{Part}_{\theta,C}$ leads to restricted stratified reference**

$\forall V \forall \theta \forall C \forall C' \forall e [C \subseteq C' \rightarrow \mathrm{SR}_{\theta,C'}(\mathrm{Part}_{\theta,C}(V))(e)]$

(When the Part operator, coindexed with thematic role θ and with granularity threshold C, is applied to any predicate, the result stratifies any e with respect to θ and any C' that is at least as coarse as C.)

(12) **Corollary: $\mathbf{D}_\theta$ leads to universal stratified reference**
$\forall V \forall \theta \forall C' [\text{Atom} \subseteq C' \rightarrow \text{SR}_{\theta,C'}(\text{D}_\theta(V))]$
(When the D operator coindexed with thematic role θ is applied to any predicate, the result has universal stratified reference with respect to θ and any C' over an atomic domain.)

(13) **Corollary: $\mathbf{D}_\theta$ leads to restricted stratified reference**
$\forall V \forall \theta \forall C' \forall e [\text{Atom} \subseteq C' \rightarrow \text{SR}_{\theta,C'}(\text{D}_\theta(V))(e)]$
(When the Part operator coindexed with thematic role θ and with granularity threshold C is applied to any predicate, the result stratifies any e with respect to θ and any C' over an atomic domain.)

To prove Theorem (10), we start with the following tautology:

$$(14) \quad \forall V \forall \theta \forall C \forall e [[e \in {}^*\lambda e' \begin{pmatrix} V(e') \wedge \\ C(\theta(e')) \end{pmatrix}] \rightarrow [e \in {}^*\lambda e' \begin{pmatrix} V(e') \wedge \\ C(\theta(e')) \end{pmatrix}]]$$

We rewrite (14) by introducing C' as a superset of C and conjoining $C(\theta(e'))$ with $C'(\theta(e'))$. This is harmless since the first conjunct entails the second:

$$(15) \quad \forall V \forall \theta \forall C \forall C' \forall e [[C \subseteq C' \wedge e \in {}^*\lambda e' \begin{pmatrix} V(e') \wedge \\ C(\theta(e')) \end{pmatrix}] \rightarrow [e \in {}^*\lambda e' \begin{pmatrix} V(e') \wedge \\ C(\theta(e')) \wedge C'(\theta(e')) \end{pmatrix}]]$$

We rewrite (15) as follows:

$$(16) \quad \forall V \forall \theta \forall C \forall C'.\ C \subseteq C' \rightarrow \forall e [[e \in {}^*\lambda e' \begin{pmatrix} V(e') \wedge \\ C(\theta(e')) \end{pmatrix}] \rightarrow [e \in {}^*\lambda e' \begin{pmatrix} [e' \in \lambda e'' \begin{pmatrix} V(e'') \wedge \\ C(\theta(e'')) \end{pmatrix}] \wedge C'(\theta(e')) \end{pmatrix}]]$$

From Theorem (19) in Section 2.3.1, we know that $\forall e [V(e) \rightarrow {}^*V(e)]$. Using this fact, we rewrite (16) as follows:

$$(17)\quad \forall V \forall \theta \forall C \forall C'.\ C \subseteq C' \rightarrow \forall e[[e \in {}^*\lambda e' \left(\begin{array}{l} V(e') \wedge \\ C(\theta(e')) \end{array} \right)]$$
$$\rightarrow [e \in {}^*\lambda e' \left([e' \in {}^*\lambda e'' \left(\begin{array}{l} V(e'') \wedge \\ C(\theta(e'')) \end{array} \right)] \wedge C'(\theta(e')) \right)]]$$

By two applications of the definition of $\text{Part}_{\theta,C}$, we rewrite (17) as follows:

$$(18)\quad \forall V \forall \theta \forall C \forall C'.\ C \subseteq C' \rightarrow$$
$$\forall e[\text{Part}_{\theta,C}(V)(e) \rightarrow e \in {}^*\lambda e' \left(\begin{array}{l} \text{Part}_{\theta,C}(V)(e') \wedge \\ C'(\theta(e')) \end{array} \right)]$$

Theorem (10) follows from (18) by the definition of universal stratified reference. The corollaries in (11), (12), and (13) follow from it immediately: Restricted stratified reference is a special case of universal stratified reference and is equivalent to the Part operator, and the D operator in turn is a special case of the Part operator.

Bibliography

Abusch, Dorit & Mats Rooth. 1990. Temporal adverbs and the English Perfect. *20th Annual Meeting of the North East Linguistic Society (NELS 20)*. 5–19.

Akmajian, Adrian & Adrienne Lehrer. 1976. NP-like quantifiers and the problem of determining the head of an NP. *Linguistic Analysis* 2(4). 395–413.

Aldridge, Maurice Vincent. 1982. *English quantifiers: A study of quantifying expressions in linguistic science and modern English usage*. Avebury, UK: Avebury.

Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 15(1). 5–16. http://dx.doi.org/10.1007/bf00627432.

Bale, Alan. 2009. Yet more evidence for the emptiness of plurality. *38th Annual Meeting of the North East Linguistic Society (NELS 38)*. 75–88.

Bale, Alan Clinton, Michaël Gagnon & Hrayr Khanjian. 2011. Cross-linguistic representations of numerals and number marking. *20th Semantics and Linguistic Theory Conference (SALT 20)*. 582–598. http://dx.doi.org/10.3765/salt.v20i0.2552.

Balusu, Rahul. 2005. Distributive reduplication in Telugu. *36th Annual Meeting of the North East Linguistic Society (NELS 36)*. 39–53. http://semanticsarchive.net/Archive/mE0YTZkZ.

Balusu, Rahul & Karattuparambil A. Jayaseelan. 2013. Distributive quantification by reduplication in Dravidian. In *Strategies of quantification*, 60–86. Oxford, UK: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199692439.003.0004.

Barker, Chris. 1992. Group terms in English: Representing groups as atoms. *Journal of Semantics* 9(1). 69–93. http://dx.doi.org/10.1093/jos/9.1.69.

Barker, Chris. 2002. Continuations and the nature of quantification. *Natural Language Semantics* 10(3). 211–242. http://dx.doi.org/10.1023/a:1022183511876.

Barner, David & Jesse Snedeker. 2005. Quantity judgments and individuation: Evidence that mass nouns count. *Cognition* 97(1). 41–66. http://dx.doi.org/10.1016/j.cognition.2004.06.009.

Barwise, Jon & Robin Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and Philosophy* 4(2). 159–219. http://dx.doi.org/10.1007/bf00350139.

Bayer, Samuel L. 1997. *Confessions of a lapsed Neo-Davidsonian: Events and arguments in compositional semantics*. New York, NY: Garland. http://dx.doi.org/10.4324/9780203055106.

Bealer, George. 1979. Predication and matter. In Francis Jeffry Pelletier (ed.), *Mass terms: Some philosophical problems*, vol. 6 (Studies in Linguistics and Philosophy), 279–294. Berlin, Germany: Springer. http://dx.doi.org/10.1007/978-1-4020-4110-5_19.

Beaver, David. 2001. *Presupposition and assertion in dynamic semantics*. Stanford, CA: CSLI Publications.

Beavers, John. 2008. Multiple incremental themes and Figure/Path relations. *18th Semantics and Linguistic Theory Conference (SALT 18)*. 90–107. http://dx.doi.org/10.3765/salt.v18i0.2495.

Beavers, John. 2012. Lexical aspect and multiple incremental themes. In Violeta Demonte & Louise McNally (eds.), *Telicity, change, and state: A cross-categorial view of event structure*, 23–59. Oxford, UK: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199693498.003.0002.

Beck, Sigrid & Uli Sauerland. 2000. Cumulation is needed: A reply to Winter 2000. *Natural Language Semantics* 8(4). 349–371. http://dx.doi.org/10.1023/a:1011240827230.

Beck, Sigrid & Arnim von Stechow. 2007. Pluractional adverbials. *Journal of Semantics* 24(3). 215–254. http://dx.doi.org/10.1093/jos/ffm003.

Beghelli, Filippo. 1997. The syntax of distributivity and pair-list readings. In Anna Szabolcsi (ed.), *Ways of scope taking*, vol. 65 (Studies in Linguistics and Philosophy), chap. 10, 349–408. Dordrecht, Netherlands: Kluwer Academic. http://dx.doi.org/10.1007/978-94-011-5814-5_10.

Beghelli, Filippo & Tim Stowell. 1997. Distributivity and negation: The syntax of *each* and *every*. In Anna Szabolcsi (ed.), *Ways of scope taking*, vol. 65, 71–107. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-011-5814-5_3.

Bennett, Michael R. 1974. *Some extensions of a Montague fragment of English*. Los Angeles, CA: University of California PhD thesis.

Bennett, Michael R. & Barbara H. Partee. 1972. *Toward the logic of tense and aspect in English*. Indiana University Linguistics Club. http://dx.doi.org/10.1002/9780470751305.ch4.

van Benthem, Johan. 1983. *The logic of time*. Dordrecht, Netherlands: Reidel.

Binnick, Robert I. 1969. *Studies in the derivation of predicative structures*. Chicago, IL: University of Chicago PhD thesis.

Bittner, Maria. 1994. Cross-linguistic semantics. *Linguistics and Philosophy* 17(1). 53–108. http://dx.doi.org/10.1007/bf00985041.

Blaheta, Don. 2003. *Binominal* each*: Evidence for a modified type system*. Providence, RI: Brown University MA thesis. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.10.7455&rep=rep1&type=pdf.

Bobaljik, Jonathan D. 1995. *Morphosyntax: The syntax of verbal inflection*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://www.ai.mit.edu/projects/dm/theses/bobaljik95.pdf.

Bobaljik, Jonathan D. 2001. Floating quantifiers: Handle with care. In Lisa Cheng & Rynt Sybesma (eds.), *The second state-of-the-article book* (45-68). Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110890952.107.

Borik, Olga. 2006. *Aspect and reference time*. Vol. 13 (Oxford studies in theoretical linguistics). Oxford, UK: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199291298.001.0001.

Bortolussi, Bernard. 2013. Latin *quisque* as a "floating" quantifier. *Journal of Latin Linguistics* 12(1). 5–26. http://dx.doi.org/10.1515/joll-2013-0002.

Brasoveanu, Adrian. 2013. Modified numerals as post-suppositions. *Journal of Semantics* 30(2). 155–209. http://dx.doi.org/10.1093/jos/ffs003.

Brasoveanu, Adrian & Jakub Dotlačil. 2015. Strategies for scope taking. *Natural Language Semantics* 23(1). 1–19. http://dx.doi.org/10.1007/s11050-014-9109-1.

Brasoveanu, Adrian & Donka F. Farkas. 2011. How indefinites choose their scope. *Linguistics and Philosophy* 34(1). 1–55. http://dx.doi.org/10.1007/s10988-011-9092-7.

Breheny, Richard. 2008. A new look at the semantics and pragmatics of numerically quantified noun phrases. *Journal of Semantics* 25(2). 93–139. http://dx.doi.org/10.1093/jos/ffm016.

Brisson, Christine. 1998. *Distributivity, maximality and floating quantifiers*. New Brunswick, NJ: Rutgers University PhD thesis. http://ling.rutgers.edu/images/10.1.1.121.4641.pdf.

Brisson, Christine. 2003. Plurals, *all*, and the nonuniformity of collective predication. *Linguistics and Philosophy* 26(2). 129–184. http://dx.doi.org/10.1023/a:1022771705575.

Bunt, Harry C. 1979. Ensembles and the formal semantic properties of mass terms. In Francis Jeffry Pelletier (ed.), *Mass terms: Some philosophical problems*, vol. 6 (Studies in Linguistics and Philosophy), 249–277. Berlin, Germany: Springer. http://dx.doi.org/10.1007/978-1-4020-4110-5_18.

Bunt, Harry C. 1985. *Mass terms and model-theoretic semantics*. Cambridge, UK: Cambridge University Press.

Bunt, Harry C. 2006. Mass expressions. In Keith Brown (ed.), *Encyclopedia of language and linguistics*, 2nd edition. Amsterdam, Netherlands: Elsevier. http://dx.doi.org/10.1016/b0-08-044854-2/01097-x.

Büring, Daniel. 2005. *Binding theory*. Cambridge, UK: Cambridge University Press. http://dx.doi.org/10.1017/cbo9780511802669.

Burzio, Luigi. 1986. *Italian syntax: A government-binding approach*. Berlin, Germany: Springer. http://dx.doi.org/10.1007/978-94-009-4522-7.

Cable, Seth. 2014. Distributive numerals and distance distributivity in Tlingit (and beyond). *Language* 90(3). 562–606. http://dx.doi.org/10.1353/lan.2014.0055.

Carlson, Gregory N. 1977. *Reference to kinds in English*. Amherst, MA: University of Massachusetts PhD thesis. http://semanticsarchive.net/Archive/jk3NzRlY.

Carlson, Gregory N. 1984. Thematic roles and their role in semantic interpretation. *Linguistics* 22(3). 259–280. http://dx.doi.org/10.1515/ling.1984.22.3.259.

Carlson, Gregory N. 1989. The semantic interpretation of generic sentences. In Gennaro Chierchia, Barbara H. Partee & Raymond Turner (eds.), *Semantic issues*, vol. 2 (Property theory, type theory, and semantics), 167–192. Dordrecht, Netherlands: Kluwer.

Carlson, Gregory N. 1998. Thematic roles and the individuation of events. In Susan Rothstein (ed.), *Events and grammar*, 35–51. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-011-3969-4_3.

Carlson, Gregory N. 2006. Generics, habituals and iteratives. In Keith Brown (ed.), *Encyclopedia of language and linguistics*. Amsterdam, Netherlands: Elsevier. http://dx.doi.org/10.1016/b0-08-044854-2/00256-x.

Carlson, Lauri. 1981. Aspect and quantification. In *Tense and aspect*, vol. 14 (Syntax and Semantics), 31–64. New York, NY: Academic Press.

Carnie, Andrew. 2006. *Syntax: A generative introduction*. Oxford, UK: Blackwell Publishing.

Carston, Robyn. 1998. Informativeness, relevance and scalar implicature. In Robin Carston & Seiji Uchida (eds.), *Relevance theory: Applications and im-*

plications, 179–236. Amsterdam, Netherlands: John Benjamins. http://dx.doi.org/10.1075/pbns.37.11car.

Cartwright, Helen. 1975. Amounts and measures of amount. *Noûs* 9(2). 143–164. http://dx.doi.org/10.2307/2214598.

Casati, Roberto & Achille C. Varzi. 1999. *Parts and places: The structures of spatial representation*. Cambridge, MA: MIT Press.

Champollion, Lucas. 2009. A unified account of distributivity, *for*-adverbials, and measure constructions. In Martin Prinzhorn, Viola Schmitt & Sarah Zobel (eds.), *Sinn und Bedeutung 14*, 84–100. Vienna, Austria: Universität Wien.

Champollion, Lucas. 2010a. Cumulative readings of *every* do not provide evidence for events and thematic roles. *Logic, Language and Meaning: 17th Amsterdam Colloquium*. 213–222. http://dx.doi.org/10.1007/978-3-642-14287-1_22.

Champollion, Lucas. 2010b. *Parts of a whole: Distributivity as a bridge between aspect and measurement*. Philadelphia, PA: University of Pennsylvania PhD thesis. http://repository.upenn.edu/edissertations/958/.

Champollion, Lucas. 2011a. Quantification and negation in event semantics. *The Baltic International Yearbook of Cognition, Logic and Communication* 6. 1–23. http://dx.doi.org/10.4148/biyclc.v6i0.1563.

Champollion, Lucas. 2011b. Temporal prepositional phrases and implicit variables. Ms. University of Pennsylvania. http://www.champollion.com/temporal-pps-and-implicit-variables.pdf.

Champollion, Lucas. 2012. Each vs. jeweils: A cover-based view on distance distributivity. *Logic, Language and Meaning: 18th Amsterdam Colloquium*. 251–260. http://dx.doi.org/10.1007/978-3-642-31482-7_26.

Champollion, Lucas. 2013. The scope and processing of *for*-adverbials: A reply to Deo and Piñango. *23rd Semantics and Linguistic Theory Conference (SALT 23)*. 432–452. http://dx.doi.org/10.3765/salt.v23i0.2680.

Champollion, Lucas. 2014. Reply to Roger Schwarzschild on event semantics. Ms. New York University. http://ling.auf.net/lingbuzz/002165.

Champollion, Lucas. 2015a. Every boy bought two sausages each: Distributivity and dependent numerals. *32nd West Coast Conference on Formal Linguistics (WCCFL 32)*. 103–110. http://www.lingref.com/cpp/wccfl/32/abstract3161.html.

Champollion, Lucas. 2015b. Refining stratified reference. *Theoretical Linguistics* 41(3-4). 223–240. http://dx.doi.org/10.1515/tl-2015-0015.

Champollion, Lucas. 2015c. Stratified reference: The common core of distributivity, aspect, and measurement. *Theoretical Linguistics* 41(3-4). 109–149. http://dx.doi.org/10.1515/tl-2015-0008.

Champollion, Lucas. 2015d. The interaction of compositional semantics and event semantics. *Linguistics and Philosophy* 38(1). 31–66. http://dx.doi.org/10.1007/s10988-014-9162-8.

Champollion, Lucas. 2016a. Covert distributivity in algebraic event semantics. *Semantics and Pragmatics* 9(15). 1–66. http://dx.doi.org/10.3765/sp.9.15.

Champollion, Lucas. 2016b. Linking the collective-distributive opposition and the telic-atelic opposition. In *46th Annual Meeting of the North East Linguistic Society (NELS 46)*. Montreal, Canada.

Champollion, Lucas. 2016c. Overt distributivity in algebraic event semantics. *Semantics and Pragmatics* 9(16). 1–65. http://dx.doi.org/10.3765/sp.9.16.

Champollion, Lucas. published online 31 July 2015. Ten men and women got married today: Noun coordination and the intersective theory of conjunction. *Journal of Semantics*. http://dx.doi.org/10.1093/jos/ffv008.

Champollion, Lucas. to appear. Distributivity, collectivity and cumulativity. In Lisa Matthewson, Cécile Meier, Hotze Rullmann & Thomas Ede Zimmermann (eds.), *Wiley's companion to semantics*. Hoboken, NJ: Wiley. http://ling.auf.net/lingbuzz/002133.

Champollion, Lucas & Manfred Krifka. to appear. Mereology. In Paul Dekker & Maria Aloni (eds.), *Cambridge handbook of formal semantics*. Cambridge, UK: Cambridge University Press. http://ling.auf.net/lingbuzz/002099.

Cheng, Chung-Ying. 1973. Comments on Moravcsik's paper. In Jaakko Hintikka, Julius Moravcsik & Patrick Suppes (eds.), *Approaches to natural language*, 286–288. Dordrecht, Netherlands: Reidel. http://dx.doi.org/10.1007/978-94-010-2506-5_14.

Chierchia, Gennaro. 1998a. Plurality of mass nouns and the notion of 'semantic parameter'. In Susan Rothstein (ed.), *Events and grammar*, vol. 70 (Studies in linguistics and philosophy), 53–104. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-011-3969-4_4.

Chierchia, Gennaro. 1998b. Reference to kinds across language. *Natural Language Semantics* 6(4). 339–405. http://dx.doi.org/10.1023/a:1008324218506.

Chierchia, Gennaro. 2006. Broaden your views: Implications of domain widening and the "logicality" of language. *Linguistic Inquiry* 37(4). 535–590. http://dx.doi.org/10.1162/ling.2006.37.4.535.

Chierchia, Gennaro. 2008. *On being 'one'*. Paper presented at the 2008 Workshop on Markedness and Underspecification in the Morphology and Semantics of Agreement (MUMSA).

Chierchia, Gennaro. 2010. Mass nouns, vagueness and semantic variation. *Synthese* 174(1). 99–149. http://dx.doi.org/10.1007/s11229-009-9686-6.

Choe, Jae-Woong. 1987. *Anti-quantifiers and a theory of distributivity*. Amherst, MA: University of Massachusetts PhD thesis. http://scholarworks.umass.edu/dissertations/AAI8727027/.

Choe, Jae-Woong. 1991. Georgian reduplication and a relational theory of distributivity. In Akira Ikeya (ed.), *Sixth Japanese-Korean joint conference on formal linguistics*. Tokyo, Japan: The Logico-Linguistic Society of Japan. https://dspace.wul.waseda.ac.jp/dspace/bitstream/2065/11793/1/JK6-4-25.pdf.

Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht, Netherlands: Foris. http://dx.doi.org/10.1515/9783110884166.

Chomsky, Noam. 1982. *The generative enterprise. a discussion with Riny Huybregts and Henk van Riemsdijk*. Dordrecht, Netherlands: Foris.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001. Beyond explanatory adequacy. *MIT Occasional Papers in Linguistics* 20. 104–131.

Cohen, Ariel. 2005. More than bare existence: An implicature of existential bare plurals. *Journal of Semantics* 22. 389–400. http://dx.doi.org/10.1093/jos/ffh031.

Collins, Chris & Paul Martin Postal. 2012. *Imposters: A study of pronominal agreement*. MIT Press. http://dx.doi.org/10.7551/mitpress/9780262016889.001.0001.

Comrie, Bernard. 1976. *Aspect*. Cambridge, UK: Cambridge University Press.

Corver, Norbert. 2015. (Un)boundedness across syntactic categories. *Theoretical Linguistics* 41(3-4). http://dx.doi.org/10.1515/tl-2015-0009.

Crain, Stephen. 2011. Meaning in first language acquisition. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning*, vol. 3 (Handbücher zur Sprach- und Kommunikationswissenschaft / Handbooks of Linguistics and Communication

Science (HSK)), chap. 103, 2724–2752. de Gruyter. http://dx.doi.org/10.1515/9783110253382.2724.

Cresswell, Max J. 1976. The semantics of degree. In Barbara H. Partee (ed.), *Montague grammar*, 261–292. New York, NY: Academic Press. http://www.sfs.uni-tuebingen.de/~astechow/Lehre/Paris08/cresswell76%20Kopie.pdf.

Cresswell, Max J. 1985. Review of Landman and Veltman (eds.), 1984, *Varieties of Formal Semantics*. *Linguistics* 23.

Daubert, B. F. & T. H. Clarke. 1944. Unsaturated Synthetic Glycerides. VI. Polymorphism of Symmetrical Monoöleyldisaturated Triglycerides. *Journal of the American Chemical Society* 66(5). 690–691. http://dx.doi.org/10.1021/ja01233a008.

Davidson, Donald. 1967. The logical form of action sentences. In Nicholas Rescher (ed.), *The logic of decision and action*, 81–95. Pittsburgh, PA: University of Pittsburgh Press. http://dx.doi.org/10.1093/0199246270.003.0006.

Davidson, Donald. 1969. The individuation of events. In Nicholas Rescher (ed.), *Essays in honor of Carl G. Hempel: A tribute on the occasion of his sixty-fifth birthday* (Synthese Library), 216–234. Dordrecht, Netherlands: Springer. http://dx.doi.org/10.1007/978-94-017-1466-2_11.

Dekker, Paul. 1997. Cases, adverbs, situations and events. In Hans Kamp & Barbara H. Partee (eds.), *Workshop on context dependence*. IMS, Stuttgart, Germany & UFAL, Prague, Czech Republic. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.16.7314&rep=rep1&type=pdf.

Delfitto, Denis. 2005. Bare plurals. In Martin Everaert & Henk van Riemsdijk (eds.), *The Blackwell companion to syntax*. Oxford, UK: Blackwell Publishing. http://dx.doi.org/10.1002/9780470996591.ch8.

Deo, Ashwini Sharad. 2009. Unifying the imperfective and the progressive: Partitions as quantificational domains. *Linguistics and Philosophy* 32(5). 475–521. http://dx.doi.org/10.1007/s10988-010-9068-z.

Deo, Ashwini Sharad & Maria Mercedes Piñango. 2011. Quantification and context in measure adverbs. *21st Semantics and Linguistic Theory Conference (SALT 21)*. 295–312. http://dx.doi.org/10.3765/salt.v21i0.2614.

Dobrovie-Sorin, Carmen. 2014. Collective quantification and the homogeneity constraint. *24th Semantics and Linguistic Theory Conference (SALT 24)* 24. 453–472. http://dx.doi.org/10.3765/salt.v24i0.2428.

van der Does, Jaap. 1993. Sums and quantifiers. *Linguistics and Philosophy* 16(5). 509–550. http://dx.doi.org/10.1007/978-94-017-2706-8_6.

van der Does, Jaap & Henk J. Verkuyl. 1996. Quantification and predication. In Kees van Deemter & Stanley Peters (eds.), *Semantic ambiguity and underspecification*, 27–54. Stanford, CA: CSLI Publications. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.37.8829&rep=rep1&type=pdf.

Doetjes, Jenny. 1997. *Quantifiers and selection: On the distribution of quantifying expressions in French, Dutch and English*. The Hague, Netherlands: Holland Institute of Generative Linguistics PhD thesis. https://openaccess.leidenuniv.nl/bitstream/handle/1887/19731/doetjes_geheel%5B1%5D.pdf?sequence=1.

Doetjes, Jenny. 2015. Very small or just not too big? Stratified reference and granularity. *Theoretical Linguistics* 41(3-4). http://dx.doi.org/10.1515/tl-2015-0010.

Dotlačil, Jakub. 2011. Fastidious distributivity. *21st Semantics and Linguistic Theory Conference (SALT 21)*. 313–332. http://dx.doi.org/10.3765/salt.v21i0.2596.

Dotlačil, Jakub. 2012. Binominal *each* as an anaphoric determiner: Compositional analysis. In Ana Aguilar Guevara, Anna Chernilovskaya & Rick Nouwen (eds.), *Sinn und bedeutung 16*, 211–224. Cambridge, MA: MIT Working Papers in Linguistics. http://mitwpl.mit.edu/open/sub16/Dotlacil.pdf.

Dotlačil, Jakub. 2013. Reciprocals distribute over information states. *Journal of Semantics* 30(4). 423–477. http://dx.doi.org/10.1093/jos/ffs016.

Dougherty, Ray C. 1970. A grammar of coördinate conjoined structures: I. *Language* 46(4). 850–898. http://dx.doi.org/10.2307/412260.

Dougherty, Ray C. 1971. A grammar of coördinate conjoined structures: II. *Language* 47(2). 298–339. http://dx.doi.org/10.2307/412083.

Dowty, David R. 1972. *Studies in the logic of verb aspect and time reference in English*. Austin, TX: University of Texas PhD thesis.

Dowty, David R. 1979. *Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and in Montague's PTQ*. Dordrecht, Netherlands: Reidel. http://dx.doi.org/10.1007/978-94-009-9473-7.

Dowty, David R. 1987. Collective predicates, distributive predicates, and *all*. In Ann Miller & Zheng-sheng Zhang (eds.), *3rd Eastern States Conference on Linguistics (ESCOL)*, 97–115. Columbus, OH: Ohio State University.

Dowty, David R. 1991. Thematic proto-roles and argument selection. *Language* 67(3). 547–619. http://dx.doi.org/10.1353/lan.1991.0021.

Dowty, David R. & Belinda Brodie. 1984. The semantics of "floated" quantifiers in a transformationless grammar. *3rd West Coast Conference on Formal Linguistics (WCCFL 3)*. 75–90.

Eberle, Kurt. 1998. The influence of Plural NPs on the Aktionsart in DRT. In Fritz Hamm & Erhard Hinrichs (eds.), *Plural quantification*. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-017-2706-8_3.

Eckardt, Regine. 1998. *Adverbs, events, and other things*. Vol. 379 (Linguistische Arbeiten). Tübingen, Germany: Niemeyer. http://dx.doi.org/10.1515/9783110913781.

Egg, Markus. 1994. *Aktionsart und Kompositionalität*. Berlin, Germany: Akademie Verlag.

Egg, Markus. 1995. Aspect and quantification - an iterative approach. *10th Amsterdam Colloquium*. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.37.2666&rep=rep1&type=pdf.

Erlewine, Michael Yoshitaka & Hadas Kotek. 2016. A streamlined approach to online linguistic surveys. *Natural Language and Linguistic Theory* 34(2). 481–495. http://dx.doi.org/10.1007/s11049-015-9305-9. http://dx.doi.org/10.1007/s11049-015-9305-9.

Farkas, Donka F. 1997. Dependent indefinites. In Francis Corblin, Danièle Godard & Jean-Marie Marandin (eds.), *Empirical issues in formal syntax and semantics*, 243–268. Bern, Switzerland: Peter Lang. http://people.ucsc.edu/~farkas/papers/reduplication.pdf.

Farkas, Donka F. & Henriëtte de Swart. 2010. The semantics and pragmatics of plurals. *Semantics and Pragmatics* 3(6). 1–54. http://dx.doi.org/10.3765/sp.3.6.

Ferreira, Marcelo. 2005. *Event quantification and plurality*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://hdl.handle.net/1721.1/33697.

Filip, Hana. 1999. *Aspect, eventuality types, and nominal reference*. New York, NY: Garland.

Filip, Hana. 2000. The quantization puzzle. In James Pustejovsky & Carol Tenny (eds.), *Events as grammatical objects, from the combined perspectives of lexical semantics, logical semantics and syntax*, 3–60. Stanford, CA: CSLI Publications.

Fine, Kit. 2012. Counterfactuals without possible worlds. *The Journal of Philosophy* 109(3). 221–246. http://dx.doi.org/10.5840/jphil201210938.

Fox, Danny & Martin Hackl. 2006. The universal density of measurement. *Linguistics and Philosophy* 29(5). 537–586. http://dx.doi.org/10.1007/s10988-006-9004-4.

Gärdenfors, Peter. 2007. Representing actions and functional properties in conceptual spaces. In Tom Ziemke, Jordan Zlatev & Roslyn M. Frank (eds.), *Body language and mind, volume 1: Embodiment*, 167–196. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110207507.2.167.

Garey, Howard B. 1957. Verbal aspect in French. *Language* 33(2). 91–110. http://dx.doi.org/10.2307/410722.

Gawron, Jean Mark. 2002. *Two kinds of determiners in DP*. Talk at LSA winter meeting. http://www-rohan.sdsu.edu/~gawron/lsa_hand.ps.

Gawron, Jean Mark. 2004. *Motion, scalar paths, and lexical aspect*. Paper presented at *Workshop on Event Structures in Linguistic Form and Interpretation, Leipzig*. http://www-rohan.sdsu.edu/~gawron/new_motion_to_state_handout.pdf.

Gawron, Jean Mark. 2005. Generalized paths. *15th Semantics and Linguistic Theory Conference (SALT 15)*. http://www-rohan.sdsu.edu/~gawron/salt_paper.pdf.

Gawron, Jean Mark. 2009. *The lexical semantics of extent verbs*. Presented at San Diego State University, January 31.

van Geenhoven, Veerle. 2004. For-adverbials, frequentative aspect, and pluractionality. *Natural Language Semantics* 12(2). 135–190. http://dx.doi.org/10.1023/b:nals.0000031389.36427.af.

van Geenhoven, Veerle. 2005. Atelicity, pluractionality and adverbial quantification. In Henk J. Verkuyl, Henriëtte de Swart & Angeliek van Hout (eds.), *Perspectives on aspect*, vol. 32 (Studies in theoretical psycholinguistics), 107–124. Berlin, Germany: Springer. http://dx.doi.org/10.1007/1-4020-3232-3_6.

Geurts, Bart. 2006. Take 'five': The meaning and use of a number word. In Svetlana Vogeleer & Liliane Tasmowski (eds.), *Non-definiteness and plurality*, 311–329. Amsterdam, Netherlands: John Benjamins. http://dx.doi.org/10.1075/la.95.16geu.

Gil, David. 1982. *Distributive numerals*. Los Angeles, CA: University of California PhD thesis.

Gil, David. 1989. Nouns, verbs, and quantification. Ms. Tel Aviv University.

Gil, David. 1993. Nominal and verbal quantification. *STUF – Language Typology and Universals* 46(1-4). http://dx.doi.org/10.1524/stuf.1993.46.14.275.

Gil, David. 1995. Universal quantifiers and distributivity. In Emmon Bach, Eloise Jelinek, Angelika Kratzer & Barbara Hall Partee (eds.), *Quantification in natural languages*, vol. 54 (Studies in Linguistics and Philosophy), 321–362. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-017-2817-1_11.

Gil, David. 2013. Distributive numerals. In Matthew S. Dryer & Martin Haspelmath (eds.), *The world atlas of language structures online*. Leipzig, Germany: Max Planck Institute for Evolutionary Anthropology. http://wals.info/chapter/54.

Gillon, Brendan S. 1987. The readings of plural noun phrases in English. *Linguistics and Philosophy* 10(2). 199–219. http://dx.doi.org/10.1007/bf00584318.

Gillon, Brendan S. 1990. Plural noun phrases and their readings: A reply to Lasersohn. *Linguistics and Philosophy* 13(4). 477–485. http://dx.doi.org/10.1007/bf00630751.

Gillon, Brendan S. 1992. Towards a common semantics for English mass and count nouns. *Linguistics and Philosophy* 15(6). 597–640. http://dx.doi.org/10.1007/bf00628112.

Graham, Daniel W. 1980. States and performances: Aristotle's test. *The Philosophical Quarterly* 30(119). 117–130. http://dx.doi.org/10.2307/2219276.

Grevisse, Maurice. 1980. *Le bon usage: Grammaire française, avec des remarques sur la langue française d'aujourd'hui*. Paris, France: Duculot.

Groenendijk, Jeroen, Theo Janssen & Martin Stokhof (eds.). 1984. *Truth, interpretation and information: 3rd Amsterdam Colloquium*. Dordrecht, Netherlands: Foris. http://dx.doi.org/10.1515/9783110867602.

Gruber, Jeffrey S. 1965. *Studies in lexical relations*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://hdl.handle.net/1721.1/13010.

Guéron, Jacqueline. 1979. On the structure of "pseudo-partitive" NP's. *Bulletin of the ICU Summer Institute in Linguistics* 12. 21–48.

Hackl, Martin. 2001. *Comparative quantifiers*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://hdl.handle.net/1721.1/8765.

Hackl, Martin. 2002. The ingredients of essentially plural predicates. *32nd Annual Meeting of the North East Linguistic Society (NELS 32)*. 171–182. http://web.mit.edu/hackl/www/papers/files/HacklNels01.pdf.

Hackl, Martin. 2009. On the grammar and processing of proportional quantifiers: *most* versus *more than half*. *Natural Language Semantics* 17(1). 63–98. http://dx.doi.org/10.1007/s11050-008-9039-x.

Harnish, Robert M. 1976. Logical form and implicature. In Thomas G. Bever, Jerrold J. Katz & D. Terence Langendoen (eds.), *An integrated theory of linguistic ability*, 313–392. New York, NY: Thomas Y. Crowell.

Hausser, Roland. 1974. *Quantification in an extended Montague grammar*. Austin, TX: University of Texas PhD thesis.

Heim, Irene. 1994. Plurals. Ms. Massachusetts Institute of Technology. http://www.sfs.uni-tuebingen.de/~astechow/Lehre/SS08/Heim_Plurals%20'94.pdf.

Heim, Irene & Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Oxford, UK: Blackwell Publishing.

Heim, Irene, Howard Lasnik & Robert May. 1991. Reciprocity and plurality. *Linguistic Inquiry* 22(1). 63–101. http://www.jstor.org/stable/4178708.

Hellan, Lars. 1981. *Towards an integrated analysis of comparatives*. Tübingen, Germany: Narr.

Hendriks, Herman. 1993. *Studied flexibility*. Amsterdam, Netherlands: University of Amsterdam PhD thesis.

Heny, Frank. 1982. Tense, aspect and time adverbials, part II. *Linguistics and Philosophy* 5(1). 109–154. http://dx.doi.org/10.1007/bf00390694.

Higginbotham, James. 1994. Mass and count quantifiers. *Linguistics and Philosophy* 17(5). 447–480. http://dx.doi.org/10.1007/bf00985831.

Hinrichs, Erhard. 1985. *A compositional semantics for aktionsarten and NP reference in english*. Columbus, OH: Ohio State University PhD thesis. https://etd.ohiolink.edu/!etd.send_file?accession=osu1272461401&disposition=inline.

Hitzeman, Janet. 1991. Aspect and adverbials. *1st Semantics and Linguistic Theory Conference (SALT 1)*. 107–127. http://dx.doi.org/10.3765/salt.v1i0.2763.

Hitzeman, Janet. 1997. Semantic partition and the ambiguity of sentences containing temporal adverbials. *Natural Language Semantics* 5(2). 87–100. http://dx.doi.org/10.1023/a:1008221528793.

Hoeksema, Jack. 1983. Plurality and conjunction. In Alice ter Meulen (ed.), *Studies in modeltheoretic semantics*, 63–83. Dordrecht, Netherlands: Foris.

Hogg, Richard M. 1977. *English quantifier systems*. North Holland.

Horn, Laurence. 1972. *On the semantics and pragmatics of logical operators in English*. Los Angeles, CA: University of California PhD thesis.

Horn, Laurence. 1989. *A natural history of negation*. Stanford, CA: CSLI Publications.

Hovda, Peter. 2009. What is classical mereology? *Journal of Philosophical Logic* 38(1). 55–82. http://dx.doi.org/10.1007/s10992-008-9092-4.

Iatridou, Sabine, Elena Anagnostopoulou & Roumyana Izvorski. 2001. Observations about the form and meaning of the Perfect. In *Ken Hale: A life in language*, 189–238. Cambridge, MA: MIT Press. http://dx.doi.org/10.1515/9783110902358.153.

Ionin, Tania & Ora Matushansky. 2006. The composition of complex cardinals. *Journal of Semantics* 23(4). 315–360. http://dx.doi.org/10.1093/jos/ffl006.

Ionin, Tania, Ora Matushansky & Eddy G. Ruys. 2006. Parts of speech: Towards a unified semantics for partitives. *36th Annual Meeting of the North East Linguistic Society (NELS 36)*. 357–370. http://www.researchgate.net/publication/46682750_Parts_of_Speech_Toward_a_Unified_Semantics_for_Partitives.

Iordăchioaia, Gianina & Elena Soare. 2015. Pluractionality with lexically cumulative verbs. *Natural Language Semantics* 23(4). 307–352. http://dx.doi.org/10.1007/s11050-015-9117-9.

Ioup, Georgette. 1975. Some universals for quantifier scope. *Syntax and Semantics* 4. 37–58.

Jackendoff, Ray S. 1972. *Semantic interpretation in generative grammar*. Cambridge, MA: MIT Press.

Jackendoff, Ray S. 1996. The proper treatment of measuring out, telicity, and perhaps even quantification in English. *Natural Language and Linguistic Theory* 14(2). 305–354. http://dx.doi.org/10.1007/bf00133686.

Janke, Vikki & Ad Neeleman. 2012. Ascending and descending VPs in English. *Linguistic Inquiry* 43(1). 151–190. http://dx.doi.org/10.1162/ling_a_00082.

Junker, Marie-Odile. 1995. *Syntaxe et sémantique des quantifieurs flottants* tous *et* chacun*: Distributivité en sémantique conceptuelle*. Vol. 28. Geneva, Switzerland: Librairie Droz.

Kamp, Hans. 1979. Events, instants and temporal reference. In Rainer Bäuerle, Urs Egli & Arnim von Stechow (eds.), *Semantics from different points of view*, 376–417. Berlin, Germany: Springer. http://dx.doi.org/10.1007/978-3-642-67458-7_24.

Kamp, Hans & Uwe Reyle. 1993. *From discourse to logic*. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-011-2066-1.

Karttunen, Lauri. 1974. Until. In *Papers from the 10th regional meeting of the Chicago Linguistic Society (CLS 10)*, 283–297. Chicago, IL. http://web.stanford.edu/~laurik/publications/archive/until.pdf.

Karttunen, Lauri & Stanley Peters. 1979. Conventional implicature. In Choon-Kyu Oh & David A. Dinneen (eds.), *Presupposition*, vol. 11 (Syntax and Semantics), 1–56. New York, NY: Academic Press.

Keim, Marybelle C. & John P. Murray. 2008. Chief academic officers' demographics and educational backgrounds. *Community College Review* 36(2). 116–132. http://dx.doi.org/10.1177/0091552108324657.

Keizer, Evelien. 2007. *The English noun phrase: The nature of linguistic categorization*. Cambridge, UK: Cambridge University Press. http://dx.doi.org/http://dx.doi.org/10.1017/cbo9780511627699.

Kennedy, Christopher. 2007. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy* 30(1). 1–45. http://dx.doi.org/10.1007/s10988-006-9008-0.

Kennedy, Christopher. 2009. The number of meanings of English number words. Ms. University of Chicago. http://semantics.uchicago.edu/kennedy/docs/uiuc-slides.pdf.

Kiparsky, Paul. 1998. Partitive case and aspect. In Miriam Butt & Wilhelm Geuder (eds.), *The projection of arguments: Lexical and compositional factors*, 265–307. Stanford, CA: CSLI Publications. http://web.stanford.edu/~kiparsky/Papers/wuppertal.pdf.

Kipper-Schuler, Karin. 2005. *Verbnet: A broad-coverage, comprehensive verb lexicon*. Philadelphia, PA: University of Pennsylvania PhD thesis. http://verbs.colorado.edu/~kipper/Papers/dissertation.pdf.

Kleiber, Georges. 1989. "Le" générique: Un massif? *Langages* 94. 73–113. http://www.jstor.org/stable/41682171.

Klein, Ewan. 1991. Comparatives. In Dieter Wunderlich & Arnim von Stechow (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung / Semantics: An international handbook of contemporary research*, 673–691. Berlin, Germany: de Gruyter.

Krantz, David H., R. Duncan Luce, Patrick Suppes & Amos Tversky. 1971. *Foundations of measurement*. New York, NY: Academic Press.

Krasikova, Sveta. 2009. Scales in the meaning of adjectives. In *Russian in contrast*. University of Oslo.

Kratzer, Angelika. 1989. An investigation of the lumps of thought. *Linguistics and Philosophy* 12(5). 607–653. http://dx.doi.org/10.1007/bf00627775.

Kratzer, Angelika. 1996. Severing the external argument from its verb. In J. Rooryck & L. Zaring (eds.), *Phrase structure and the lexicon*, 109–137. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-015-8617-7_5.

Kratzer, Angelika. 2000. The event argument and the semantics of verbs, chapter 2. Ms. University of Massachusetts, Amherst. http://semanticsarchive.net/Archive/GU1NWM4Z/.

Kratzer, Angelika. 2001. The event argument and the semantics of verbs, chapter 4. Ms. University of Massachusetts, Amherst.

Kratzer, Angelika. 2003. The event argument and the semantics of verbs, chapter 3. Ms. University of Massachusetts, Amherst. http://semanticsarchive.net/Archive/GU1NWM4Z/.

Kratzer, Angelika. 2007. On the plurality of verbs. In Johannes Dölling, Tatjana Heyde-Zybatow & Martin Schäfer (eds.), *Event structures in linguistic form and interpretation*, 269–300. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110925449.269.

Kratzer, Angelika. 2016. Situations in natural language semantics. In Edward N. Zalta (ed.), *The Stanford encyclopedia of philosophy*, Spring 2016. Stanford, CA. http://plato.stanford.edu/archives/spr2016/entries/situations-semantics/.

Krifka, Manfred. 1989a. Nominal reference, temporal constitution and quantification in event semantics. In Renate Bartsch, Johan van Benthem & Peter van Emde Boas (eds.), *Semantics and contextual expression*, 75–115. Dordrecht, Netherlands: Foris. http://amor.cms.hu-berlin.de/~h2816i3x/Publications/Krifka%201989%20Nominal%20Reference.pdf.

Krifka, Manfred. 1989b. *Nominalreferenz und Zeitkonstitution: Zur Semantik von Massentermen, Pluraltermen und Aspektklassen*. Munich, Germany: Wilhelm Fink. http://amor.cms.hu-berlin.de/~h2816i3x/Publications/Krifka_1989_Nominalreferenz_Zeitkonstitution.PDF.

Krifka, Manfred. 1990. Four thousand ships passed through the lock: Object induced measure functions on events. *Linguistics and Philosophy* 13(5). 487–520. http://dx.doi.org/10.1007/bf00627291.

Krifka, Manfred. 1991. Massennomina. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung / Semantics: An international handbook of contemporary research*, 399–417. Berlin, Germany: de Gruyter.

Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In Ivan A. Sag & Anna Szabolcsi (eds.), *Lexical matters*, 29–53. Stanford, CA: CSLI Publications. http://amor.cms.hu-berlin.de/~h2816i3x/Publications/Krifka%201992%20Thematic%20Relations.PDF.

Krifka, Manfred. 1998. The origins of telicity. In Susan Rothstein (ed.), *Events and grammar*, vol. 70 (Studies in linguistics and philosophy), 197–235. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-011-3969-4_9.

Krifka, Manfred. 1999. At least some determiners aren't determiners. In Ken Turner (ed.), *The semantics/pragmatics interface from different points of view*, 257–291. Amsterdam, Netherlands: Elsevier. http://amor.cms.hu-berlin.de/~h2816i3x/Publications/ATLEASTSOME.pdf.

Krifka, Manfred. 2004. Bare NPs: Kind-referring, indefinites, both, or neither? *13th Semantics and Linguistic Theory Conference (SALT 13)*. 180–203. http://dx.doi.org/10.3765/salt.v13i0.2880.

Krifka, Manfred, Francis Jeffry Pelletier, Gregory N. Carlson, Alice ter Meulen, Gennaro Chierchia & Godehard Link. 1995. Genericity: An introduction. In Gregory N. Carlson & Francis Jeffry Pelletier (eds.), *The generic book*, 1–124. Chicago, IL: University of Chicago Press.

Križ, Manuel. 2015. Homogeneity, non-maximality, and *all*. *Journal of Semantics*. http://dx.doi.org/10.1093/jos/ffv006.

Kroch, Anthony S. 1974. *The semantics of scope in English*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://hdl.handle.net/1721.1/13020.

Kuhn, Jeremy. 2014. Gather-*type predicates: Massiness over participants*. Presentation at the 45th Annual Meeting of the North East Linguistic Society (NELS 45). http://www.jeremykuhn.net/papers/Kuhn-gather-slides.pdf.

Kuhn, Jeremy. 2015. *Cross-categorial singular and plural reference in sign language*. New York University PhD thesis.

Kuno, Susumu. 1982. The focus of the question and the focus of the answer. In *Papers from the parasession on nondeclaratives*, 134–157.

Ladusaw, William. 1982. Semantic constraints on the English partitive construction. *1st West Coast Conference on Formal Linguistics (WCCFL 1)*. 231–242.
Landman, Fred. 1989. Groups, I. *Linguistics and Philosophy* 12(5). 559–605. http://dx.doi.org/10.1007/bf00627774.
Landman, Fred. 1991. *Structures for semantics*. Kluwer.
Landman, Fred. 1996. Plurality. In Shalom Lappin (ed.), *Handbook of contemporary semantic theory*, 425–457. Oxford, UK: Blackwell Publishing. http://dx.doi.org/10.1111/b.9780631207498.1997.00019.x.
Landman, Fred. 2000. *Events and plurality: The Jerusalem lectures*. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-011-4359-2.
Landman, Fred. 2004. *Indefinites and the type of sets*. Oxford, UK: Blackwell Publishing. http://dx.doi.org/10.1002/9780470759318.
Landman, Fred & Susan Rothstein. 2009. Incremental homogeneity in the semantics of aspectual *for*-phrases. In Malka Rappaport Hovav, Ivi Sichel & Edit Doron (eds.), *Syntax, lexical semantics and event structure*, 229–251. Amsterdam, Netherlands: John Benjamins. http://dx.doi.org/10.1093/acprof:oso/9780199544325.003.0011.
Landman, Fred & Susan Rothstein. 2012a. The felicity of aspectual *for*-phrases—Part 1: Homogeneity. *Language and Linguistics Compass* 6(2). 85–96. http://dx.doi.org/10.1002/lnc3.324.
Landman, Fred & Susan Rothstein. 2012b. The felicity of aspectual *for*-phrases—Part 2: Incremental homogeneity. *Language and Linguistics Compass* 6(2). 97–112. http://dx.doi.org/10.1002/lnc3.323.
Langacker, Ronald. 1986. *Foundations of cognitive grammar*. Stanford, CA: Stanford University Press.
Lasersohn, Peter. 1988. *A semantics for groups and events*. Columbus, OH: Ohio State University PhD thesis. http://semanticsarchive.net/Archive/zQ2ODQxN/.
Lasersohn, Peter. 1989. On the readings of plural noun phrases. *Linguistic Inquiry* 20(1). 130–134. http://www.jstor.org/stable/4178619.
Lasersohn, Peter. 1992. Generalized conjunction and temporal modification. *Linguistics and Philosophy* 15(4). 381–410. http://dx.doi.org/10.1007/bf00627682.
Lasersohn, Peter. 1995. *Plurality, conjunction and events*. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-015-8581-1.
Lasersohn, Peter. 1998a. Events in the semantics of collectivizing adverbials. In Susan Rothstein (ed.), *Events and grammar*, vol. 70 (Studies in linguistics

and philosophy), 273–292. Dordrecht, Netherlands: Springer. http://dx.doi.org/10.1007/978-94-011-3969-4_11.

Lasersohn, Peter. 1998b. Generalized distributivity operators. *Linguistics and Philosophy* 21(1). 83–93. http://dx.doi.org/10.1023/a:1005317815339.

Lasersohn, Peter. 1999. Pragmatic halos. *Language* 75(3). 522–551. http://dx.doi.org/10.2307/417059.

Lasersohn, Peter. 2010. Mass nouns and plurals. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning*. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110255072.1131.

Lassiter, Daniel. 2010a. Explaining a restriction on the scope of the comparative operator. *University of Pennsylvania Working Papers in Linguistics* 16(1). http://repository.upenn.edu/cgi/viewcontent.cgi?article=1107&context=pwpl.

Lassiter, Daniel. 2010b. The algebraic structure of amounts: Evidence from comparatives. In Thomas Icard & Reinhard Muskens (eds.), *Interfaces: Explorations in logic, language, and computation (lnai 6211)*. Berlin, Germany: Springer. http://dx.doi.org/10.1007/978-3-642-14729-6_4.

LaTerza, Chris. 2014a. *Distributivity and plural anaphora*. College Park, MD: University of Maryland PhD thesis. http://hdl.handle.net/1903/15826.

LaTerza, Chris. 2014b. Local plural anaphora as sub-event distributivity. *32nd West Coast Conference on Formal Linguistics (WCCFL 32)*. 141–148. http://www.lingref.com/cpp/wccfl/32/paper3165.pdf.

Levin, Beth. 1993. *English verb classes and alternations: A preliminary investigation*. Chicago, IL: University of Chicago Press.

Levinson, Stephen C. 2000. *Presumptive meanings*. Cambridge, MA: MIT Press.

Lewis, David. 1972. General semantics. In Donald Davidson & Gilbert Harman (eds.), *Semantics of natural language*, 169–218. Dordrecht, Netherlands: Reidel. http://dx.doi.org/10.1007/978-94-010-2557-7_7.

Lin, Jo-Wang. 1998. Distributivity in Chinese and its implications. *Natural Language Semantics* 6(2). 201–243. http://dx.doi.org/10.1023/a:1008299031574.

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In Reiner Bäuerle, Christoph Schwarze & Arnim von Stechow (eds.), *Meaning, use and interpretation of language*, 303–323. Reprinted in Link 1998a, Chapter 1. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110852820.302.

Link, Godehard. 1987a. Algebraic semantics of event structures. *6th Amsterdam Colloquium*. Reprinted in Link 1998a, Chapter 11., 243–262.

Link, Godehard. 1987b. Generalized quantifiers and plurals. In Peter Gärdenfors (ed.), *Generalized quantifiers*, 151–180. Reprinted in Link 1998a, Chapter 4. Berlin, Germany: Springer. http://dx.doi.org/10.1007/978-94-009-3381-1_6.

Link, Godehard. 1991a. Plural. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung / Semantics: An international handbook of contemporary research*, 418–440. Reprinted in Link 1998a, Chapter 2, translated by the author. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110126969.6.418.

Link, Godehard. 1991b. Quantity and number. In Dietmar Zaefferer (ed.), *Semantic universals and universal semantics*, 133–149. Reprinted in Link 1998a, Chapter 9. Dordrecht, Netherlands: Foris.

Link, Godehard. 1997. Ten years of research on plurals—where do we stand? In Fritz Hamm & Erhard Hinrichs (eds.), *Plurality and quantification*, vol. 69 (Studies in Linguistics and Philosophy), 19–54. Reprinted in Link 1998a, Chapter 7. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-017-2706-8_2.

Link, Godehard. 1998a. *Algebraic semantics in language and philosophy*. Stanford, CA: CSLI Publications.

Link, Godehard. 1998b. Je drei äpfel—three apples each: Quantification and the German 'je'. In Godehard Link (ed.), *Algebraic semantics in language and philosophy*, 117–132. Stanford, CA: CSLI Publications.

Link, Godehard. 2015. Stratified reference: A note on its logic. *Theoretical Linguistics* 41(3-4). http://dx.doi.org/10.1515/tl-2015-0011.

Lønning, Jan Tore. 1987. Mass terms and quantification. *Linguistics and Philosophy* 10(1). 1–52. http://dx.doi.org/10.1007/bf00603391.

Malamud, Sophia A. 2006a. (Non)maximality and distributivity: A decision theory approach. *16th Semantics and Linguistic Theory Conference (SALT 16)*. 120–137. http://dx.doi.org/10.3765/salt.v16i0.2943.

Malamud, Sophia A. 2006b. *Semantics and pragmatics of arbitrariness*. Philadelphia, PA: University of Pennsylvania PhD thesis. http://people.brandeis.edu/~smalamud/Malamud-diss-single.pdf.

Malamud, Sophia A. 2012. The meaning of plural definites: A decision-theoretic approach. *Semantics and Pragmatics* 5(3). 1–58. http://dx.doi.org/10.3765/sp.5.3.

Maling, Joan M. 1976. Notes on quantifier-postposing. *Linguistic Inquiry* 7(4). 708–718. http://www.jstor.org/stable/4177962.

Marantz, Alec. 1984. *On the nature of grammatical relations*. Cambridge, MA: MIT Press. http://www.ai.mit.edu/projects/dm/theses/marantz81.pdf.

Markosian, Ned. 2014. Time. In Edward N. Zalta (ed.), *The Stanford encyclopedia of philosophy*, Spring 2014. Stanford, CA. http://plato.stanford.edu/archives/spr2014/entries/time/.

Matthewson, Lisa. 2001. Quantification and the nature of crosslinguistic variation. *Natural Language Semantics* 9(2). 145–189. http://dx.doi.org/10.1023/a:1012492911285.

McCawley, James D. 1968. Concerning the base component of a transformational grammar. *Foundations of Language* 4(3). 243–269. http://www.jstor.org/stable/25000330.

de Mey, Sjaap. 1981. The dependent plural and the analysis of tense. *11th Annual Meeting of the North East Linguistic Society (NELS 11)*.

Mills, Ian, Tomislav Cvitaš, Klaus Homann, Nikola Kallay & Kozo Kuchitsu (eds.). 2007. *Quantities, units and symbols in physical chemistry (IUPAC Green Book)*. Oxford, UK: Blackwell Science.

Milsark, Gary. 1974. *Existential sentences in English*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://dspace.mit.edu/handle/1721.1/13021.

Mittwoch, Anita. 1982. On the difference between *eating* and *eating something*: activities versus accomplishments. *Linguistic Inquiry* 13(1). 113–122. http://www.jstor.org/stable/4178263.

Mittwoch, Anita. 1988. Aspects of English aspect: On the interaction of perfect, progressive and durational phrases. *Linguistics and Philosophy* 11(2). 203–254. http://dx.doi.org/10.1007/bf00632461.

Mollá-Aliod, Diego. 1997. *Aspectual composition and sentence interpretation: A formal approach*. Edinburgh, UK: University of Edinburgh PhD thesis. http://comp.mq.edu.au/~diego/publications/phd/thesis.pdf.

Moltmann, Friederike. 1989. Measure adverbials as part quantifiers. *8th West Coast Conference on Formal Linguistics (WCCFL 8)*. 247–261. http://semantics.univ-paris1.fr/pdf/Measure%20Adverbials.pdf.

Moltmann, Friederike. 1991. Measure adverbials. *Linguistics and Philosophy* 14(6). 629–660. http://dx.doi.org/10.1007/bf00631962.

Moltmann, Friederike. 1992. Reciprocals and *same/different*: Towards a semantic analysis. *Linguistics and Philosophy* 15(4). 411–462. http://dx.doi.org/10.1007/bf00627683.

Moltmann, Friederike. 1997. *Parts and wholes in semantics*. Oxford, UK: Oxford University Press.

Moltmann, Friederike. 1998. Part structures, integrity, and the mass-count distinction. *Synthese* 116(1). 75–111. http://dx.doi.org/10.1023/a:1005046308299.

Moltmann, Friederike. 2004. The semantics of *together*. *Natural Language Semantics* 12(4). 289–318. http://www.jstor.org/stable/23749465.

Moltmann, Friederike. 2009. Degree structure as trope structure: A trope-based analysis of positive and comparative adjectives. *Linguistics and Philosophy* 32(1). 51–94. http://dx.doi.org/10.1007/s10988-009-9054-5.

Montague, Richard. 1973. The proper treatment of quantification in ordinary English. In Jaakko Hintikka, Julius Moravcsik & Patrick Suppes (eds.), *Approaches to natural language: 1970 Stanford workshop on grammar and semantics*, 221–242. Dordrecht, Netherlands: Springer. http://dx.doi.org/10.1007/978-94-010-2506-5_10.

Mourelatos, Alexander P. D. 1978. Events, processes, and states. *Linguistics and Philosophy* 2(3). 415–434. http://dx.doi.org/10.1007/bf00149015.

Müller, Ana & Esmeralda Negrão. 2012. On distributivity in Karitiana. In Patricia Cabredo Hofherr & Brenda Laca (eds.), *Verbal plurality and distributivity*, vol. 546 (Linguistische Arbeiten), 159–184. de Gruyter. http://dx.doi.org/10.1515/9783110293500.159.

Muskens, Reinhard. 1996. *Meaning and partiality*. Stanford, CA: CSLI Publications.

Nakanishi, Kimiko. 2004. *Domains of measurement: Formal properties of non-split/split quantifier constructions*. Philadelphia, PA: University of Pennsylvania PhD thesis. http://repository.upenn.edu/dissertations/AAI3138060/.

Nakanishi, Kimiko & Maribel Romero. 2004. Two constructions with *most* and their semantic properties. *34th Annual Meeting of the North East Linguistic Society (NELS 34)*. 453–467.

Naumann, Ralf. 1999. A dynamic logic of events and states for the interaction between plural quantification and verb aspect in natural language. *Logic Journal of the IGPL* 7(5). 591–627. http://dx.doi.org/10.1093/jigpal/7.5.591.

Nouwen, Rick. 2006. *Natural language quantifiers*. Lecture notes for ESSLLI 2006 course.

Nouwen, Rick. to appear. Plurality. In Paul Dekker & Maria Aloni (eds.), *Cambridge handbook of semantics*. Cambridge University Press.

Oh, Sei-Rang. 2001. Distributivity in an event semantics. *11th Semantics and Linguistic Theory Conference (SALT 11)*. 326–345. http://dx.doi.org/10.3765/salt.v11i0.2844.

Oh, Sei-Rang. 2006. *Plurality markers across languages*. Amherst, MA: University of Massachusetts PhD thesis. http://digitalcommons.uconn.edu/dissertations/AAI3236140.

Ojeda, Almerindo E. 2003. A Russellian interpretation of measure nouns. In *From NP to DP: The syntax and semantics of noun phrases*, 255–276. Amsterdam, Netherlands: John Benjamins. http://dx.doi.org/10.1075/la.55.12oje.

Parsons, Terence. 1970. An analysis of mass and amount terms. *Foundations of Language* 6. 362–388.

Parsons, Terence. 1987. Underlying states in the semantical analysis of English. In *Aristotelian society 88*, 1–30. http://www.jstor.org/stable/4545070.

Parsons, Terence. 1990. *Events in the semantics of English*. Cambridge, MA: MIT Press.

Parsons, Terence. 1995. Thematic relations and arguments. *Linguistic Inquiry* 26(4). 635–662. http://www.jstor.org/stable/4178917.

Partee, Barbara H. 1987. Noun phrase interpretation and type-shifting principles. In Jeroen Groenendijk, Dick de Jongh & Martin Stokhof (eds.), *Studies in Discourse Representation Theory and the theory of generalized quantifiers*, 115–143. Dordrecht, Netherlands: Foris. http://dx.doi.org/10.1002/9780470758335.ch15.

Partee, Barbara H., Alice G. B. ter Meulen & Robert Eugene Wall. 1990. *Mathematical methods in linguistics*. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-009-2213-6.

Partee, Barbara H. & Mats Rooth. 1983. Generalized conjunction and type ambiguity. In Rainer Bäuerle, Christoph Schwarze & Arnim von Stechow (eds.), *Meaning, use and interpretation of language*, 361–383. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110852820.361.

Pearson, Hazel. 2009. Towards a semantics for group nouns. Ms. Harvard University.

Pearson, Hazel. 2010. A new semantics for group nouns. *28th West Coast Conference on Formal Linguistics (WCCFL 28)*. 160–168. http://www.lingref.com/cpp/wccfl/28/paper2448.pdf.

Pelletier, Francis Jeffry & Lenhart K. Schubert. 2002. Mass expressions. In Dov M. Gabbay & Franz Guenthner (eds.), *Handbook of philosophical logic*, vol. 10, 1–87. Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-017-4524-6_6.

Petrova, Milena. 2000. The distributive marker *po* in Bulgarian. Ms. University of Southern California.

Pianesi, Fabio. 2002. Book review: Friederike Moltmann, *Parts and Wholes in Semantics*. *Linguistics and Philosophy* 25(1). 97–120. http://dx.doi.org/10.1023/a:1014347214919.

Pianesi, Fabio & Achille C. Varzi. 1996. Events, topology, and temporal relations. *The Monist* 78(1). 89–116. http://dx.doi.org/10.5840/monist19967919.

Pietroski, Paul M. 2005. *Events and semantic architecture*. Oxford, UK: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199244300.001.0001.

Pietroski, Paul M. 2006. Interpreting concatenation and concatenates. *Philosophical Issues* 16(1). 221–245. http://dx.doi.org/10.1111/j.1533-6077.2006.00111.x.

Piñón, Christopher. 1995. *An ontology for event semantics*. Stanford, CA: Stanford University PhD thesis.

Piñón, Christopher. 1999a. A semantics for durative adverbials. In *Sinn und Bedeutung 4*. Düsseldorf, Germany: University of Düsseldorf. http://pinon.sdf-eu.org/work/pinon_sda_ho.pdf.

Piñón, Christopher. 1999b. Durative adverbials for result states. *18th West Coast Conference on Formal Linguistics (WCCFL 18)*. 420–433. http://pinon.sdf-eu.org/work/pinon_dars.pdf.

Piñón, Christopher. 2000. *Distributive* po- *in Polish*. Presentation at Sinn und Bedeutung V, Amsterdam. http://pinon.sdfeu.org/work/pinon_dpp_ho_2000.pdf.

Piñón, Christopher. 2015. An illusory common core. *Theoretical Linguistics* 41(3-4). http://dx.doi.org/10.1515/tl-2015-0012.

Pontow, Carsten & Rainer Schubert. 2006. A mathematical analysis of theories of parthood. *Data & Knowledge Engineering* 59(1). 107–138. http://dx.doi.org/10.1016/j.datak.2005.07.010.

Postal, Paul Martin. 1974. *On raising*. Cambridge, MA: MIT Press.

Potts, Christopher. 2008. Interpretive economy, Schelling points, and evolutionary stability. Ms. University of Massachusetts, Amherst. http://semanticsarchive.net/Archive/jExYWZlN/.

Pratt, Ian & Nissim Francez. 2001. Temporal prepositions and temporal generalized quantifiers. *Linguistics and Philosophy* 24(2). 187–255. http://dx.doi.org/10.1023/a:1005632801858.

Przepiórkowski, Adam. 2013. The syntax of distance distributivity in Polish: Preserving generalisations with weak heads. *HPSG [Head-driven Phrase Structure Grammar] 2013 Conference*. 161–181. http://www.stanford.edu/group/cslipublications/cslipublications/HPSG/2013/toc.shtml.

Przepiórkowski, Adam. 2014a. Distance distributivity in Polish: Towards a Glue Semantics approach. *Empirical Issues in Syntax and Semantics 10 (CSSP [Colloque de Syntaxe et Sémantique à Paris] 2013 Proceedings)*. 107–124. http://www.cssp.cnrs.fr/eiss10/.

Przepiórkowski, Adam. 2014b. Syntactic and semantic constraints in a Glue Semantics approach to distance distributivity. *LFG'14 [Lexical Functional Grammar 2014] Conference*. 482–502. http://cslipublications.stanford.edu/LFG/19/lfg14.html.

Przepiórkowski, Adam. 2015. A weakly compositional analysis of distance distributivity in Polish. *Annual Workshop on Formal Approaches to Slavic Linguistics: The First Berkeley Meeting 2014 (FASL 2014)*. 262–281.

Quine, Willard van Orman. 1960. *Word and object*. Cambridge, MA: MIT Press.

Rathert, Monika. 2004. *Textures of time*. Berlin, Germany: Akademie Verlag. http://dx.doi.org/10.1515/9783050084015.

Richards, Barry. 1982. Tense, aspect and time adverbials, part I. *Linguistics and Philosophy* 5(1). 59–107. http://dx.doi.org/10.1007/bf00390693.

Rimell, Laura. 2004. Habitual sentences and generic quantification. *23rd West Coast Conference on Formal Linguistics (WCCFL 23)*. 663–676. http://www.nyu.edu/projects/szabolcsi/Rimell_WCCFL23_Habitual.pdf.

Robaldo, Livio. 2011. Distributivity, collectivity, and cumulativity in terms of (in)dependence and maximality. *Journal of Logic, Language and Information* 20(2). 233–271. http://dx.doi.org/10.1007/s10849-010-9131-8.

Roberts, Craige. 1987. *Modal subordination, anaphora, and distributivity*. Amherst, MA: University of Massachusetts PhD thesis. http://scholarworks.umass.edu/dissertations/AAI8710499/.

van Rooij, Robert. 2003. Questioning to resolve decision problems. *Linguistics and Philosophy* 26(6). 727–763. http://dx.doi.org/10.1023/b:ling.0000004548.98658.8f.

van Rooij, Robert. 2008. Comparatives and quantifiers. In *Empirical issues in syntax and semantics*, vol. 7, 393–414. Paris, France: Colloque de Syntaxe et Sémantique à Paris.

van Rooij, Robert & Katrin Schulz. 2006. Pragmatic meaning and non-monotonic reasoning: The case of exhaustive interpretation. *Linguistics and Philosophy* 29(2). 205–250. http://dx.doi.org/10.1007/s10988-005-3760-4.

Rothstein, Susan. 1995. Adverbial quantification over events. *Natural Language Semantics* 3(1). 1–31. http://dx.doi.org/10.1007/bf01252883.

Rothstein, Susan. 2009. Individuating and measure readings of classifier constructions: Evidence from Modern Hebrew. *Brill's Annual of Afroasiatic Languages and Linguistics* 1(1). 106–145. http://dx.doi.org/10.1163/187666309x12491131130783.

Rothstein, Susan. 2010. Counting and the mass/count distinction. *Journal of Semantics* 27(3). 343–397. http://dx.doi.org/10.1093/jos/ffq007.

Sadock, Jerry. 1984. Whither radical pragmatics. In Deborah Schiffrin (ed.), *Meaning, form and use in context: Linguistic applications*, 139–149. Georgetown University Press.

Safir, Ken & Tim Stowell. 1988. Binominal each. *18th Annual Meeting of the North East Linguistic Society (NELS 18)*. 426–450. http://www.linguistics.ucla.edu/people/stowell/Safir-Stowell_-_Binominal_Each_-_NELS_1988_ocr.pdf.

Sakaguchi, Mari. 1998. *Distributivity in English and Japanese*. Los Angeles, CA: University of California PhD thesis.

Sauerland, Uli. 2003. A new semantics for number. *13th Semantics and Linguistic Theory Conference (SALT 13)*. 258–275. http://dx.doi.org/10.3765/salt.v13i0.2898.

Sauerland, Uli, Jan Anderssen & Kazuko Yatsushiro. 2005. The plural is semantically unmarked. In Stephan Kepser & Marga Reis (eds.), *Linguistic evidence: Empirical, theoretical and computational perspectives*, 413–434. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110197549.413.

Scha, Remko. 1981. Distributive, collective and cumulative quantification. In Jeroen Groenendijk, Theo Janssen & Martin Stokhof (eds.), *Formal methods in the study of language*, 483–512. Reprinted in Groenendijk, Janssen & Stokhof 1984. Amsterdam, Netherlands: Mathematical Center Tracts. http://dx.doi.org/10.1515/9783110867602.131.

Schein, Barry. 1986. *Event logic and the interpretation of plurals*. Cambridge, MA: Massachusetts Institute of Technology PhD thesis. http://hdl.handle.net/1721.1/15107.

Schein, Barry. 1993. *Plurals and events*. Cambridge, MA: MIT Press.

Schlenker, Philippe. to appear. The semantics/pragmatics interface. In Paul Dekker & Maria Aloni (eds.), *Cambridge handbook of formal semantics*. Cambridge, UK: Cambridge University Press. http://ling.auf.net/lingbuzz/002545.

Schwarz, Florian. 2009. *Two types of definites in natural language*. Amherst, MA: University of Massachusetts PhD thesis. http://scholarworks.umass.edu/open_access_dissertations/122/.

Schwarzschild, Roger. 1996. *Pluralities*. Vol. 61 (Studies in Linguistics and Philosophy). Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-94-017-2704-4.

Schwarzschild, Roger. 2002. The grammar of measurement. *12th Semantics and Linguistic Theory Conference (SALT 12)*. 225–245. http://dx.doi.org/10.3765/salt.v12i0.2870.

Schwarzschild, Roger. 2006. The role of dimensions in the syntax of noun phrases. *Syntax* 9(1). 67–110. http://dx.doi.org/10.1111/j.1467-9612.2006.00083.x.

Schwarzschild, Roger. 2014. Distributivity, negation and quantification in event semantics: Recent work by L. Champollion. Ms. Massachusetts Institute of Technology.

Schwarzschild, Roger. 2015. Partitives and duratives. *Theoretical Linguistics* 41(3-4). http://dx.doi.org/10.1515/tl-2015-0013.

Scontras, Gregory. 2014. *The semantics of measurement*. Harvard University PhD thesis. http://web.stanford.edu/~scontras//papers/Scontras_Thesis.pdf.

Selkirk, Lisa. 1977. Some remarks on noun phrase structure. In Peter Culicover, Tom Wasow & Adrian Akmajian (eds.), *Formal syntax*, 285–316. New York, NY: Academic Press.

Simons, Peter. 1987. *Parts: A study in ontology*. Clarendon Press.

Singh, Raj. 2007. Presupposition and selectional restrictions. Ms. Massachusetts Institute of Technology. http://http-server.carleton.ca/~singhr/files/singh-selectional-restrictions.pdf.

Smith, Carlota. 1997. *The parameter of aspect*. 2nd edition. Dordrecht, Netherlands: Reidel.

Smollett, Rebecca. 2001. Quantized direct objects don't delimit after all. In Henk J. Verkuyl, Henriëtte de Swart & Angeliek van Hout (eds.), *Perspectives on aspect*, 41–59. Berlin, Germany: Springer. http://dx.doi.org/10.1007/1-4020-3232-3_3.

Spector, Benjamin. 2007. Aspects of the pragmatics of plural morphology: On higher-order implicatures. In Uli Sauerland & Penka Stateva (eds.), *Presuppositions and implicature in compositional semantics*, 243–281. London, UK: Palgrave. http://dx.doi.org/10.1057/9780230210752.

Spelke, Elizabeth S. 1990. Principles of object perception. *Cognitive Science* 14(1). 29–56. http://dx.doi.org/10.1207/s15516709cog1401_3.

Spevak, Olga. 2014. *The noun phrase in classical Latin prose* (Amsterdam Studies in Classical Philology). Brill. http://dx.doi.org/10.1163/9789004265684.

Sportiche, Dominique. 1988. A theory of floating quantifiers and its corollaries for constituent structure. *Linguistic Inquiry* 19(3). 425–449. http://www.jstor.org/stable/25164903.

Stanley, Jason & Zoltán Gendler Szabó. 2000. On quantifier domain restriction. *Mind and Language* 15(2&3). 219–261. http://dx.doi.org/10.1111/1468-0017.00130.

von Stechow, Arnim. 1984a. Comparing semantic theories of comparison. *Journal of Semantics* 3(1-2). 1–77. http://dx.doi.org/10.1093/jos/3.1-2.1.

von Stechow, Arnim. 1984b. My reaction to Cresswell's, Hellan's, Hoeksema's, and Seuren's comments. *Journal of Semantics* 3(1-2). 183–199. http://dx.doi.org/10.1093/jos/3.1-2.183.

von Stechow, Arnim. 2002a. German *seit* 'since' and the ambiguity of the German Perfect. In Ingrid Kaufmann & Barbara Stiebels (eds.), *More than words. a Festschrift for Dieter Wunderlich*, 393–432. Berlin, Germany: Akademie Verlag. http://dx.doi.org/10.1515/9783050081274-016.

von Stechow, Arnim. 2002b. Temporal prepositional phrases with quantifiers: Some additions to Pratt and Francez (2001). *Linguistics and Philosophy* 25(5-6). 755–800. http://dx.doi.org/10.1023/a:1020872017811.

von Stechow, Arnim. 2009. Tenses in compositional semantics. In Wolfgang Klein & Ping Li (eds.), *The expression of time*, 129–166. Berlin, Germany: de Gruyter. http://dx.doi.org/10.1515/9783110199031.129.

Sternefeld, Wolfgang. 1998. Reciprocity and cumulative predication. *Natural Language Semantics* 6(3). 303–337. http://dx.doi.org/10.1023/a:1008352502939.

Stickney, Helen. 2008. *The emergence of DP in the partitive structure*. Amherst, MA: University of Massachusetts PhD thesis. http://scholarworks.umass.edu/open_access_dissertations/131/.

Sutton, Melody. 1993. *Binominal "each"*. Los Angeles, CA: University of California MA thesis.

Syrett, Kristen. 2013. The role of cardinality in the interpretation of measurement expressions. *Language Acquisition* 20(3). 228–240. http://dx.doi.org/10.1080/10489223.2013.796949.

Syrett, Kristen. 2015. Events and agents in the acquisition of universal quantification. *Theoretical Linguistics* 41(3-4). http://dx.doi.org/10.1515/tl-2015-0014.

Szabolcsi, Anna. 2010. *Quantification*. Cambridge, UK: Cambridge University Press. http://dx.doi.org/10.1017/cbo9780511781681.

Szabolcsi, Anna & Frans Zwarts. 1993. Weak islands and an algebraic semantics for scope taking. *Natural Language Semantics* 1(3). 235–284. http://dx.doi.org/10.1007/978-94-011-5814-5_7.

Talmy, Leonard. 1996. Fictive motion and 'ception'. In Paul Bloom, Mary A. Peterson, Lynn Nadel & Merrill F. Garrett (eds.), *Language and space*. Cambridge, MA: MIT Press.

Talmy, Leonard. 2011. Cognitive semantics: An overview. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics: An international handbook of natural language meaning*, vol. 1 (Handbücher zur Sprach- und Kommunikationswissenschaft / Handbooks of Linguistics and Communication

Science (HSK)), chap. 27, 622–642. de Gruyter. http://dx.doi.org/10.1515/9783110226614.622.

Tarski, Alfred. 1929. Les fondements de la géométrie des corps (foundations of the geometry of solids). *Księga Pamiątkowa Pierwszego Polskiego Zjazdu Matematycznego,* suppl. to *Annales de la Société Polonaise de Mathématique* 7. 29–33.

Tarski, Alfred. 1935. Zur Grundlegung der Booleschen Algebra. *Fundamenta Mathematicae* 24. Translated to English as Tarski 1956, 177–198. https://eudml.org/doc/212745.

Tarski, Alfred. 1956. On the foundations of the Boolean algebra. In Joseph Henry Woodger (ed.), *Logics, semantics, metamathematics. Papers from 1923 to 1938*, 320–341. Translation of Tarski 1935. Oxford, UK: Clarendon.

Tasmowski-De Ryck, Liliane & S. Paul Verluyten. 1982. Linguistic control of pronouns. *Journal of Semantics* 1(4). 323–346. http://dx.doi.org/10.1093/jos/1.3-4.323.

Tatevosov, Sergej. 2002. The parameter of actionality. *Linguistic Typology* 6(3). 317–401. http://dx.doi.org/10.1515/lity.2003.003.

Taub, Alison. 1989. Collective predicates, aktionsarten and *all*. In Emmon Bach, Angelika Kratzer & Barbara H. Partee (eds.), *Papers on quantification*. Amherst, MA: University of Massachusetts.

Taylor, Barry. 1977. Tense and continuity. *Linguistics and Philosophy* 1(2). 199–220. http://dx.doi.org/10.1007/bf00351103.

Taylor, Barry. 1985. *Modes of occurrence*. Oxford, UK: Basil Blackwell.

Tellier, Christine & Daniel Valois. 1993. Binominal *chacun* and pseudo-opacity. *Linguistic Inquiry* 24(3). 399–589. http://www.jstor.org/stable/4178830.

Thomas, Guillaume. 2015. The present tense is not vacuous. *Journal of Semantics* 32(4). 685–747. http://dx.doi.org/10.1093/jos/ffu010.

Thomas, Guillaume & Yasutada Sudo. 2016. *Cumulative readings of* each. Presentation at the Workshop on (Co-)Distributivity, Paris, February 11-12, 2016.

Todorova, Marina, Karen Straub, William Badecker & Robert Frank. 2000. Aspectual coercion and the online computation of sentential aspect. In Lila R. Gleitman & Aravind K. Joshi (eds.), *22nd Annual Conference of the Cognitive Science Society*, 3–8. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.23.8886&rep=rep1&type=pdf.

Tsoulas, George & Eytan Zweig. 2009. *Distributivity across languages and logics*. Course at ESSLLI. http://distshare.blogspot.com.

Tunstall, Susanne Lynn. 1998. *The interpretation of quantifiers: Semantics & processing*. Amherst, MA: University of Massachusetts PhD thesis.

Ursini, Francesco-Alessio. 2006. *Measure phrases and directional PPs: Measuring out movement*. Utrecht, Netherlands: Utrecht University MA thesis. http://dspace.library.uu.nl/handle/1874/13816.

Vaillette, Nathan. 2001. Flexible summativity: A type-logical approach to plural semantics. In *OSU Working Papers in Linguistics 56*, 135–157. Columbus, OH: Ohio State University. http://linguistics.osu.edu/sites/linguistics.osu.edu/files/osuwpl56-nva.pdf.

Varzi, Achille C. 2006. A note on the transitivity of parthood. *Applied Ontology* 1(2). 141–146. http://academiccommons.columbia.edu/download/fedora_content/download/ac:179023/CONTENT/AO_2006.pdf.

Varzi, Achille C. 2010. Mereology. In Edward N. Zalta (ed.), *The Stanford encyclopedia of philosophy*. Stanford, CA. http://plato.stanford.edu/archives/spr2010/entries/mereology/.

Vendler, Zeno. 1957. Verbs and times. *The Philosophical Review* 66(2). 143–160. http://dx.doi.org/10.2307/2182371.

Vendler, Zeno. 1962. Each and every, any and all. *Mind* 71(282). 145–160. http://dx.doi.org/10.1093/mind/lxxi.282.145.

Vendler, Zeno. 1967. *Linguistics in philosophy*. Ithaca, NY: Cornell University Press.

Verkuyl, Henk J. 1972. *On the compositional nature of the aspects*. Dordrecht, Netherlands: Reidel. http://dx.doi.org/10.1007/978-94-017-2478-4.

Verkuyl, Henk J. 1989. Aspectual classes and aspectual composition. *Linguistics and Philosophy* 12(1). 39–94. http://dx.doi.org/10.1007/bf00627398.

Verkuyl, Henk J. 1993. *A theory of aspectuality: The interaction between temporal and atemporal structure*. Cambridge, UK: Cambridge University Press. http://dx.doi.org/10.1017/cbo9780511597848.

Verkuyl, Henk J. 2005. Aspectual composition: Surveying the ingredients. In Henk J. Verkuyl, Henriëtte de Swart & Angeliek van Hout (eds.), *Perspectives on aspect*, 19–39. Berlin, Germany: Springer. http://dx.doi.org/10.1007/1-4020-3232-3_2.

Verkuyl, Henk J. & Jaap van der Does. 1991. *The semantics of plural noun phrases*. Vol. LP-91-07 (ITLI prepublication series for logic, semantics and philosophy of language). Amsterdam, Netherlands: University of Amsterdam. https://www.illc.uva.nl/Research/Publications/Reports/LP-1991-07.text.pdf.

Vlach, Frank. 1993. Temporal adverbials, tenses and the Perfect. *Linguistics and Philosophy* 16(3). 231–283. http://dx.doi.org/10.1007/bf00985970.

de Vries, Hanna. 2015. *Shifting sets, hidden atoms: The semantics of distributivity, plurality and animacy*. Utrecht University PhD thesis. http://dspace.library.uu.nl/handle/1874/312186.

Wechsler, Stephen & Yae-Sheik Lee. 1996. The domain of direct case assignment. *Natural Language and Linguistic Theory* 14(3). 629–664. http://dx.doi.org/10.1007/bf00133600.

Williams, Alexander. 2009. Themes, cumulativity, and resultatives: Comments on Kratzer 2003. *Linguistic Inquiry* 40(4). 686–700. http://dx.doi.org/10.1162/ling.2009.40.4.686.

Williams, Edwin. 1991. Reciprocal scope. *Linguistic Inquiry* 22(1). 159–173. http://www.jstor.org/stable/4178711.

Winter, Yoad. 1997. Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy* 20(4). 399–467. http://dx.doi.org/10.1023/a:1005354323136.

Winter, Yoad. 2001. *Flexibility principles in Boolean semantics: The interpretation of coordination, plurality, and scope in natural language*. Cambridge, MA: MIT Press.

Winter, Yoad. 2002. Atoms and sets: A characterization of semantic number. *Linguistic Inquiry* 33(3). 493–505. http://dx.doi.org/10.1162/002438902760168581.

Winter, Yoad & Remko Scha. 2015. Plurals. In Shalom Lappin & Chris Fox (eds.), *Handbook of contemporary semantic theory*, 2nd edition, chap. 3, 77–113. Wiley-Blackwell. http://dx.doi.org/10.1002/9781118882139.ch3.

Zimmermann, Malte. 2002a. A compositional analysis of anti-quantifiers as quantifiers. *12th Semantics and Linguistic Theory Conference (SALT 12)*. 322–338. http://dx.doi.org/10.3765/salt.v12i0.2876.

Zimmermann, Malte. 2002b. *Boys buying two sausages each: On the syntax and semantics of distance-distributivity*. Amsterdam, Netherlands: University of Amsterdam PhD thesis. http://hdl.handle.net/11245/1.194584.

Zimmermann, Malte. 2008. Quantification in Hausa. In Lisa Matthewson (ed.), *Quantification: Universals and variation*, vol. 64 (North Holland Linguistic Series: Linguistic Variations), chap. 11, 415–475. Bingley, UK: Emerald.

Zucchi, Sandro & Michael White. 2001. Twigs, sequences and the temporal constitution of predicates. *Linguistics and Philosophy* 24(2). 223–270. http://dx.doi.org/10.1023/a:1005690022190.

Zwarts, Joost. 1997. Vectors as relative positions: A compositional semantics of modified PPs. *Journal of Semantics* (14). 57–86. http://dx.doi.org/10.1093/jos/14.1.57.

Zwarts, Joost. 2005. Prepositional aspect and the algebra of paths. *Linguistics and Philosophy* 28(6). 699–740. http://dx.doi.org/10.1007/s10988-005-2466-y.

Zwarts, Joost. 2006. Event shape: Paths in the semantics of verbs. Ms. Radboud University Nijmegen and Utrecht University. http://www.let.uu.nl/users/Joost.Zwarts/personal/EventShape.pdf.

Zwarts, Joost. 2013. From N to N: The anatomy of a construction. *Linguistics and Philosophy* 36(1). 65–90. http://dx.doi.org/10.1007/s10988-013-9131-7.

Zwarts, Joost & Henk J. Verkuyl. 1994. An algebra of conceptual structure: An investigation into Jackendoff's conceptual semantics. *Linguistics and Philosophy* 17(1). 1–28. http://dx.doi.org/10.1007/bf00985039.

Zweig, Eytan. 2008. *Dependent plurals and plural meaning*. New York, NY: New York University PhD thesis. http://semanticsarchive.net/Archive/GJhMzhhZ/.

Zweig, Eytan. 2009. Number-neutral bare plurals and the multiplicity implicature. *Linguistics and Philosophy* 32(4). 353–407. http://dx.doi.org/10.1007/s10988-009-9064-3.