

Introduction

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I.1 Linguistics Meets Philosophy

Linguistics, like all sciences, is deep-rooted in philosophy. Perhaps the most obvious example is that linguistic meaning has been at the center of philosophic inquiry for as long as philosophic discourse has been documented.¹ Nevertheless, among the current subfields in linguistics (including phonetics, phonology, and syntax), *formal semantics* was the latest bloomer.² As noted in the Preface, it was not until the mid-1980s that formal semantics began to develop as an autonomous field within linguistics. And it was not until the 1990s that it became solidified as such, with the founding of the journal *Natural Language Semantics* and the conference *Semantics and Linguistic Theory (SALT)*.³ These venues welcomed philosophers, but their aims and scope were largely linguistic.⁴

Turning the clock to 2021, formal semantics is now cemented as part of the linguistics canon in leading linguistics departments. Linguistics students often learn core ideas from twentieth-century philosophy of language without taking a step into the philosophy department. This is an amazing turn of events for a

¹ An oft-cited ancient text is *Cratylus*, where Plato questions how names of objects get determined. However, philosophic discussion about linguistic meaning goes as far back as Indian philosophers during the Vedic period.

² By ‘formal semantics’, I mean the scientific study of meaning which (as described in the Preface) developed from philosophy of language and philosophic logic. For a brief overview (translated into multiple languages), see: <http://web.eecs.umich.edu/~rthomaso/documents/general/what-is-semantics.html>.

³ *SALT* has taken place annually for the last 31 years, typically in the United States, though in 2006 it was held at the University of Tokyo, in 2010 it was held in Vancouver, British Columbia (co-hosted by University of British Columbia and Simon Fraser University), and in 2022 it will take place in Mexico City (co-hosted by El Colegio de México and the Universidad Nacional Autónoma de México). Five years after *SALT* was founded, another formal semantics conference, *Sinn und Bedeutung*, began to meet annually, initially in Germany, and then throughout Europe. Both conferences have proceedings that are widely read and cited.

⁴ This continues to be the case. *Natural Language Semantics* currently includes the following statement: ‘*Natural Language Semantics* publishes studies focused on linguistic phenomena as opposed to those dealing primarily with the field’s methodological and formal foundations’ (www.springer.com/journal/11050/aims-and-scope).

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scientific subfield that is a mere 30 years old! But it's not without its dangers. I would argue that the continued growth of formal semantics and philosophy of language is predicated on renewed conversations between linguists and philosophers. As the cliché goes: *don't forget where you came from*.

My outlook is based on personal experience. As an undergraduate student, I was privileged to study both philosophy and linguistics at one of the birthplaces of formal semantics, UCLA. My main influence was Terry Parsons, who taught in both the philosophy and linguistics departments. His philosophy course 'Pre-Fregean Logic' (co-taught with Calvin Normore) was the reason I became a philosophy major. His linguistics course 'Introduction to Semantics' was the reason I became a linguistics minor, with aspirations of becoming a 'subatomic semanticist'.⁵

As a graduate student, I was fortunate to attend Rutgers University during its 'golden era' in formal semantics (starting in the early 2000s), when linguists and philosophers were in frequent conversation, that is, when 'linguistics met philosophy'. Courses related to formal semantics were often packed with linguists and philosophers, regardless of which building, campus or department they were taught in; whether the course introduced the basics through 'Heim & Kratzer' or through Reinhard Muskens' *Compositional Discourse Representation Theory*; whether a seminar spurred discussion about reference, theory of mind, metaphor, convention, focus, (in)definites, stubbornly distributive predicates or the temporal system of Kalaallisut.⁶ Friendships developed across disciplines, and conversations took place on- and off-campus among students and faculty.⁷ They were constant and fruitful.⁸

⁵ Courses with David Kaplan and Josef Almog (at UCLA) and Jeff King and John Searle (at UC Berkeley) also played an important role in my philosophic education, while independent studies with Philippe Schlenker and Tim Stowell had a great influence on my choice to pursue a PhD in linguistics.

⁶ Maria Bittner, Veneeta Dayal, and Roger Schwarzschild were actively teaching formal semantics in the linguistics department. In the philosophy department, there were many seminars related to core issues in formal semantics and philosophy of language, including those taught by John Hawthorne, Jeff King, Ernie Lepore, Ted Sider, and Jason Stanley. There were also seminars at the Rutgers Center for Cognitive Science (RuCCS), including those taught by Alan Leslie, Chung-chieh (Ken) Shan, and Matthew Stone, as well as the late Jerry Fodor and Lila Gleitman.

⁷ These conversations were aided by annual workshops organized by Ernie Lepore ('Ernie-fests'), which brought together leading linguists and philosophers from around the world to engage with graduate students at Rutgers pursuing formal semantics. In addition to these workshops, there were weekly talks at the Rutgers Center for Cognitive Science (RuCCS) which brought linguists and philosophers in contact with faculty and students from psychology and computer science. There were also weekly basketball games organized by Ted Sider, bringing philosophers and other academics (including linguists) together from Rutgers and Princeton.

⁸ Below is a website that has tracked progress of many of the graduate students involved in these conversations. Both linguists and philosophers are mentioned in tandem due to their research being in formal semantics. <https://ruccs.rutgers.edu/students-recent-placement>

While such conversations are now rarely fostered by graduate programs,⁹ linguistics nevertheless meets philosophy, albeit in other venues. There are conferences (e.g. Amsterdam Colloquium and Semantics and Philosophy in Europe) and summer institutes (e.g. European Summer School in Logic, Language and Information and North American Summer School in Logic, Language and Information) which are regularly organized and attended by both linguists and philosophers (students and faculty alike). One of the most influential (and oldest) journals in formal semantics is called *Linguistics and Philosophy*. The current editors-in-chief are a linguist and a philosopher, promoting submissions in formal semantics from both disciplines.¹⁰ A more recent journal, *Semantics and Pragmatics*, currently has four philosophers and six linguists as associate editors, and an impressive number of linguists and philosophers on their editorial team.

The payoff from such efforts is evident. There is a new generation of philosophers doing formal semantics of a kind that is heavily influenced by linguistics. Indeed, some of their research is indistinguishable from the kind of research conducted in linguistics. There is a true convergence of methods here! To wit, it is quite common for philosophers of language to list ‘formal semantics’ as an area of specialization (or competence) in their CVs (not doing so may trigger the undesirable implicature that one is not up to date on the latest developments in the field). Moreover, philosophy graduate students apply to select linguistics jobs and vice versa; some junior and senior faculty switch from one department to the other (as visitors or tenured/tenure-track faculty); some even have affiliations with both departments, within and across institutions. As a result, it’s becoming more and more arbitrary whether a formal semanticist is called a ‘linguist’ or a ‘philosopher’, with the label simply signifying the name of the department to which they belong.

I hope these trends continue to grow and continue to undermine superficial boundaries imposed by institutional structures. They are only natural given the history of formal semantics described in the Preface and explored further in the chapters that follow.

⁹ There are many reasons for this. Some are systemic, others have to do with the fact that too many stars have to align to bring about consistent investment from students and faculty, across two (or more) departments, to have shared research interests and to consistently engage with those interests within a community. Among other things, this requires administrative support, community leadership, money (for good food), and endless energy.

¹⁰ Another influential journal with similar aims is *Journal of Semantics*, which – despite having predominantly linguists on their editorial board and as associate editors – encourages submissions in ‘all areas in the study of meaning, with a focus on formal and experimental methods’, including ‘semantically informed philosophy of language’ (<https://academic.oup.com/jos>).

I.2 Goal and Themes of the Volume

The goal of this volume is to empower new conversations between linguists and philosophers by (i) showing how far formal semantics has come because of the interactions between the two disciplines and (ii) critically assessing prior conversations, those currently taking place and those that are in a dire need of happening.

The volume emerged from a community that was born in 2017, when I invited friends and colleagues to think about how linguists and philosophers have contributed, and continue to contribute, to the broad themes below. I chose these themes to ensure that the volume has representation of both (i) knowledge exchange that had been taking place since the birth of formal semantics and (ii) new ideas that have emerged as a result of prior or ongoing conversations.

- Reporting and ascribing
- Describing and referring
- Narrating and structuring
- Locating and inferring
- Typologizing and ontologizing
- Determining and questioning
- Arguing and rejecting
- Implying and (pre-)supposing

Each theme is explored in this volume through specific topics (see Section 0.3 for an overview), which were chosen in correspondence with the interests of the authors. I asked the authors to think about their chosen topics in light of the four questions below.

- (1) Why do you think both linguists and philosophers find [topic x] interesting?
- (2) What recent developments in linguistics and philosophy do you think are most exciting in thinking about [topic x]?
- (3) What do you consider to be the key ingredients in adequately analyzing [topic x]?
- (4) What do you consider to be the outstanding questions pertaining to [topic x]?

To give the reader access to what the authors' thought process was like, each chapter begins with the authors' answers to these questions.

While this volume covers only a small sample of topics in formal semantics, I believe it is nevertheless representative of the kinds of conversations that have taken place and are currently taking place between linguists and philosophers. Indeed, several noteworthy trends immediately emerge.

Below, I briefly summarize the main trends that I see in terms of ‘the who’ and ‘the what’.

- THE WHO

- (1) While formal semantics in linguistics has always had a strong representation of women, the same cannot be said of philosophy, which has always been a male-dominant discipline. However, given the convergence of methods described in Section 0.1, there are signs of real progress. Many current conversations in formal semantics are a result of and driven by women linguists *and* philosophers, including the women featured in this volume.
- (2) Unfortunately, people of color are still underrepresented in formal semantics, even though there is a recent push to change this in linguistics. If history is an indicator, then linguistics will be a positive role model for philosophy in this respect.

- THE WHAT

- (1) New conversations about old problems have emerged amongst linguists and philosophers. In particular, questions have arisen about:
 - (a) Whether we have been wrong to hold onto alleged axioms in formal semantics (e.g. Fregean compositionality, acquaintance relations, the idea that rejection can be reduced to assertion, strong theoretical dependence on external objects in the world or judgments of truth).
 - (b) How to analyze previously excluded data (e.g. literary prose, multimodal and argumentative discourse), and adopt methodologies from neighboring fields (e.g. psychology, computer science, narratology). This volume motivates new avenues worth pursuing.
- (2) While Gricean pragmatics remains a staple in current conversations between linguists and philosophers, this volume shows that other frameworks (coherence- and question-based approaches) have taken center stage, especially in the analysis of context-dependence, discourse and information structure. The genesis of this progress is the ‘dynamic turn’ in the 1980s, mentioned in the Preface, which has revolutionized research at the semantics-pragmatics interface.
- (3) Since the mid-1990s, crosslinguistic research has blossomed in linguistic semantics, but not in philosophy, where fieldwork is not a practiced method of inquiry. As a result, semantics of understudied languages are rarely discussed between linguists and philosophers. This volume provides some notable exceptions (e.g. recent research on definite descriptions, tense, aspect and evidentials) which illustrate the dire need for such conversations to not only take place, but to become the centerfold of discussion moving forward.

I.3 Overview of the Chapters

Many natural language phenomena (e.g. quantification, anaphora, temporality, modality) have been the subject of semantic inquiry since antiquity. However, many insightful questions and methodologies have emerged more recently (and could have only emerged) as a result of formal semantics research. The contributions of this volume are a testament to this development. The volume proceeds as follows.¹¹

I.3.1 *Reporting and Ascribing*

Chapter 1 is about attitude ascriptions and speech reports, which were at the center of attention when philosophers and logicians began to see natural languages as formal systems. In this chapter, Angelika Kratzer looks at the history of formal semantics, not for its own sake, but for lessons about how to approach attitude ascriptions and speech reports today. She suggests that linguists and philosophers have taken a few wrong forks in the road. To solve the problem of logical equivalents, Kratzer suggests that we should have listened to Rudolf Carnap, who made it clear that, even if the truth of an attitude ascription or speech report may depend on the intensional structure of the embedded clause, this in no way forces the conclusion that propositions can't be mere intensions. For *de re* ascriptions, Kratzer suggests that we should have listened to David Kaplan, who replaced names in the scope of attitude verbs with descriptions, rather than associating the individuals those names stand for with modes of presentation. What held linguists and philosophers back in both cases, according to Kratzer, was Fregean compositionality. Shedding that legacy, she presents prototypes for analyses of attitude verbs and verbs of speech within an intensional semantics where propositions are mere sets of possible worlds and *de re* ascriptions require no special technologies created just for them.

In Chapter 2, Yael Sharvit and Matt Moss defend an acquaintance-based semantics for *de re* attitude reports – an analysis that has recently been challenged by some philosophers, but has been widely adopted by linguists. Sharvit and Moss begin by surveying the philosophical literature on the logical form of *de re*, with particular attention to how acquaintance relations solve the problem posed by so-called *double vision scenarios*. Sharvit and Moss reject the view that cognitive contact with the 'res' requires causal interaction, arguing that the causal conception of acquaintance is inadequately motivated in the philosophical literature on *de re*. Subsequently, they turn to other

¹¹ The overview of chapters below features summaries provided by the authors, slightly altered by the editor for purposes of exposition.

linguistic data, showing that the *de re* analysis is needed to account for certain tense constructions. They argue that the success of this application provides a further reason to reject an exclusively causal conception of acquaintance, since the kind of cognitive contact relevant to *de re* attitudes towards times cannot plausibly be causal. Sharvit and Moss discuss objections to the *de re* analysis of tense, such as the apparent unavailability of double vision scenarios involving times. Subsequently, they consider various additional principles and constraints that further refine the theory's predictions, and they conclude that while further research is needed to fully vindicate the *de re* analysis in this application, it offers the most unified and well-motivated account of embedded tense data currently on offer.

1.3.2 *Describing and Referring*

In Chapter 3, Hans Kamp explores the meaning of definite descriptions – a research topic with which linguistics and philosophy have been intimately intertwined as long as they have been acquainted. In particular, Kamp revisits Keith Donnellan's highly influential *referential–attributive* distinction from a communication-theoretic perspective, which distinguishes between utterance production and utterance interpretation – in this case between the referential and the attributive use of definite descriptions and their referential and attributive interpretation. The framework is MSDRT (for 'Mental State Discourse Representation Theory'), an extension of Discourse Representation Theory (DRT) that provides mental state descriptions (MSDs) for utterance producers and recipients. MSDs consist of propositional attitude representations (PRs) and entity representations (ERs). ERs represent entities from the outside world (their referents), to which they are linked by causal relations and which they can contribute to the contents of the agent's PRs. The referential use and interpretation of a description are analyzed as those which producer and interpreter take to refer to the referent of one of their ERs (while the attributive use and interpretation take it to refer to whatever satisfies its descriptive content). This approach differentiates more finely between different use scenarios than other approaches and throws new light on the question whether the referential and the attributive use are mutually exclusive and whether they are jointly exhaustive.

Chapter 4 explores the meaning of definite descriptions from a crosslinguistic perspective. In particular, Elizabeth Coppock considers what further philosophic insight could be provided on this topic in the modern era, when work on definite descriptions has become less focused on English. To that end, Coppock considers one unresolved, philosophic issue that persists even in this modern era of crosslinguistic comparison, pitting *dynamic semantics* against *situation semantics*. A prominent synthesis of these competing (though

compatible) frameworks says that both are needed for so-called ‘strong’ and ‘weak’ articles, respectively. Indeed, this distinction has served as inspiration for much recent work on the crosslinguistic semantics of definiteness. Coppock shows that while this new development has led to a much richer and more well-rounded picture of definiteness as a phenomenon, the predictions of the two analyses overlap too much, leading to spurious debate when fieldworkers go to analyze a new language. The chapter aims to clarify what is at stake empirically in the choice among analyses and advocates for continued philosophical reflection as we operationalize our linguistic methods of discovery.

1.3.3 *Narrating and Structuring*

Chapter 5 focuses on the role that discourse relations and discourse structure play in semantic theorizing. This topic of inquiry was pioneered in AI research in the 1970s by Jerry Hobbs, and became of interest to linguists and philosophers in the late 1980s and early 1990s, particularly with the development of Centering Theory and Segmented Discourse Representation Theory. In this chapter, Julie Hunter and Kate Thompson provide an overview of how discourse relations not only add semantic content above and beyond the individual propositions expressed by the utterances in a discourse, but they, and the complex structures to which they give rise, can influence the interpretations of individual utterances, having an effect on the very propositions the utterances are understood to express. Subsequently, Hunter and Thompson look in detail at how theories of discourse structure can be brought to bear on current questions in formal semantics involving the distinction between so-called *at-issue* and *non-at-issue* content. The core data that they consider involves appositive relative clauses and discourse parenthetical reports. Hunter and Thompson also discuss recent efforts to use discourse structure to model conversational goals and capture the subjective nature of discourse interpretation. Finally, they consider a question that has not received proper attention in linguistics and philosophy: how to extend theories of discourse structure to multimodal discourse. Along the way, Hunter and Thompson emphasize the importance of corpus work in studying discursive phenomena and raise a series of large questions to be pursued in future work.

In Chapter 6, Pranav Anand and Maziar Toosarvandani examine a previously undiscussed interaction between tense and predicates of personal taste (PPTs) – two linguistic expressions which have independently been prominent in discussions amongst linguists and philosophers. While disagreements involving *delicious* or *fun* are generally considered faultless (i.e. they have no clear fact of the matter), Anand and Toosarvandani observe that, in joint oral narratives, this faultlessness varies with tense: if the narrative is told in the

historical present, disagreements involving a PPT are not faultless. Drawing on narrative research in psychology and discourse analysis, they propose that this contrast reflects a pragmatic convention of the narrative genre in which participants construct a consensus version of what happened from a unitary perspective. To link this pragmatics with the semantics, Anand and Toosarvandani adopt a *bicontextual semantics*, where the perspectival parameters for both PPTs and tense are located in a context of assessment (and not context of utterance). They show that when these contextual parameters are constrained by the unitary perspective of narratives, the present tense leads to nonfaultless disagreements, as its semantics tightly binds the temporal location of an event to the parameter relevant for appraisal. The past tense, by contrast, enables both faultless and nonfaultless disagreements. Anand and Toosarvandani derive this flexibility by revising the existing semantics for past tense, engendering a new perspective on crosslinguistic variation in tense usage.

1.3.4 *Locating and Inferring*

Chapter 7 considers the meaning of tense in its own right – a topic that goes back to (at least) Aristotle, who discussed in his *De Interpretatione* whether or not sentences about the future have a truth value. While philosophers originally focused on the future tense, Corien Bary argues that the present tense poses many challenges as well – challenges that are interesting for linguists and philosophers alike. These arguments were fueled by research in formal semantics in the last decade. In particular, Bary focuses on two particularly complex present tense phenomena: the present tense in complements of indirect speech and attitude reports, and the historical present. She argues that while formal semantics has provided significant insight on these phenomena, a holistic understanding of the present tense requires broader conversations between formal semantics and other fields of language study, such as psycholinguistics, cognitive linguistics, philosophy of language, mind and fiction, literary studies, and narratology.

Chapter 8 is about evidentiality, a topic that – compared to many of the others in this volume – has only quite recently been featured in conversations between linguists and philosophers. In these conversations, evidentiality is usually equated with so-called *propositional evidentiality*, i.e. evidentials that scope over propositions. In this chapter, Diti Bhadra undertakes a crosslinguistic comparative study of propositional and *nominal evidentiality*, i.e. evidentials that scope over nominals, and are fused with the determiner/demonstrative systems or with nominal tense markers. Bhadra demonstrates that there are cohesive parallels in how flavors of both propositional and nonpropositional evidentiality interact with verbal and nominal tense and aspect.

She uses tools from modal logic to show that we can: (i) unify the subdomains of evidentiality using modal accessibility relations while also preserving important distinctions between them, (ii) use the same tools to compositionally capture the interaction between evidentials and tense and aspect, and (iii) have the representation of an agent's certainty of belief be reflected in quantificational force. More concretely, Bhadra proposes to encode the sub-type of evidence in the semantics of evidentials, with three distinct evidential flavors embodying three distinct spatio-temporal modal accessibility relations: direct (sensory) evidentials are temporally sensitive historical necessity relations (yielding the factive nature of perception); inferential evidentials of pure reasoning are epistemic accessibility relations; inferential evidentials of results are a combination of the above two.

1.3.5 Typologizing and Ontologizing

In Chapter 9, Jessica Rett explores the ontology of semantic theory – a highly controversial topic that was first taken up by philosophers and logicians who viewed natural languages as formal systems. The vast majority of formal theories employ individuals as a basic type; they represent quantification over, modification of, and reference to individuals. However, with the development of linguistic semantics, new views emerged about which basic semantic entities should be included in our formal semantic ontology, and on which principles we should include them. In this chapter, Rett explores these views in detail. She first considers various semantic theories that include additional types or entities, including possible worlds, but also less common ones like vectors. Subsequently, she considers two competing views that are currently featured in conversations between linguists and philosophers. According to the first view, types should be constrained or reduced. According to the second view, types should be proliferated. Rett presents some representative arguments on both sides and suggests a path forward in evaluating them against one another.

Chapter 10 is also about the ontology of semantic theory, but explores this topic from a different perspective. In this chapter, Gillian Ramchand argues that the ontological categories that linguists and philosophers require for understanding meaning and meaning composition in natural language cannot be exclusively proxied by external objects in the world or judgments of truth. In other words, Ramchand argues against a widely held view in formal semantics that a set of metaphysically justified ontological objects is required for natural language ontology; the latter field should be considered a distinct philosophical and analytical exercise, according to Ramchand. The chapter takes as its central empirical ground the meaning of 'nonfinite' verb forms in English. Paradoxes relating to the English progressive and passive