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## The Syntactic and Semantic Atoms of the Spray/load Alternation

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**THE SYNTACTIC AND SEMANTIC ATOMS  
OF THE *SPRAY/LOAD* ALTERNATION**

A Dissertation Presented

by

MICHAEL ALEXANDER WILSON

Submitted to the Graduate School of the  
University of Massachusetts Amherst in partial fulfillment  
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

September 2021

Linguistics

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# THE SYNTACTIC AND SEMANTIC ATOMS OF THE *SPRAY/LOAD* ALTERNATION

A Dissertation Presented

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MICHAEL ALEXANDER WILSON

Approved as to style and content by:

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Kyle Johnson, Chair

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Rajesh Bhatt, Member

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Seth Cable, Member

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Luiz Amaral, Member

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Joe Pater, Department Chair  
Department of Linguistics

*To my wife and my parents,  
whose unflagging support never ceases to humble me*

“Feynman was a truly great teacher. He prided himself on being able to devise ways to explain even the most profound ideas to beginning students. Once, I said to him, ‘Dick, explain to me, so that I can understand it, why spin one-half particles obey Fermi-Dirac statistics.’ Sizing up his audience perfectly, Feynman said, ‘I’ll prepare a freshman lecture on it.’ But he came back a few days later to say, ‘I couldn’t do it. I couldn’t reduce it to the freshman level. That means we don’t really understand it.’”

—David L. Goodstein, *Feynman’s Lost Lecture*

“Ah, but a man’s reach should exceed his grasp,  
Or what’s a heaven for?”

—Robert Browning, *Andrea del Sarto*

“My life amounts to no more than one drop in a limitless ocean. Yet what is any ocean, but a multitude of drops?”

—David Mitchell, *Cloud Atlas*

## ACKNOWLEDGMENTS

I am surely not the first to note the great irony that words when viewed under the linguistic microscope manifest a kaleidoscopically complex behavior that one despairs to limn; and yet, when one urges one's poor old Broca's area to marshal the same with the greatest possible poetic force to proffer an appropriate amount of gratitude to the utmost deserving, they prove a meager and paltry font that cannot even pretend to capture the merest soupçon of the emotions that presumed to call them out for such lofty purpose. But I must try. I rely on the charity of my acknowledgees to divine the truth of the thoughts that have left the ensuing words behind as their bare and imperfect trace.

First, my committee: Kyle Johnson, Rajesh Bhatt, Seth Cable, and Luiz Amaral. They were more than I could have hoped for: generous with their time, support, and criticism. There were several points during the research that has found its way into this dissertation when I did no more than grope in the dark. I am grateful that they were willing to do so with me and to shine a light whenever they could. I have learned so much from them not only about language, but about how to study it; I could not have hoped for better role models of diligence. I will greatly miss meeting with them regularly.

Kyle Johnson is one of the main reasons I came to UMass. When I did not have a chance to meet with him during the open house due to him traveling, he called to chat with me by phone instead, which I have not forgotten. His paper with Sigrid Beck on the dative alternation was so exciting to me as an undergraduate student—I had just gotten my first taste of  $\bar{X}$ -theory and argument structure from Stephen Wechsler and Steven Pinker and was hungry for more—and I am so glad for the opportunity to have made use of their approach in chapter 2. This work introduced me to the syntactic decompositional approach that I make use of throughout the dissertation. Much more than this, though, Kyle has proven an excel-

lent instructor and mentor. His first-semester syntax course ushered me into the world of modern minimalist-style syntax, and his seminars introduced me to the multidominance that I make use of herein. I also learned a lot from being his teaching assistant; he has a remarkable way of finding a way to express an old idea that is just new enough to clear away the cobwebs and set it into stark relief. Moreover, his classes were not only instructive but hugely entertaining, merging complex theory with vaudevillian pastiche. This wit and presentational acuity is not only verbal but also visual. I recall clearly a moment in a seminar on multidominance where he grasped one marker in each hand, and proceeded to draw a multidominance graph with both simultaneously, beginning by setting the markers to the same point on the board and spreading his arms as far upward and outward as they could reach, which resulted in no small amount of amusement on the part of the rapt student-spectators. As an advisor, he has helped me navigate the well-known bogs and swamps of argument structure through his gentle patience, his willingness to read through literature with me, and his generosity. He has always been willing to meet when he has had the time, even when that has meant multiple overlong meetings per week. I cannot express how grateful I am for his generosity with ideas: many of the ideas in this dissertation, including all of the major ones, have their ultimate source in something Kyle said. I have especially relied on his unwillingness to feign understanding of bad or confusing ideas, which has led me to avoid many pitfalls. His deliberate approach to the study of language, which insists every idea must rest on solid conceptual, theoretical, and empirical foundations, is one I strive to emulate. In addition, he seems to know something important about every topic one might wish to bring up in discussion; this has led to the bloatedness of my reading list, which is certain to last me a while yet.

Rajesh Bhatt's second-semester syntax course is, ultimately, what led me to this dissertation topic. A term paper reexamining certain claims about adjectival passives led to a general paper discussing three classes of verbs that have odd behavior as adjectival passives. One of those classes of verbs are the *cover/fill* class discussed in chapter 4, and the similarity of these to *spray/load* verbs is what resulted in the topic of this dissertation. Every meeting with Rajesh has been a delight; his kindness and enthusiasm have gotten me animated even on days when I was sure I had accomplished nothing since our last meeting.



His ability to instantly see the predictions of an analysis, the problems or predictions that could result, and what one would or could have to say to solve those problems is inspiring. What's more incredible is that this ability does not seem to rely on the idea having been described particularly well, since I witnessed this behavior many times over when discussing the barest suggestions of a thought.

Seth Cable showed me that complex semantics doesn't have to be mysterious. His second-semester semantics course, which introduced me to the more theoretically involved areas of semantics, was transformational. Before it, my struggle to parse semantic formulae and merely understand what they said was real. Afterward, the scales had fallen from my eyes and I suddenly found myself able not only to understand what these formulae did, but to see what they meant. The fact that I have been able to say anything (semi-)comprehensible about semantics in this dissertation is because of him. I am continually striving to match the clarity and depth of discussion in his invaluable course handouts, which I have often leaned on more than the original works they discuss. In meetings, Seth is attentive and scary smart. Another UMass graduate student (whose identity I can't recall) once accurately observed that "Seth thinks in a straight line." Often, I would be presenting some idea or another, or even just some data, and I could glance up and see the gears already turning in his mind. At some point soon after, the obvious path forward identified, he would begin to describe what the certain conclusion was one clear step at a time. Sometimes, I was lucky and the obvious way forward he found was what I had been building towards but slowly. Other times, I was unlucky and the rest of the handout lay exposed for the hodgepodge it was. Another thing Seth is particularly good at is coming up with just the right example. Many times, what I was proposing made a prediction that I had not seen. Seth has not only seen these predictions, but uniformly come up with precisely the example to test them.

Unlike Kyle, Rajesh, and Seth, I only met with Luiz once. For this reason, I do not have as complete an impression of him as I do of the other members of my committee. But I am nevertheless very grateful to him for serving as my external member, and coming to that meeting and my defense with piercing and important questions, which in my understanding goes beyond what is expected of an external member.

And then there is the group I would consider my hidden committee, who taught me

psycholinguistics: Brian Dillon, Lyn Frazier, and Shota Momma. While my dissertation contains no psycholinguistics, I consider myself to me no less a psycholinguist than a syntactician, thanks in no small part to their support. And indeed, the reason this dissertation does not contain experimental work is because they taught me that one should run only the necessary experiments, and none that were necessary suggested themselves. I was also fortunate that all of them are willing to engage with questions of how linguistic theory interacts with psycholinguistics in a way that accords equal respect to both—a trait shared by too few. They have me how to do psycholinguistics in a way that interfaces with generative grammar without attempting to supplant it, which I am incredibly grateful for.

Brian Dillon is a joy to work with. His cheerful optimism has often brushed away the lingering clouds of doubt. When my many attempts at follow-ups to my first generals paper on the processing of argument structure kept failing, he was always willing to listen and help me find the next way to go forward. Even when that turned out to be a dead end, he was willing to switch gears and work on a project based on a psycholinguistic prediction raised by my second generals paper, which has proven to be quite a fruitful line of research indeed. Not only this, but he was willing to get down into the weeds at every step of the way, helping me revise and re-revise stimuli, showing me how to carry out new experimental procedures, showing me how to do the right statistical analysis (and how to interpret the results correctly), and helping me make sense of the results. The pandemic has made me miss (as I will continue to miss) the ability to drop by his office whenever he was around to run something by him or get help interpreting a stubborn piece of data. His class on statistics was the first time I felt like there was a way to really understand what the idea behind the math was, and the ability to see the code of the Matrix like that was indispensable for getting me through the hectic second course in the psychology statistics sequence. His willingness to run me through the gauntlet of setting up an eye-tracking experiment and analyzing data in the space of about a month is something I shall not soon forget.

I regret that I have not taken more advantage of my proximity to Lyn Frazier, who is one of the indisputable giants in her field. Because of my poor scheduling abilities, I did not get the chance to work with her much beyond my first generals paper. But she was the one who taught me that the best psycholinguistics experiment is the simplest one you can

run, and it's even better if you don't have to run one at all. In practice, this has motivated me to try and develop more interesting psycholinguistic questions so that I could expand my methodological toolkit. Lyn always encouraged me to ask the deepest "why" questions. I recall one meeting in particular where she asked me why I assumed that thematic roles exist, which is a question I am still grappling with, and which has informed the approach in this very much non-psycholinguistic dissertation in a profound way. Her impulse to ask the big questions and skeptically reconsider the basis of familiar assumptions is one I hope to properly emulate someday.

Shota Momma came to UMass in the Fall of 2019, while I began as a student in the Fall of 2015. But this temporal gap belies the amount of influence and support he has given me. He offered me a position as his research assistant during his first semester at UMass. But I never got the impression that I was merely a research assistant; he treated me at our meetings as an advisee, not merely one to run experiments or code data (though this would have been invaluable on its own!). He has taught me about speech production—not only about its methodological nuts and bolts, but also about its true utility for understanding human language. The breadth and audacity of his research program beggars belief, as he uses speech production to probe not only how language is implemented in the architecture of the mind, but also the very representations of language in truly new and exciting ways. To use an analogy, I have found myself struggling to keep one plate spinning on the end of its stick, while Shota found the time to not only help me with that plate, but also help me start spinning up others while keeping all of his own going. His keen insight on how one can test ideas in new ways and identify new predictions marks a psycholinguistic fecundity that I hope to have gleaned some of. To put things in perspective: when Shota came to UMass, there were two experimental research programs that I had been working on over the course of those four years; by the end of his first semester, I had to set down all of them in a document to avoid losing track, and I believe the count came out to 10 or 12. Beyond this, he has been very generous: my "extra" year of funding that supported the time period in which much of the research and writing of this dissertation took place came from a research assistantship that was part of his funding deal as a new hire. But due to the pandemic, working from home, and being busy writing that dissertation, I ended up

doing very little over the past year to merit being called a research assistant. Shota never raised the issue, though he would have been right to, and I am immensely grateful for the time that afforded to work on this project with few other concerns to occupy me.

Then there is Tom Roeper, who no less than my two committees has exerted a huge influence on my thinking. Tom recruited me from a second-semester psycholinguistics and language acquisition course to work on the recursion project, which is studying how the deepest principles of grammar are reflected in the very beginnings of child language. Tom's approach to the study of language is one of eclecticism; whenever I have had the fortune to meet with him, we have never ended up quite where I expected at the start, but we had always covered some interesting and unexplored territory. As a consequence (or a cause? It's hard to say) of this eclecticism, he is an idea and example generator *par excellence*. His ability to come up with examples that verge on the quirky, and yet whose clarity, applicability, and reach is arresting and unquestionable, is supernatural. My computer and notes are full of one-off observations he would make during our meetings that I would hastily scratch down for "later investigation." Of course, trying to keep up with the amount of work truly following up on every observation I could attribute to him would be futile. It seems as though he could generate enough interesting data to fuel an entire research program in an afternoon, without even trying. Beyond this, Tom is one of the most positive people on the planet. While seeing a question from others could often make me preemptively worry about some feature or other of an idea (rightfully and helpfully so), Tom's questions in pretty much every instance I can remember were the highest kind of praise, where he would show through an on-the-spot example that some important prediction buried in the analysis was, in fact, borne out; suggest a connection with some distant phenomenon that was clearly relevant and whose mysteries could now be explored anew; and find some connection with the deepest parts of grammar that was always present but not recognized. Just about every single question I can remember from Tom directed at me or any other speaker was like this, and they were all a delight. I am grateful to him for helping to disarm some of my natural tendency toward cynicism and languor through his effusive positive energy.

Beyond those above who have advised me on my work and whose spirit I hope to carry on through it, I have had the happy chance to work with many other outstanding people

at UMass. As a teaching and research assistant, I had the great fortune to work with not only Kyle, Seth, Tom, Brian, Lyn, and Shota, but also with Nick LaCara, John Kingston, and Magda Oiry. Nick made my first introduction to teaching linguistics much easier than it could have been with his well-crafted handouts and clear guidance on what to teach in each section and how to grade assignments. John Kingston afforded me a great deal of support while I had to navigate TAing three sections of linguistics 101 with him while taking a 4-day-a-week stats course, and I hope to emulate the clarity and precision of his lecture materials. And Magda Oiry was an immense help in dealing with a difficult situation as a teaching assistant for an online 101 course that had been causing me no small amount of worry (and I am thankful for Joe Pater's support with that one as well). I am also grateful to Alice Harris for being my first point of contact with UMass, as she was the one who informed me of the fortunate decision and gave me a wonderful first impression of this friendly department, to Ana Arregui for helping me prepare for an interview, Gaja Jarosz for keeping me on track with paperwork, and Lisa Green for serving as the Graduate Program Director for my first-year cohort. In all these capacities, their generosity has exceeded all reasonability.

Of course, there is more to be thankful for than those who supported my research so directly. Tom Maxfield proved a steadfast guard against the vagaries of the UMass administration, helping me navigate more funding issues than I can properly recall. Michelle McBride has helped me navigate issues of registration and paperwork, and more besides. When Rong and I were traveling during concerts of the Springfield Symphony Orchestra, Michelle and Sharon would ensure our tickets would not go to waste—and while we were simply grateful for that, they made the effort to repay us in kind by taking us to a lovely dinner and piano show, a non-academic highlight of my time in the happy valley. While Barbara Partee is an intellectual titan of the department, she is also a titan of its *Gemütlichkeit*. I am grateful to her for her beginning-of-semester parties,<sup>1</sup> and for her taking me and Rong to concerts around the five colleges (at no charge to us!). I am also thankful to perennial Visiting Professor Tom Ernst for many interesting and collegial conversations at dinner parties over the years, and to Andrew Cohen for an excellent statistics course. Though I only

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<sup>1</sup>Which I would humbly suggest start dedicating their beginnings to the drinking of tea. This would, of course, allow one to refer to the event as the annual “Partee part-tea party,” which in my mind is simply too good an opportunity to pass up.

met with Jeremy Hartman twice, I wish I had more, as he provided important, interesting, and unanticipated commentary both times; I am glad to have had him as the chair of my general papers. Linguistics is much the poorer for his absence. Of the departments I was fortunate enough to sample in my open house tour, UMass stood out as the friendliest and most collegial, and it is because of all of the great people mentioned in these previous paragraphs (and others whose influence has been less direct but still acutely felt).

I am also thankful to so many of my fellow graduate students at UMass. While I don't think I can simply list everyone present at UMass during my tenure there, those not specifically mentioned should know that they still have their presence in my heart. Leland Kusmer, Ivy Hauser, Coral Hughto, Brandon Prickett, Maggie Baird, and Leah Chapman formed the core of the Spectrolunch/party group (along with the sometimes-participants Bethany Dickerson, Alex Nyman, Max Nelson, and Erika Mayer). Treating spectrogram reading as a *Jumble*-like puzzle helped liven up many busy and difficult weeks, not only because of the diversion but because of the positive spirit they all brought. Regrettably, the pandemic seems to have put an end to Spectrolunch, and its most recent organizers have all departed UMass—my hope is that this is only temporary; I would hate to see this tradition truly die, since it was a welcome source of good spirits. Beyond this, I am grateful to Hsin-Lun Huang (who never fails to take everything one says in the utmost seriousness), Duygu Göksu, Kaden Holladay, Jyoti Iyer, Kimberly Johnson, Erika Mayer, Anissa Neal, Rodica Ivan, Christopher Hammerly, Alex Göbel, Deniz Özyıldız, Petr Kusliy, Kattia Vostrikova, Sakshi Bhatia, David Erschler, Jérémy Pasquereau, Andrew Lamont, and Adina Camelia Bleotu (a visitor to the department) for many illuminating questions and discussions about my research and others' over the years. I am also grateful to my cohort—Chris Hammerly, Alex Göbel, Brandon Prickett, Carolyn Anderson, and Jaieun Kim—for “foreign of the week,” the Friday-morning homework sessions in the first-year office, and the late night stats homework sessions (which were also attended by some stats students not in this cohort). Those in the know will realize one name is missing from my cohort here—because I must save the best for last.

I must also mention at least one undergraduate student at UMass that deserves special thanks. While I am grateful to all of the students that have been in the classes I have been

fortunate enough to TA for in many ways that resist description, I am especially grateful to Barbora Hlachova for being an excellent research assistant on several experiments. Barb is a patient and quick learner, and very accommodating. She was originally going to help me run an eye-tracking experiment—and then COVID cut the legs out from under that one before it could really get going. When I then made to develop an online speech production version of the experiment (in collaboration with Shota), she was just as enthusiastic about helping transcribe and analyze the speech data. Her conscientious assistance saved me a lot of time and has let me progress much faster in this project than I otherwise could have.

Both the individuals above and the UMass Syntax, Psycholing, and Semantics workshops (whose regular participants overlap substantially with everyone I have listed up to this point, with the important-to-note additions of the psychologists Jon Burnsky, Chuck Clifton, and Adrian Staub) have my gratitude for presenting their own interesting work, accepting my often misguided questions in good humor, and providing much useful feedback on early-and later-stage ideas; and on many abstracts over the years. For similar reasons, thanks is due to the members of the eye-tracking and GAP/SPAM labs as well. Particularly helpful and encouraging feedback at conferences came from Bronwyn Bjorkman, Gary Thoms, Beth Levin, Ryan Walter Smith, Jianrong Yu, Yining Nie, Faruk Akkuş, and Byron Ahn. Emma Nguyen talked to me about her work on language acquisition in an area that I was investigating in adult psycholinguistics, which provided much useful perspective and insight. Monica Do spoke to me about her work on speech production on the same topic. Ming Xiang helped me put together an application for the NSF SBE postdoctoral research fellowship; while it unfortunately wasn't funded, she put a lot of effort into helping me develop a project and proposal that I am proud of. Someday I promise I will go back and pick up those threads. Bob Frank offered me a job as a computational linguist despite me having little background in this area, which I am excited to begin, as it should let me apply what I have learned over these past years in a new way. There are surely many other people who have touched my life and helped me grow at UMass in ways that I have overlooked and so failed to mention with the weight they deserve. I assure them that this is accidental, and that their contributions are none the less appreciated for it.

The UMass library staff also merit some thanks for quickly responding to my requests

for books and scanned articles (which were many, particularly over the previous two months). I am amazed they got through them all.

As distant as the pre-UMass times seem at this moment, there were also those before who have had a profound influence on my intellectual development. From UT Austin, I want to especially thank Stephen Wechsler, Scott Myers, and Juan Colomina-Almiñana. Stephen Wechsler taught my first real syntax course, which spurred my interest in argument structure that has driven me since. I had Scott Myers as an instructor for courses on phonetics and “how to do experiments on language.” The course on phonetics was a model of clarity, and has inspired an interest in the psycholinguistics of speech perception that simmers in the background of my mind. Many times this knowledge of phonetics has saved me when standing in front of a section of students with eager questions. The course on how to do experiments was my first introduction to psycholinguistics and statistical analysis, and my term paper in that class inspired the topic of my first generals paper at UMass. It is unlikely that I would have become as interested in psycholinguistics as I am without Scott’s teaching. Juan Colomina-Almiñana encouraged me to view myself as a researcher; while our paper has unfortunately languished over the years, I am grateful for him inviting me as a lowly and somewhat directionless undergraduate to collaborate on an extension of a term paper I submitted to his class on Hispanic sociolinguistics. He was the first professor to refer to me as a colleague—and when I was still an undergraduate! Me!—which afforded me the mental perspective to view myself as someone who could do all of the things I was interested in and reading about. I am truly grateful.

Still earlier than this were the professors of the distant pre-UT Austin era. At Texas State University – San Marcos, I had the great fortune to take classes from Nancy Wilson. Her courses on English writing took me from someone who fancied he could put together a sentence to someone who actually could, and could moreover employ rhetorical devices in service of loftier ideals, rather than as mere geegaws. Once she said to the class that “You’ll never get more feedback on your assignments than from me,” which wasn’t so much a boast as an accurate observation. I have done my best to follow this lead with my students. Her feedback was not only technical, but substantive, as she would ask questions that would push me to truly engage with what I was saying—after the first paper in her class, I made



sure to never write down anything that I didn't truly believe and think through first. She approached me at the end of my first class with her and offered me a position at the Texas State University Writing Center (which later led to me being able to get a job at the UT Austin Writing Center while bypassing the usual tedious process of taking a semester-long course on the theory and practice of writing centers). Having the opportunity to be a peer writing consultant has proven transformational in my own writing; others have told me that my writing is clear and well-organized—while I cannot speak to whether these claims are entirely accurate, to the extent they are it is because of Nancy, the opportunities she afforded me, and what she taught me about how to deploy writing with great skill.

Also at Texas State University was Antonio Gragera, whose course on the syntax of Spanish was my first real exposure to linguistic analysis, simplified though it was for a bunch of language majors. Somewhat ironically, this course made me want to change my major from Spanish to linguistics—though ultimately I ended up double majoring. Then there was Agustín Cuadrado, whose courses on Spanish literature and film led to me buying far more books by García-Márquez, Borges, and other giants of magical realism than I can truly hope to finish (though I did manage to finish *Cien Años* in its original precise and poetic Spanish a few years ago, which I am eternally grateful to him for). And at Austin Community College, there was Todd Phillips, whose Spanish language classes made so clear to me that my earlier notions of foreign languages as mere substitution ciphers of English could not have been farther from the truth (it was the verbal morphology that captured my heart and mind—how efficient and unlike English!). There were also my non-academic Spanish instructors, my co-workers from my first job at Chick-fil-A—Chuy, Lulu, Mariana, José, Adriana, Yesenia (and others whose names I've since lost to memory)—whose willingness to speak Spanish with this *gringo* led to me internalizing Spanish in a way that has proven fairly resilient over time.

Now I turn to my family, whose contributions to this dissertation are the deepest and most subtle. My dad, though he might be surprised to know it, is ultimately responsible for setting me down the path of linguistics. The fateful event was when he took me to a late showing of the first of Peter Jackson's films in *The Lord of the Rings* series. This led to me becoming obsessed with J. R. R. Tolkien's books, and his constructed languages therein,

which was cemented by Helge Kåre Fauskanger's excellent website *Ardalambion*. This in turn led to an interest in linguistics that was stoked by the daughter of a family friend (whose name I can't recall) who was studying linguistics lending me John McWhorter's *The Power of Babel*. Due to the combination of this with my interest in Spanish, I ultimately decided to major in linguistics and Hispanic linguistics as an undergraduate.

Beyond this, my dad and mom have never ceased to support me in all my ludicrous and peregrine aspirations over the years. From paleontologist, to comic strip artist, to novelist, to computer scientist, to sound engineer, to Spanish major, and finally(?), to linguist, they have always been behind me. I recall one time in particular, during the comic strip artist epoch, where I insisted upon getting professional quality Koh-I-Noor Rapidograph pens for inking, and so my mom went with me to a fancy pen store in downtown Austin where I bought several pens that I didn't really need to support an illusorily foreseen career. My dad bought me several textbooks on Java to support my ambition to become a programmer, and helped me get set up and debug. Many other stories like this could be told, but this isn't a biography. I also have to thank them for the bedrock of my education: I count myself fortunate among the homeschooled to have made it where I am.

My brother and sister have not substantially played a role in my educational development, but I am no less grateful to them. Being able to hang out with them, play video games, and cultivate an absolutely atrociously dry sense of humor over the years has been invaluable in shaping me. More distant relations also deserve their share of thanks: Grandma and Grandpa, Dear and Papa, who always taught me to never stop with their steadfast faith in and support of me. I am sad that Grandpa and Papa did not make it to the end of this dissertation—I wish they were around for me to be able to properly convey my thanks. Papa in particular was someone whose difficult to describe balance of sternness and utter compassion makes him one of my role models. I also have to thank my uncles, aunts, and cousins, for their encouragement and less direct though no less important support.

My mother-in-law, 柳小梅 (*Liǔ Xiǎoméi*), has also been a large source of support. As she does not speak English, I will have to rely on Rong to convey these thoughts to her. 妈妈 (*Māma*) has supported the research behind this dissertation quite directly by doing a lot of cooking while she stayed with us for the first year of the COVID pandemic. She is also

responsible for organizing much of my trip to China, and ensuring that I was never short of ice for drinks while I was there (which, to the uninitiated, is a real concern). Rong also tells me that she always takes my side in disagreements, which I find incredibly amusing and sweet. The rest of Rong's family is also sweet and supportive; though her brother Isaac (who speaks English) is the only other one I have much interacted with directly, he, along with 姥姥 (*lǎolao*), 大姨妈 (*dà yímā*), 大姨爹 (*dà yídiē*), 二姨妈 (*èr yímā*), 陈大夫 (*Chén dàifu*), 舅舅 (*jiùjiu*), 舅妈 (*jiùmā*), 姐姐 (*jiějie*), Frank, Charles, 萌宝 (*Méngbǎo*), and 茵茵 (*Yīnyīn*) (and 督督 (*dūdū*)) have welcomed me into the family with open arms and hearts.

And of course, I would be remiss to forget Tigger, Baxter, Einstein, Cody, and Sparky, who I grew up with; and Scooter, who I didn't. Not to mention Bug, 小兔兔 (*Xiǎo tùtù*), 小麦鸡 (*Xiǎo Màiījī*), Milky, Biggie, Smallie, Percy, 小麦企鹅 (*Xiǎo Màiqǐ'é*), Crocy, Wolfie, 小蛋兔兔 (*Xiǎo dàn tùtù*), 小粉兔兔 (*Xiǎo fěn tùtù*), and the rest of the friends (Rong will know what this means).

Before I come to the final part of these acknowledgments, which I would fain leave unfollowed, I will borrow a quote from Dan Quayle to make a standard and appropriate disclaimer. Like him, "I stand by all the misstatements that I've made." The many errors that I have failed to exorcise from this dissertation are mine and mine alone.

Finally, there are no adequate words to express the depths of my love, gratitude, and appreciation for Rong Yin, my 小榕包 (*Xiǎo Róngbāo*) for now and for ever. She was only briefly a mere cohortmate before we fell hopelessly in love—occasioned by a meeting at the late Northampton establishment *The Foundry* which I must thank for providing a venue for the auspicious encounter. Her many contributions to this dissertation are both professional and personal, as she has been not only a colleague, co-author, and attentive helpful critic of all my work; but also a wife and life partner I could not be luckier to have. She is smart, sweet, kind, loving, hardworking, protective, cute... but the list could easily stretch on to infinity. The odds of our meeting, converging on each other from opposite sides of the planet at precisely the right time, could only have been weighted by fate. My appreciation and love for her is endless, and deep beyond what I could ever hope to express with the clumsy and superficial fragments of thoughts that words convey. She is interwoven inescapably and inextricably into the fabric of this dissertation and my life. 我最愛的小榕，我永远爱你！

# ABSTRACT

## THE SYNTACTIC AND SEMANTIC ATOMS OF THE *SPRAY/LOAD* ALTERNATION

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What is the relationship between the word *spray* in the sentence *John sprayed the paint onto the wall* and its identically pronounced counterpart in *John sprayed the wall with the paint*? At some level, we recognize these two uses of *spray* as the same word. But the fact that they combine with their arguments in different ways means they cannot be identical. The relationship between these two uses of *spray*—called the *spray/load* alternation—is productive in a way that a descriptively adequate grammar of English should capture. Other verbs show the same pattern, adults and children extend it to novel verbs, and children learning English overextend the pattern to non-alternating verbs. For these and other reasons, precisely how to describe and explain the *spray/load* alternation has been well-studied.

I discuss two kinds of novel evidence that bear on the correct analysis of the *spray/load* alternation. First, I wield the adverb *again* as a diagnostic of the syntactic and semantic decomposition of *spray/load* verbs, which reveals a syntactic bracketing paradox. Second,

I dive deep into hitherto little explored facts that reveal striking asymmetries between the two kinds of objects of *spray/load* verbs. Goal objects are subject to restrictions on movement and nominalization that theme objects are not.

To account for these data, I propose an analysis that makes two theoretical contributions. First, the bracketing paradox revealed by *again* can be neatly resolved by a theory of syntax that allows multidominance. Second, the asymmetries between theme and goal objects suggests goal objects are derived in English by the conflation of a phonologically null preposition with the verb root, which reduces the asymmetries to facts about the syntax of prepositions.

Finally, I compare my analysis to others empirically and theoretically. Empirically, my analysis loses no significant ground to others' and has the advantage of accounting for the novel evidence discussed above. Theoretically, my approach requires only a simple and independently motivated syntax and semantics; my analysis' compatibility with this architectural simplicity constitutes an explanatory advantage compared to accounts that require more theoretical machinery to achieve similar or lesser levels of descriptive adequacy.

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# LIST OF ABBREVIATIONS

$\sqrt{x}$	Root of $x$
1	1 <sup>st</sup> person
2	2 <sup>nd</sup> person
3	3 <sup>rd</sup> person
ACC	Accusative Case
A	Adjective
AgrO	Object agreement (as syntactic category)
Asp	Aspect (as syntactic category)
ASP	Aspect (in glosses)
CL	Classifier
DAT	Dative Case
DEF	Definite
$\Delta$	Change
D	Determiner (as syntactic category)
DET	Determiner (in glosses)
DIR	Directional
ERG	Ergative Case
Foc	Focus (as syntactic category)
FOC	Focus (in glosses)
GEN	Genitive Case
INST	Instrumental Case
K	Case (in the context of KP (Case phrase))
LOC	Locative

NPI	Negative Polarity Item
NOM	Nominative Case
NMLZ	Nominalizer
Obj	Object
Obl	Oblique
Pass	Passive (as syntactic category)
PST	Past Tense
PERF	Perfect
PFV	Perfective
PL	Plural
PRED	Predicate
P	Preposition
P <sub>DIR</sub>	Directional preposition
P <sub>LOC</sub>	Locative preposition
P <sub>LOC<math>\emptyset</math></sub>	Phonologically null locative preposition
PRES	Present Tense
Q	Quantifier
R	Relation
SC	Small clause
Sem	Semantics
SG	Singular
Subj	Subject
SUBL	Sublative Case
Syn	Syntax
T	Tense
UAH	Universal Alignment Hypothesis (Perlmutter & Postal 1984)
UTAH	Uniformity of Theta-Assignment Hypothesis (Baker 1988a)
<i>v</i>	“Little <i>v</i> ” (as syntactic category) (Kratzer 1996)
V	Verb
XP	X phrase (where X is a syntactic category)

# CHAPTER 1

## MOLECULAR FISSION

### 1.1 Introduction

Relations between different words can tell us a lot about how language constructs meaning. Words can be related in many ways. One way words can be related is by virtue of their semantics, as with *buy* and *sell*. For any sentence containing the verb *buy*, we can construct a corresponding sentence using the verb *sell* that has an approximately identical meaning.

- (1) a. John bought a shirt from Bill.
- b. Bill sold a shirt to John.

A general goal of a theory of grammar is to characterize regularity in a useful way. Given the observation that every sentence with the verb *buy* has a corresponding sentence containing the verb *sell* that differs from it in predictable ways (and vice versa), a natural inclination is to posit some grammatical mechanism that would derive this regularity in a principled way. However, a problem for this is that the relation between *buy* and *sell* is not a common one. Most verbs do not have doublets that behave like this. The relation is not really all that regular, and so in this particular case it is attributed to a quirk of these particular verbs, rather than to some deep principle of the grammar.

And an important question that this raises is how we know whether two words are related productively or only accidentally. As an example of the problem, considering the following two pairs of sentences.

- (2) a. They buy many books.
- b. They bought many books.
- (3) a. They deposited the money at the bank.
- b. They secured the boat by the bank.

A quite reasonable view is that the words *buy* and *bought* in (2) are related in a way that should be described by the correct theory of English grammar. In contrast, the words *bank* and *bank* in (3) are not related in a way that should be stated by the correct theory of English grammar. What underlies these intuitions, and distinguishes them from the relationship between *buy* and *sell*?

The relationship cannot be one of a shared phonological core. While *buy* and *bought* both start with a /b/, this is the only phoneme they share. And while that phoneme occurs at the beginning of both words, we would not seriously propose that every word beginning with a /b/ is productively related to *buy* and *bought*. As a clear case in point, the words *bank* and *bank* in (3) have identical phonological content, and yet we do not consider them to be related, except in that accidental and grammatical irrelevant way we term homophony.

Of course, a shared common phonology can often help us identify relationships between words. In most cases, phonological processes do not affect words' phonologies so drastically as in the case of *buy* and *bought*. But the point I want to make here is simply that we cannot use phonology as the sole means of identifying relations between words, and any putative relation between words that we are inspired to investigate on the basis of phonological similarity will never be stated in solely phonological terms in its accurate characterization.<sup>1</sup>

We are thus left still struggling with how to properly characterize the relationship between words like *buy* and *bought* in a way that does not predict a relationship between *bank* (financial institution) and *bank* (the land near the edge of a river). Adding syntax to our phonology will not help us here either; while it is true that both *buy* and *bought* are of the same syntactic category, so are the two *banks*. We cannot state the relationship in terms of syntactic category, even with a caveat of shared phonology.

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<sup>1</sup>Except possibly for Borer (2013), who proposes that lexical roots are identified only by their phonology—though even she must build in a space for irregular past tense forms.

Instead, the relationship seems to be stable at the level of semantics. The meaning of *buy* and *bought* is identical with the exception that *bought* is used to describe an event that occurred in the past and *buy* is used to describe one that occurs habitually (and has a non-third-person singular subject). In contrast, the two *banks* do not seem to have any shared meaning. While they are both descriptions of entities, they are true of very different sets of entities (though perhaps the sets of entities they are true of are not entirely disjoint). Thus, as long as we allow for some well-defined variation in meaning of the sort *buy* and *bought* exemplify, we can characterize their relationship at the level of their semantic denotation.

A long-popular way of accounting for this “well-defined variation in meaning” is to propose that *buy* and *bought* have internal structure. The shared part of this internal structure is what is responsible for the common semantics these words have; I will call it  $\sqrt{\textit{buy}}$ . The part of meaning that is not shared is related to when the event each describes takes place relative to the time that a sentence containing each is uttered, so we can call it Tense. Whether Tense is Past or Present influences the pronunciation of  $\sqrt{\textit{buy}}$ . If Tense is Past, then  $\sqrt{\textit{buy}}$  is pronounced as *bought*; if Tense is Present, then  $\sqrt{\textit{buy}}$  is pronounced as *buy* (or *buys*, depending on the  $\varphi$ -features of the subject).

This way of characterizing the relationship between *buy* and *bought* is a very standard one. It is useful in that it allows us to understand the relationship between the denotation of *buy* and *bought* as being rule-governed: both have the meaning of the lexical constant  $\sqrt{\textit{buy}}$ , which composes with the denotation of either Past or Present in a predictable way, to give rise to the meanings these words are associated with in (2). We could call this a decompositional approach, since in order to capture the productive relationship between *buy* and *bought*, we posited that each is decomposable into two parts: a shared component  $\sqrt{\textit{buy}}$ , and a different component Past or Present.

In this dissertation, I will analyze a relationship between words that is in some ways similar to the one between *buy* and *bought*, and in some ways quite different. This relationship is called “alternation.” What defines alternation is a syntactic difference between two sentences that have to do with how a predicate’s arguments are arranged, where the predicate seems to have an identical or near-identical meaning in each sentence. The fact of there being a shared meaning is similar to the relationship we discussed between *buy* and *bought*.

What distinguishes alternation from this has to do with the arrangement and/or interpretation of the predicate's arguments, which differ between the sentences that exemplify a particular alternation.

The empirical domain I investigate is the *spray/load* alternation, exemplified in (4–5).<sup>2</sup>

- (4) a. John sprayed the paint onto the wall. (theme-object structure)  
b. John sprayed the wall with the paint. (goal-object structure)
- (5) a. John loaded the boxes onto the truck. (theme-object structure)  
b. John loaded the truck with the boxes. (goal-object structure)

The *spray/load* alternation refers to the fact that verbs like *spray* and *load* can occur in two distinct structures, related to the realization of the non-agent arguments. Here, unlike in the case of *buy* and *bought*, their phonology is identical—though this happens to be an accidental fact about English, and is not critical. What is important has to do with the arrangement and interpretation of the arguments in each variant of the alternation. In the theme-object structure, a theme argument (*the paint/the boxes*) occurs immediately following the verb, while a goal argument (*the wall/the truck*) is the object of a preposition. In the goal-object structure, a theme argument is the object of a preposition, while a goal argument occurs immediately following the verb.<sup>3</sup> I will provide better definitions for the terms “theme” and “goal” in chapters 3 and 4; for now I use them loosely and rely on the charity of the informed reader.

Like the contrast between *buy* and *bought*, the semantic relationship between the sentences in the *spray/load* alternation is not one of identity. In the case of *buy* and *bought* this is because of a difference in Tense. In the case of the *spray/load* alternation, Tense may remain constant. What is more, the meaning difference associated with the *spray/load* alternation is subtle, and not necessarily immediately apparent without provisioning the proper examples. The semantic relationship between each variant of the *spray/load* alternation is

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<sup>2</sup>A table of all the verbs that Levin (1993) identifies as participating in the *spray/load* alternation can be found in the first table in the appendix to chapter 4. That table also summarizes some other properties of these verbs that play a role in the discussion in chapters 3 and 4.

<sup>3</sup>The reason for the somewhat awkward phrasing of this paragraph is that I am attempting to remain theory-neutral at this point regarding whether both of, e.g., *the paint* and *the wall* are arguments of the verb. Ultimately, I will argue that neither the theme nor the goal is a semantic argument of the verb root.



perhaps best described as “near-entailment,” with each member of the pair nearly but not quite entailing the other. The reason for this near-entailment is something I will explain shortly, and attempting to explain its source is one of the topics of chapters 3 and 4.

My approach to investigating this alternation is inspired by Peirce (1897)’s metaphor of verbs as one of the atomic parts of a sentence. Under this view, a verb’s valency determines the number and kind of arguments it combines with in the same way that a chemical’s valency determines the number and kind of elements it can combine with. Ultimately, I advocate an increasingly popular view that this metaphor is not quite right: rather than verbs being atoms, they are molecules composed of a lexical core that contributes a basic event description and functional heads that impose further structure on that basic event type. One clear example of this is Tense in the case of *buy* and *bought*; I will propose that there are additional functional heads implicated in the relationship between the theme-object and goal-object structures that do have an overt phonological reflex in English. This approach, which decomposes what we might call “surface verbs” into complexes of functional heads surrounding a lexical core, has been widely adopted in research on argument structure in recent years (see Borer (2005b) and Harley (2011) for overviews).

What distinguishes my approach from previous approaches in this vein is that I provide a syntax and semantics that work together and which go “all the way down.” In other words, I provide a fully fleshed out syntactic analysis of the *spray/load* alternation along with a fully worked out compositional semantics. Prior work on the *spray/load* alternation (and, indeed, prior work in this general approach to argument structure) tends to focus on either syntax or semantics to the exclusion of the other (though, of course, there are the rare, pleasant exceptions). The contribution of this dissertation is thus not only in the analysis I propose, but also in the methodology used, which provides an example of how to construct an analysis of argument structure phenomena that is fully integrated with an independent syntax and semantics. In my view, the less bespoke theoretical machinery an analysis requires, the more likely it is to be explanatory—perhaps even right.

## 1.2 Setting the Stage

To get started, I will summarize some of the main issues that have been identified as part of what a full account of the *spray/load* alternation should explain according to prior literature, and then provide an outline of the rest of the dissertation. One of the first things that we must establish is that the *spray/load* alternation is something that requires a grammatical explanation, like the active-passive alternation. If one could simply memorize which verbs occur with which structures, then there would be nothing to explain. We must determine whether the two structures available to *spray/load* verbs are related in a productive way that a proper grammatical analysis should explain.

It is clear that there must be some predictable relationship between the two structures involved in the *spray/load* alternation, with evidence coming from acquisition. Children, it seems, can pick up on this predictability and generalize (sometimes incorrectly) that when they hear a particular verb used in one structure, it can be used in the other (Bowerman 1982). Such overgeneralization occurs in both directions, showing that the relationship must be derivable given either surface form as input.

(6) Theme-object → Goal-object:

- a. E, 7;2: Look, Mom, I'm gonna pour it with water, my belly.
- b. E, 4;11: I don't want it because I spilled it of orange juice.

(Pinker 1989, (1.19) and Bowerman 1982, tab. 11.3, (13))

(7) Goal-object → Theme-object:

- a. Mark, 4;7: And fill the little sugars up in the bowl how much you should.
- b. E, 4;5: I'm going to cover a screen over me.

(Pinker 1989, (1.18) and Bowerman 1982, tab. 11.3, (5))

In addition, Pinker (1989) reports that children who were taught novel nonce verbs in only the theme-object structure productively used them in the goal-object structure 78–100% of the time.

Such evidence shows us that our model of grammar must be able to characterize a productive relationship between the theme-object and goal-object structures of the *spray/load*

alternation. We could write a descriptive rule that makes this relation explicit as follows (after Hall 1965, p. 87).

$$(8) \quad DP_1 V DP_2 P_{\text{Loc}} DP_3 \leftrightarrow DP_1 V DP_3 \text{ with } DP_2$$

Note that the relationship between the two structures is bidirectional—it does not assume that one structure is basic.<sup>4</sup> Given what we have seen, this makes sense because the productivity of this alternation can go in both directions (Pinker 1989). Despite this, it is fairly common to assume that the theme-object structure is the more basic of the two, with the goal-object structure derived productively from it. We could imagine that one could reason backward that the goal-object structure must have been derived from the theme-object structure, and thereby generate it even if the process is not explicitly specified as productive in that direction.

However, stating the relationship this way with no further restrictions would overgenerate for adult speakers. The fact that we refer to data like those in (6–7) as overgeneralizations makes this clear. In adult English, there are in fact verbs that occur in one or the other structure only.

- (9) a. John dumped water into the sink.  
b. \* John dumped the sink with water.
- (10) a. \* John covered the blanket onto the screen.  
b. John covered the screen with the blanket.

At some level, it must be specified which verbs allow both frames. This means the grammar must allow us to state which verbs occur in which structures. A simple approach to this would be to say that each verb is simply marked for which frames it occurs in. Then, we would not need a rule to relate them. The problem with this approach is that it would fail to account for the productivity of the alternation. One of the interesting problems raised by the *spray/load* alternation, then, is the problem of constrained productivity. A thought about how to account for this constrained productivity is to seek not to find the relationship between the theme-object and goal-object structures in a transformation, but instead to find

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<sup>4</sup>This is not a feature of many analyses, including Hall (1965)'s original proposal.

it elsewhere. Where exactly this “elsewhere” is remains a topic of debate; I make a proposal about this in chapter 3.

One task that an explanation of the *spray/load* alternation faces, then, is its productivity. In other words, it must provide some account of how the theme-object and goal-object structures are related to one another syntactically and/or semantically. Rappaport & Levin (1988) and Rappaport et al. (1993) note that there are (at least) three other properties to be explained.

- (11) a. The near paraphrase relation between the two variants must be captured;
- b. The linking of the arguments should be predictable in terms of their theta-roles;
- c. The affected interpretation of the goal as direct argument must be accounted for.

In the following subsections, I establish these four desiderata in more detail (acquisition/productivity, paraphrasability, linking, and affectedness).

### 1.2.1 Acquisition

In his explanation of how the *spray/load* alternation is acquired as a productive rule, Pinker (1989) considers the fact that the alternation is somewhat choosy: he reports that not all verbs that occur in one of the two structures occur in both.

- (12) a. John filled the glass with the water.
- b. \* John filled the water into the glass.
- (13) a. \* John poured the glass with the water.
- b. John poured the water into the glass.

Pinker (1989)’s explanation relates these facts to the lexical semantics of the verbs: *fill* specifies a result state, while *pour* specifies a manner of motion. The objects of each of these verbs correspond to the entity that the verbs’ lexical semantics apply to. Verbs like *spray/load* are primarily manner verbs, like *pour*. What distinguishes them from *pour* is that they produce

a predictable effect on the location that the moved object contacts, allowing them to be conceptualized as change of state verbs like *fill*, which allows them to be realized using the syntax of such verbs.

A problem for this account and others like it is that it is highly idiosyncratic to English. For instance, while *fill* does not generally occur in the theme-object structure in English, its Hindi translation equivalent भर *bhar* can freely occur in both the goal-object and theme-object structures. Similar facts hold in Mandarin Chinese and German, as well as other languages.<sup>5</sup>

(14) Hindi (Rajesh Bhatt, p.c.):

- a. युनुस ने कमरे में भूसा भर दिया है।  
 Yunus ne kamre mē bhuusaa bhar diyaa hai.  
 YUNUS ERG room in hay fill give.PFV is  
 “Yunus has filled hay into the room.” (lit.)
- b. तुमने सारा कमरा कीलों से भर दिया है।  
 tum=ne saaraa kamraa kiilō se bhar diyaa hai.  
 YOU=ERG all room nails with fill give.PFV is  
 “You have filled the entire room with nails.”

(15) Mandarin Chinese (based on Pao 1996, (10); Rong Yin, p.c.):

- a. 我把一些水装在瓶子里了。  
 wǒ bǎ yī xiē shuǐ zhuāng zài píngzi lǐ le.  
 I BA one some water fill at bottle inside ASP  
 “I filled water into the bottle.” (lit.)
- b. 我把瓶子装了一些水。<sup>6</sup>  
 wǒ bǎ píngzi zhuāng le yī xiē shuǐ.  
 I BA bottle fill ASP one some water  
 “I filled the bottle with some water.”

(16) German (Rosen 1996, (51)):

- a. John füllte Wasser in das Glas.  
 John filled water in the glass  
 “John filled water into the glass.” (lit.)
- b. “John füllte das Glas mit Wasser.  
 John filled the glass with water  
 “John filled the glass with water.”

<sup>5</sup>See Kim (1999) for a thorough discussion of cross-linguistic differences in the *spray/load* alternation, as well as Mateu (2000, 2017), Damonte (2005), and Lewandowski (2014).

<sup>6</sup>Note that this sentence does not include any word that should be glossed as *with*. This speaks against any potential cross-linguistic account of the *spray/load* alternation that would assign a crucial role to *with* in deriving the alternation. I am not aware of any accounts like this, but it may be worth noting.

Thus, Pinker’s explanation of why *fill* does not alternate fails to extend to Hindi, Mandarin, and German, unless we assume that *fill* in these languages does not encode a result state.<sup>7</sup> Other languages pose similar problems for this sort of account as well, as described by Kim (1999) and Beavers (2017). Furthermore, this account may not be entirely adequate for English either. At least some speakers can accept *fill* in the theme-object structure, and *pour* is similarly acceptable for some speakers if *full* is added.<sup>8</sup>

- (17) a. % The chef filled the mixture into the zucchini.  
 b. % John poured the glass full with/of water.

Pinker notes cases like (17b), considering them evidence for his approach. However, it is unclear why verbs like *spray* can be associated with a result state in the absence of an adjective that specifies it, while *pour* requires this to be explicit.

### 1.2.2 Paraphrasability

What makes us consider the *spray/load* alternation an alternation has to do with the fact that the meaning of the theme-object and goal-object structures are intuitively very similar. Going beyond the level of intuition, Rappaport & Levin (1988) and Rappaport et al. (1993) note that a goal-object sentence seems to entail a theme-object sentence, but not vice versa.

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<sup>7</sup>This is claimed to be the case for Mandarin in Pao (1996, p. 9) and German in Rosen (1996, p. 211). However, for at least Mandarin, the facts may be more complicated; Rong Yin (p.c.) reports to me that if the theme is modified by 一些 *yī xiē* ‘some,’ it is indeed the case that neither structure necessarily encodes the fullness of the goal. But if this is omitted (as in Pao 1996’s original examples), she reports that the variant in (15b) is most naturally interpreted as indicating that the container is (contextually) completely full, while this is not the case in the variant in (15a). However, Rajesh Bhatt (p.c.) reports to me that he does not feel there is a large difference between English *fill* and Hindi भर *bhar* ‘fill’ with regards to encoding the fullness of the object, though this is based on a snap judgment rather than the results of a full battery of semantic tests. I have not verified the situation in German.

The proper diagnostic, of course, is to verify whether these sentences are true in scenarios where the container is not full, or equivalently whether negating the fullness of the container in a continuation would lead to a contradiction. However, tests like these suggest to me that the origin of the intuition that the English verb *fill* necessarily encodes fullness could be mistaken. For instance, examples like *John filled the vase with a little bit of water and then put the flowers in* do not seem contradictory to me—clearly, the vase is not being described as completely full (even contextually), because the flowers can be put into it without leading to a contradiction. Instead, it is perhaps the case that *fill*, for some unknown reason, can only occur in the goal-object structure. This structure might force a fullness interpretation on the goal object, or strongly favor one. Thus, the fullness interpretation of *fill* could be **due to** the fact that *fill*, for independent reasons, can only occur in a goal-object structure that imposes a holistic interpretation of the goal, rather than the other way around. See also the discussion in chapter 4 around examples (11–12) and fn. 39. See also the discussion in chapter 5, section 5.3.1, where I propose that the implicational reversal of syntax and lexical semantics might provide an alternative source for a proposed link between manner/result lexical semantics and the *spray/load* alternation.

<sup>8</sup>I myself do not find these sentences fully acceptable, and others I have consulted have given different judgments, so there appears to be interspeaker variation regarding this point.

- (18) a. John sprayed the wall with paint. → John sprayed paint onto the wall.  
b. John sprayed paint onto the wall. ↗ John sprayed the wall with paint.

The reason for the unidirectional entailment has to do with the third property Rappaport & Levin (1988) and Rappaport et al. (1993) mention: the affected interpretation of the goal, which I will discuss in due course.<sup>9</sup>

### 1.2.3 *Linking*

In Rappaport & Levin (1988)'s and Rappaport et al. (1993)'s framework, arguments receive particular interpretations based on where they occur in an event structural template. Such templates consist of broadly motivated logical predicates that combine with the rich encyclopedic meaning of particular verbs that flesh them out. Theta-roles, in their system, are a shorthand for referring to where arguments occur in particular event structures. Based on this structural information, linking rules determine how each argument projects into a syntactic structure by assigning to each a grammatical function such as subject, object, indirect object, or oblique. These grammatical functions are in turn, associated with particular structural positions.<sup>10</sup>

Thus, what Rappaport & Levin (1988) and Rappaport et al. (1993) mean in (11b) is that the event structural templates associated with each structure must provide enough information to determine why, for instance, *the wall* occurs as the direct object in the goal-object structure, while it appears in a PP in the theme-object structure (and vice versa for *paint*).

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<sup>9</sup>Rajesh Bhatt (p.c.) reports to me a different intuition regarding the source of the entailment asymmetry, which I share. This intuition is that the goal-object structure seems to encode intentionality on the part of the agent, while the theme-object structure does not. That is, if John sprayed the wall with paint, he meant to do so. But if John sprayed paint onto the wall, it may well have been accidental. This idea is not one that has been discussed in the literature on the *spray/load* alternation, as far as I can tell. I would suggest that it may be derivable from the meaning of the goal-object structure, which (loosely speaking, for now) seems to entail that the goal is holistically affected, while the theme-object structure does not. Correspondingly, *John sprayed the wall with paint* may describe a scenario (the wall having paint all over it) that is less likely to arise accidentally than the scenario described by *John sprayed paint onto the wall* (which is compatible with scenarios in which only a little paint is on the wall). This idea would locate the intuition about intentionality in the pragmatics; whether this is the right move may be worth further examination.

<sup>10</sup>As Rappaport & Levin (1988)'s and Rappaport et al. (1993)'s concerns lie primarily in identifying the contents of event structural templates, they do not spell out precisely how grammatical functions are related to structural positions.

Different theories of argument structure would frame this point in a radically different way. In particular, Harley (2011) and Borer (2005a,b, 2013) propose theories in which theta-roles as such have no purchase. While we might use them as descriptive labels for different kinds of things, they do not play any causal role in the grammar. Instead, it is the syntax that determines the meaning of arguments, not the other way around. Thus, in Rappaport & Levin (1988)'s and Rappaport et al. (1993)'s system, a derivation begins in the lexicon by associating a verb with an event structural template that then determines what kind of syntactic structure is projected. In contrast, Harley (2011)'s and Borer (2005a,b, 2013)'s system would frame the question in the opposite way, asking how syntactic structures determine the different interpretations the arguments receive in each structure. It is these interpretations that we might refer to as theta-roles, but they would be understood as a result of, rather than a cause of, a particular structure in which the arguments receiving these interpretations occur.

#### 1.2.4 *Affectedness*

Perhaps the most well-studied aspect of the *spray/load* alternation has been this semantic difference between the two structures. Whichever argument is realized as the object is interpreted as holistically or totally affected, while the prepositional argument need not be (Beavers 2017).

- (19) John loaded the hay onto the wagon, ...
- a. ... but left some space for the grain.
  - b. ... filling it all up.
  - c. # ... but there was some hay left over.
- (20) John loaded the wagon with the hay, ...
- a. ... but there was some hay left over.
  - b. ... moving every last straw.
  - c. # ... but left some space for the grain. (from Beavers 2017, (12–13))



When *the hay* is the object of *load* and *the wagon* its prepositional object, *the wagon* may be completely full or not, but all of the hay must have been used up. In contrast, when *the wagon* is the object and *the hay* the prepositional object, the wagon must be completely full, though some hay may be left over. This effect interacts with contextual and pragmatic factors. As Rappaport & Levin (1985) and Pinker (1989) point out, it can be true to say *The vandal sprayed the statue with paint* even if the entire statue isn't covered; what is important is that the statue as an artistic object is completely affected even if it is only partially covered with paint. Standard semantic factors related to quantized reference also play a role; quantized objects show the effect, while non-quantized objects do not (Beavers 2017). Note that while Rappaport & Levin (1988) and Rappaport et al. (1993) specifically state that an explanation only for the holistic interpretation of a goal-object is required, these data from Beavers (2017) show that both structures merit a similar explanation of why their object is interpreted as holistically affected. Part of the reason for this fact being traditionally overlooked could be due to the common use of mass nouns for the theme, meaning that conditions on quantized reference are not met. This would defuse the holistic effect in the theme-object structure.

As Beavers (2017) notes, while there are many putative explanations of this fact, none of them may actually be explanations as such, as oftentimes these accounts reduce to simply restating this fact in one way or another. For instance, Tenny (1994) presents an account that assigns a privileged role to the object in defining the contours of an event, which she refers to as the Measuring-Out Constraint. This proposal describes some of the same patterns regarding the relation between telicity and incremental themes as discussed in Krifka (1998). While the Measuring-Out Constraint may be a valuable descriptive generalization, we are left with the question of why only objects can measure out events. In other words, why couldn't *the wagon* measure out the event in (19), or *the hay* in (20)? If we cannot explain why it is that objects are privileged in this way, the Measuring-Out Constraint reduces to a restatement of the difference, as Beavers (2017) notes.

### 1.3 Overview

This dissertation investigates the *spray/load* alternation in a very different way from previous work. While prior work has focused primarily on the four issues just discussed, I focus on two sets of facts that have previously been overlooked and unaddressed.

The first kind of fact has to do with the syntax and semantics of sentences that *spray/load* verbs occur in as revealed by adverbial modification. I show in chapter 2, using new evidence from the adverb *again*, that both the theme-object and goal-object structures display an interesting paradox. It is possible to modify the object and the verb to the exclusion of the rest of the PP, while at the same time it is possible to modify the object and the PP to the exclusion of the verb. Given standard assumptions about syntax, this constitutes a bracketing paradox, which I resolve with a syntax that allows a node to have multiple mothers (i.e., a syntax with multidominance). The explanation of this first kind of fact places certain implicit limits on accounts of the *spray/load* alternation. In particular, the fact that the verb and the object can be modified to the exclusion of the PP makes analyses that crucially treat the object of the preposition or the PP itself as an argument of the verb difficult to maintain. Instead, the alternation must primarily have to do with the status of the “object,” which under the multidominance analysis is semantically both an argument of the verb and of the prepositional phrase.

In chapter 3, I investigate the second kind of fact, which has remained largely overlooked, that shows that theme-objects and goal-objects of *spray/load* verbs differ syntactically. The relevant data come from non-agentive uses and nominalizations of *spray/load* verbs. The proposed resolution is that the goal-object structure involves the incorporation of a null preposition with the verbal root, which accounts for this asymmetry, and constitutes my account of the *spray/load* alternation. Chapter 4 continues to investigate the P-conflation analysis, where I refine Rapoport (2014)’s account of the holistic effect, and extend the P-conflation analysis to account for non-agentive transitive uses of *spray/load* verbs.

Following the presentation of my analysis, chapter 5 presents a detailed comparison of how my approach fares compared to prior work on the *spray/load* alternation. I describe in detail several previous accounts of the *spray/load* alternation (Brinkmann 1995; Damonte

2005; D'Elia 2016; Larson 1990, 2014; Mateu 2000, 2017; Rappaport & Levin 1988; Wunderlich 1997), with particular care paid to a careful evaluation of how they address acquisition, near-paraphrasability, linking, and affectedness. Then, I turn to an evaluation of my account, discussing how it could account for the same four desiderata. As described above, my account is aimed at explaining new sets of facts relevant to the *spray/load* alternation; it is crucial to verify that focusing primarily on these facts has not led to an analysis that is incapable of addressing the four desiderata as well.

Finally, chapter 6 examines the general utility of my approach. Ultimately, I conclude that even if the specific claims made in this dissertation were found lacking, there are advantages in how I approach the study of argument structure alternations that would be worth preserving. In particular, I argue that an adequate approach to argument structure must combine fully fleshed out syntactic and semantic analyses. These syntactic and semantic analyses should integrate seamlessly with existing models of syntax and semantic composition to the extent possible. Achieving explanatory adequacy in the domain of argument structure favors the reuse of existing, well-established theoretical machinery over the introduction of purpose-built grammatical devices that have little applicability outside of the particular phenomenon under consideration.

## CHAPTER 2

# AGAIN AND THE STRUCTURE OF *SPRAY/LOAD* VERBS

### 2.1 Introduction

Owing to the vastness of the prior literature on the *spray/load* alternation, it is perhaps surprising that I should not start by reviewing some of this work, and instead leave this for later (in chapter 5). There is good reason for this: my investigation does not take this prior literature as its starting point. Rather than starting with an examination of acquisition, linking properties, or the holistic effect, I examine the syntax and semantics of *spray/load* verbs by means of a diagnostic that has not been previously employed in studying them: the readings that *again* produces in sentences with *spray/load* verbs. This use of *again* to investigate the syntactic and semantic decomposition of verb phrases follows a precedent set by Dowty (1979), von Stechow (1995, 1996), Beck & Snyder (2001), Beck & Johnson (2004), Beck (2005), Bale (2007), Beck & Gergel (2015), Johnson (2018), and Patel-Grosz & Beck (2019). This work has shown that *again* can be wielded as a powerful diagnostic of “hidden” event structure, as I will summarize in section 2.2. In brief, *again* introduces to the meaning of a sentence that a predicate of eventualities held at a time prior to the eventuality described by the sentence. Specifically which eventuality held before is the eventuality described exclusively by the phrase *again* attaches to (Bale 2007). It is possible to show that sometimes this eventuality is not the eventuality described by the whole sentence. When

this is the case, it reveals how the complex event structure described by a sentence can be built up in syntactic and semantic layers. *Again* can nestle between these layers, allowing us a clear view of how they fit together. In the case of *spray/load* verbs, this leads to an apparent paradox, where two different and apparently mutually incompatible syntactic and event structures are implicated. I resolve this paradox using a syntax that allows phrases to have more than one mother—that is, a syntax that uses multidominance.

I first turn in section 2.2 to a more detailed explanation of how the *again* diagnostic works in some relatively simple cases, drawing primarily on von Stechow (1995, 1996), Beck & Johnson (2004), and Bale (2007), with small alterations. Section 2.3 presents the application of this diagnostic to *spray/load* verbs, the apparent paradox that results from its application, and the proposed resolution. Section 2.4 two topics related to the syntax of *spray/load* verbs developed in this chapter: one has to do with the interpretation of multidominated indefinites, and the other discusses a way of using the diagnostics presented in this chapter to distinguish different kinds of verbs that occur in the theme-object structure.

## 2.2 The Semantics and Syntax of *Again*

*Again* is an adverb that attaches to predicates of eventualities, which comprise events and states (Bach 1981). It is an identity function that carries a presupposition that a distinct eventuality meeting the description of the predicate it combines with held at a prior time.<sup>1</sup>

- (1) a. **Context:** Brendan kicked the soccer ball towards the net, but it didn't quite make it. So ...  
Anne kicked the ball again. (Bale 2007, (30a–b))
- b.  $\llbracket \text{Anne kicked the ball again.} \rrbracket =$   
 $\lambda e. \text{kick}(e, \text{the ball}) \wedge \text{AGENT}(e, \text{Anne}) = 1$   
 presupposition:  $\exists e' [\tau(e') < \tau(e) \wedge \text{kick}(e', \text{the ball})] = 1 \approx$   
 “Anne kicked the ball, and the ball was kicked before.”
- c.  $\llbracket \text{again} \rrbracket = \lambda P. \lambda e : \exists e' [\tau(e') < \tau(e) \wedge P(e')] = 1. P(e) = 1$

<sup>1</sup>I have not directly encoded the requirement that the prior eventuality not overlap with the eventuality described in the asserted content. This is not difficult to do, but it would make the formulae more complicated with little pay-off. The reader may imagine that this requirement is there but simply not typed.

In (1b), we see that *again* can attach to a constituent that describes an event of kicking the ball. The result has an identical meaning, but with a presupposition that an event of kicking the ball occurred before as well. Note that this prior event may sometimes have a different agent, as shown by Bale (2005, 2007), as demonstrated in the examples above; I refer the interested reader to Bale’s work for further examples and analysis. We can factor out the contribution of *again* proper as in (1c), where “ $\tau$ ” is a function from an event to its runtime, and “ $<$ ” is a relation that chronologically orders events from earlier to later given their runtimes. I present the eventuality that is presupposed to have held before as existentially bound rather than as a free variable or as anaphoric, following Patel-Grosz & Beck (2019), though this choice does not affect my analysis.

Because *again* has the particular semantics it does, we can analyze the readings that sentences with *again* receive to diagnose non-surface-apparent event structure. In sentences like (1b), we can see that the sentence contains a predicate of eventualities that contains the verb and its object, but not the subject. In other sentences, different readings are possible. Each truth-conditionally distinct reading corresponds to a different attachment site for *again*, as the semantics in (1c) will result in different readings depending on the predicate of eventualities it modifies. Traditionally, two kinds of readings are accorded special labels, depending on whether the eventuality that occurred before was a state or an event. In case it was a state that held before, the reading is referred to as a restitutive reading. In case it was an event that occurred before, the reading is referred to as a repetitive reading (Bale 2005, 2007; Beck 2005; Beck & Gergel 2015; Beck & Johnson 2004; Beck & Snyder 2001; Dowty 1979; Patel-Grosz & Beck 2019; von Stechow 1995, 1996).<sup>2</sup>

- (2) John opened the door again.
- a. John opened the door, and the door had opened before. (repetitive)
  - b. John opened the door, and the door had been open before. (restitutive)

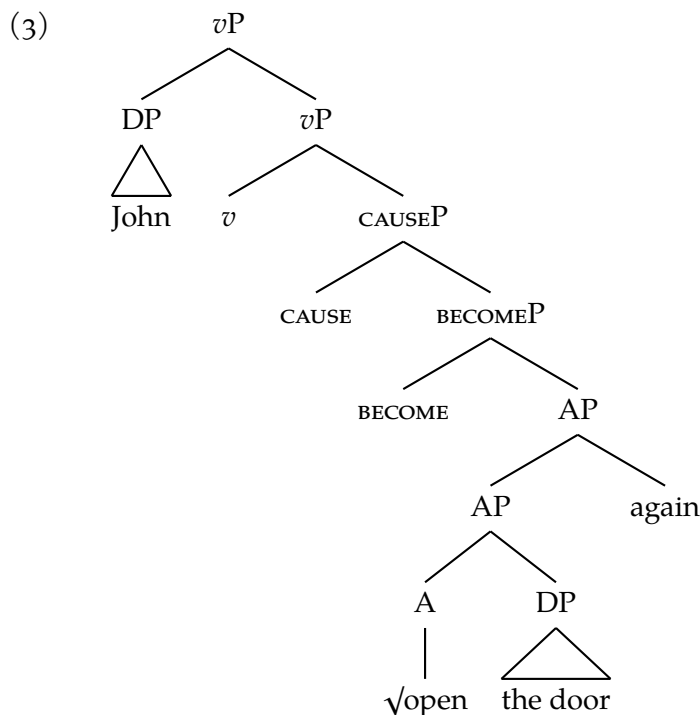
Note that “restitutive” and “repetitive” are merely terminological shortcuts to pick out whether the eventuality associated with *again*’s presupposition is eventive or stative. Other

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<sup>2</sup>An important point is that, as Beck & Gergel (2015) argue, the repetitive reading found in (modern day) English cannot be explained as a counter-directional reading. This is important because it makes it easier to use *again* to precisely diagnose event structure in English.

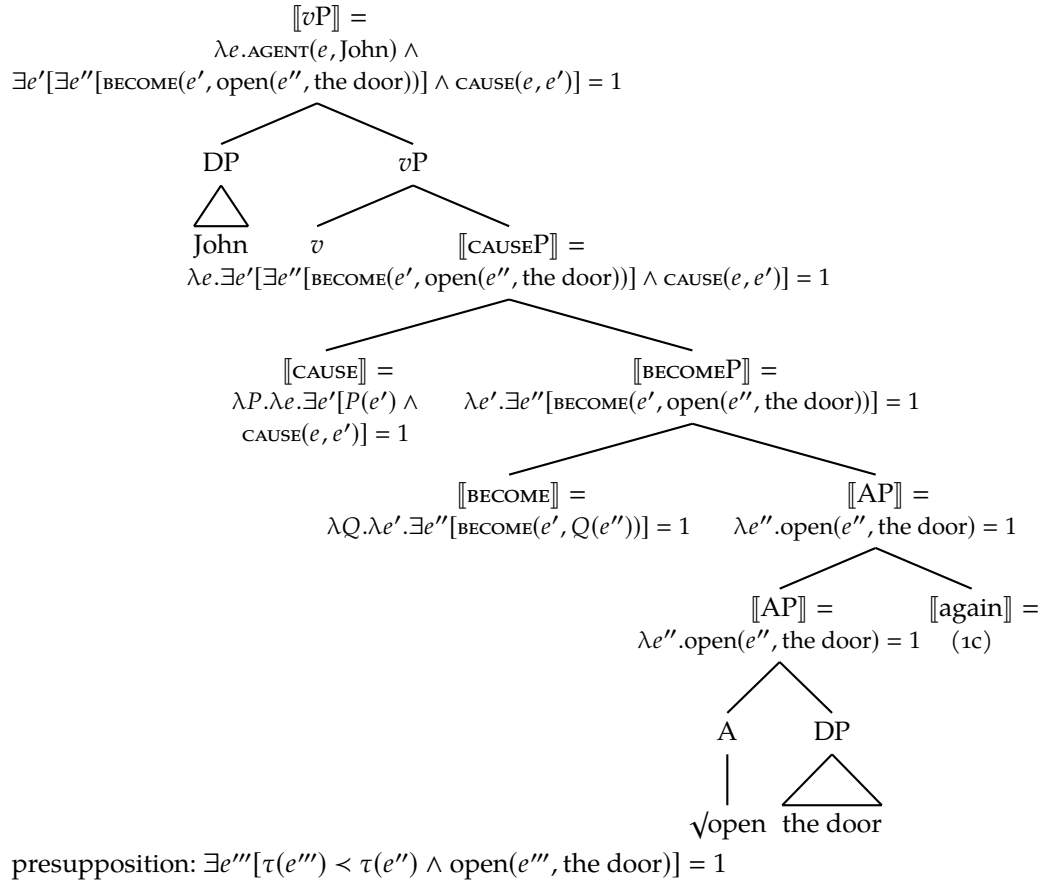
divisions are also relevant to diagnosing the syntactic and semantic decomposition of event structure (including subjectless vs. subject-containing repetitive readings). Other readings have also been discussed (see Bale 2005, 2007 and Patel-Grosz & Beck 2019 for examples), but these distinctions while important are not crucial here.

Given the hypothesis that *again* has a single semantics (the one in (1c)), how can we explain the ambiguity in (2)? One answer, that adopted by von Stechow (1995, 1996) and much subsequent work, is that the ambiguity reflects structure that is not surface apparent. In particular, the restitutive reading shows us that there is a part of the sentence that corresponds to a predicate of states of the door being open. If there were no part of the sentence with this denotation, it would not be possible to modify it independently, as *again* does in the restitutive reading. Thus, we have the following structure:



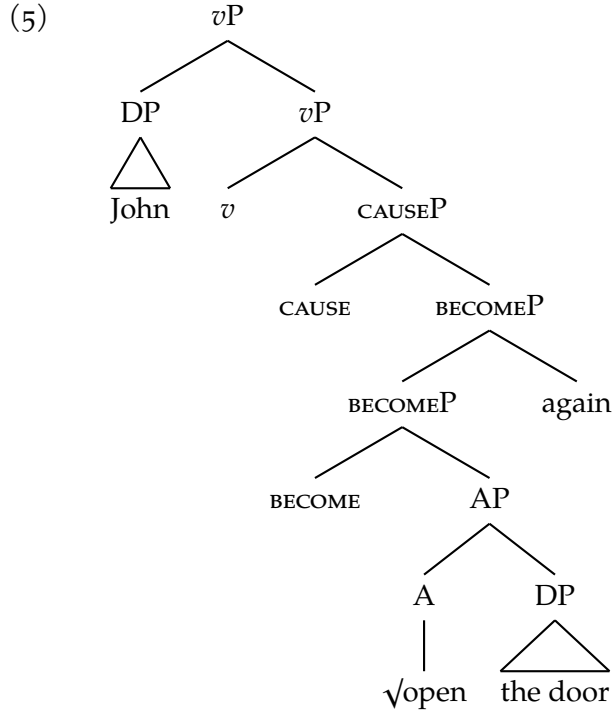
If  $\llbracket \sqrt{\text{open}} \rrbracket = \lambda x. \lambda e. \text{open}(e, x) = 1$ , where the semantic relation *open* is true of eventualities *e* that are states of *x* being open, the meaning of *again* in (1c) applied to AP will produce the restitutive reading in (2b) (Beck & Johnson 2004; Kratzer 2005; von Stechow 1995, 1996).

(4)

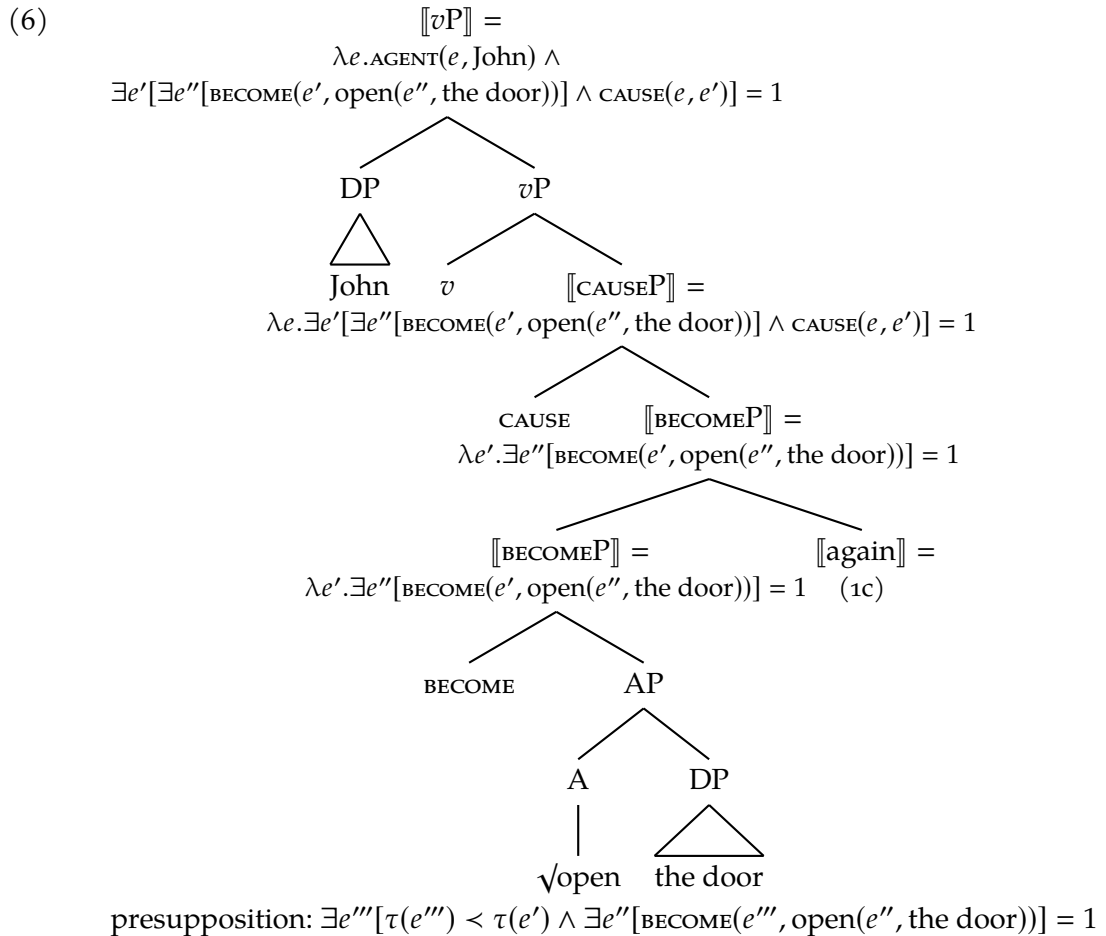


The repetitive reading will arise if *again* attaches to a predicate of events; in this case, if it attaches higher, to BECOME<sub>P</sub> (OR CAUSE<sub>P</sub>):





Semantic composition proceeds as indicated in (6).



Note that in the repetitive reading, *again* attaches to CAUSEP rather than vP. The presupposition of *again* thus does not include the agent *John*, similarly to (1b) (several additional examples of this reading can be found in Bale 2007).<sup>3</sup>

However, we must treat the repetitive reading with some caution: we must ensure that it is actually distinct from the restitutive reading. This can be difficult because any case in which the repetitive reading is true is also a case in which the restitutive reading is true. If there was an event of opening the door before, it follows that the door was open before. What we need is an environment in which the presupposition can only be satisfied if there was an event of opening the door before, but not merely if the door had been open before. This can be achieved if we introduce an additional adverb, which will interact with *again*.

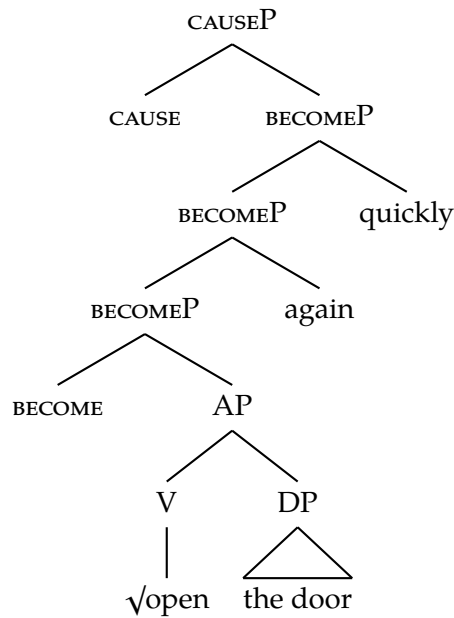
- (7) a. **Context:** Bill slowly opened the door, and then closed it. Frustrated with Bill's plodding, ...  
John opened the door again quickly. (repetitive)
- b. **Context:** The door in John's new apartment was installed open, creating a nice breeze. When the breeze blew it shut, ...  
John opened the door again quickly. (restitutive)
- (8) a. **Context:** Bill opened the door quickly, and then closed it. To prove he could do it just as fast as Bill, ...  
John opened the door quickly again. (repetitive)
- b. **Context:** The door in John's new apartment was installed open, creating a nice breeze. When the breeze blew it shut, ...  
#John opened the door quickly again.

When *again* occurs before *quickly*, we see that both a repetitive and a restitutive reading are possible. This is expected if *quickly* can attach to BECOME<sup>P</sup> above where *again* occurs in (4)

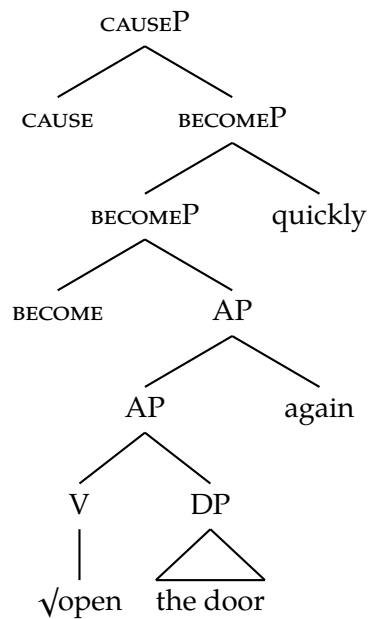
<sup>3</sup> Note that structures with *v*, CAUSE, and BECOME create a tripartite division of the verb phrase, which has been explored heavily in Ramchand (2008) and subsequent work. However, as an anonymous reviewer for *Linguistic Inquiry* has pointed out to me, *again* is typically understood to fail to distinguish between CAUSEP and BECOME<sup>P</sup>. One may wonder if this constitutes an argument against such a tripartite division in favor of a bipartite one, where a single head combines the semantics attributed to CAUSE and BECOME. While this would be an interesting avenue to explore, the argument goes beyond the scope of the dissertation. Interestingly, one might consider Bale (2007)'s evidence for a distinction between subject-ful repetitive readings, subjectless repetitive readings, and restitutive readings to exemplify *again*'s ability to diagnose a tripartite VP. This evidence is reviewed below.

and (6), as shown below.

(9) a. Repetitive:

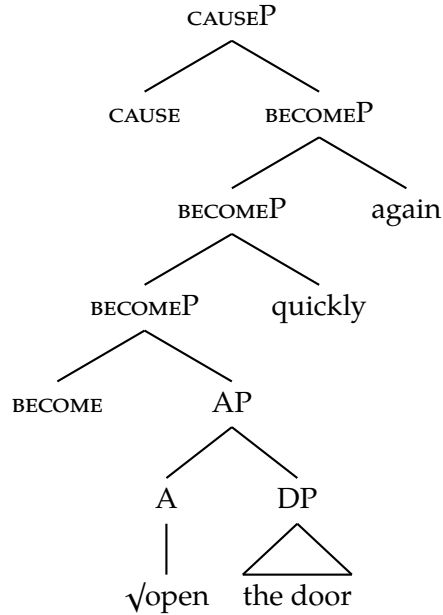


b. Restitutive:



However, when *again* occurs to the right of *quickly*, only a repetitive reading is possible, with a purely restitutive reading being excluded. This is because *quickly* can only attach to predicates of events like  $[[\text{BECOME}_P]]$ , since it is a manner adverb that cannot be felicitously used to modify states, like those AP describes. In order for *again* to occur to the right of *quickly* when *quickly* is attached on the right side of BECOME<sub>P</sub>, it must occur higher than it.

(10)



In (8b), the surface position of *again* is only compatible with a reading in which it modifies BECOME<sub>1</sub>P and includes the contribution of *quickly* in its presupposition. In order for *again* to modify AP, it would have to occur below *quickly*. This would result in it appearing to the left of *quickly*, as in (7).

Examples like (7–8) are not the only ones that show us that *again*'s presupposition is crucially related to its syntactic position. For instance, consider the readings that *again* gives rise to when it occurs after VP compared to the reading it produces when it occurs before the verb.

- (11) a. **Context:** John opened the door, and then closed it. But then ...  
John opened the door again. (subject-ful repetitive)
- b. **Context:** Bill opened the door, and then closed it. Then ...  
John opened the door again. (subjectless repetitive)
- c. **Context:** The door was installed open, and had never been closed. Then someone shut it. So ...  
John opened the door again. (restitutive)

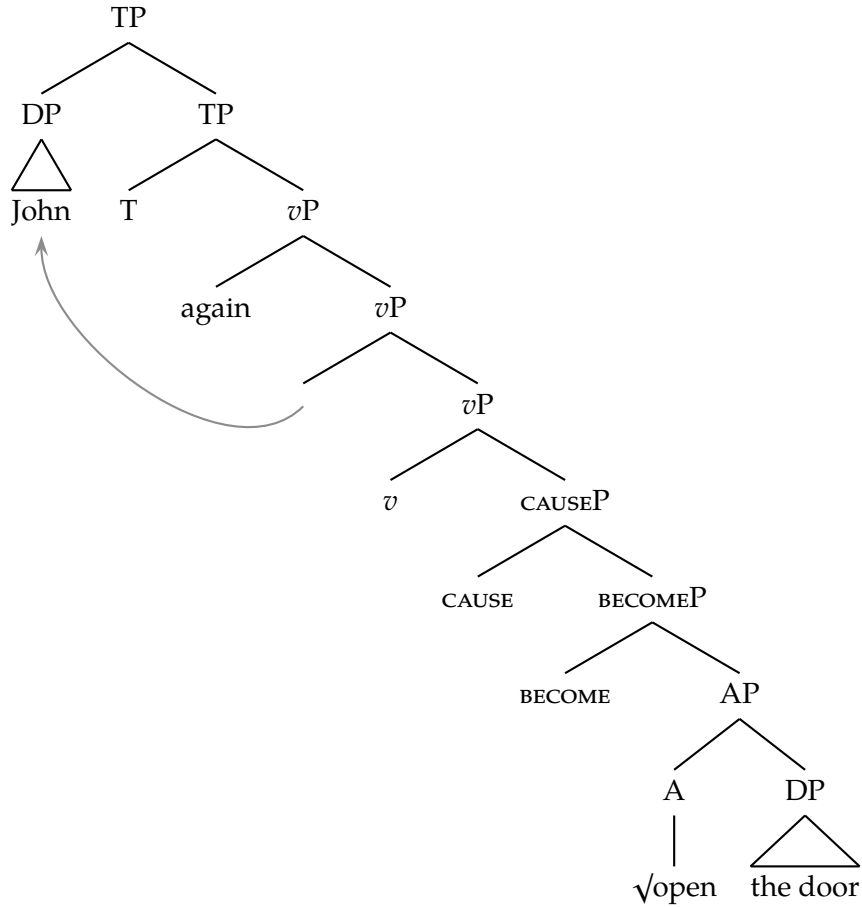
- (12) a. **Context:** John opened the door, and then closed it. But then ...  
           John again opened the door. (subject-ful repetitive)
- b. **Context:** Bill opened the door, and then closed it. Then ...  
       #John again opened the door.
- c. **Context:** The door was installed open, and had never been closed. Then  
       someone shut it. So ...  
       #John again opened the door.

We see that when *again* occurs at the end of the sentence, as in (11), its presupposition is compatible with contexts supporting at least three kinds of readings: (i) a subject-ful repetitive reading, where the agent of the prior event is the same as the agent of the new event; (ii) a subjectless repetitive reading, where the agent of the prior event differs from the agent of the new event; and (iii) a restitutive reading, where the event described by the sentence is not part of *again*'s presupposition (and correspondingly, nor is that event's agent). The restitutive and subjectless readings can be derived as shown previously, in (4) and (6), respectively. The subject-ful repetitive reading can be derived if *again* attaches to *vP*, and so includes the subject in its scope.<sup>4</sup>

What the facts in (12) allow us to do is distinguish the subject-ful repetitive reading from the other two readings, because the word order in the sentences in (12) is only compatible with the subject-ful repetitive reading—though just as before, we must take care to distinguish these readings if we wish to claim they are in fact different. A reading where the presupposition of *again* does not explicitly include the agent of the prior event is of course compatible with a context where the agents of the prior and new events happen to be the same individual. But since we can see in (12) that a subject-ful reading is forced when *again* occurs before *open*, we know that when *again* occurs in this surface position, it must take scope over *vP*. The reason the subject surfaces in front of *again* is because it moves past *again* to Spec,TP to receive case and satisfy the EPP.

<sup>4</sup>There is a small technical issue here that we cannot show conclusively that the subjectless and subject-ful repetitive readings really exist as separate readings when *again* immediately follows the verb in (11). Diagnosing these readings requires the introduction of additional modifiers and changing the position of *again*. They cannot be shown conclusively to exist when these modifiers are not present, and when *again* occurs immediately following the object. But parsimony would favor allowing them, absent some principled reason to rule them out.

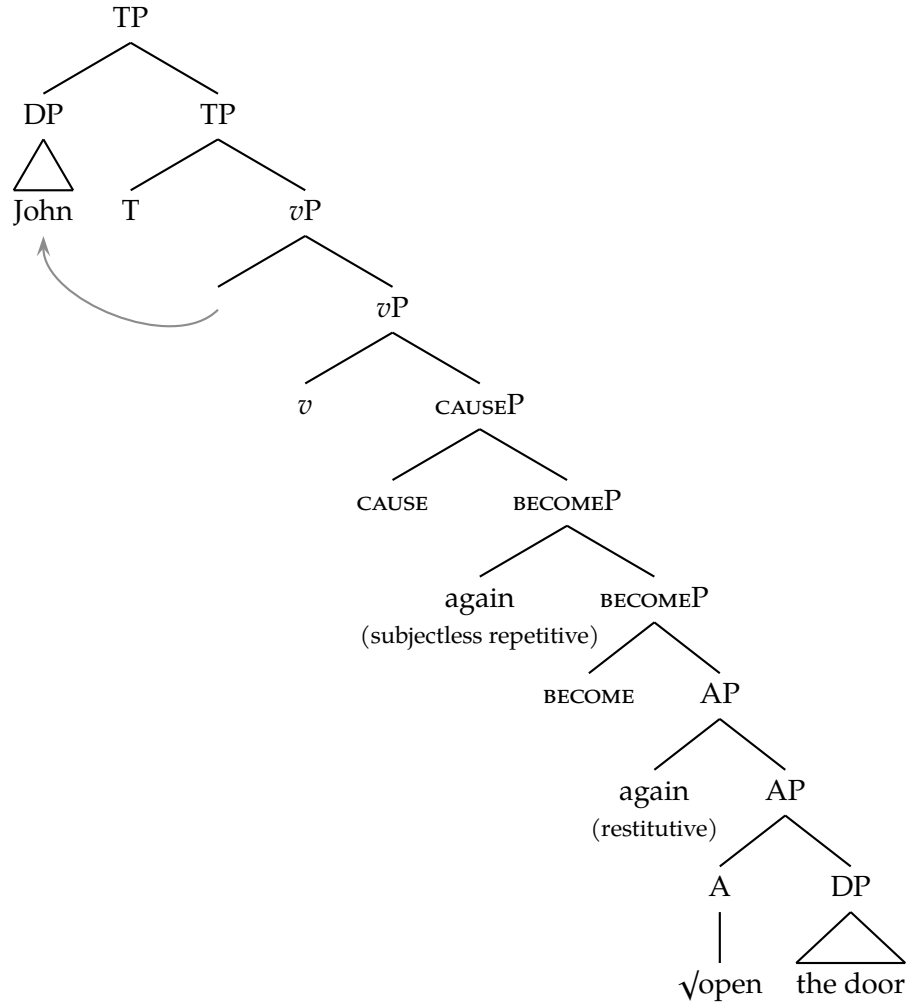
(13)



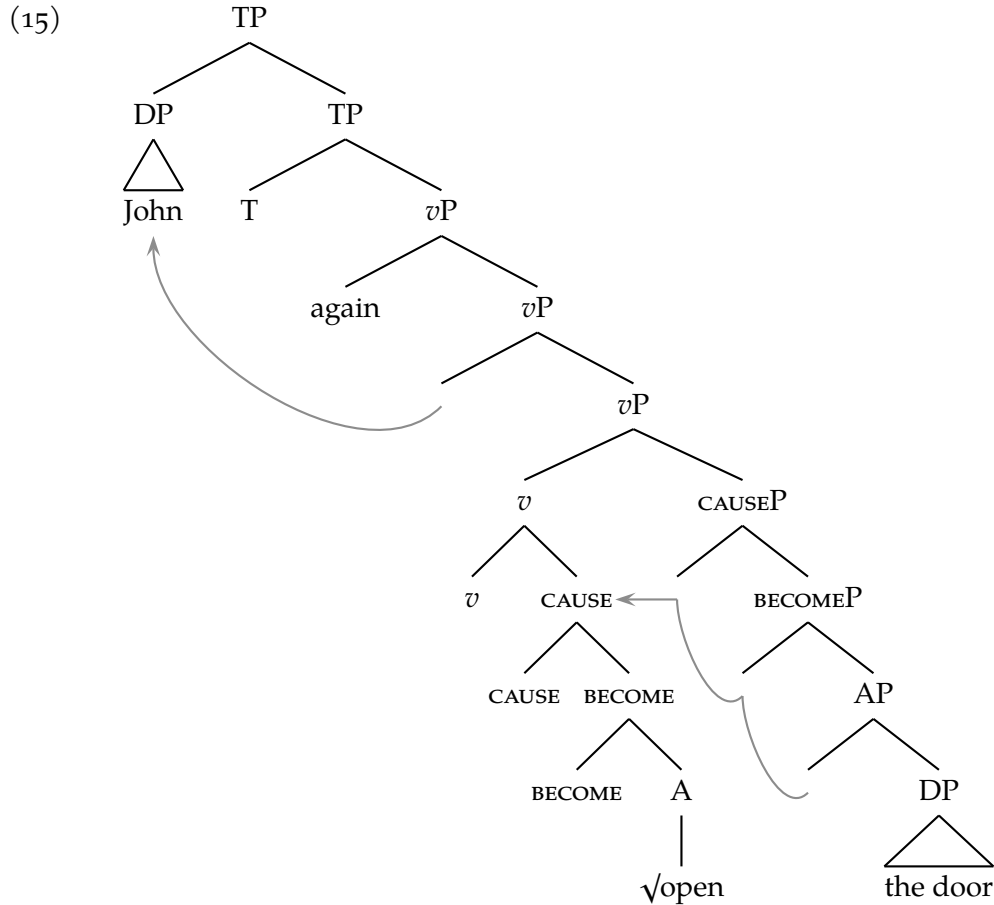
This syntax will produce the correct word order, and allow for the subject-ful repetitive presupposition. (I will not show the steps of semantic composition here, as they are only trivially different from what is shown above in (6) and (4).)

However, we still need to say something more here. Why can't *again* left-adjoin to CAUSEP or AP? If  $\sqrt{\text{open}}$  is pronounced where it is shown in (13), it should be possible to adjoin *again* to its left and still produce a subjectless repetitive or restitutive reading, as shown below.

(14)



I will assume that what this shows us is that  $\sqrt{open}$  is not pronounced where it is shown in (13). Instead, it is pronounced in  $v$ . We can model this using the operation of head-movement:  $\sqrt{open}$  head-moves through *BECOME* and *CAUSE* to  $v$ . The verb pronounced as *open* will (in transitive uses) thus comprise four morphemes:  $v$ , *CAUSE*, *BECOME*, and  $\sqrt{open}$ .



If *open* is pronounced in the position of *v*, it would explain why *again*'s presupposition must include the subject when *again* precedes the verb.<sup>5</sup> Thus, we see in a different way how *again*'s presupposition is uniquely determined by its syntactic complement, provided we adopt this idea about where verbs are pronounced.

As Bale (2007) points out, facts like those in (7–8) and (11–12) (among others) make it difficult to maintain an analysis of restitutive *again* where its presupposition is not uniquely determined by the predicate of eventualities it combines with (as in, e.g., Dowty 1979; Egg 1999; Jäger & Blutner 2003; Williams 2015). Such analyses posit that there is some semantic

<sup>5</sup>Note that (15) might seem to predict that *again* could produce a subjectless repetitive or restitutive reading if it followed the verb but preceded the object. However, attempting to place *again* (or any adverb, for that matter) in a position that linearly intervenes between the verb and the object results in ungrammaticality.

- (i) \* John opened again the door.

There are two ways we might think about this. The first is that there may simply be a requirement on linearization in English that requires adjacency between verbs and their objects. The second possibility is that the object moves above its base position to a position associated with accusative case assignment (though this would require additional assumptions about the reconstruction of indefinite objects, which can scope below restitutive *again*). The choice is not crucial for my argument, so I remain agnostic.



operator within restitutive *again*'s presupposition or some pragmatic process that can identify the result state component of a complex eventuality, and presuppose the prior existence of a result state meeting the same description. However, if such an operator were in principle available, the lack of a restitutive reading for (8) would not be explained, nor would the lack of subjectless repetitive and restitutive readings for (12). Instead, one would have to say that the *again* with the state-identifying operator could only occur in particular syntactic positions, which in English would be post-VP, below eventive adverbs—precisely the position where such an operator would not be required to derive the correct readings. This would make the syntax of restitutive *again* restricted in an apparently *ad hoc* way. Instead, if one supposes that there is a single *again* that produces repetitive and restitutive readings, this pattern is explained as a result of the fact that *again*'s presupposition necessarily contains everything in its complement, if we adopt the idea that verbs are pronounced in the position of *v*.

The upshot of this section is that *again* receives different readings depending on the semantics of the constituent it modifies, which is determined by where it occurs syntactically. Two readings of *again* receive special labels: a presupposition involving a prior event is what we call a repetitive reading, while a presupposition involving a prior state is what we call a restitutive reading. However, finer-grained distinctions are relevant as well (including, e.g., the subjectless repetitive reading, which reveals an event-denoting constituent that excludes *v*/the subject). If we see that a sentence with *again* receives a repetitive reading, we conclude that *again* is attached to and semantically modifies a syntactic constituent that is a predicate of events (in this case, *CAUSEP*, since the presupposition does not include the subject). If we see that a sentence with *again* receives a restitutive reading, we conclude that *again* is attached to and semantically modifies a syntactic constituent that is a predicate of states (in this case, *AP*).

### 2.3 *Again* with *Spray/load* Verbs

In this section, I show that *again* also receives different readings depending on its position when it occurs in sentences with *spray/load* verbs. When it occurs following the VP,

it is ambiguous between a repetitive reading and a restitutive reading targeting the PP, much like what happens with double object verbs, as discussed in Beck & Johnson (2004) and Johnson (2018). When *again* occurs immediately following the object, a low repetitive reading is possible that includes the verb and object but excludes the PP. This leads to an apparent paradox: how can the object form a constituent with the PP that excludes the verb (shown by the restitutive reading), while simultaneously forming a constituent with the verb that excludes the PP (shown by the low repetitive reading)? I resolve this paradox using an approach to syntax that allows phrases to have more than one mother (i.e., an approach that allows multidominance) (Citko 2005; Engdahl 1980; Gärtner 1997, 1999; Hiraiwa & Bodomo 2008; Johnson 2012, 2018; Nunes 2001; Starke 2001, a.m.o.).

### 2.3.1 *The Restitutive Reading*

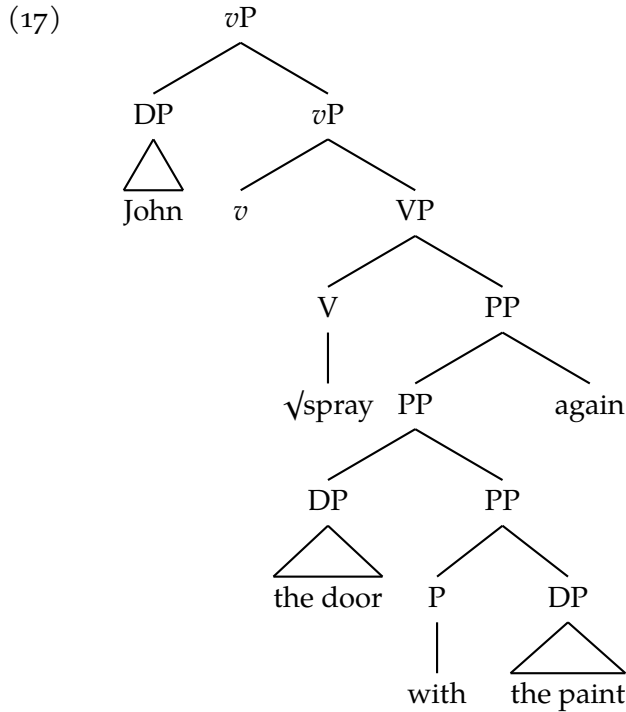
First, let's look at what happens when *again* occurs following the VP in a sentence with a *spray/load* verb.

- (16) a. **Context:** Someone had previously sprayed the door with the forest green paint, but over time the paint began to flake off. So, ...  
 John sprayed the door with the paint again. (repetitive)
- b. **Context:** The door was made of boards that had been coated with the forest green paint. Over time, the paint flaked off. So, ...  
 John sprayed the door with the paint again. (restitutive)

We see that much like with *open*, *again* with *spray* is ambiguous between a repetitive and a restitutive reading. The repetitive reading here doesn't tell us much except that *again* can occur high, above the event-introducing V.<sup>6</sup> On the other hand, the restitutive reading tells us that there is a constituent in the sentence that *again* can attach to that describes states of the door being with the paint ( $\approx$  the door having the paint on it). The constituent that is a description of such states is the one that *again* attaches to when it receives the restitutive reading in (16). This is shown in (17), which has a small clause structure:

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<sup>6</sup>And we can verify its independence from the restitutive reading in a similar manner as we did with *open*. But I will not repeat this argument.



If the phrase headed by *with* is a predicate of states in which the door is “with” the paint, the position that *again* occurs in will produce the restitutive reading in (16b).<sup>7</sup>

The restitutive reading that *again* can receive with *spray* is not exclusive to the goal-object structure. A similar reading is possible with the theme-object structure.<sup>8</sup>

<sup>7</sup>This reading of *again* leads us to a structure for *spray/load* verbs that is in many ways parallel to the structure for double object verbs developed in Beck & Johnson (2004). The difference is that the head of the small clause is pronounced independently in the case of *spray/load* verbs, while it is pronounced as part of the verb in double object sentences.

<sup>8</sup>An interesting issue raised by examples like (19b) is that the predicate of eventualities that *again* takes as its argument does not seem to include the path component of the prepositions *into* and *onto*. In other words, the reading produced is what is expected if *again* were modifying a PP headed by *on*. Though I will not attempt an account of this fact here, it is my hope that the explanation might lie in a theory of PPs that splits path and place into separate P heads (see Cinque & Rizzi 2010; Fábregas 2007; Gehrke 2008; Kracht 2002; Radkevich 2010; Roy & Svenonius 2009; Svenonius 2007, 2010). I will tentatively suggest here that a PathP may be of the wrong semantic type for *again* to compose with, since it does not describe eventualities, but trajectories, and those latter end in the states that *again* can compose with. At any rate, the issue is not restricted to *spray/load* verbs, since it also occurs in cases like the following, which uses the non-*spray/load* verb *walk*:

- (i) **Context:** The scientists finally finished building the robot at the lab. To test its capabilities, they programmed a route for it to follow, and started it up. The robot stood up and walked out of the room. Then, it turned around, and ...  
It walked into the room again. (restitutive)

Here, what is restored is the state of the robot being in the room, which does not include the path component of *into*. This shows that the reading where *again* just modifies the place component of a path+place preposition is not something unique to *spray/load* verbs. I assume that whatever analysis explains (i) will also account for these readings with *spray/load* verbs.

An alternative might suppose that the meaning contributed by *to* is actually present in the *spray/load* verb itself, and that the overt addition of *to* to the locative preposition could be treated as a kind of agreement or phonological reflex of this. Some evidence supporting this is that when *to* is omitted in a theme-object *spray/*

- (19) a. **Context:** Someone had previously sprayed the forest green paint onto the door, but over time it began to flake off. So, ...  
 John sprayed the paint onto the door again. (repetitive)
- b. **Context:** The door was made of boards that had been coated with the forest green paint. Over time, the paint flaked off. So, ...  
 John sprayed the paint onto the door again. (restitutive)

This means that the theme-object structure is essentially the same as the goal-object structure. The only difference is that in one case, the P that heads the small clause is *with*, and in the other case, the P that heads the small clause is a locative preposition—in this case, *onto*.

Before moving on, there is one more piece of syntactic and semantic glue to add to this structure. We must explain how  $[[\sqrt{\text{spray}}]]$  composes with the predicate of states that the PP denotes. The semantic link here seems to be one of causation: the spraying event causes the state described by the PP. We could implement this idea using either a special rule of semantic composition (Beck & Johnson 2004; von Stechow 1995, 1996), or else by a silent syntactic head whose denotation, when composed with its complement and its specifier, achieves the same result as this semantic rule (Beck & Johnson 2004; Johnson 2018; Kratzer 2005). I will take the latter approach, but this choice is not crucial. The syntactic head is called *CAUSE*,<sup>9</sup> and its denotation is  $\lambda P.\lambda Q.\lambda e.Q(e) \wedge \exists e'[P(e') \wedge \text{CAUSE}(e, e')] = 1$  (“true iff *Q* holds of *e*, and there exists an event *e'* described by *P* such that *e* causes *e'*”) (cf. Kratzer 2005; Pytkäinen 2002, 2008).<sup>10</sup>

*load* sentence, the meaning does not seem to be affected (provided, of course, that the PP is not interpreted as an adjunct describing the location of the entire event), while in other sentences it clearly is.

- (18) a. John sprayed the paint on the wall.  $\leftrightarrow$  John sprayed the paint onto the wall.  
 (under the relevant readings)
- b. John walked in the room.  $\nleftrightarrow$  John walked into the room.

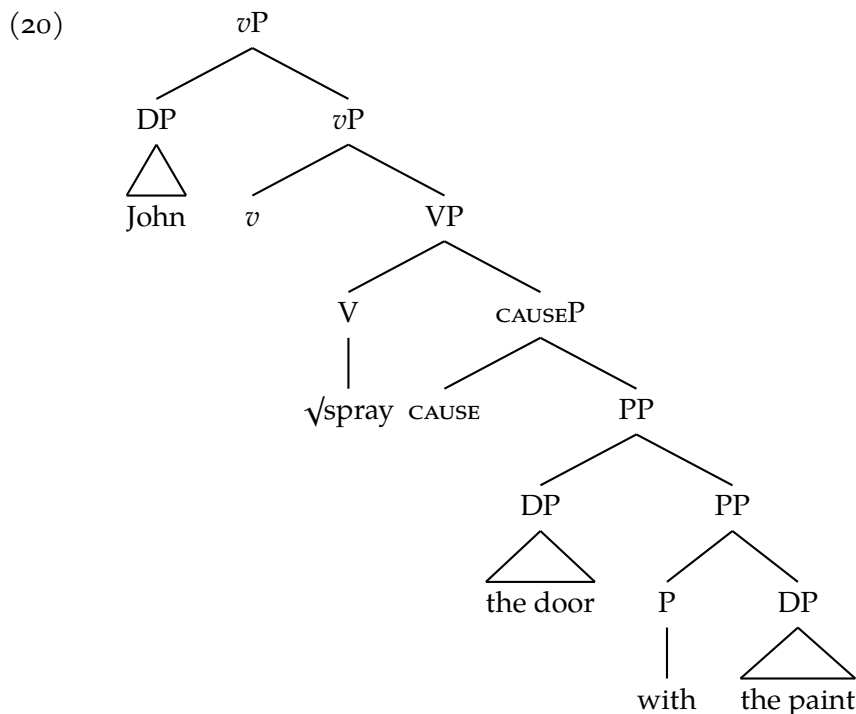
However, I do not pursue this idea further, and it is not a feature of my final analysis. Whether this idea could be integrated with what I propose is a topic I leave for future research.

<sup>9</sup>Sometimes typeset variously as [*cause*] or *CAUS*, among other possibilities.

<sup>10</sup>Note that the meaning *CAUSE* is given here is slightly different from the one in (4) and (6), which combines with a predicate of eventualities to form a predicate of eventualities, in contrast to this *CAUSE*, which takes two predicates of eventualities to form a predicate of eventualities. One could take two approaches. The first is to assume that both these variants of *CAUSE* exist. The second (and more preferable in my opinion) is to assume that the structures in (4) and (6) are slightly more complex than presented here, with the two predicate *CAUSE* combining first with *BECOME<sub>P</sub>*, and then with a null light verb that contributes very little lexical semantic content and is interpreted something like “do,” producing a semantics that could be paraphrased as “John’s doing something (directly) caused the door to become open.”

In order for this to work, we must also specify the nature of the semantic relation *CAUSE*. I will follow Kratzer (2005) and assume that it is true of two events that are linked by counterfactual, direct causation. That is,  $e$  causes  $e'$  only if  $e'$  occurs only when  $e$  does. Furthermore,  $CAUSE(e, e')$  is true only if the end of  $e$  overlaps with the beginning of  $e'$  (in other words, there are no intervening eventualities). This rules out using *CAUSE* to felicitously describe butterfly effect scenarios. More details can be found in Kratzer (2005) and subsequent work.

Our structure that contains *CAUSE* is thus the following:<sup>11</sup>



This structure is entirely parallel to the intransitive structure proposed for resultatives in Kratzer (2005) and following work, with the only difference being that the resultative predicate is a PP rather than an adjective. It will produce the semantics in (21).<sup>12</sup>

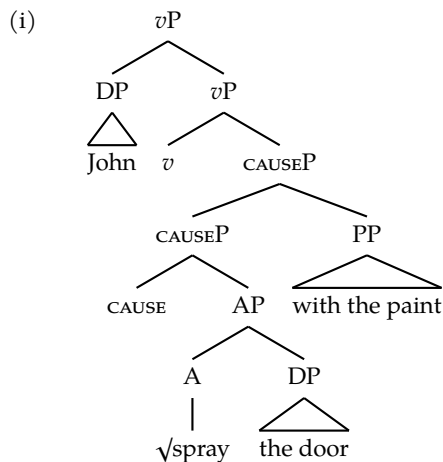
<sup>11</sup>The reader will note that I have not included the *BECOME* head in this structure, unlike what I did for the examples with *open*. One might include it below *CAUSE* in (20) and all subsequent structures I propose for sentences with *spray/load* verbs without changing the substance of the analysis. I omit it for presentational reasons, as it would make the structures and semantics that are yet to come overly complicated in a way that would not affect my conclusions or arguments.

<sup>12</sup>It is worth noting that the semantics in (21) would not require the paint to be the theme of the spraying event. I will argue in chapter 4 that this prediction is correct. Conversely, the semantics for the theme-object structure corresponding to (21) (which I have not shown) would also not require the paint to be the theme of the spraying, since they would simply encode that a spraying event causes a state of the paint being on the door. I will later argue that this prediction is incorrect. I implement a stop-gap to address this false prediction later in this chapter, but provide a full solution in chapter 3.

$$(21) \quad \lambda e. \text{AGENT}(e, \text{John}) \wedge \text{spray}(e) \wedge \exists e' [\text{with}(e', \text{the door, the paint}) \wedge \text{CAUSE}(e, e')] = 1$$

Having dealt with these syntactic and semantic niceties, we can remind ourselves of the main point of this section: *again* can receive a restitutive reading when it occurs post-VP with *spray/load* verbs. This reading shows us that there is a predicate of states (i.e., “the door with the paint”:  $\lambda e. \text{with}(e, \text{the door, the paint}) = 1$  or “the paint onto the door”:  $\lambda e. \text{onto}(e, \text{the paint, the door}) = 1$ ), which is syntactically realized as a PP [the door with the paint] or [the paint onto the door]. We thus have evidence from this reading of *again* that *spray/load* verbs have a small clause syntax (similar to a structure posited for double object verbs in previous work (Beck & Johnson 2004; Harley 2002; Johnson 2018)).<sup>13</sup>

<sup>13</sup>A reviewer for *Linguistic Inquiry* wonders whether *with* is the head of a small clause, or the head of a low adjunct. However, given the restitutive reading discussed in this section, it is unclear where exactly a low adjunct headed by *with* could adjoin. It would have to adjoin below the verb root, since otherwise when *again*'s presupposition contains the *with* phrase, it would also have to include the verb root, which is not what occurs. However, one could imagine that the verb root denotes a result state rather than a manner, and occurs lower, as follows.



However, this is problematic because post-VP *again* would scope over at least *CAUSE the door √spray with the paint*. Another possibility would involve the PP being a lower adjunct to AP. Restitutive *again* would then scope over *√spray the door with the paint*. Presumably, the prior state would then have to be a “sprayed” state. This prediction is clearly false, as shown in (19b).

The reviewer alternatively suggests that this lower stative predicate might be a null predicate that contributes a meaning of total affectedness, related to the holistic effect discussed in the preceding chapter (Mulder 1992). However, this would predict a very weak restitutive (rather than repetitive) reading when *again* occurs between the object and *with*, which would only require the object to have been totally affected before.

- (ii) **Context:** Bill poured water all over the towel. Then, ...  
# John sprayed the towel again with paint.

As the next section shows, the (eventive) verb root is crucially part of the presupposition created when *again* occurs following the object, which is what rules out (ii). If *again* could attach to a constituent with the meaning of *the towel totally affected*, (ii) should be felicitous.

One verb for which an analysis more like (i) may be correct is *fill*; when it occurs with restitutive *again*, the prior state must be a state of fullness:

### 2.3.2 The Repetitive<sup>-</sup> Reading

*Again* can receive a different reading with *spray/load* verbs when it occurs immediately following the object.<sup>14</sup>

- (22) **Context:** The wooden door had never had paint on it, but John decided he wanted to paint it with the forest green paint. In order to do this, it was necessary to clean it off first. So first, Bill sprayed the door with water to clean it, and then ...  
John sprayed the door again (this time) with the paint. (repetitive<sup>-with</sup>)

When *again* occurs after the object, as in (22), the sentence can receive a reading in which the event that occurred before is a spraying of the door—a repetitive reading. However, unlike

- 
- (iii) a. **Context:** The lake was full of water, but it all evaporated. So, ...  
The parks department filled the lake with water again.  
b. **Context:** The poor excuse for a well had only ever had a small puddle of water in it. Even that evaporated eventually. But one day, taking a hose, ...  
# John filled the well with water again.

If the prior state could just be one of the well having some water in it, then (iii-b) should be felicitous, but it is not. Ultimately, a structure that combines the multidominance structures to come and (i) may be correct for *fill*, with the lower state corresponding to *full*. However, it is clear that the verb root is not part of the presupposition of a restitutive *again* in other cases, while it is equally clear that a low predicate meaning simply “totally affected” would produce too weak a reading for repetitive *again*. Thus, the semantics leads us to a parse where *with* is the head of a small clause.

<sup>14</sup>There seems to be another reading available for the string in (22) when the parenthetical (*this time*) is omitted, which is one in which *again* modifies just *with the paint*. This reading is easiest to get if *again* is prosodically stressed and has a short pause before it (Bale 2007).

- (i) **Context:** One day, Bill sprayed the door with the forest green paint. The next day, ...  
John sprayed the wall, AGAIN with the paint.

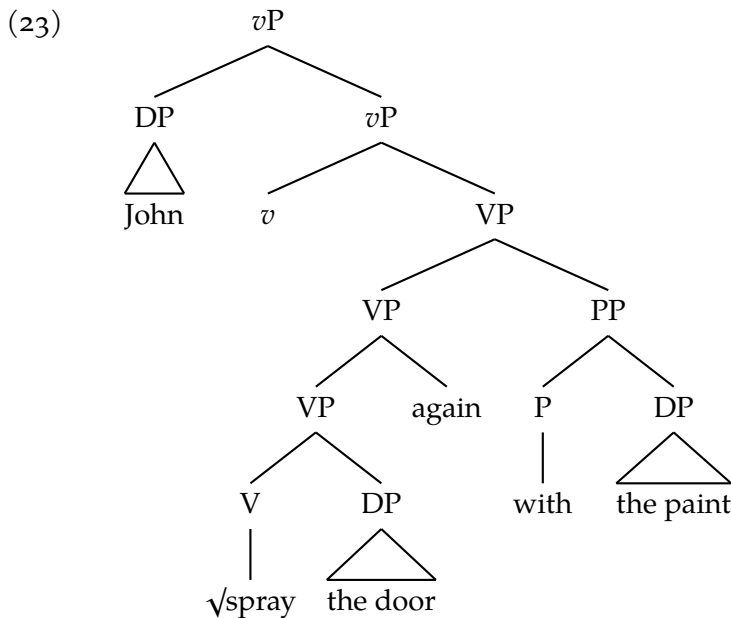
However, it should be noted that the meaning of *with* in this reading, and the meaning of *with* in the reading in (22) may be quite different. In particular, the reading in (i) seems to require that the *with*-phrase’s DP be interpreted as the instrument, rather than as a theme. This may be hard to intuit given the context in (i), which invites an inference that the door ended up with the paint on it, as a result of the spraying event in which the paint was the instrument. However, the difference becomes clearer if we devise a context where the *with*-phrase is not most naturally interpreted as an instrument.

- (ii) **Context:** Bill and John bought some forest green paint. To take it home, Bill loaded the truck with the paint. After they had arrived, ...  
# John sprayed the door, AGAIN with the paint.

If *again* could modify just the phrase *with the paint*, this sentence should be felicitous. In particular, there was a prior state in which something was with the paint (when the truck was loaded with it). However, such a reading is not possible. It is only possible to get a felicitous reading if the paint was used as an instrument to aid in the loading of the truck in some way, where the contents of the truck may be different from the paint. It is hard to come up with such a context for the loading event described in (ii). Thus, I will assume that the reading in (i) shows that in addition to the low *with*-phrases that involve a theme that occur within VP (and which may remain implicit), *spray/load* verbs can occur with higher instrumental *with*-phrases that adjoin to *vP*. This is unsurprising as instrumental *with*-phrases are generally available with agentive verbs; there is no reason to expect they should not be available for *spray/load* verbs.

the repetitive reading we previously discussed, this one excludes the *with*-phrase from the event *again* modifies. I will variously refer to this reading as the “repetitive<sup>-with</sup>” reading (read as “repetitive minus *with*”), the repetitive<sup>-</sup> reading, or the low repetitive reading.<sup>15</sup>

If we place aside the conclusion we reached in the last section for the time being, we can ask what we learn about the structure of *spray*’s VP from this reading of *again*. This reading tells us that there is a predicate of events of spraying the door, which do not contain the meaning of *with the paint*. We can represent this structurally as in (23), which is a transitive + PP structure:



If  $[\llbracket \sqrt{\text{spray}} \rrbracket] = \lambda x.\lambda e.\text{spray}(e, x) = 1$ , with the semantic relation *spray* being true of events *e* that are sprayings of *x*, this structure will produce a reading compatible with the context of (22).<sup>16</sup>

<sup>15</sup>As suggested by the use of appositive *this time* in (22), the repetitive<sup>-</sup> reading is easiest to get when there is a strong prosodic boundary after *again*. While in my judgment this strong prosodic boundary is not required to get this reading, others have reported some variation, with them reporting it is required. We might thus wonder about the importance of the prosody here. It is my belief that the multidominance analysis I propose in section 2.3.4 will predict the existence of this prosodic boundary naturally, following Selkirk (2011)’s influential Match Theory of the syntax-prosody interface. However, it must be noted that adjustments to Match Theory will need to be made to make it compatible with multidominance structures, since these allow one phrase to belong to more than one constituent. The same issue, of course, needs to be overcome in order to properly linearize structures with multidominance. I speculate that the prosodic status of multidominated nodes will be resolved in the same way for linearization and for prosodic purposes, but details remain to be worked out. I am focused on the syntax-semantics interface in this dissertation and not the syntax-prosody interface, and will say no more about this issue, though it may be important.

<sup>16</sup>Nie (2019) independently motivates a structure like (23) based on the reading that the verbal prefix *re-* produces.



Similarly to before, the equivalent reading is available in the theme-object structure.

- (24) **Context:** Bill and John were hired to paint the door. Bill arrived early, but spent the whole day spraying the paint into the air, with not a single drop hitting the door. John arrived late, and noticed that the door had not been painted. So, ...  
John sprayed the paint again onto the door. (repetitive<sup>-onto</sup>)

### 2.3.3 *The Puzzle*

At this point, the puzzle at issue here might be obvious: if we examine the reading that *again* receives when it occurs post-VP with *spray*, we see that [the door with the paint] is a constituent that excludes  $\sqrt{\text{spray}}$ , as in (20). On the other hand, if we examine the reading that *again* receives when it occurs immediately following the object, we see that [spray the door] is a constituent that excludes *with the paint*, as in (23). In a traditional syntax, these structures are incompatible: if *the door* forms a constituent with *with the paint* that excludes *spray*, it cannot also form a constituent with *spray* that excludes *with paint*. The same paradoxical pattern occurs in the theme-object structure as well. If we were to adopt either the small clause structure or the transitive + PP structure, we would be left with unexplained and unexplainable residual data.

One way to account for this behavior would be to say that *spray* is actually the pronunciation of two distinct verbs that happen to share a pronunciation and similar meanings. One *spray* takes a small clause complement, and the other takes first an object and then a PP (which may or may not be an argument). However, there is evidence that weighs against this approach. In particular, the post-verbal DP of *spray/load* verbs must be interpreted as the object of the verb, even when that very object is the subject of a resultative predicate. The reason this matters has to do with how resultative predicates can be interpreted with non-*spray/load* verbs.

In many cases, it appears that the restriction that I just noted (that the subject of the resultative predicate is interpreted as the object of the verb) holds for resultatives with non-*spray/load* verbs.

- (25) John hammered the metal flat.  
= "John hammered the metal, with the result that the metal became flat."

However, Kratzer (2005) argues that this correlation is spurious, and that the verb in resultative structures is actually intransitive, with the apparent object actually serving only as the subject of the resultative predicate. Consider her example:

- (26) John drank the teapot empty.  
≠ "John drank the teapot, with the result that the teapot became empty."  
= "John drank, with the result that the teapot became empty."

The meaning of (26) is not that John drank the teapot with the result that the teapot was empty, but that the teapot was empty as the result of John's drinking. In other words, the verb is intransitive. This makes sense because one does not drink teapots, but their contents. Kratzer (2005) argues that all resultatives are formed from intransitives in this way. The frequent appearance of a direct object interpretation is for her a common but non-obligatory semantic inference imposed by the strict kind of causation that links the event described by the verb to the predicate describing the result state. The direct causation relation between the event described by the verb and the resulting state permits no event to intervene between the eventuality the verb describes and the one the resultative predicate describes. This will ensure that the subject of the resultative predicate is preferentially interpreted as the object of the verb if it can be (as in (25)). But it doesn't always have to be interpreted that way if such an inference produces an odd meaning, and this occurs in (26).

However, this does not appear to be the case with resultatives formed with *spray/load* verbs. In these cases, the object must be the direct object of the verb's action, and not merely inferred to be. Consider the following example, which is parallel to (26):

- (27) John sprayed the bucket dry.  
= "John sprayed the bucket, with the result that the bucket became dry."  
≠ "John sprayed, with the result that the bucket became dry."

This sentence can be true if the bucket is the goal of the spraying event; for instance, if there was something in the bucket, and John dried the bucket by spraying something into

it. However, it cannot receive a reading where the bucket became dry as the result of John spraying its contents from it (via a hose or something of that sort). For instance, imagine that the bucket contains paint, and John attaches a hose to a nozzle on the bucket. Then, John sprays every last drop of the paint from the bucket onto something else, which results in the bucket being dry. This is exactly like the scenario described by the teapot sentence, where John's drinking the contents of the teapot result in the teapot's being empty. Nevertheless, such a reading is not possible for *spray*. Only the reading where *the bucket* is interpreted as a direct object of *spray*—which is most natural if it is the goal rather than the theme—is possible. Thus, despite its occurrence with a resultative secondary predicate, *spray* still behaves as obligatorily transitive in contrast to *drink*.<sup>17</sup> The impossible reading in (27) should be possible if intransitive uses of  $\sqrt{\textit{spray}}$  were allowed. Such uses would look like the one in (20), and would be predicted under the lexical ambiguity account of the *again* facts.

The same pattern holds for other *spray/load* verbs.

- (28) a. **Context:** John squeezed the tube of icing over the cake, thereby drizzling icing onto the cake while emptying the tube of icing.  
 #John drizzled the tube empty.
- b. **Context:** John poured the contents of the glass into a bowl, thereby emptying the glass while filling the bowl.  
 #John filled the glass empty.
- c. **Context:** John took the contents of the truck and loaded them into shipping containers, thereby leaving the truck bare.  
 #John loaded the truck bare.

In each of these cases, we have scenarios which plausibly describe events of causing a particular result. The spraying of the contents of the bucket is an event of the bucket becoming dry. The drizzling of the icing onto the cake is an event of emptying the tube containing it. The filling of the bowl is an event of emptying the glass. The loading of the shipping containers is an event of the truck becoming bare.<sup>18</sup> In each case, however, the sentences

<sup>17</sup>In chapter 3 I propose a semantics for *spray/load* verbs that analyzes them as of type  $\langle s, t \rangle$  (though this chapter ends up treating them as type  $\langle e, st \rangle$  as a stop-gap). Thus, the status of *spray/load* verbs as obligatorily transitive must be a syntactic fact in my analysis that cannot be derived from the semantics.

<sup>18</sup>Example (28c) is perhaps harder to conceive of as invoking direct causation, but it is no worse, I believe,

cannot receive the readings that they should be able to if the resultatives occurred with intransitive verbs. This constitutes evidence against an account of the restitutive reading that permits the intransitive structure in (20).

It might be possible to object that the restriction of direct causation is violated in the contexts in (28). One might be able to claim, for instance, that in (28a), the tube is not really a participant in the drizzling eventuality—the participants in that eventuality might include only the agent, the icing, and the cake. Similar objections could apply to the other cases. However, this cannot be the reason these sentences are ruled out if something like Kratzer (2005)'s small clause analysis of sentences like *John drank the teapot empty* is on the right track. The reason for this is that *John drank the teapot empty* is posited to invoke direct causation: John's drinking can be an event of causing the state of the emptiness of the teapot. But the teapot is not be a participant in the minimal drinking eventuality: the drinking eventuality itself would seem to have as participants only John and what he drank, which is the contents of the teapot and not the teapot itself. Insofar as *John drank the teapot empty* is acceptable, then, we have evidence that entities that are not participants of the eventuality the verb describes (drinking eventualities, in this case, which don't include the teapot as a participant) can be participants of a result state directly caused by those eventualities (the empty state, whose participant is the teapot). If the teapot's participation in the result state despite its lack of participation in the drinking eventuality does not falsify the relation of direct causation, then it is implausible to claim that the tube's alleged lack of participation in the drizzling eventuality would do so. Arguments of an identical shape apply to the other examples.

Furthermore, this evidence from the difference between resultatives and *spray/load* verbs is not the only kind of evidence that weighs against the structural ambiguity approach. In particular, it is possible to construct sentences with two *agains*, one that occurs after the object, and another that occurs after the entire VP. Though the judgments are difficult, these sentences are felicitous in contexts that support a repetitive<sup>-</sup> and a restitutive reading, but not a high repetitive reading that includes the event and the result state.<sup>19</sup>

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than thinking of an act of drinking the contents of the teapot as an event of the teapot becoming empty.

<sup>19</sup>It is possible to construct similar examples with the prefix *re-*: *John resprayed the paint onto the fence again*, and so on. The addition of *re-* also makes it possible to observe behavior similar to what I have described for

- (29) **Context:** John decided to make a small fence for his garden. He brushed some boards with a green-colored paint he really liked, and put them together to make the fence. Over time, the paint flaked off and left the boards bare. John wanted to restore the fence's color. Luckily he still had most of the original paint left. But now he had a fancy machine that could spray paint onto the boards, so he wouldn't have to use a brush.
- a. **cont.:** He hooked up the sprayer to the spigot on the paint bucket, and then asked Bill to spray the paint onto a piece of cardboard to test that it was working with no air bubbles or mechanical issues (John wasn't confident he'd do it right himself). Once John was satisfied Bill had properly tested it, he took the nozzle outside, and ...  
John sprayed the paint again onto the fence again.
- b. **cont.:** Before using the sprayer, the dirt and remaining flecks of paint needed to be cleared off the fence. So John asked Bill to use the power washer to spray the fence with water and clean it off (John was worried he'd hurt himself with it). Once everything was clean, he hooked up the sprayer to the spigot on the paint bucket. Without stopping to test the machine, ...  
John sprayed the fence again with the paint again.

Let us consider what presuppositions are supported in these contexts. A subject-ful repetitive presupposition that includes John isn't satisfied in either scenario, since John never sprayed anything before in either case—Bill did. But a subjectless repetitive presupposition that includes the spraying event and the resulting state wouldn't be satisfied either. In neither case is there a prior eventuality that is a spraying that results in the paint being on the fence/the fence being with the paint. The paint got on the fence by virtue of its being built out of painted boards, not by being sprayed.

So what presuppositions are satisfied? In fact, the presuppositions that are satisfied,

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*spray/load* verbs with certain classes of resultatives; e.g., *John rehammered the metal flat again*. Not all resultatives allow this: cf. *John (\*re)sneezed the tissue soggy*, based on an example from Carrier & Randall (1992). While a detailed study of resultatives is outside the scope of this dissertation, I believe this behavior suggests that at least some resultatives are amenable to the multidominance analysis I advocate in (2.3.4). In addition, the syntax of *re-* is more complicated than the syntax of *again*, making the argument ultimately stronger but more subtle (Keyser & Roeper 1992; Tom Roeper, p.c.).

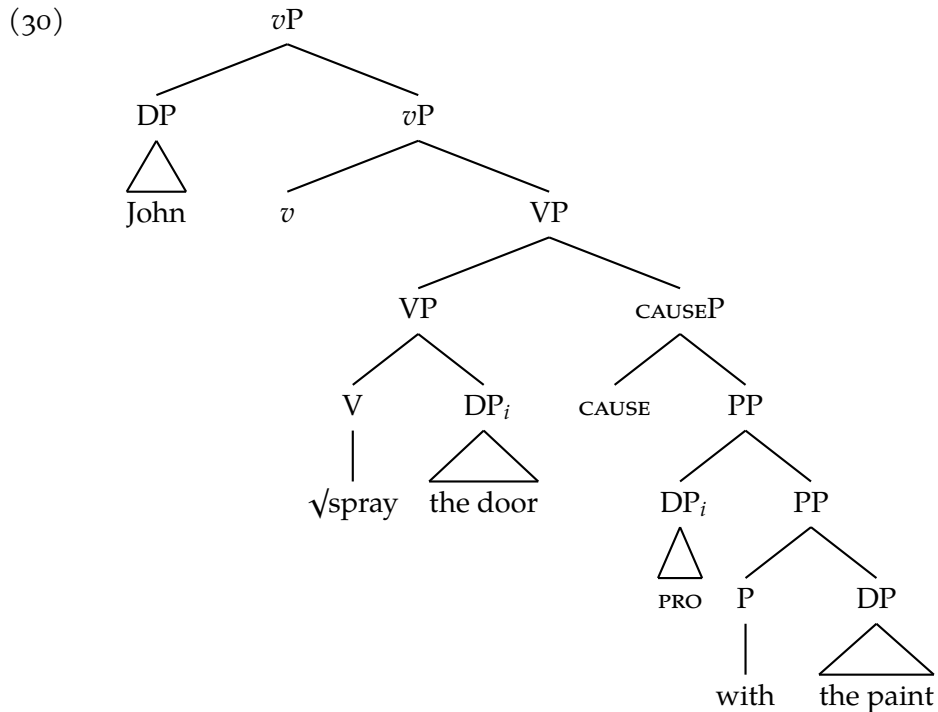
and which make (29) felicitous are those that we discussed before: the restitutive and repetitive presuppositions. The restitutive presupposition is satisfied because in both contexts, the paint was on the fence before (or, equivalently for present purposes, the fence was with the paint before), by virtue of the fence being built of painted boards. The repetitive presuppositions are satisfied by Bill spraying the paint and Bill spraying the fence (with water). But note that these presuppositions exclude the PP. In (29a), Bill sprayed the paint onto a piece of cardboard—not onto the fence. In (29b), Bill sprayed the fence with water—not with paint. We can thus see the bracketing paradox can arise in a single sentence: the first *again* can modify *spray the paint* or *spray the fence*, while the second *again* can modify *the paint onto the fence* or *the fence with the paint*. We cannot attribute the side-by-side existence of restitutive and repetitive presuppositions with *spray/load* verbs to there being two structures these verbs can occur in, each of which is compatible with one of these possibilities. Instead, we must propose a single structure that can accommodate both readings at once.

Finally, a conceptual reason to disfavor the lexical ambiguity account is that the readings that lead us to the bracketing paradox occur quite generally with *spray/load* verbs. If we were to explain this as due to a lexical ambiguity, we would be required to posit phonologically identical and semantically similar (in terms of lexical semantics) verbs for, as far as I can tell, every *spray/load* verb. These verbs would differ primarily only in their syntax, with small compositional semantic differences, but largely similar lexical semantics. While ruling out systematic and arbitrary homophony of this sort is impossible to support empirically, it is based on a desire for the simplest possible theory of lexical meanings; we should avoid positing lexical doublets to solve these sorts of problems unless there is independent evidence to support such an approach.

#### 2.3.4 *Towards a Solution*

One possible resolution to our bracketing paradox would combine the intransitive and resultative structures into one. We could assume that  $\sqrt{\textit{spray}}$  always combines with an object and then a small clause PP whose subject is interpreted as identical to the object. However, since we don't pronounce the phrase that denotes the object twice, one of these phrases

would actually be a phonologically null pronoun that is obligatorily coindexed with the non-phonologically null phrase. Presumably the null pronoun would go in Spec,PP, since when *again* modifies the phrase consisting of [ $\sqrt{\text{spray}}$  the door], *the door* occurs to the left of *again* (*mutatis mutandis* for the theme-object structure).



However, (30) predicts that a quantificational object should only be able to scope above restitutive *again*. This is because PRO is bound by the object, which occurs outside the PP that *again* attaches to when it produces a restitutive reading. In other words, the subject of the previous result state would have to be identical to the subject of the result state described by the sentence in order to satisfy *again*'s presupposition, since it is coindexed with or bound by it. This prediction is clearly false.

(31) **Context:** The door was made with painted boards. Over time, the paint flaked off. So, ...

John sprayed paint onto the door again. (restitutive)

Consider the truth conditions that would be associated with (31) under the analysis in (30).

$$(32) \quad \llbracket (31) \rrbracket = \lambda e. \exists x [\text{paint}(x) \wedge \text{spray}(e, x) \wedge \text{AGENT}(e, \text{John}) \wedge \exists e' [\text{with}(e', \text{the door}, x) \wedge \text{CAUSE}(e, e')] = 1$$

$$\text{presupposition: } \exists e'' [\tau(e'') < \tau e' \wedge \text{with}(e'', \text{the door}, x)] = 1$$

The quantifier that binds  $x$  scopes over the presupposition of restitutive *again*, since it occurs outside of *again*. Thus, the structure in (30) would predict that in order for (31) to be felicitous, the paint that John sprayed onto the door would have to be the very same paint (or the very same kind of paint, under a kind reading) that was on it before. Of course, this is not the most natural reading of this sentence; the most natural reading is that John used different paint. This shows the empirical inadequacy of the PRO account of the *again* facts.<sup>20</sup> (I revisit the scope of indefinites relative to *again* in section 2.4.1. There, I provide additional examples showing that indefinites can be bound within restitutive *again*'s presupposition.)

In addition to this empirical shortcoming, there are a number of theory-internal oddities in this structure that the presence of PRO raises. First, the identity of PRO is unclear. Given that we are dealing with English data at present, it is presumably not *pro*. But this does not also seem like a canonical control context that would invoke a PRO. It is also unclear how PRO could receive case. While PRO was classically held to not receive case (Chomsky 1981), this view has been challenged more recently (Sigurðsson 1991). Presumably, the subject receives case by moving to Spec,TP, the object receives case from  $v$ , and the object of *with* receives case from P. But this leaves no way for PRO to receive case, if one endorses Sigurðsson's argument. Another question that arises is why the object of  $\sqrt{\text{spray}}$  and the subject of the small clause cannot differ, as in the following:

(33) \* John sprayed the house the door with paint.

Intended reading: "John sprayed the house, which resulted in the door having paint on it."

Despite being of the same categorical type, a full DP cannot appear where PRO does in (30). Presumably, the reason for this is the same problem identified for PRO just above: the DP in Spec,PP has nowhere it can get case. While the distribution of PRO is not identical to

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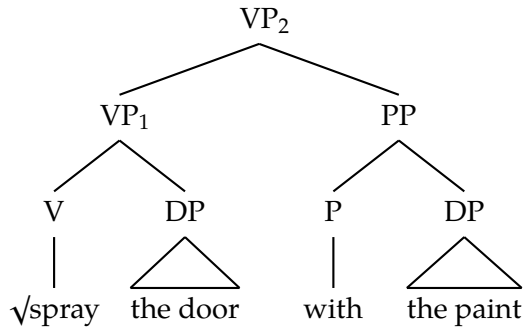
<sup>20</sup>See also Johnson (2018), who makes a similar point regarding the inadequacy of a PRO-based account compared to a multidominance-based account of English dative verbs.



the distribution of full DPs (since PRO can usually only appear in non-finite contexts), this is not a non-finite context. This fact might actually lead us to expect that a full DP could appear in Spec,PP, while PRO could not. However, given the analysis in (30), we would see the opposite pattern—a curious reversal of what we might otherwise expect. In sum, there are both empirical and theoretical shortcomings when adopting the PRO-based account.

Another approach<sup>21</sup> would treat *spray/load* verbs as being of type  $\langle e, \langle \langle e, st \rangle, st \rangle \rangle$ . They would combine with an object, and then take a PP with an unsaturated entity argument, saturating the PP's open entity argument with their object, as follows.<sup>22</sup>

(34) a.



b.  $[[PP]] = \lambda x.\lambda e.with(e, x, the\ paint) = 1$

c.  $[[V]] = \lambda x.\lambda P_{\langle e, st \rangle}.\lambda e.\exists e'[spray(e, x) \wedge CAUSE(e, e') \wedge P(e', x)] = 1$

d.  $[[VP_1]] = \lambda P.\lambda e.\exists e'[spray(e, the\ door) \wedge CAUSE(e, e') \wedge P(e', the\ door)] = 1$

e.  $[[VP_2]] =$

$\lambda e.\exists e'[spray(e, the\ door) \wedge CAUSE(e, e') \wedge with(e', the\ door, the\ paint)] = 1$

While this produces the correct semantics for the asserted content, it faces certain challenges in accounting for the presuppositions produced by *again*. With regards to the restitutive reading, no constituent exists that denotes a state of the door with the paint. With regards to the low repetitive reading, a constituent that approximately denotes a prior event of spraying the door exists ( $VP_1$ ), but it is not of the right type to combine with an *again* that is a predicate of eventualities. Furthermore, the unsaturated *P* argument would need to be excluded from *again*'s presupposition in order to achieve the right reading.

The reviewer suggests that one could modify the denotation of *again* to account for these facts, which is in principle possible. However, Bale (2007) has demonstrated that *again* only

<sup>21</sup>Suggested by an anonymous *Linguistic Inquiry* reviewer.

<sup>22</sup>This is similar to an account of resultatives discussed in Williams (2015).

attaches to predicates of eventualities, and that the prior eventuality it presupposes is identical in kind to the one its sister denotes. An argument of this sort was presented above in discussing examples like (7–8) and (11–12); if we decouple *again*'s presupposition from its syntax, we lose clear explanations of the behavior those examples showed. The view that *again* is a predicate of eventualities whose presuppositional content is exclusively determined by the constituent it attaches to is also assumed or argued for in much other work (e.g., Beck 2005; Beck & Gergel 2015; Beck & Johnson 2004; Beck & Snyder 2001; Johnson 2018; Patel-Grosz & Beck 2019; von Stechow 1995, 1996). Further, it is clear that at least one *again* that can combine with simple predicates of events exists. Consider an example like the following, where *again* outscopes the raising verb *seem*, which heads a phrase denoting a predicate of events.

- (35) There again seemed to be a problem (though in neither case was there actually a problem). (again > seem)

Any *again* with a different denotation would have to coexist next to the *again* that is a predicate of events.<sup>23</sup>

Regardless, it is worth noting here that there seems to be a relatively simple adjustment we could make to the meaning of *again* that would correctly produce the restitutive reading we are after given the structural analysis in (34a). We could posit that in addition to the *again* that is a function from predicates of eventualities to predicates of eventualities (type  $\langle st, st \rangle$ ), there is an *again* that is a function from functions of entities to predicates of eventualities, to a function from entities to predicates of eventualities (type  $\langle \langle e, st \rangle, \langle e, st \rangle \rangle$ ). The denotation of this *again* would be the following.

- (36)  $[[\text{again}_2]] = \lambda P_{\langle e, st \rangle}. \lambda x. \lambda e : \exists e' [\tau(e') < \tau(e) \wedge P(e', x)]. P(e, x) = 1$

*Again*<sub>2</sub> could adjoin to PP in (34a). The result of this would have a presupposition that

<sup>23</sup>One might argue that we should nevertheless question whether Bale (2007)'s evidence for this view of *again* could be explained in another way. In my opinion, this would not be so easy to achieve. Working out the details of these *agains* leads to complexities in including and excluding the right parts of the semantics in *again*'s denotation, with the end result being seemingly unavoidably *ad hoc* in many ways.

One could always posit multiple *agains*, each associated with its own particular syntactic restrictions and slightly different semantics, but such an approach would run the risk of being unfalsifiable. It would also fail to be explanatory. This is, to me, a steep price to pay simply to avoid positing multidominance—an approach to syntax that has been independently motivated.

includes a variable that is bound by the lambda operator. When  $VP_1$  combines with the PP, it would saturate this open entity argument in the presupposition and in the asserted content. This would produce the correct restitutive reading, as shown.

- (37) a.  $[[PP \text{ again}]] =$   
 $\lambda x.\lambda e : \exists e'[\tau(e') < \tau(e) \wedge \text{with}(e', x, \text{the paint})] = 1. \text{with}(e, x, \text{the paint}) = 1$
- b.  $[[VP_1]] = \lambda P.\lambda e.\exists e'[\text{spray}(e, \text{the door}) \wedge \text{CAUSE}(e, e') \wedge P(e', \text{the door})] = 1$
- c.  $[[VP_2]] =$   
 $\lambda e.\exists e'[\text{spray}(e, \text{the door}) \wedge \text{CAUSE}(e, e') \wedge \text{with}(e', \text{the door}, \text{the paint})] = 1$   
presupposition:  $\exists e''[\tau(e'') < \tau(e') \wedge \text{with}(e', \text{the door}, \text{the paint})] = 1$

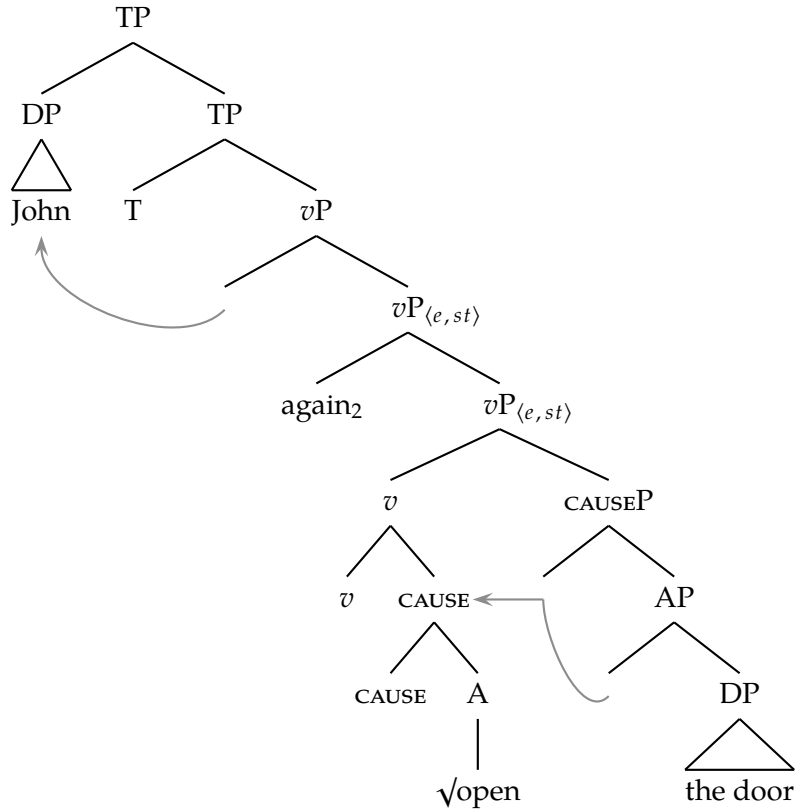
The presupposition of *again* is satisfied whenever there was some prior eventuality of the door being with the paint, which is the restitutive presupposition we sought.

Furthermore, positing the existence of *again*<sub>2</sub> does not make any incorrect predictions regarding the link between *again*'s position and the possible readings it can receive, as far as I can tell. The one case we have discussed where this might be relevant is the fact that *again* can only receive a reading where it includes the subject when it occurs preverbally.<sup>24</sup> Under the analysis that *again* denotes only a predicate of eventualities, I argued that the possible readings of *again* in pre-subject position showed that it attached to the highest projection of *vP*, and that the verb is pronounced in *v*. The relevant discussion and examples start around (12). However, if we allow an *again* of a different type, we must ask whether the explanation of this pattern would be lost. In fact, the existence of *again*<sub>2</sub> would not make any incorrect predictions here, and would show us precisely the same thing that type  $\langle st, st \rangle$  *again* did: that the verb is pronounced in *v*.

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<sup>24</sup>The existence of *again*<sub>2</sub> does not, as far as I can tell, have any implications for the sentences comparing the relative scope of *again* and other adverbs like *quickly*, as in (7–8).

(38)



As shown in (38), the only difference is that *again*<sub>2</sub> would left-adjoin below the base position of the subject, rather than above it as in (15). Otherwise, nothing would be different.

Thus, positing *again*<sub>2</sub> would predict the correct restitutive reading in (34a), and does not make any incorrect predictions in other cases as far as I can tell (even considering ones I have not discussed here). Positing this *again*, then, seems to require us only to accept that there are two homophonous *again*s, one that is a predicate of eventualities (to account for cases where *again*<sub>2</sub>'s type would prevent semantic composition but *again* is licit), and *again*<sub>2</sub>. Of course, while this is somewhat *ad hoc*, since it does not make any incorrect predictions and allows us some hope of resolving the bracketing paradox, we might be willing to make this move. It could simply be that *spray/load* verbs are the proving grounds that show us the existence of *again*<sub>2</sub>, which is otherwise similar enough to *again* that a difference would be difficult to detect.

But this move has only resolved half of the problem: the restitutive reading in (34a). We would need to posit yet another *again* to account for the low repetitive reading in (34a), since *again*<sub>2</sub> would not be of the right type to compose with VP<sub>1</sub>. Call this *again* *again*<sub>3</sub>. The

denotation of *again*<sub>3</sub> would have to allow it to compose with functions of type  $\langle est, st \rangle$ , making it type  $\langle \langle est, st \rangle, \langle est, st \rangle \rangle$ .

However, once we attempt to go past identifying the type of *again*<sub>3</sub>, we run into a significant problem. A crucial difference between *again*<sub>3</sub> and *again*<sub>2</sub> is that *again*<sub>3</sub> would necessarily have to meddle in the semantics of its sister to a greater extent. In particular, *again*<sub>2</sub>'s denotation merely takes a phrase with an unsaturated entity argument, which defines its presupposition. Put another way, the lambda-bound entity argument in the sister of *again*<sub>2</sub> is also bound by the same lambda-operator in *again*<sub>2</sub>'s presupposition. Thus, in some sense, *again*<sub>2</sub> allows us to maintain the generalization established clearly in Bale (2007) (and implicitly adopted in much other work) that the prior eventuality invoked in *again*'s presupposition is semantically identical in all but running time to the one described by its sister. This generalization is, in my view, quite solid.

The problem that arises then, is that the denotation of *again*<sub>3</sub> would have to explicitly exclude the meaning of the  $\langle e, st \rangle$  function in the denotation of VP<sub>1</sub> from its presupposition in order to account for the repetitive<sup>-</sup> reading. Consider the presupposition that would result if this function were not excluded. It would be bound in *again*<sub>3</sub>'s presupposition in the same way that the entity argument of *again*<sub>2</sub> was. The resulting presupposition would behave as scoping over VP<sub>2</sub>, including both the spraying event and the resulting state.

- (39) a.  $[[\text{again}_3]] =$   
 $\lambda Q_{\langle est, st \rangle} . \lambda R_{\langle e, st \rangle} . \lambda e : \exists e' [\tau(e') < \tau(e) \wedge Q(R(e'))] = 1 . Q(R(e)) = 1$
- b.  $[[\text{VP}_1 \text{ again}_3]] =$   
 $\lambda R_{\langle e, st \rangle} . \lambda e : \exists e' [\tau(e') < \tau(e) \wedge \exists e'' [\text{spray}(e', \text{the door}) \wedge \text{CAUSE}(e', e'') \wedge R(e'', \text{the door})]] . \exists e''' [\text{spray}(e, \text{the door}) \wedge \text{CAUSE}(e, e''') \wedge R(e''', \text{the door})]$
- c.  $[[\text{VP}_2]] =$   
 $\lambda e . \exists e''' [\text{spray}(e, \text{the door}) \wedge \text{CAUSE}(e, e''') \wedge \text{with}(e''', \text{the door}, \text{the paint})]$   
 presupposition:  $\exists e' [\tau(e') < \tau(e) \wedge \exists e'' [\text{spray}(e', \text{the door}) \wedge \text{CAUSE}(e', e'') \wedge \text{with}(e'', \text{the door}, \text{the paint})]]$

Of course, this result is precisely what we are hoping to avoid: the repetitive<sup>-</sup> presupposition explicitly excludes the resulting state. We want the presupposition of *again*<sub>3</sub> to include

just the spraying eventuality and the object, and nothing more.

The only way that it would be feasible to do this would be to existentially bind  $R$  specifically within  $again_3$ 's presupposition.

- (40)
- a.  $\llbracket again_3 \rrbracket = \lambda Q_{\langle est, st \rangle} . \lambda R_{\langle e, st \rangle} . \lambda e : \exists e' [\tau(e') < \tau(e) \wedge \exists R' [Q(R'(e'))] . Q(R(e))]$
  - b.  $\llbracket VP_1 again_3 \rrbracket = \lambda R_{\langle e, st \rangle} . \lambda e : \exists e' [\tau(e') < \tau(e) \wedge \exists R' [\exists e'' [\text{spray}(e', \text{the door}) \wedge \text{CAUSE}(e', e'') \wedge R'(e'', \text{the door})]]] . \exists e''' [\text{spray}(e, \text{the door}) \wedge \text{CAUSE}(e, e''') \wedge R(e''', \text{the door})]$
  - c.  $\llbracket VP_2 \rrbracket = \lambda e . \exists e''' [\text{spray}(e, \text{the door}) \wedge \text{CAUSE}(e, e''') \wedge R(e''', \text{the door})]$   
presupposition:  $\exists e' [\tau(e') < \tau(e) \wedge \exists R' [\exists e'' [\text{spray}(e', \text{the door}) \wedge \text{CAUSE}(e', e'') \wedge R'(e'', \text{the door})]]]$

The resulting presupposition would only be satisfied if there were some prior result state,  $R'$  that the previous spraying of the door resulted in.

However, there are two objections to the analysis in (40). One is that it makes an empirical prediction which is arguably false. This prediction is that there must have been some prior state holding of the door that the prior spraying resulted in. The following sort of example shows that this prediction is probably false.

- (41) **Context:** The door had a lot of dried mud caked on it. John intended to wash the door with a pressure washer. But he had never used a pressure washer before, and didn't know what it looked like. Instead, he accidentally took the air compressor. He sprayed the door with compressed air, which did nothing to the caked-on mud. Realizing his mistake, John went and found the actual pressure washer. And so, ...

John sprayed the door again with water.

Here, the presupposition of  $again$  seems to be satisfied by the prior eventuality of John spraying the door with compressed air. In the context given, this spraying eventuality produced no clear effect on the door. This leads me to believe that the repetitive<sup>-</sup> presupposition should not include an existential binder over result states holding of the object that came from the prior spraying event. However, it should be noted that one could argue that the

result state of the door's being sprayed with compressed air is a resultant state, in the sense of Kratzer (2000). This kind of state is one that every eventuality that culminates can be associated with; for instance, if Mary ate lunch, then the associated resultant state is the state of Mary's having eaten lunch. If the existentially bound relation in *again*<sub>3</sub>'s presupposition can be satisfied by resultant states, then the prediction we just examined may be true (though difficult or perhaps impossible to falsify).

The second objection is more general. It has to do with the evidence I presented earlier that the eventuality invoked in *again*'s presupposition is identical in shape to the one its sister describes. I provided two kinds of arguments for this: one from the interaction of *again* with other adverbs, and one from the contrast between post-VP and pre-verb *again*. Both of these arguments showed that *again*'s presupposition was unable to exclude anything contained in the denotation of its sister. Bale (2007)—from whom I have adapted the arguments presented above—provides several additional kinds of evidence supporting this view of *again*. Of course, the existence of *again*<sub>3</sub> would not pose any direct problems for those pieces of evidence—it is of the wrong type to occur in those examples, and so would not make any wrong predictions in such cases. But the general objection is that we have good evidence that all other uses of *again* do not tamper with the internals of the denotation of its sister. In contrast, *again*<sub>3</sub>, in order to produce the correct result, would necessarily have to existentially bind part of its sister's denotation in its presupposition. Thus, positing *again*<sub>3</sub> would make it impossible to maintain the view that *again*'s presupposition invokes an eventuality that matches the description of the eventuality its sister describes. This move would afford *again*'s presupposition too much leeway, letting it meddle with the predicate of eventualities denoted by its sister. This proposal, and its pursuant proliferation of too-powerful *agains* commands too great a cost. We should therefore seek an alternative to the analysis proposed in (34a) that allows us to maintain a maximally simple theory of *again*.

In that spirit, I would like to propose a solution that resolves the oddities associated with the PRO-based account, while maintaining an analysis of *again* as a predicate of eventualities whose presupposition invokes an eventuality that contains nothing beyond the denotation of its sister. That solution involves multidominance. This solution is similar to the one developed by Hiraiwa & Bodomo (2008) to explain object sharing in serial verb

constructions in Dàgáárè, with the core difference being that rather than the object being dominated by two VPs, it is dominated by a VP and PP. It is also similar to an account of ditransitive possession verbs developed in Johnson (2018), with two primary differences: (i) the head of the small clause is pronounced independently in the case of *spray/load* verbs instead of as part of the verb, and (ii) the multidominated phrase is the specifier of the resultative predicate rather than its complement. If the object is multidominated by VP and PP, it can occur in both positions, will lead to the right readings, and will avoid the issues the mysterious PRO raised. It will also allow us to treat *again* as a predicate of eventualities, in line with previous work. The single stipulation we are left with is that the object must be pronounced linearly adjacent to the verb, but something like this restriction may be needed for English objects anyway.<sup>25,26</sup>

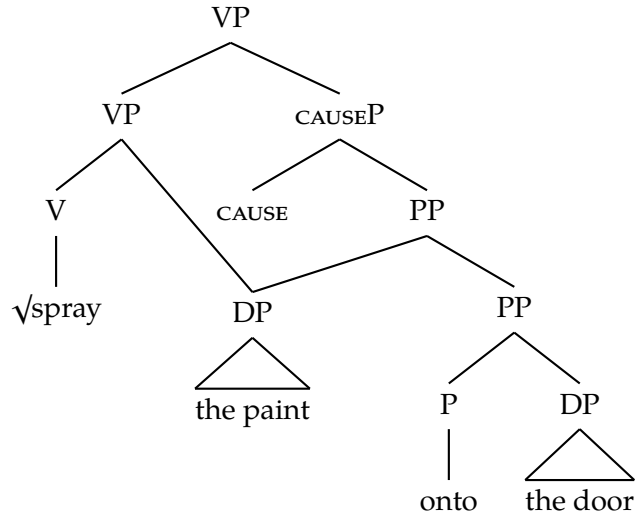
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<sup>25</sup>If we assume (as is often assumed in transformational syntax) that the object moves to a position above VP for case marking, we may be able to dispense with this stipulation given an appropriate theory of linearization.

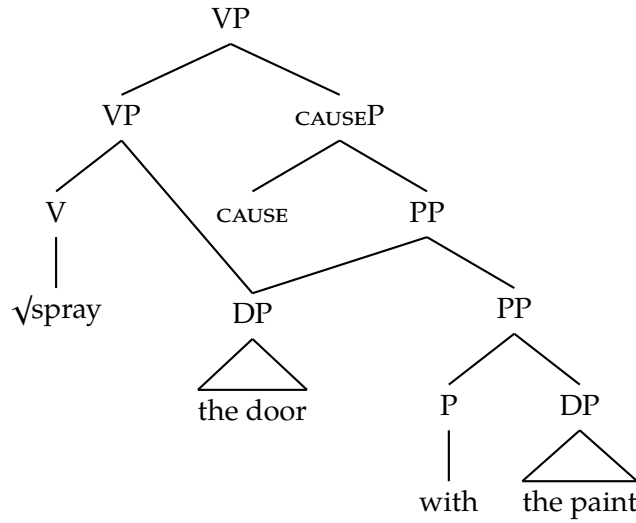
<sup>26</sup>The semantics these structures imply would seem to require that the object of a *spray/load* verb be interpretable as either a theme or a goal. This is intended as no more than an expository stop-gap; I resolve the issue in chapter 3.



(42) a.



b.



When *again* adjoins to the lower VP, it will result in the lower, repetitive<sup>-</sup> reading. When it is adjoined to the right, it will be ambiguous between a low attachment to the PP, giving rise to the restitutive reading; and a high attachment site above VP, giving rise to a high

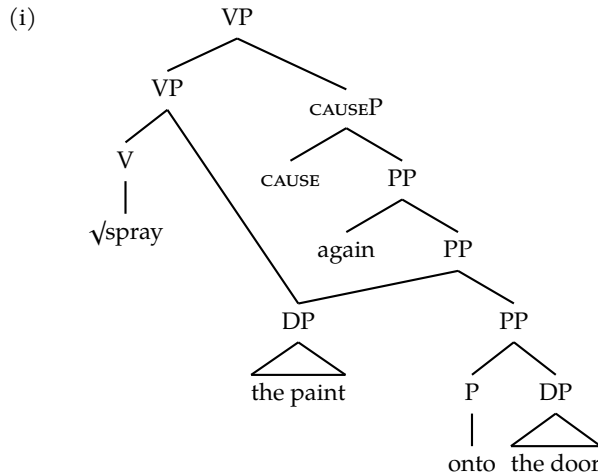
repetitive reading.<sup>27,28</sup>

The multidominance approach easily extends to less canonical cases, where an AP oc-

<sup>27</sup>A reviewer for *Linguistic Inquiry* suggests that perhaps the verb root occurs higher in the theme-object structure than in the goal-object structure. However, given that *again* appears to produce largely similar presuppositions in both theme-object and goal-object structures when it occurs in similar positions, I do not believe that *again* provides any direct evidence to support this proposed difference (though it may not rule it out, given a structure that will still account for the associations between *again*'s position and its possible readings).

Another reviewer for *Linguistic Inquiry* asks if the multidominance analysis makes additional predictions, besides providing an account of the bracketing paradox. There are two things to note here. The first is that multidominance has been independently motivated in a variety of empirical domains (see Citko 2005; Engdahl 1980; Gärtner 1997, 1999; Hiraiwa & Bodomo 2008; Johnson 2012, 2018; Nunes 2001; Starke 2001, a.m.o.). Thus, it is not a *sui generis* solution to the particular puzzle highlighted here. Second is that despite this prior work, I am not aware of any particular predictions multidominance makes besides the existence of apparent bracketing paradoxes of the sort presented in this paper (the work cited above invokes multidominance precisely to resolve such paradoxes in other domains). Other than predicting the existence of complex constituent structures of this sort, a syntax with multidominance appears to be identical (or nearly so) to a syntax without it. No predictions are expected beyond the existence of structures that in other theories would constitute bracketing paradoxes.

<sup>28</sup>These structures raise the question of why *again* cannot surface immediately following the object by left-adjointing to the small clause PP, which would produce a restitutive reading. For instance:



The reading this structure would produce does indeed not seem to be available with immediately post-object *again*.

- (ii) **Context:** The door was made of boards that had been coated with forest green paint. Over time, the paint flaked off. So, ...  
 # John sprayed the paint again onto the door.

The same behavior occurs in the goal-object structure (though I don't give the full example here).

While I do not have an explanation for the lack of this reading, I will note that while there is clear evidence that *again* can left-adjoin to adjunct PPs (Bale 2007), there may be evidence that *again* cannot left-adjoin to small clauses:

curs after the object.<sup>29</sup>

- (43) a. John poured the glass full with/of water.  
b. John loaded the truck full with/of hay.

This possibility is entirely consistent with the analysis developed here, and even expected.<sup>30</sup> Nothing requires that the small clause of a *spray/load* verb be a PP. In fact, under the multidominance analysis I just proposed, this would be what is going on in (27), discussed above. In the same way, I suggest that what is going on in (43) is that the head of the small clause is the adjective *full*, which takes a PP complement describing the contents of the full state, and whose subject is multidominated by AP and VP (i.e., it is simultaneously the

- 
- (iii) **Context:** John and Bill both enjoy going to the park. Bill walked his dog in the park on Tuesday, and the next week, ...  
John went jogging, again in the park on Tuesday. (adjunct PPs)
- (iv) **Context:** When I put little booties on the cat, I couldn't stop laughing. Later, my wife called me into the room after having the same idea herself, and ...
- a. The cat in booties again was just as funny the second time!  
(small clause right-adjoined *again*)
- b. # Again the cat in booties was just as funny the second time! (small clause left-adjoined *again*)

Note that in (iv-b), there would be no multidominance structure that would be expected to produce the word order where Spec,PP precedes *again* (i.e., *The cat again in booties...*), in contrast to the structure in (i). Thus, whether this constitutes valid evidence that *again* cannot left-adjoin to small clauses in general, or just in cases where it would linearly precede the specifier of the small clause, is unclear.

However, more generally, the non-existence of a reading that my structure might predict does not compromise my argument. In particular, the non-existence of the reading that an *again* left-adjoined to the small clause would produce does not constitute an argument against the existence of the restitutive and repetitive<sup>-</sup> meanings that I have established. It is the existence of these readings that is sufficient to motivate my approach, with the non-existence of other readings presumably requiring a different sort of explanation.

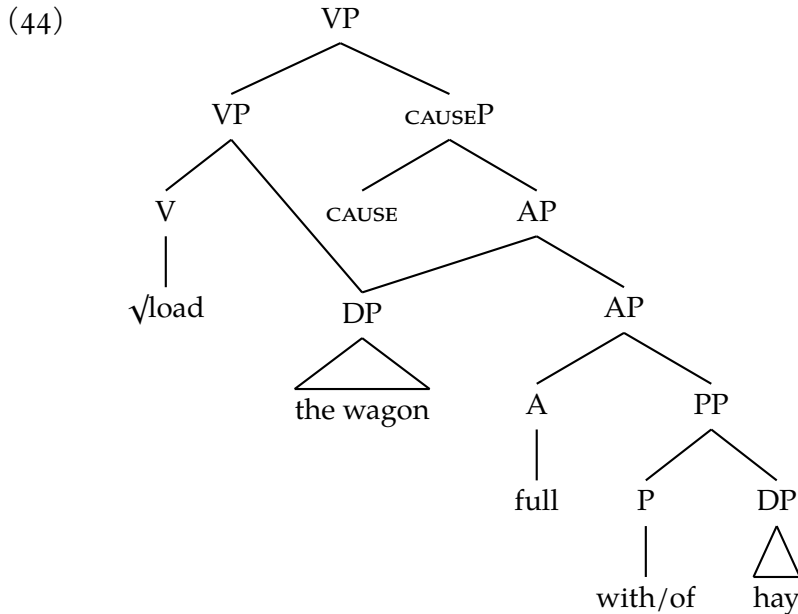
<sup>29</sup>These cases were brought to my attention by an anonymous reviewer for *Linguistic Inquiry*.

<sup>30</sup>Seth Cable (p.c.) has pointed out to me that there is for him an interesting contrast between the following examples with regards to the behavior of *again*.

- (i) a. John loaded the truck again, full of hay.  
b. ?? John poured the glass again, full of water.

This suggests that while *the truck* can be the object of *load*, *the glass* cannot really be the internal argument of *pour*. This raises some questions for my full analysis, which I revisit briefly in chapter 5, footnote 49.

subject of the result state AP and the object of the verb).<sup>31,32</sup>



Finally, I will prefigure that the multidominance analysis fares better than D’Elia (2016)’s

<sup>31</sup>Note that *full with* in isolation is somewhat degraded (though to my ears, not fully ungrammatical) compared to both *full of* and *full with* in the context of *load*.

- (i) a. The truck was full of hay.
- b. ?? The truck was full with hay.
- c. John loaded the truck full of hay.
- d. ? John loaded the truck full with hay.

I will note that if one controls for the availability of an instrumental *with* parse of (i-d) by adding a separate instrumental *with*-phrase, the use of *full with* sounds considerably more degraded to my ears.

- (ii) a. John loaded the truck full of hay with a pitchfork.
- b. ?? John loaded the truck full with hay with a pitchfork.

This suggests that (i-d) is less degraded than (i-b) because of the existence of an instrumental *with* parse that isn’t available for the latter. In such a parse, *full* would not take a PP complement, and the *with*-phrase would adjoin to *vP*. However, it should be noted that these judgments are gradient and subtle, and may not be shared by everyone. As a case in point, Rajesh Bhatt (p.c.) reports that he feels both (i-b) and (i-d) are somewhat acceptable, but (i-b) sounds rather old-fashioned and (i-d) is somewhat improved, which I interpret as essentially in agreement with my judgments reported above. However, he reports that (ii-b) is fine for him, while it is clearly marginal for me.

<sup>32</sup>It is worth noting that not every adjective can be used as a resultative with *spray/load* verbs.

- (i) a. \* Dave sprayed the door colorful.
- b. \* Dave loaded the boxes (stacked) upright. (Seth Cable, p.c.)

An important question is thus what rules out such cases, if *full* is indeed being used as an adjective in (44). I do not have an answer, but it is well known that similar restrictions exist with other resultatives.

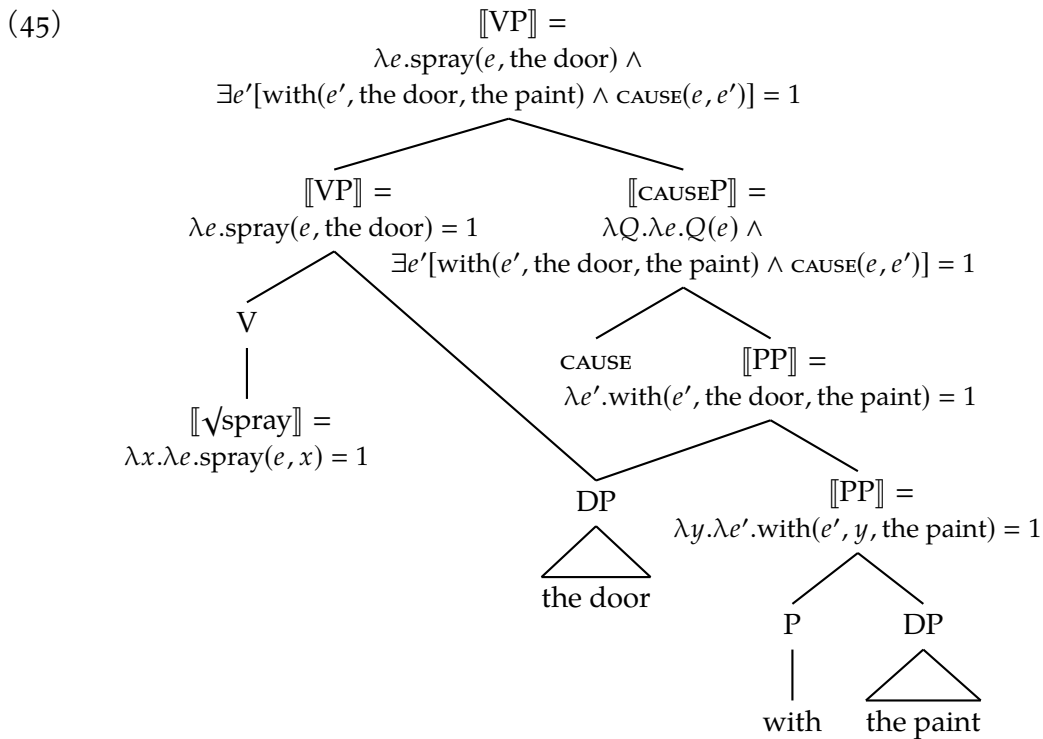
- (ii) a. John scrubbed the pot shiny /\*shined. (Carrier & Randall 1992, (25a))
- b. John hammered the metal flat /\*worthless.

I suggest that what is responsible for explaining these sorts of patterns will explain the impossibility of (i). Encouraging in this regard are the examples in (27–28), which are grammatical and interpretable, being merely infelicitous in the contexts given.

analysis on many of the diagnostics that prove problematic for him, to be discussed in chapter 5, section 5.2.3.3.2. D’Elia (2016) argues that goal-objects occur in the specifier of a small clause, and are not actually objects of the verb. However, many of his diagnostics seem to indicate the opposite, that goal-objects are actual objects of the verb. This is indeed the case in the multidominance analysis, since the goal is both an object and the subject of a small clause. As such, it is expected to have the properties of any typical object, as well as the properties of the subject of a small clause—with caveats to be discussed in chapter 3.

### 2.3.5 Semantic Composition in Structures with Multidominance

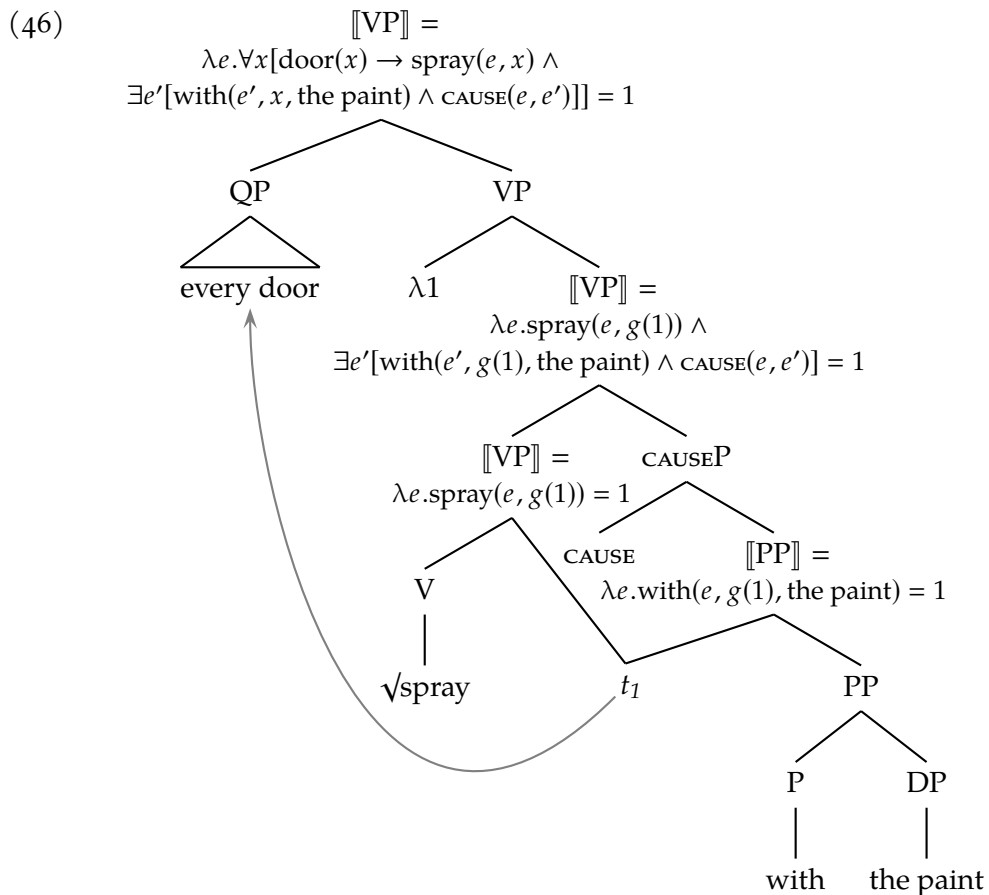
In order to be sure that the structure in (42) will solve our problem, it is necessary to say something about how phrases with two mothers are interpreted semantically. Luckily, there is nothing that special to say here: a multidominated phrase is interpreted according to standard rules of semantic composition by combining with both of its sister phrases separately (Johnson 2012).<sup>33</sup> How this works is shown in the following example:



<sup>33</sup>Note, however, that Johnson (2012) argues that it is possible in certain circumstances for a phrase to semantically compose with only one of its sisters. However, in standard cases, semantic composition will proceed as shown in (45).

It is worth flagging here that this semantics requires the entity argument of a *spray/load* verb to be interpretable as either a theme or a goal. That is, “ $\text{spray}(e, x)$  would have to be true of an eventuality  $e$  and an entity  $x$  in case  $e$  is a spraying eventuality, and  $x$  is the theme or the goal of that eventuality. I will note here that this undesirable move is intended as no more than an expository stop-gap; I return to this issue and ultimately do away with the need to posit this sort of semantics for *spray/load* verbs in §3 in a way that does not adversely affect the conclusions of this chapter.

Quantificational objects will undergo QR to a position higher than VP, and be interpreted as a bound variable.



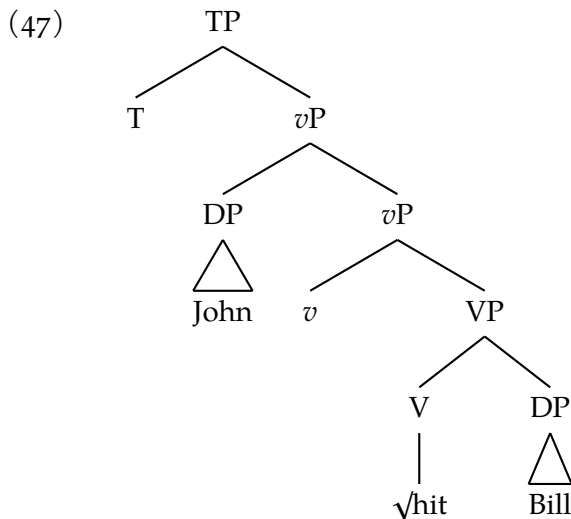
Since its lambda binder is high, the variable will be bound by the same quantifier along both paths, which will ensure that the object of the verb is the same as the subject of the resultative predicate, as shown in (27–28).<sup>34</sup>

<sup>34</sup>The structure in (46) may appear somewhat odd given that my account uses multidominance. Typically, movement in a theory with multidominance is treated as Rmerge, as I discuss in section 2.3.6. In such theories, a moved item will not behave as in (46), where movement results in the original position of the item being

### 2.3.6 Syntactic Derivation of Structures with Multidominance

A common way of implementing multidominance (e.g., Johnson 2012) arises from the treatment of movement as Rmerge (equivalently called internal Merge). Merge, of course, is a (possibly *the*) now standard syntactic operation that takes two elements of a numeration and creates a set that bears the label of one of those elements (Chomsky 1995). Rmerge describes a way of modeling what happens when Merge applies to an element in a numeration that has already been merged before: the remerged element occurs in two structural positions at once (Chomsky 2004; Citko 2005; Epstein et al. 1998; Gärtner 1999; Starke 2001). This represents a simplification of the copy theory of movement, which models Merge applying to an already merged element as involving the copying of that element, the merger of the copy of the original element, and then special restrictions on linearization to ensure that only the highest copy (in most cases) gets spoken (Chomsky 1993, 1995).

Consider the following by way of illustration. I will show how Rmerge could apply in the derivation of the simple declarative sentence *John hit Bill*. Prior to applying Merge to an element that has already been merged, we have the following structure. (I ignore head-movement here for illustrative purposes.)




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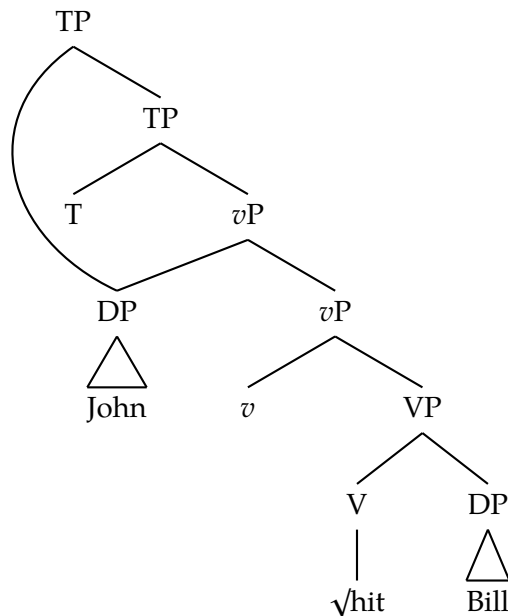
treated as a trace. The combination of a copy/trace-based theory of QR with the multidominance syntax of *spray/load* verbs' VPs is thus an intentional simplification. The correct result is also reached with a theory of QR that is more consistent with the tenets of a multidominance approach to movement, such as the one presented by Johnson (2012). However, re-presenting a full theory of QR that plays nicely with multidominance is beyond the scope of this dissertation, which is focused on the argument structure of *spray/load* verbs. I refer the interested reader to Johnson's article for a detailed account of just such a theory that will produce the correct results for structures like the one in (45), but which models movement as Rmerge.

This structure can be built by the following applications of Merge.

- (48)
- a.  $\text{Merge}(\{\text{Bill}\}_{\text{DP}}, \{\sqrt{\text{hit}}\}_{\text{V}}) = \{\{\text{Bill}\}_{\text{DP}}, \{\sqrt{\text{hit}}\}_{\text{V}}\}_{\text{VP}}$
  - b.  $\text{Merge}(\{\dots\}_{\text{VP}}, \{v\}_{\text{v}}) = \{\{\{\text{Bill}\}_{\text{DP}}, \{\sqrt{\text{hit}}\}_{\text{V}}\}_{\text{VP}}, \{v\}_{\text{v}}\}_{\text{vP}}$
  - c.  $\text{Merge}(\{\dots\}_{\text{vP}}, \{\text{John}\}_{\text{DP}}) = \{\{\{\{\text{Bill}\}_{\text{DP}}, \{\sqrt{\text{hit}}\}_{\text{V}}\}_{\text{VP}}, \{v\}_{\text{v}}\}_{\text{vP}}, \{\text{John}\}_{\text{DP}}\}_{\text{vP}}$
  - d.  $\text{Merge}(\{\dots\}_{\text{vP}}, \{\text{T}\}_{\text{T}}) = \{\{\{\{\{\text{Bill}\}_{\text{DP}}, \{\sqrt{\text{hit}}\}_{\text{V}}\}_{\text{VP}}, \{v\}_{\text{v}}\}_{\text{vP}}, \{\text{John}\}_{\text{DP}}\}_{\text{vP}}, \{\text{T}\}_{\text{T}}\}_{\text{TP}}$

The next (and, for us, final) step in the derivation consists of moving the subject to Spec,TP, to satisfy the EPP and so that it receives nominative Case. This will also be accomplished by Merge, but in this instance, Merge applies to an element that has already been merged: the DP *John*. As a result, *John* is structurally in both Spec,TP and Spec,vP.

- (49)  $\text{Merge}(\{\dots\}_{\text{TP}}, \{\text{John}\}_{\text{DP}}) =$



Note that up to this point, I have intentionally simplified the presentation of movement to avoid showing multidominance that is not crucial to my central claims. All these movements could be replaced with structures that use multidominance with no consequence—except in the case of QR, which crucially replaces the moved item with a trace of type *e*. I refer the reader to Johnson (2012) for details about the analysis of QR in a system that makes use of multidominance.

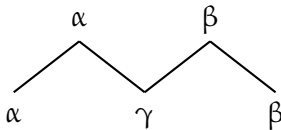
Remerge takes an element and merges it with a node that dominates it. This will capture the same set of facts that the restriction that a moved item must c-command its trace or



copy does. However, this means that Rmerge cannot produce the structures I presented in (42). This is because the two positions of the multidominated DP are not in a c-command relation. The way in which these structures are derived, then, cannot be via Rmerge.

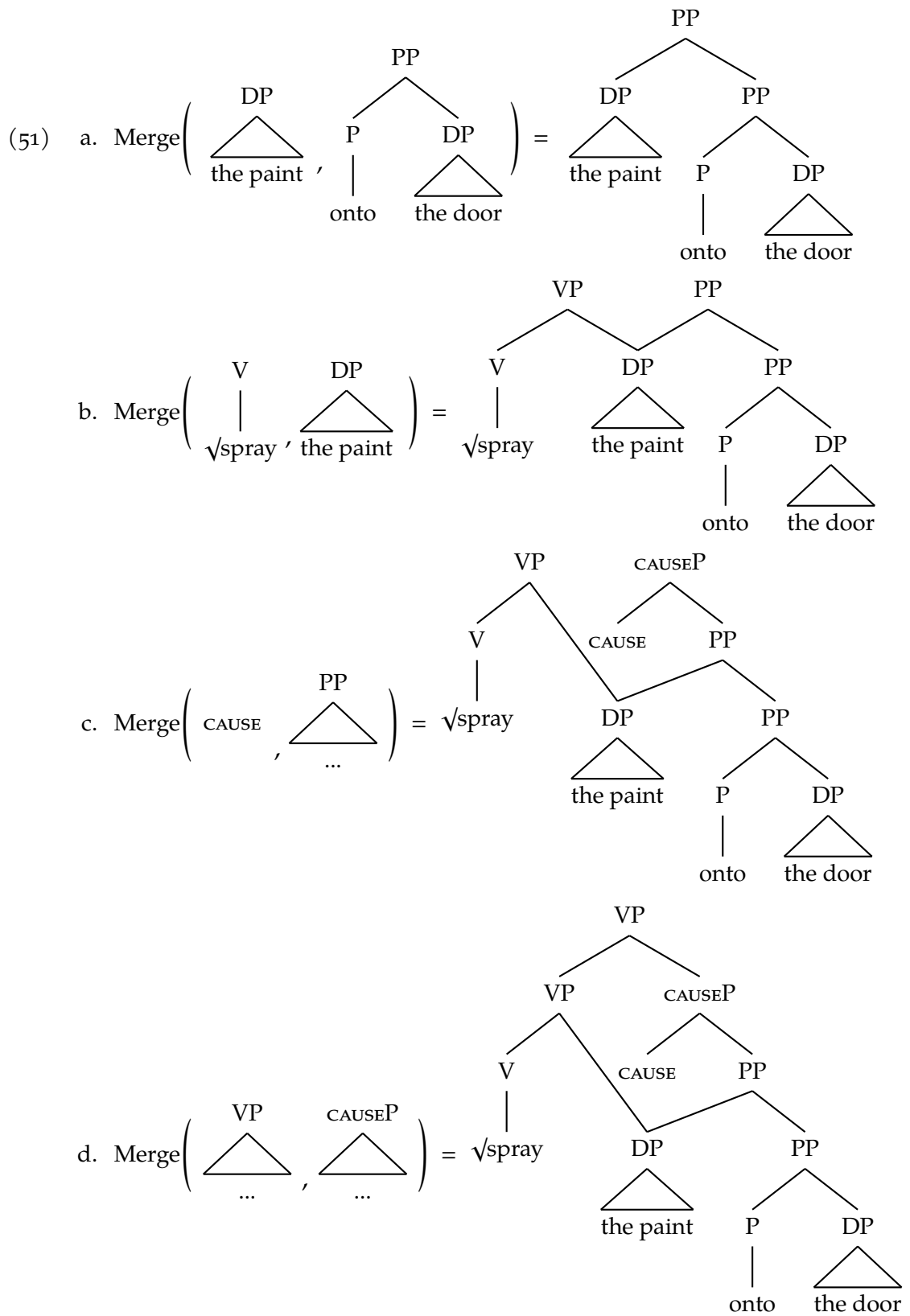
The solution comes from Citko (2005), who argues that the definition of Merge not only permits Rmerge (or internal Merge), but also what she dubs parallel Merge. We might equivalently just think of this as Merge that creates parallel structures, where parallel structures are those that do not contain a single node that dominates all others. The advantage of thinking this way is that it makes it clear that parallel Merge is not distinct from Merge, but instead describes a special case when Merge applies and the kind of structure that results. Rmerge applies to an element that has already been merged and results in a representation where the remerged node c-commands itself (or, equivalently, a representation with a single node that dominates all others), as in (49). In contrast, parallel uses of Merge create a (possibly intermediate) representation where the parallel merged element does not c-command itself (or, equivalently, a representation where there is no single node that dominates all others).

(50) a.  $\text{Merge}(\{\alpha\}_\alpha, \{\gamma\}_\gamma) = \{\{\alpha\}_\alpha, \{\gamma\}_\gamma\}_\alpha$

b.  $\text{Merge}(\{\gamma\}_\gamma, \{\beta\}_\beta) =$  

This is the application of Merge that is required to derive the structures that *spray/load* verbs occur in according to my analysis. As an illustration, consider the following partial derivation of (42a).<sup>35</sup> I have not shown the derivation of the PP, which is accomplished by a standard application of Merge applying to *onto* and *the door*, and is unremarkable.

<sup>35</sup>Note that whether the object merges first with the PP or the verb does not matter; either order will produce the correct structure. I have chosen to show it merge first with the PP for no particular reason.



This, then, is how I propose multidominance arises in the structures of sentences with *spray*/

*load* verbs: via parallel Merge.<sup>36</sup> I return to the question of why parallel Merge is required in chapter 6, section 6.3.2.1.

## 2.4 Additional Issues in the Syntax of *Spray/load* Verbs

The discussion in the preceding section suggests a novel conception of what characterizes the class of possible *spray/load* verbs. In particular, the present analysis treats the set of possible *spray/load* verbs as precisely those that have lexical semantics compatible with goal and theme arguments. In addition, these verbs are obligatorily transitive—if this were not the case, resultatives in which the secondary predicate held of something other than the verb's object should be possible, contrary to the facts presented in (27–28). Finally, they must be compatible with a resultative structure. Put together, these facts will lead to the behavior shown by the alternation. However, there are more issues related to the syntax of these verbs that merit investigation, which I now turn to.

For instance, consider the question of how to treat uses of *spray/load* verbs that lack a PP following the object.<sup>37</sup>

- (52) a. John sprayed the door.  
b. John sprayed the paint.

I see two possibilities: one is to simply posit that CAUSEP is absent in these structures. That is, they do not involve multidominance, and are syntactically just like standard monotransitive verbs. Another possibility is that they involve an implicit CAUSEP, which is syntactically present but left unspoken. The correct analysis hinges on exactly how implicit arguments (like the putative implicit CAUSEP) are to be represented. However, note that when *again* occurs to the right of the object in a sentence lacking the post-object PP, a low repetitive reading is possible, but not a restitutive reading. This favors the analysis without an implicit CAUSEP.

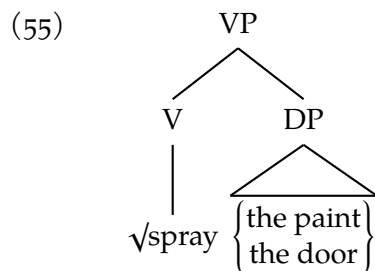
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<sup>36</sup>I modify this analysis in chapter 3 in ways that do not affect the point here. All that is different is that V merges with a functional head to form a complex head, and that is what merges with the object rather than the verb root itself. Parallel Merge will apply in the same way it does here to derive that only slightly different structure.

<sup>37</sup>This issue was raised by an anonymous reviewer for *Linguistic Inquiry*.

- (53) a. **Context:** Bill sprayed the door, but didn't quite hit all of it. So, ...  
 John sprayed the door again. (repetitive)
- b. **Context:** Bill sprayed the paint, but didn't cover the target. So, ...  
 John sprayed the paint again. (repetitive)
- (54) **Context:** The door was made of boards coated with forest green paint. Over time, the paint flaked off. So, ...
- a. # John sprayed the door again. (restitutive)
- b. # John sprayed the paint again. (restitutive)

If a hidden CAUSEP with the meaning of *the door with the paint* or *the paint onto the door* (or something more vague that denoted a result state) were available for *again* to modify in (54a–b), both might be expected to be acceptable, contrary to fact. This leads me to favor an analysis treating intransitive uses of *spray/load* verbs in the same way as other intransitive verbs, as follows.



The holistic effect that has been widely noted (Beavers 2017) is no less explained in the present account than in many others. Any approach that assigns a privileged role to the object in measuring out the contours of the event described by the verb, such as Tenny (1994), should apply no less to the current analysis, since the argument that bears this privilege is the object (as well as the specifier of the result-denoting PP). Thus, it is expected to bear the properties that any object would have, and should be responsible for measuring out the event in the same way as other objects. However, the gentle reader will recall that a full explanation of why exactly only objects can measure out events in this way is still required, and it is not provided here. Instead, I turn to this question in chapter 4. Ultimately, I reject the Measuring Out constraint and similar ideas as accurately describing the holistic effect, arguing that it arises in different ways in theme-object and goal-object structures.

Another question is why multidominance is required in my analysis when a resultative structure is present. What would prevent there from being one DP in the object position, and a different DP in Spec,PP, as in (56)?<sup>38</sup>

- (56) **Context:** Dave has a mixture of water and paint. He sprays it all over the door. As a result, the entire door gets paint on it, including the knob.
- a. \* Dave sprayed the door the knob with paint.
  - b. \* Dave sprayed the water/paint mixture paint onto the door.

Nothing would seem to go wrong here semantically, since it would indeed be accurate to say that Dave's spraying the door directly caused the state of the knob being with paint (or that Dave's spraying the water/paint mixture directly caused the state of paint being on the door). But in fact, I have already explained why such cases are ruled out, when I addressed the inadequacies of the PRO-based account earlier. The issue is syntactic, not semantic, as I proposed in the discussion of (33). What goes wrong in these structures is that the DP in Spec,PP cannot receive Case: the subject and object would receive Case in the usual ways structural Case is assigned, while the DP in Comp,PP would receive Case from the preposition. But this leaves no Case assigner for the DP in Spec,PP, leading to a violation of the Case filter. This rules out one possibility for a non-multidominance structure (when the PP is present).

Another possibility is best addressed later, as it is only raised by a revision to the analysis I will make in chapter 3. There, I will ultimately propose that the denotation of *spray/load* verb roots is not of type  $\langle e, st \rangle$ , but of type  $\langle s, t \rangle$ . This move helps resolve an asymmetry in the status of theme objects and goal objects that I provide evidence for there. This raises the question of why it is not possible to use *spray/load* verbs intransitively with a small clause result state, which would predict that the examples in (27–28) could be felicitous, contrary to fact. In the end, I propose that what rules out the intransitive small clause syntax, which would not involve multidominance, is syntactic rather than semantic. *Spray/load* verbs are syntactically obligatorily transitive even though this fact cannot be derived from their semantics, much like the contrast between the optionally transitive *eat* and the similar

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<sup>38</sup>I thank Seth Cable (p.c.) for these examples.

in meaning but obligatorily transitive *devour*.

In addition, there is a puzzle involving the relative scope of *again* and indefinite objects, which reveals certain difficulties associated with computing the scope of indefinites in frameworks that feature multidominance more generally. While a full resolution to this question is outside the scope of this dissertation, I sketch a partial solution below, with the goal of convincing the reader that further inroads are possible, even if several details remain yet to be worked out.

#### 2.4.1 *Multidominance and the Scope of Indefinites*

Two facts in combination present a puzzle regarding the interpretation of multidominated indefinite objects in my account. To preview the rest of this section, I will first show that an indefinite must be bound by a single quantifier in the asserted content, as revealed by the fact that the object must be identical to the subject of the resultative predicate (cf. (27–28)). Second, I will show that an indefinite may nevertheless scope below a restitutive or low repetitive *again*, which would seem to require it to be bound by multiple quantifiers. Providing a full analysis of this pattern is outside the scope of this dissertation, but I will argue below that the solution is likely to reside in a fuller understanding of how indefinites are interpreted, and does not point to any problems specific to my account.

For presentational purposes, I will adopt an analysis of indefinites rooted in Heim (1982)'s and Diesing (1992)'s work, whereby indefinites are analyzed as introducing free variables of type  $e$ , which are existentially bound by an operator  $\exists$ . Where this operator appears in a syntactic tree signals where the indefinite takes scope. (If one assumes a QR-based approach to the interpretation of indefinite objects, then the position of  $\exists$  in the following structures can be taken to signal the landing site(s) of QR, though some additional complications may arise involving trace conversion.)

The first fact is that in asserted content, the object must be identical to the subject of the resultative predicate. This was shown before in (27–28) for definite objects, and it is also true of indefinite objects.<sup>39</sup>

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<sup>39</sup>I concentrate here on theme-object examples. This is because it is easier to come up with naturalistic contexts involving indefinite themes and definite goals than vice versa (and see Brinkmann 1995 for additional

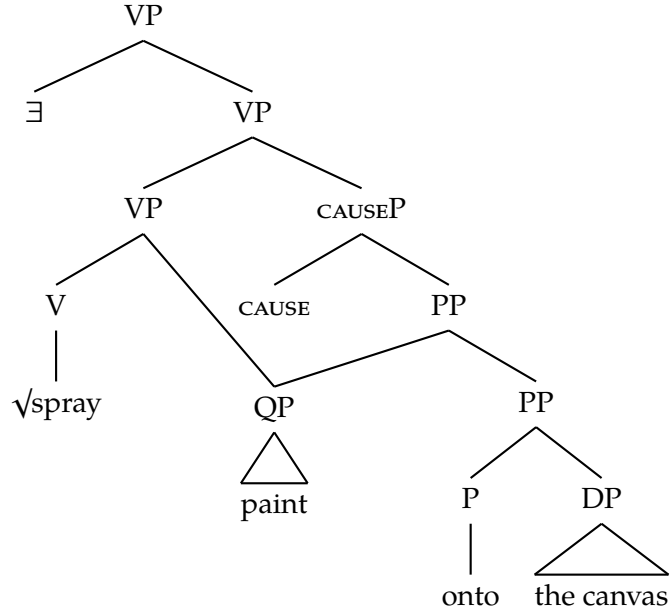
- (57) a. **Context:** John took a large sheet of canvas and laid it on the floor of his workspace. Then, he took a bucket of paint and hooked up a hose to it. Using the hose, ...  
John sprayed paint onto the canvas.
- b. **Context:** John is a modern artist who uses innovative techniques. For his latest work, he took a large sheet of canvas and laid it on the floor of his workspace. Then, he took a piece of plywood larger than the canvas and coated it evenly in forest green paint. He placed the plywood with the paint side down just above the canvas, so that wherever pressure was applied on the reverse side, the forest green paint would come into contact with and stick to the canvas. Then, he took a hose hooked up to a bucket of cheap red paint, and ...  
#John sprayed paint onto the canvas.

(57a) is felicitous in the context given because the paint John sprays is the paint that ends up on the canvas. In contrast, (57b) is infelicitous because that is not the case: John sprays the cheap red paint through the hose onto the plywood, which causes the forest green paint coating the opposite side of the plywood to go onto the canvas. This shows us that the indefinite can only be associated with a single existential binder. In other words, (58a) below is a possible structure, which corresponds to (57a); while (58b) is not a possible structure, which would correspond to (57b).

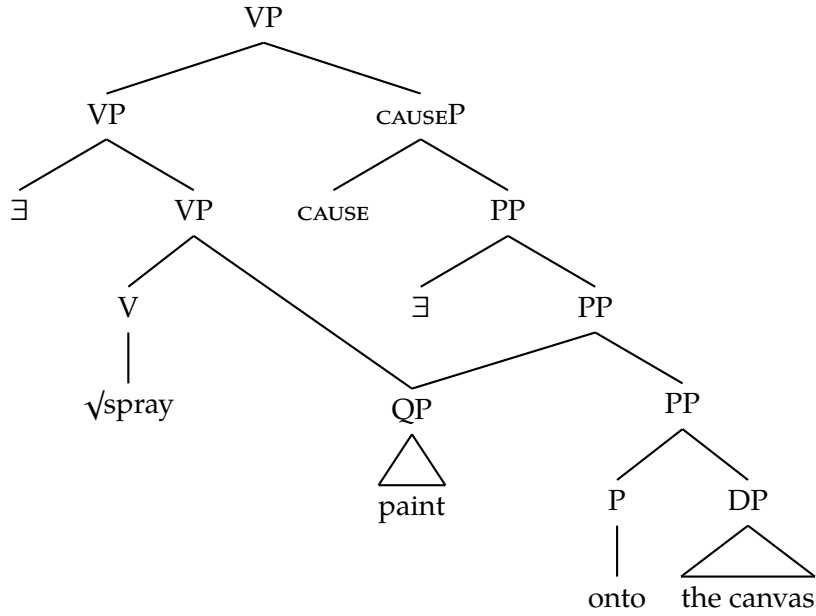
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discussion related to this point), and the relevant issues have to do with the interpretation of indefinite objects. The same pattern of facts holds for goal-object structures. I avoid presenting the relevant parallel examples because to do so would greatly expand the length of this section without affecting the discussion.

(58) a.



b.



If the single indefinite could be associated with multiple existential quantifiers as in (58b), (57b) should be felicitous in the scenario described. The semantics would have two existential quantifiers, and would be the following.

$$(59) \quad \llbracket (58b) \rrbracket = \lambda e. \exists x[\text{paint}(x) \wedge \text{spray}(e, x)] \wedge \exists e' [\exists x[\text{paint}(x) \wedge \text{onto}(e', \text{the canvas}, x)] \wedge \text{CAUSE}(e, e')] = 1$$

This semantics describes eventualities that are sprayings of paint, which cause eventualities of paint being on the canvas. This describes what happens in (57b): John sprays (red) paint, which causes (green) paint to be on the canvas. Thus, if (58b) were a possible representa-



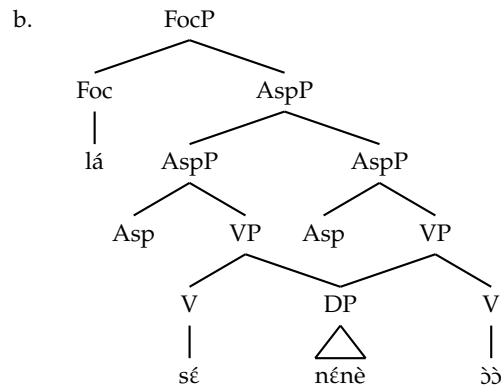
tion for (57b), it would be felicitous. Because (57b) is in fact not felicitous, we conclude that (58b) is not a possible representation, leaving only (58a), corresponding to (57a).<sup>40</sup>

One could object that the semantics in (59) violates the restrictions imposed by direct causation. It seems possible and even plausible that John’s spraying of red paint does not directly cause the state of the green paint being on the canvas. There might be an intervening event, which consists of the event of the board moving and causing the green paint to come into contact with the canvas. However, there seems to be evidence that weighs against explaining away the problem in this way. Other resultatives, which would involve direct causation no less than (57b), do allow this sort of mediated contact to count for the purposes of direct causation.

<sup>40</sup> Additional suggestive evidence supporting this point comes from Hiraiwa & Bodomó (2008), who provide evidence for a structure where an object merges independently with two verbs in Dàgáàrè sentences like the following:

- (60) a. ò dà sé lá néné òò.  
 3SG PST roast FOC meat eat  
 “He roasted meat and ate it.”

(Hiraiwa & Bodomó 2008, (1a))



They show based on possible predicate cleft structures that the object *néné* ‘meat’ is parallel merged with each verb separately (with subsequent movement of the first verb above the focus marker). What is relevant to the present discussion is that their translation uses a coreferential pronoun rather than a second indefinite. This suggests that the indefinite is bound only once, which would have to occur above where the branches rejoin (at AspP, in their analysis). If it could be bound lower, a more appropriate translation would be “He roasted meat and ate meat.” However, this remains speculative, since I have not been able to consult a native speaker of Dàgáàrè to verify whether such a reading is impossible.

- (61) **Context:** John wanted to make the lumpy sheet of metal flat by hammering it. But he wasn't confident that he could get it to an even flatness entirely by hand. He got a large piece of wood and laid it over the metal, so that it would evenly distribute the force of his hammering across the surface of the metal. Then, John finally picked up the hammer, and ...  
John hammered the metal flat.

In this case, John is not directly hammering the metal, causing the metal to be flat. Instead, he is hammering the wood on top of the metal, which then transfers the force of the blows through to the metal, making the metal flat. Yet this sentence is felicitous in the context, despite the mediated contact being identical to the sort of mediated contact in (57b). I conclude that direct causation is satisfied in both cases, meaning the explanation for why (57b) is infelicitous must lie elsewhere.

Now, we turn to the second fact, which is that an indefinite can scope below a restitutive or repetitive<sup>-</sup> *again*.<sup>41</sup>

- (62) a. **Context:** John's teeth lost all their enamel. Luckily, his dentist had a fancy machine that could spray enamel onto teeth, though he'd never actually used it before. John showed up for his appointment, and ...  
The dentist sprayed enamel onto John's teeth again. (restitutive)
- b. **Context:** John's teeth lost all their enamel. Luckily, his dentist had a fancy machine that could spray enamel onto teeth. Since this was a new treatment, it was quite popular, and the dentist had been busily spraying enamel onto people's teeth all day. Just before John's turn, the dentist decided to take a break, and put his aide in charge of continuing the treatments. Then it was John's turn, and ...  
The dentist's aide sprayed enamel again onto John's teeth. (repetitive<sup>-onto</sup>)

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<sup>41</sup>The examples in this section do not directly control for the possibility of a high scope kind reading of the indefinite. It is possible to construct examples that would control for this (imagine there are at least two kinds of enamel distinguished by their concentration or other properties), but this would greatly complicate the contexts and sacrifices the naturalness of these cases, with no obvious change in the discussion to come.

Note that in (62a), only a restitutive presupposition is supported: while enamel had been on John's teeth before, it was not sprayed onto John's teeth. Similarly, in (62b), only a subjectless, repetitive<sup>-</sup> reading is supported by the context. The dentist's aide had not sprayed enamel before, and the presupposition excludes *onto John's teeth*, since enamel was never sprayed onto John's teeth before.

Furthermore, it is clear that in the most natural readings of these scenarios, the indefinite scopes below *again*. In (62b), presumably the enamel that the dentist's aide sprays is not the very same enamel that the dentist sprayed before. Likewise, in (62a), it is not the enamel that used to be on John's teeth that is restored to them, but different enamel. Thus, in each case, we get a reading where the indefinite most naturally scopes below *again*. Finally, we can combine both readings of *again* in a single example, as we did before with definites in (29) (though the judgment becomes more difficult presumably due to the multiplicity of *again*s just as before, it is shared by the native English speakers I have consulted).

- (63)     **Context:** John's teeth lost all their enamel. Luckily, his dentist had a fancy machine that could spray enamel onto teeth. Since this was a new treatment, it was quite popular, and the dentist had been busily spraying enamel onto people's teeth all day. Just before John's turn, the dentist decided to take a break, and put his aide in charge of continuing the treatments. Then it was John's turn, and ...  
The dentist's aide sprayed enamel again onto John's teeth again.

Note that this context supports repetitive<sup>-</sup> and restitutive presuppositions, but does not support a reading where either *again* scopes over the combined VP (i.e., there was no prior eventuality of spraying enamel onto John's teeth, merely prior eventualities of spraying enamel and enamel being on John's teeth). This is just as we should expect given the multidominance analysis. What this example tells us is that the indefinite can scope below each *again* independently. The most natural reading is one in which the indefinite scopes below each *again*: the enamel sprayed before is presumably different from the enamel the dentist's aide sprays, and that is not the same as the enamel that used to be on John's teeth.

Thus, we see that an indefinite object can scope below either a repetitive<sup>-</sup> *again* as in (62b) or a restitutive *again* as in (62a) (or both simultaneously, for those who are able to

accept (63)). In other words we seem to have evidence that something like (58b) is possible, at least with regards to the scope of the indefinite relative to *again*'s presupposition—despite the fact that the asserted content does not allow the reading this structure would produce. Further, we can verify that even when the indefinite scopes below *again*'s presupposition, it must nevertheless scope above the highest VP in the asserted content, as shown by the required identity of the object and the subject of the resultative predicate.

(64) **Context:** John's teeth lost all their enamel. Luckily, his dentist had a fancy machine that could spray enamel onto teeth. However, when John showed up for his appointment, it turned out his dentist was nearly blind, and could not aim the spray gun correctly at John's mouth. Fortunately, there was a small hole in the tube attached to the spray gun. Whenever, John's dentist held down the spray gun's trigger, some enamel would spray out of the gun into the air, while some enamel would drip from the hole and onto John's teeth, coating them with the enamel. So, in the end, ...

# The dentist sprayed enamel onto John's teeth again.

If (58b) were a possible structure, this sentence should be felicitous. In particular, the semantics it gives rise to are similar to those in (59), which describe the scenario above: there is an event of spraying enamel is an event of causing enamel to be on John's teeth. However, the enamel sprayed is not the enamel that ends up on John's teeth. The enamel sprayed ends up in the air because the dentist cannot see well enough to aim the nozzle at John's teeth, while the enamel on John's teeth is the enamel that drips from the hole in the tube. In sum, what we see is that the asserted content of sentences where *spray/load* verbs take an indefinite object is the semantics compatible with (58a), while the presupposition associated with the different readings of *again* in such sentences may correspond to what (58b) would produce—a curious semantic paradox.

It seems that for a sentence like (62a), we have just the following semantics and presupposition (*mutatis mutandis* for the parallel example in (62b)):

(65)  $\lambda e. \exists x[\text{enamel}(x) \wedge \text{spray}(e, x) \wedge \exists e'[\text{onto}(e', \text{John's teeth}, x) \wedge \text{CAUSE}(e, e')]] = 1$   
 presupposition:  $\exists e''[\tau(e'') < \tau(e') \wedge \exists x[\text{enamel}(x) \wedge \text{onto}(e', \text{John's teeth}, x)]] = 1$

The asserted content requires the enamel sprayed to be the same as the enamel that ends up on John's teeth, while the presupposition allows the enamel in the prior eventuality to differ from the enamel in the eventuality described by the asserted content. The challenge lies not in describing the semantics, but in deriving this result compositionally.

This puzzle is not unique to my analysis of *spray/load* verbs. It is a puzzle shared by other analyses that allow an indefinite to be multidominated, including most clearly Hiraiwa & Bodomo (2008) and Johnson (2018). In fact, Johnson briefly discusses this very puzzle, suggesting a solution that he notes would allow the indefinite to be bound twice in the asserted content, which I have shown above is incorrect for *spray/load* verbs.<sup>42</sup> If we adopt a syntax with multidominance, there should probably be some constraint on the syntax/semantics interface that requires a single QP to be associated with a single semantic quantifier. Otherwise, we could predict that an indefinite could be bound multiple times in structures involving movement, if this is modeled as Rmerge (as is typical in many theories with multidominance). This would mean that a potentially unbounded number of existential quantifiers could be associated with a single QP, probably an undesirable result. The constraint I've described will require that the asserted content has only a single existential quantifier associated with the QP. In the multidominance analysis of *spray/load* verbs, this will ensure that the existential quantifier scopes above VP.<sup>43</sup>

But *again's* presupposition might have certain requirements associated with it as well. Heim (1982)'s and Diesing (1992)'s idea is that indefinites represent free variables that must be existentially closed. We might suppose that one context where these variables can or must be closed is in the presupposition of *again*, leading to an existential binder to be inserted within *again's* presupposition without affecting the asserted content. Alternatively, it might be possible to insert an existential binder below *again* in the asserted content, but overwrite this quantifier when the branches rejoin and the violation of the single-QP-to-single-quantifier constraint becomes apparent. The general solution involves figuring out

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<sup>42</sup>I think it likely that Johnson (2018)'s proposed solution is incorrect for ditransitive verbs as well. The relevant examples would be largely similar to the ones in this section, though making the argument is outside the purview of this dissertation.

<sup>43</sup>This constraint may need to carve out an exception to allow multiple existential quantifiers to be associated with a single QP if Kaden Holladay's multidominance analysis of right-node raising is correct (Rajesh Bhatt, p.c.).

how the grammar manages the balance between the constraint on the interpretation of QPs with the need for free variables to get bound in particular places, and that solution will explain not only how *spray/load* verbs work, but double object and serial verb constructions as well.

A piece of evidence that favors treating these facts as reflecting something particular to indefinites is that universal quantifiers do not seem to be able to scope low in *again*'s presupposition in sentences with *spray/load* verbs.

- (66) **Context:** The factory manager had everyone paint the boards with brushes. There were a lot of them, and all the paint in the factory was used up. Then, the painted boards were assembled into a fence. Over time, the paint flaked off. John was put in charge of repainting the fence, so he went out and bought many buckets of paint. He didn't want to go through the tedium of using a brush, so he got a spray nozzle. Then, ...

#John sprayed all the paint onto the fence again.<sup>44</sup>

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<sup>44</sup>One might object that the use of the definite determiner *the* in combination with universal quantifier *all* in this example might be responsible for the unavailability of the low scope reading, since definites behave as though outscoping all other quantifiers. However, the unacceptability of the low scope reading of *all* given the context cannot be credited to the use of the definite determiner in *all the paint*. In particular, Bale (2007) provides an example of a universal quantifier scoping below *again* even when a definite determiner is included, his (72).

- (i) **Context:** When Seymour moved into his first apartment, all the windows were open creating a nice breeze. He liked it so much he kept the windows open. In fact, when he moved into his next apartment, ...  
He opened all the windows again.

The set of windows in the presupposition and the asserted content are different, showing that the universal quantifier takes scope below *again*. (Bale (2007) attributes this behavior to the propositional complexity of resultative VPs (recall the earlier discussion that analyzed *open* as a resultative), which provide a landing site for QR below repetitive *again*.) What is important for present purposes is that the use of *the* following *all* does not require strict identity between the sets of windows in (i). This means that (66)'s unacceptability cannot be attributed to the definite determiner requiring strict identity of the paint involved in the asserted content and the paint involved in the presupposition. Instead, the definite here seems to serve as a contextual restrictor. Note the difference in the readings of *all paint* (which means "all paint that exists") and *all the paint* (which means "all the paint in the context"). Using *all paint* in place of *all the paint* in (66) would therefore similarly result in infelicity, but for a very different reason—it is silly to assert that John sprayed all paint (that exists) onto the fence.

A question that one might have is why a low scope reading is not possible in a sentence like the following, a fact which Bale (2007) does not explicitly address.

- (ii) a. **Context:** When Seymour moved into his first apartment, all the windows were automatic, and when open when anyone passed by. However, it turned out that when Seymour moved in, they were stuck open, which created a nice breeze. Eventually, Seymour's landlord decided to fix the automatic windows, and left them closed afterward. So, later that day, ...  
As Seymour walked into the apartment, all the windows opened again. (restitutive)

This behavior is expected in the Heim-Diesing approach because universal quantifiers do not introduce free variables like indefinites do. They are thus not subject to constraints regulating the existential closure of free variables. Instead, universal quantifiers are interpreted via QR in the usual way (e.g., as in (46), or as in Johnson (2012)'s theory of QR). They would have to scope above *again* in order to satisfy the proposed syntax/semantics constraint on the interpretation of QPs, and could not be closed within *again*'s presupposition.

#### 2.4.2 Distinguishing Verb Classes: Put vs. Dump

Definitionally, *spray/load* verbs can occur in theme-object and goal-object structures. However, some verbs only occur in one or the other of these structures.

(67) Theme-object only:

- a. John put the glass on the table.
- b. \* John put the table with the glass. (under the relevant reading)
- c. John dumped the water in the well.
- d. \* John dumped the well with the water.

(68) Goal-object only:

- a. \* John coated paint on the wall.
- b. John coated the wall with paint.
- c. \* John plugged putty into the hole.
- d. John plugged the hole with putty.

- 
- b. **Context:** When Seymour moved into his first apartment, all the windows were open creating a nice breeze. He liked it so much he kept the windows open. When it came time for him to move, his next apartment turned out to be pretty spiffy, since it had windows that would automatically open when you passed by. In fact, ...  
# As Seymour walked into the apartment, all the windows opened again.

(ii-a) shows that a restitutive reading of post-VP *again* is possible with an unaccusative use of *open*, while (ii-b) shows that this is only the case if the universal quantifier scopes above *again*'s presupposition. Given the hypothesis that unaccusative *open* is propositionally complex and consists of an event that causes an open state, why couldn't the quantifier be bound low in this case? I suggest that it has to do with the fact that the quantifier in moves to Spec,TP in such cases, which is above restitutive *again*. A natural result of this is that it must be interpreted as scoping over *again*'s presupposition. Of course, what remains is explaining why reconstruction is not a possibility (see Boeckx (2001) for a relevant proposal).

I will return to the status of cases like (68) in chapter 4, section 4.3. For now, I will focus on how we can distinguish two different kinds of verbs that occur in (67) using the diagnostics developed in this chapter.

Levin (1993) and Beavers (2017) both note that there are verbs that only occur in the theme-object structure, which they categorize as non-alternating theme-object verbs. However, I propose that this categorization is misleading, as verbs like *put* and *dump* behave differently with respect to the possible readings of *again* they support. While both support restitutive readings of *again*, only verbs like *dump* support repetitive<sup>-</sup> readings.

- (69) a. **Context:** John built the box in the garage. While reorganizing, he had to move it out on the driveway, but when he finished ...  
 John put the box into the garage again. (restitutive)
- b. **Context:** John put the box in the basement. While reorganizing, he had to move it somewhere else, so ...  
 #John put the box again into the garage.<sup>45</sup> (repetitive<sup>-into</sup>)
- (70) a. **Context:** John went to the lake. He dipped a glass into the water, and pulled it out full. Then, ...  
 John dumped the water into the lake again. (restitutive)
- b. **Context:** John filled the cup with water, and then dumped in into the pan on the stove. He then realized that he was supposed to wait until the pan had gotten hotter, so he picked up the pan, and ...  
 John dumped the water again into a bowl. (repetitive<sup>-into</sup>)

This contrast shows us that non-alternating theme-object verbs like *dump* pattern like alternating *spray/load* verbs in terms of the readings of *again* they support. Since those readings form the core of the argument for the multidominance analysis, I conclude these verbs have the syntax of *spray/load* verbs, but do not alternate (for reasons I explore in chapter 3).

<sup>45</sup>This sentence can receive a reading when *again* is interpreted as restitutive, which is easiest if it is prosodically marked. I assume this is possible because *into the garage* can right-shift past restitutive *again*. Another possibility is that this is an instance of left-adjoining *again*; see Bale (2007) for additional information and examples. However, I do not see how this could be a case of *again* left-adjoining to *into the garage* if one adopts an analysis where *put* takes a small clause complement, which is supported by the possibility of a restitutive reading in (69a).



On the other hand, the only (relevant) reading of *again* that is possible with verbs like *put* is a restitutive reading. This means that we have evidence for a small clause PP syntax, as laid out in section 2.3.1. However, we have no evidence that from *again* that *put* is transitive. For this reason, I conclude that the small clause syntax in (17) is right for *put* (with *with* replaced with a locative preposition).

In short, then, the readings that *again* produces with different theme-object verbs support splitting them into two groups. In one group are verbs that seem to involve multidominance in their syntax, just like *spray/load* verbs, such as *dump*. We could call these non-alternating theme-object *spray/load* verbs. In the other group are verbs like *put*, which do not seem to have the multidominant syntax of *spray/load* verbs. This distinction is useful: it allows us to distinguish verbs that are relevant to understanding the distribution of the *spray/load* alternation from verbs that are not. An account of the *spray/load* alternation will need to account for why *dump* cannot occur in the goal-object structure. It will not necessarily need to account for why *put* cannot do this.<sup>46</sup> The readings of *again* discussed in this chapter thus help us understand what an analysis of the *spray/load* alternation should account for, and what it need not necessarily account for.

## 2.5 Conclusion

This chapter argues for a particular view of the syntax of *spray/load* verbs and the alternation that is characteristic of them. Using *again* as a diagnostic of their event structure, I argued that the object forms a constituent with the verb that excludes the PP, while simultaneously forming a constituent with the PP that excludes the verb. I presented an analysis in terms of multidominance that permits such structures, and discussed some implications this analysis has for our understanding of *spray/load* verbs and the alternation they display.

I also discussed an additional puzzle relating to *spray/load* verbs. This puzzle has to do

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<sup>46</sup>Ultimately, the account I adopt in chapter 4 for the semantics of *with* will explain this, however. In particular, there is a reading of *John put the table with the glass*, where the table is moved into a position where it is with the glass. The reason that a reading where the glass is what is moved is impossible is because *with*'s complement in no case encodes a theme of the verb, but instead contributes a separate directly caused eventuality. In the case of *spray/load* verbs, the reading where the object of *with* is what is moved comes about because of how goal-objects are introduced, in combination with world knowledge and general reasoning, as I will argue in chapter 4.

with the interpretation of indefinites in structures with multidominance, which is easy to observe in the context of *spray/load* verbs, but is an area needing investigation in multidominance frameworks more generally. The solution to this puzzle is likely to reside in a fuller understanding of how indefinites are interpreted, rather than in a revision to the syntactic analysis proposed here for *spray/load* verbs, as it arises with non-*spray/load* verbs as well.

Taking a look at the bigger picture, we can see that multidominance allows argument structures that would otherwise be impossible. One of those is a transitive resultative structure, and I have argued that *spray/load* verbs realize this structure. Johnson (2018) has argued that some ditransitive verbs invoke this same structure, but with the multidominated object being the complement rather than the specifier of the result state. In previous work, Hiraiwa & Bodomo (2008) present an analysis of a bracketing paradox that arises in serial verb constructions in Dàgáárè as revealing another otherwise impossible structure, where two verbs share a single object in a dual transitive structure. A syntax that allows multidominance predicts that argument structures like these should exist barring any constraints that would rule them out for independent reasons. We raise these possibilities when we allow phrases to have multiple mothers, so the fact that they seem to be realized is a welcome result.

What remains an open question is how we can constrain multidominance in the area of argument structure. What rules out a phrase being the complement of V and the specifier of *vP*, for instance? Such general questions must be addressed in order to develop a theory of how multidominance applies in the realm of argument structure that does not overgenerate.

## CHAPTER 3

### P-CONFLATION AND ALTERNATION

#### 3.1 Introduction

Now that we have a model for the syntactic structures that *spray/load* verbs find themselves in, we can begin our investigation of the *spray/load* alternation itself. What is interesting about *spray/load* verbs is, of course, not only the structures they occur in, but the relations between those structures, which I identified as related to a core topic of linguistic theory in chapter 1. More bluntly, the previous chapter models the syntax that surrounds these verbs in both the theme-object and goal-object structures, but it does not model the relationship between those structures. We have an intuition that there is some relationship between these two ways that *spray/load* verbs have of expressing their arguments. Empirical evidence, discussed briefly in chapter 1, bolsters this intuition: the *spray/load* alternation is productive, meaning that children may use a *spray/load* verb they have heard in only one structure in the other, and that it can extend to novel verbs.

And yet, this productivity is limited. Some cases of this sort were discussed in the previous chapter, where productively using one form or another is possible but often somewhat degraded.

- (1) a. John filled the zucchini with the mixture.  
b. % John filled the mixture into the zucchini.<sup>1</sup>

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<sup>1</sup>This example comes from an anonymous reviewer for *Linguistic Inquiry*.

- (2) a. John poured water into the glass.
- b. % John poured the glass (full) with water.

The analysis in this chapter will suggest a way of thinking about why productivity is possible but limited in such cases.

In other cases, sentences which on the surface appear identical to *spray/load* verbs and permit the same readings of *again* in the same positions nevertheless categorically fail to alternate.

- (3) a. **Context:** John dipped a bucket into the well and pulled up some water.  
Finding it unsatisfactory, ...  
John dumped the water into the well again. (restitutive)
- b. **Context:** John was trying to fill up the well to retrieve a toy boat that had fallen inside. He needed to add more water so the boat would float to the top where he could reach it. He filled up a large glass with water, and then decided he'd rather use a bowl, so he dumped the water into the bowl.  
Upon arriving at the well ...  
John dumped the water again into the well. (repetitive<sup>-into</sup>)
- c. John dumped the water into the well.
- d. # John dumped the well with the water.
- (4) a. **Context:** The bookshelf was made from pieces of varnished wood. When the varnish began to come off ...  
John coated the bookshelf with varnish again. (restitutive)
- b. **Context:** The bookshelf was coated with paint. Then, John decided to varnish it, so ...  
John coated the bookshelf again with varnish. (repetitive<sup>-with</sup>)
- c. John coated the bookshelf with varnish.
- d. # John coated varnish onto the bookshelf.

We need stronger restrictions to explain these cases, it would seem. There appears to be a syntactic difference here that cannot be overridden by context, at least not without effec-

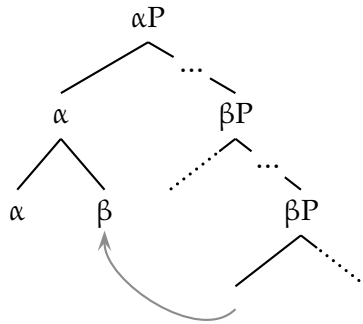
tively making these into novel verbs that share a pronunciation with their existing English counterparts.

This chapter deals with these restrictions and the modeling of the relation between the two structures that comprise the *spray/load* alternation. However, evidence that the theme-object and goal-object structures differ is not provided by the behavior of *again*; as we saw in the last chapter, each structure behaves identically with regards to the *again* diagnostic, making them appear syntactically identical—the only difference is the lexical identity of the preposition. However, looking at a broader range of contexts in which these verbs appear shows us that there is a true syntactic difference between the theme-object and goal-object structures.

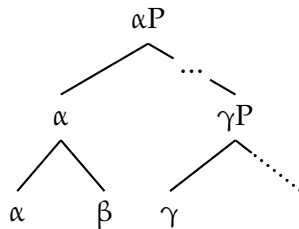
The syntactic asymmetries between these variants become apparent when considering unaccusative and nominal uses of *spray/load* verbs. As I will show in section 3.2, only the theme-object variant permits unaccusative and nominal uses, while the goal-object variant does not. I propose that this pattern is derived by P-conflation: the goal-object structure involves the conflation of a phonologically null preposition with the verb. The asymmetries then reduce to the syntax of prepositions and null affixes.

Since there does not seem to be a better place to introduce what conflation means, I will do so briefly here. Conflation is defined in opposition to incorporation, which are both ways in which complex heads may be formed. Conflation describes what occurs when a complex head is formed by external Merge, while incorporation describes what occurs when a complex head is formed by internal Merge (or, equivalently, Rmerge; see the discussion in chapter 2, section 2.3.6) (Folli & Harley 2005, 2020; Hale & Keyser 1993a; Harley 2005; Haugen 2009; Mateu 2000, 2012, 2017). This is illustrated schematically in the examples below.

- (5) a. Incorporation:



- b. Conflation:



In (5a), we can say that  $\beta$  incorporates into  $\alpha$ , while in (5b),  $\alpha$  and  $\beta$  have conflated (in this case,  $\alpha$  is shown as projecting). What ends up being useful about the distinction is that while incorporation requires the projection of a phrase headed by  $\beta$ , conflation does not. Thus P-conflation can occur even if the conflated preposition is never the head of a PP. This is an important distinction between my account and Damonte (2005)'s (to be discussed in chapter 5, section 5.2.3.2), since it allows me to derive the *spray/load* alternation non-transformationally.

With conflation defined, I will now outline the remainder of this chapter. Section 3.2 presents data that establishes the syntactic differences between theme-object and goal-object *spray/load* verbs. Next, section 3.3 presents data relating to the German verbal prefix *be-*, which is implicated in the German equivalent of the *spray/load* alternation in some cases, which will motivate positing an analogous (though not completely equivalent) null prefix in English. Some details relating to the syntax and semantics of this analysis are discussed in section 3.4. Section 3.5 shows that under the P-conflation analysis, the syntactic behavior of English *spray/load* verbs conforms to existing and well-established generalizations regarding the syntax of prepositions and the meanings of nominalizations. It also suggests a way of thinking about these existing patterns that approaches an explanation, though rejecting this explanation would not entail rejecting the P-conflation analysis.

### 3.2 Non-agentive Uses and Nominalizations of *Spray/load* Verbs

If a *spray/load* verb can occur in a non-agentive use, it seems that only the theme can be the subject (Levin 1993, sec. 9.7; D’Elia 2016, (263–265)), with six exceptions.<sup>2</sup> Similarly, their nominalizations can only refer to the theme, as first noted in Fraser (1971) (see also Levin 1993, sec. 9.7). (Some *spray/load* verbs do not allow non-agentive uses and/or nominalizations in English, presumably for independent reasons.<sup>3</sup>)

- (6) a. Paint sprayed onto the wall.  
 b. \* The wall sprayed with paint.  
 c. the spray (= the paint/≠ the wall)
- (7) a. Rain sprinkled onto the ground.  
 b. \* The ground sprinkled with rain.  
 c. the sprinkling (= the rain/≠ the ground)

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<sup>2</sup>The exceptions occur with *fill*, *clog*, *flood*, *interlace*, *interleave*, and *stop up* in sentences like *The room filled with water* (though the standard pattern, *Water filled the room*, is also grammatical for all of these to some extent). What is exceptional is that unlike other *spray/load* verbs, the goal can become the subject. However, note that unlike other *spray/load* verbs, an overt preposition is not easily possible with any of these: \**Water filled into the room*. All of these exceptions are in fact listed as non-alternating goal-object verbs in Levin (1993). I have not found any other verbs that belong to the *spray/load/fill* class that allow this. I believe modeling them as deadjectival might provide a way of accounting for the exception, but I have not worked out the details. I will not attempt an analysis of their syntax/semantics in what follows.

In addition, note that some *spray/load* verbs may have alternate lives as members of the *swarm* class of verbs, which can occur with either theme or location subjects (Dowty 2001).

- (i) a. Bees swarmed in the garden.  
 b. The garden swarmed with bees.
- (ii) a. John drizzled icing onto the cake.  
 b. John drizzled the cake with icing.  
 c. Icing drizzled onto the cake.  
 d. \* The cake drizzled with icing. (on goal-subject reading)  
 e. Icing drizzled on the cake. (locative meaning possible)  
 f. ? The cake drizzled with icing. (on location-subject reading)

I leave aside these complications. One could state that the proper generalization is that goal subjects of *spray/load* verbs are not possible, with location subjects being possible for some verbs. Certainly, the relationship between the *spray/load* alternation and the *swarm* alternation is worth exploring. But, as Dowty (2001) points out, there are a number of differences between these alternations that make it hard to reduce one to the other.

<sup>3</sup>A full list of *spray/load* verbs from Levin (1993) that summarizes their behavior in unaccusative and nominal uses appears in the appendix to this chapter.

- (8) a. Icing drizzled onto the cake.  
 b. \* The cake drizzled with icing.  
 c. the drizzle (= the icing/≠ the cake)
- (9) a. \* Books loaded into the truck.  
 b. \* The truck loaded with books.  
 c. the load (= the book/≠ the truck)

These cases might pose a problem for the multidominance analysis presented in the previous chapter. In particular, that analysis treats goal objects and theme objects as being of equal status, in that they occur in the same structural positions. Thus, there is no obvious source for any asymmetry regarding which promotes to a subject position or what the nominalization of a *spray/load* verb can refer to.<sup>4</sup> Chapter 2 tells us that this difference cannot be tied to whether the relevant argument is an object of the verb, since the post-verbal DP is an object of the verb in both structures as revealed by repetitive<sup>-</sup> readings of *again*. The task of this chapter is thus to identify the source of the asymmetry, and to show how it can be integrated with the multidominance analysis.<sup>5</sup>

A first attempt to address this might be to say that the non-agentive uses do not represent cases of an object being promoted. Note that the non-agentive uses that are possible often require (or simply sound better) with prepositions introducing the goal. This is important because sentences with *spray/load* verbs might also take instrumental adjuncts. Instruments are often able to become subjects, in sentences like *The knife cut the bread*, for instance; and the themes of *spray/load* verbs, but not the goals, are precisely those that I suggested may have a parallel life in instrumental *with*-phrases.

What speaks against treating these as instrumental subjects is the fact that prepositions seem to often be obligatory for non-agentive uses of *spray/load* verbs. If these were instru-

<sup>4</sup>This concern was pointed out to me by an anonymous reviewer for *Linguistic Inquiry*. However, I believe it is worth noting that this problem applies to other existing analyses of the *spray/load* alternation, many of which also treat theme and goal objects as having the same syntactic status. The problem is not entirely new to my account, even if its significance has not always been appreciated in prior work.

<sup>5</sup>However, it is worth noting that most of what is said in this chapter is independent from the multidominance analysis. Adopting the basic proposals of this chapter does not rely on endorsing the multidominance analysis, though of course I present these proposals in a way that integrates them with it. Alternative implementations are surely possible, though I would posit they would run into problems when accounting for the facts in chapter 2.



mental subjects, the sentences should be derived from structures using instrumental *with*-phrases, which would lack the locative preposition. Including an instrumental *with*-phrase in a sentence that also includes the locative preposition that does not take an object are very degraded or ungrammatical, yet these sentences (minus the agent) would be the basis for the sentences in (6–8) that take locative prepositions following the verb.

- (10) a. \* John sprayed onto the wall with paint.
- b. \* John sprinkled onto the ground with water.
- c. \* John drizzled onto the cake with icing.

Thus, (6–8) seem to represent cases where an internal argument is promoted to a subject position, much like in unaccusatives or passives; rather than cases of the instrument-subject alternation. In addition, treating these non-agentive subjects as instrumental subjects would fail to straightforwardly explain the similar restriction observed in their nominalizations, where the theme also appears to be the privileged argument.

Finally, note that despite the asymmetry in unaccusative uses of *spray/load* verbs, no asymmetry exists with regards to passivization. Both theme-object and goal-object variants can passivize.

- (11) a. Paint was sprayed onto the wall.
- b. The wall was sprayed with paint.
- (12) a. Water was sprinkled onto the plants.
- b. The plants were sprinkled with water.
- (13) a. Icing was drizzled onto the cake.
- b. The cake was drizzled with icing.
- (14) a. Books were loaded into the truck.
- b. The truck was loaded with books.

Thus, whatever explains the asymmetry in unaccusative uses must not apply to passives.

### 3.3 *Be-* and the *Spritzen/luden* Alternation

In this section, I examine the German verbal prefix *be-*, which is implicated in the German *spray/load* alternation and many other valency operations. What unites all uses of *be-* is that it stands in complementary distribution to an overt preposition. *Be-*'s distribution is both somewhat too widespread and too restricted to be exactly equivalent to what drives the English *spray/load* alternation. However, the detour will be useful as it will establish the existence of valency changing prefixes that have a prepositional meaning. On this basis, I will propose that the English *spray/load* alternation (and some cases of the German equivalent) are derived by the conflation of a null prepositional affix with the verb.

#### 3.3.1 *Be-*: *The Basics*

The German prefix *be-* can occur with a wide range of verb types. In every case, its presence clearly or arguably correlates with the absence of an overt preposition. Unless otherwise noted, the examples in this section come from Brinkmann (1995).

(15) *Transitive:*

- a. Ich male meine Katze.  
I paint my cat  
"I paint (a picture of) my cat."
- b. Ich bemale meine Katze.  
I BE-paint my cat  
"I paint (= apply paint to) my cat."

(16) *Intransitive:*

- a. Peter stieg auf den Berg.  
Peter climbed on the mountain  
"Peter climbed up the mountain."
- b. Peter bestieg den Berg.  
Peter BE-climbed the mountain  
"Peter climbed the mountain."

- (17) *Spray/load* (some) (Iwata 2008, ch. 10, (1–2)):
- a. Die Randalierer spritzten Farbe auf das Auto.  
the vandals sprayed paint onto the car  
“The vandals sprayed paint onto the car.”
  - b. \* Die Randalierer spritzten das Auto mit Farbe.  
the vandals sprayed the car with paint
  - c. \* Die Randalierer bespritzten Farbe auf das Auto.  
the vandals BE-sprayed paint onto the car
  - d. Die Randalierer bespritzten das Auto mit Farbe.  
the vandals BE-sprayed the car with paint  
“The vandals sprayed the car with paint.”

Similar patterns are found for *spray/load* verbs in Hungarian and Russian (Ackerman 1992; Iwata 2008; Levin & Rappaport Hovav 1998).

- (18) Hungarian (Ackerman 1992, (2–3)):
- a. a paraszt (rá=)rakta a szénát a szekérré.  
the peasant (onto=)loaded.3SG.DEF the hay.ACC the wagon.SUBL  
“The peasant loaded the hay onto the wagon.”
  - b. \* a paraszt (rá=)rakta a szekeret szénával.  
the peasant (onto=)loaded.3SG.DEF the wagon.ACC hay.INSTR
  - c. \* a paraszt meg=rakta a szénát a szekérré.  
the peasant PERF=loaded.3SG.DEF the hay.ACC the wagon.SUBL
  - d. a paraszt meg=rakta a szekeret (szénával).  
the peasant PERF=loaded.3SG.DEF the wagon.ACC hay.INSTR  
“The peasant loaded the wagon (with hay).”
- (19) Russian (Levin & Rappaport Hovav 1998, 262):
- a. Krest’jany na-gruzili seno na telegu.  
peasants.NOM NA-loaded hay.ACC on cart.ACC  
“The peasants loaded hay onto the cart.”
  - b. Krest’jany za-gruzili telegu senom.  
peasants.NOM ZA-loaded cart.ACC hay.INSTR  
“The peasants loaded the cart with hay.”

In these cases, the *spray/load* alternation is morphologically marked, suggesting there is a generalization that could be made here regarding the relationship between morphology and the *spray/load* alternation.<sup>6</sup>

<sup>6</sup>Note that the Hungarian data presented above is somewhat problematic for the generalization that a prepositional affix is related to the goal-object structure. In particular, the overt prepositional prefix *ra-* ‘onto’ is associated with the **theme-object** structure in Hungarian, while the goal-object structure is associated with a perfective affix. (Levin & Rappaport Hovav (1998) do not provide informative glosses for Russian *na-* and *za-*

In German, the alternation between a preposition and *be-* is clear in the case of intransitive and *spray/load* verbs. It is less obvious in the case of transitive verbs. However, the meaning of the *be-*prefixed variant of a transitive suggests that the proper comparison is not with the transitive, but with an intransitive. In particular, the interpretation of (15a) is that the speaker depicts their cat in a painting. In contrast, the interpretation of (15b) carries no such entailment—rather, it entails that the speaker applied paint to or on their cat. We might thus think of *bemale* ‘BE-paint’ as corresponding to ‘paint on,’ rather than a prefixed bare *male* ‘paint.’

In all cases above, it seems plausible then that *be-* should be analyzed as a verbal affix that carries a prepositional meaning. The combination of the verb and *be-* will form a predicate that takes an entity argument, as demonstrated most clearly in (16) by the fact that *stieg* is intransitive, while *bestieg* is transitive. This entity argument is interpreted as the (physical) goal of the eventuality the verb describes. In the case of *spray/load* verbs, there remains one additional puzzle, which has to do with why the theme, formerly the verb’s object, is now expressed as the complement of *with*. I will return to this question later on, in chapter 4, section 4.2. For now, the discussion is focused on how to derive the alternation between a theme-object and a goal-object.

If *be-* were implicated in every goal-object use of *spray/load* verbs in German, the analysis would be quite simple: we could simply posit that English has an unpronounced version

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) However, given some of the data to come, it seems clear that *be-* is associated with a prepositional function in German. In addition, as Beavers (2017) reports (though he does not provide the data), the perfective prefix may actually appear with either structure in Hungarian, making the data presented above from Iwata (2008), who cites them from Ackerman (1992), perhaps somewhat misleading in isolation. In this regard, it is instructive to compare the data in (18) with the data from Moravcsik (1978) that is reported in Levin & Rappaport Hovav (1998), who provide examples that are more congenial to my approach.

- (i) Hungarian (Moravcsik 1978, p. 257):
- a. János rá-mázolta a festéket a falra.  
John onto-smear.d.he.it the paint.ACC the wall.onto  
“John smeared paint on the wall.”
  - b. János be-mázolta a falat festékkal.  
John in-smear.d.he.it the wall.ACC paint.with  
“John smeared the wall with paint.”

Note that in (i-b), the goal-object structure is compatible in Hungarian with a prefixed preposition, in contrast to what is shown in (18).

However, I will suggest here that while the affixation of a preposition might be one way to derive the *spray/load* alternation, it may not be the only way—other types of derivational morphology and even non-morphological ways of deriving it may be possible. See also Mateu (2000, 2017) and the discussion in chapter 5, section 5.2.3.4.

of *be-*. In fact, the utility of doing this would extend beyond the *spray/load* alternation, as English also contains many other verbs that alternate between intransitive and transitive variants with no overt prefix, while the same verbs may be prefixed with *be-* in German. For instance, *climb* in English can be both intransitive and transitive, with no overt prefixation.

- (20) a. John climbed up the ladder.  
 b. John climbed the ladder.

If transitive *climb* were actually derived by the affixation of an unpronounced English equivalent of German *be-*, we would unite the *spray/load* alternation with such cases. Many other verbs behave this way, too: *wander*, *roam*, *leap*, *jump*, etc. If these all involve a null prepositional affix that corresponds to German *be-*, we could explain why these intransitive/transitive alternations all seem to have a prepositional meaning.

While I believe that the affixation of a null P might indeed explain such cases, identifying this null prefix with German *be-* is not actually so easy as all that. For one thing, not every goal-object *spray/load* verb occurs with *be-*.

- (21) a. Die Vandalen spritzten Farbe auf das Auto.  
 the vandals sprayed paint onto the car  
 "The vandals sprayed paint onto the car."  
 b. Die Vandalen \*(be)spritzten das Auto mit Farbe.  
 the vandals BE-sprayed the car with paint  
 The vandals sprayed the car with paint."  
 (22) a. Lily schmierte Butter auf die Wand.  
 Lily smeared butter onto the wall  
 "Lily smeared butter onto the wall."  
 b. Lily \*(be)schmierte die Wand mit Butter.  
 Lily BE-smeared the wall with butter  
 "Lily smeared the wall with butter."  
 (23) a. Sie luden Heu auf den Wagen.  
 they loaded hay onto the wagon  
 "They loaded hay onto the wagon."  
 b. Sie (be)luden den Wagen mit Heu.  
 they BE-loaded the wagon with hay  
 "They loaded the wagon with hay."

- (24) a. Sie füllten Benzin in den Tank.  
they filled gas into the tank  
“They filled the tank with gas.”
- b. Sie (<sup>?</sup>be)füllten den Tank mit Benzin.  
they <sub>BE</sub>-filled the tank with gas  
“They filled the tank with gas.”
- (25) a. Sie stopfte die T-Shirts in die Tasche.  
she stuffed the T-Shirts into the bag  
“She stuffed the T-Shirts into the bag.”
- b. Sie (\*be)stopfte die Tasche mit den T-Shirts.  
she <sub>BE</sub>-stuffed the bag with the T-shirts  
“She stuffed the bag with the T-shirts.”

In particular, note that the goal-object use of *spritzen* and *schmieren* require *be-* prefixation, *laden* and *füllen* may be prefixed or not, and *stopfen* rejects prefixation.

Brinkmann (1995) further notes that in the cases where *be-* prefixation is optional, it correlates with an interpretational difference. Within the class of *spray/load* verbs (but not with the other cases discussed above), *be-* prefixation prevents the goal from being understood as the interior of an object. When a verb takes a goal-object without *be-*, the interpretation is that the theme moves to the interior of the goal; when it does so with *be-*, the interpretation is that the theme moves to the exterior of the goal.

- (26) a. Sue begießt den Braten mit Wasser.  
Sue <sub>BE</sub>-poured the roast with water  
“Sue poured water onto the roast.”
- b. Sue begießt das Glas mit Wasser.  
Sue <sub>BE</sub>-poured the glass with water  
Only: “Sue poured water onto the glass.”
- (27) a. Wenn’s in den Skiurlaub geht, packen Müllers ihr Auto immer als  
When in the ski-vacation go pack Millers their car always as  
blieben sie ein halbes Jahr lang weg.  
stay they a half year long away  
“When leaving for the ski vacation, the Millers pack their car(’s interior) as if they will be away for half a year.”
- b. Wenn’s in den Skiurlaub geht, bepacken Müllers ihr Auto immer als  
When in the ski-vacation go <sub>BE</sub>-pack Millers their car always as  
blieben sie ein halbes Jahr lang weg.  
stay they a half year long away  
“When leaving for the ski vacation, the Millers pack their car(’s trunk and roof) as if they will be away for half a year.”

This interpretational difference makes sense of the ungrammaticality of *be-* prefixation in

(25b); the lexical semantics of *stopfen* ‘stuff’ requires that the theme be moved to the interior of the goal. This is incompatible with *be-*’s requirement that the goal be an exterior surface, so the combination will always result in a contradiction.

The facts above support an analysis where *be-* prefixation derives goal-object *spray/load* verbs only for cases when the goal is interpreted as the exterior surface of some object. The derivation of non-*be-*prefixed goal-object *spray/load* verbs must be accomplished without *be-*. We could suppose that *be-* is a prefix whose meaning is the same as *onto*’s, and that there is a null prefix that means *into* or whose meaning includes both *into* and *onto*, with the *into* reading being derived via implicature.

However, while this statement of *be-*’s meaning works well enough in the context of *spray/load* verbs, it does not extend to its uses with intransitive verbs. With intransitive verbs, *be-* can alternate with *in* ‘in/into,’ *auf* ‘onto,’ and *an* ‘on/onto.’

- (28) a. Bernd stieg auf die Mauer.  
 Bernd climbs onto the wall  
 “Bernd climbs onto the wall.”
- b. Bernd bestieg die Mauer.  
 Bernd BE-climbs the wall  
 “Bernd climbs the wall.”
- (29) a. Sie stieg in das Auto.  
 she climbs into the car  
 “She climbs into the car.”
- b. Sie bestieg das Auto.  
 she BE-climbs the car  
 “She climbs into the car.”

In particular, note that intransitive *stiegen* ‘climb’ can occur with both *auf* ‘onto’ and *in* ‘into’ PPs. Both of these can alternate with transitive *bestiegen*. This is a clear contrast to English, where transitive *climb* can only mean that the subject ascended the exterior of the object. If there were a null *be-* prefix in English that were responsible for both the *spray/load* alternation and other P/transitive alternations, it would have to behave in exactly the opposite way from the German *be-* in the range of interpretations in could get in different structures. With *spray/load* verbs, the English null *be-* would have to be interpretable as *into* or *onto*, while for intransitive verbs, it could not mean *into* (at least with *climb*).<sup>7</sup>

<sup>7</sup>Brinkmann (1995) also says that *be-* prefixation is impossible in non-agentive contexts:

### 3.3.2 *Be- Prefixation Is Freer in German*

We have already seen some differences between the behavior of German *be-* and its putative null English counterpart. The range of possible interpretations associated with these affixes appear to be exact mirrors of each other in the contexts of *spray/load* verbs and intransitives. But in addition to these differences, there are more. German *be-* prefixation is available with a much wider range of verb types than its null counterpart would be in English. More specifically, the alternation in German between V PP and *be*-V DP has a wider distribution than the alternation between V PP and V DP does in English (though there is some overlap). The following examples show both the overlap in the distribution of these alternations, as well as their differences.

- (30) Verbs of active perception:
- a. Der blinde Firmenchef            tastete   auf dem neuen Mazda herum.  
   the blind company-director touched on the new Mazda around  
   “The blind company director touched around on the new Mazda.”
  - b. Der blinde Firmenchef            betastete dem neuen Mazda.  
   the blind company-director *BE*-touched the new Mazda  
   “The blind company directory felt the new Mazda.”
  - c. ? The blind man felt around on the car.
  - d. The blind man felt the car.

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- (i) a. Die Murmeln rollten über die Fliesen.  
      the marbles rolled over the tiles  
      “The marbles rolled over the tiles.”
- b. \* Die Murmeln berollten die Fliesen.  
          the marbles *BE*-rolled the tiles

However, note that even the agentive counterpart of causativizable verbs like *rollen* ‘roll’ cannot occur with *be-* prefixation.

- (ii) \* Er berollt den Billardtisch mit Kugeln.  
      he *BE*-rolled the pool.table with balls

This suggests that the contrast in (i) may be unrelated to the non-agentive context, and may have to do with more general properties of causativizable verbs.



- (31) Verbs of material manipulation:
- a. Der Bildhauer arbeitete an dem Marmor.  
the sculptor worked at the marble  
"The sculptor worked at the marble."
  - b. Der Bildhauer bearbeitete den Marmor.  
the sculptor BE-worked the marble  
"The sculptor worked the marble."
  - c. The sculptor worked at the marble.
  - d. The sculptor worked the marble.
- (32) Verbs of speech:
- a. Man sprach über das Rauchen im Büro.  
one spoke about the smoking in.the office  
"They talked about smoking in the office."
  - b. Man besprach das Rauchen im Büro.  
one BE-spoke the smoking in.the office  
"They talked about smoking in the office."
  - c. They talked about smoking in the office.
  - d. \* They talked smoking in the office.<sup>8</sup>
- (33) Verbs of emotion:
- a. Sie staunte über die zersägte Kette.  
she gaped over the sawn-apart chain  
"She marveled at the sawn-apart chain."
  - b. Sie bestaunte die zersägte Kette.  
she BE-gaped the sawn-apart chain  
"She marveled at the sawn-apart chain."
  - c. She marveled at the sawn-apart chain.
  - d. \* She marveled the sawn-apart chain.
- (34) Datives:
- a. Andreas schenkt seiner Vermieterin rote Rosen.  
Andreas gifts his.DAT landlady.DAT red roses  
"Andreas gifts his landlady red roses."
  - b. Andreas beschenkt seine Vermietieren mit roten Rosen.  
Andreas BE-gifts his.ACC landlady.ACC with red roses  
"Andreas gifts his landlady red roses."
  - c. Andreas gifts his landlady red roses.
  - d. \* Andreas gifts his landlady with red roses.

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<sup>8</sup>There are some idioms where something like this is possible: *John and Bill talked shop for hours.*

- (35) Benefactives:
- a. Oscar kochte Nasi Goreng für die Familie.  
Oscar cooked Nasi Goreng for the family  
"Oscar cooked Nasi Goreng for the family."
  - b. Oscar bekochte die Familie mit Nasi Goreng.  
Oscar *BE*-cooked the family with Nasi Goreng  
"Oscar cooked Nasi Goreng for the family."
  - c. Oscar cooked Nasi Goreng for the family.
  - d. \* Oscar cooked the family with Nasi Goreng.

- (36) Privatives:
- a. Er raubte der Frau die Handtasche.  
he robbed the woman her purse  
"He robbed the woman of her purse."
  - b. Er beraubte die Frau (\*mit der / von der / ihrer Handtasche).  
he *BE*-robbed the woman with her / of her / her.GEN purse  
"He robbed the woman."
  - c. He robbed the woman of her purse.
  - d. He robbed the woman.

In particular, while both German V PP/*be*-V DP and English V PP/V DP alternations are possible for verbs of active perception and verbs of material manipulation, in English the V PP/V DP alternation is impossible for verbs of speech, verbs of emotion, datives, and benefactives. In addition, English allows expressing the theme argument of privatives as a PP, while German does not.

These differences between the greater freedom of German *be*- prefixation compared to the English intransitive-transitive alternation, in addition to the interpretational differences within the realm of the *spray/load* alternation, make it hard to identify the *spray/load* alternation with the result of null *be*- prefixation in English. If this were what gave rise to goal-object forms, we would expect that other German alternations this prefix is involved in should be possible with no overt prefix in English. However, this is not the case. In addition, the fact that the *spray/load* alternation is possible in German without overt *be*- prefixation, provided the goal is a surface and not an interior, supports a view where the *spray/load* alternation is not dependent on *be*- prefixation.

Further issues are raised in Dewell (2004) and Iwata (2008), who show that *be*- prefixa-

tion is correlated with additional interpretational differences. In particular, *be-* prefixation results in an event description that does not specify an endpoint.

- (37) a. # Er hat den Lastwagen schon geladen, und nun ladt er noch etwas  
 he has the truck already loaded and now loads he still something  
 auf den Lastwagen.  
 onto the truck  
 "He has already loaded the truck, and now he is loading something else  
 onto the truck."  
 b. Er hat den Lastwagen schon belade, und nun ladt er noch etwas  
 he has the truck already BE-loaded and now loads he still something  
 auf den Lastwagen.  
 onto the truck  
 "He has already be-loaded the truck, and now he is loading something else  
 onto the truck." (Dewell 2004, (34))

Iwata (2008) suggests that it is this property of *be-* that prevents it from occurring with verbs like *stopfen* 'stuff' in (25), as its lexical semantics describe the filling of an enclosed space, and so are associated with an intrinsic endpoint.<sup>9</sup> If a hidden *be-* derived the goal-object structure, then, we might expect it to be associated with an anti-holistic reading, contrary to fact.

However, these issues do not truly constitute evidence against an analysis where the *spray/load* alternation is derived by prepositional affix. They simply constitute evidence against German *be-* being identical to whatever null affix is responsible for the alternation in English, and against the view that the only semantic contribution of *be-* is prepositional in nature. Instead, *be-*'s meaning might be both aspectual and prepositional. And we already saw evidence that the distribution of *be-* goes well beyond *spray/load* verbs in German in (30–36), including cases where alternating between an overt preposition and a null affix is impossible in English.

Furthermore, we could suppose that *be-* competes with a similarly prepositional but phonologically null affix in German to derive the differing interpretations of *be-*-prefixed *spray/load* verbs and non-*be-*-prefixed *spray/load* verbs. Suppose that when *be-* is prefixed

<sup>9</sup>While I cannot speak directly to this point as regards German *stopfen*, Iwata (2008)'s reasoning certainly does not apply in the case of English *stuff*, which we might also suppose specifies an endpoint. It is possible to form an analog of (37a) using *stuff* in English.

- (i) He has already stuffed the suitcase with his clothes, and now he's stuffing it with his souvenirs.

While one could claim that German *stopfen* differs from English *stuff* in that it specifies that the container ends up completely full, I am skeptical.

to a *spray/load* verb, it produces an *onto*+asp reading. A similar but phonologically null affix, P<sub>LOC $\emptyset$</sub>  would occur in the *into* reading. We could suppose that this phonologically null affix is in fact the same one implicated in the English *spray/load* alternation. However, in English this prefix must alternate with both *into* and *onto*. We could suppose that the prefix's meaning is underspecified. In German, the contrast between the *onto*+asp reading of *be-* and the *into* reading of the null P<sub>LOC $\emptyset$</sub>  would be due to pragmatic reasoning. *Be-*'s semantics produce an *onto*(+asp) reading. If the speaker doesn't use *be-*, the semantics would, in some cases, be compatible with either an *into* or an *onto* reading. But a hearer can reason in a Gricean way that if the more specific *onto* reading were supported, the speaker would have used *be-*. Since they didn't do this, they can't have meant to communicate the *onto* reading. As a result, the hearer will interpret the null prefix as supporting an *into* reading, just as described above. In other cases, the lexical semantics of the verb will require an *into* reading, making *be-* prefixation impossible. This is what happens, for instance, in (25), where the lexical semantics of *stopfen* 'stuff' require a goal that is an interior and not a surface.<sup>10</sup> In English, there is no overt prefix that competes with P<sub>LOC $\emptyset$</sub> , so the interpretation will depend both on the lexical semantics of the verb (e.g., with *stuff*) and contextual factors (as with *load*).

I will follow Brinkmann (1995) and Wunderlich (1997)'s lead, then, and suppose that this is the right sort of explanation for the *spray/load* alternation at least in German and in English. In German, both *be-* prefixation and P<sub>LOC $\emptyset$</sub>  affixation can derive goal-object *spray/load* verbs, with the differing interpretations associated with each of these options arising from the semantics of *be-* and general pragmatic reasoning. In contrast, English does not have an equivalent to *be-*, even a phonologically null one; it has only P<sub>LOC $\emptyset$</sub> .

However, Brinkmann (1995) and Wunderlich (1997) propose that the alternation is essentially lexical, with the affixation of *be-* signaling a change in the lexical semantics of the verb that occurs prior to its insertion into a syntactic context. This change can be accomplished even in the absence of *be-*, of course, since in some cases German *spray/load* verbs can alternate without *be-* prefixed, as we have just seen. The end result of this is that the

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<sup>10</sup>Note that more complications arise when considering that *be-* can produce meanings other than *onto* with non-*spray/load* verbs, as in (29b). Somehow, its meaning is contextually restricted with *spray/load* verbs so as to only allow *onto* readings, as Brinkmann (1995) describes.



course of the discussion, where I will show that locative prepositions are licit in goal-object structures (example (45) and the surrounding discussion). In addition, in chapter 4, section 4.2, I will argue that the *with* that often travels with the goal-object structure is in fact a kind of locative preposition, following Rapoport (2014). For now, the reading could comfortably ignore this and replace  $P_{\text{LOC}}$  (the **overt**  $P_{\text{LOC}}$ , that is) in (38b) with *with* until the relevant points in the discussion are reached.

The ways that Brinkmann (1995), Wunderlich (1997), and Damonte (2005) implement this idea differ from my approach, as I will discuss in chapter 5, sections 5.2.1.2 and 5.2.3.2. Brinkmann (1995) and Wunderlich (1997) essentially posit that P-conflation takes the form of a lexical redundancy rule that creates a goal-object verb from a theme-object verb if the verb takes a theme and a prepositional argument, while in my approach, the conflation is crucially syntactic, as will become apparent.

In contrast, Damonte (2005) pursues a syntactic approach. But my account differs from his in two (related) respects. First, Damonte's approach relies on P-incorporation, rather than P-conflation. Second, Damonte's approach relates the theme-object structure to the goal-object structure transformationally, with the theme-object structure being the basic one. My approach involves P-conflation, where  $P_{\text{LOC}\emptyset}$  is first-merged with the verb root. Thus, in my approach, the theme-object and goal-object structures are not transformationally related. Instead, they are related because they contain partially overlapping sets of roots and functional heads that differ in their syntactic arrangement.<sup>11</sup> The next section shows that my analysis makes the right predictions about the impossibility of forming unaccusatives from goal-object verbs and the possible readings of *spray/load* verb nominalizations, in a way that other analyses do not.

In English, the precise identity and interpretation of  $P_{\text{LOC}\emptyset}$  in the goal-object structure depends on the particular verb it combines with (cf. D'Elia 2016, p. 130). For instance, goal-object *load* supports either an *into* or an *onto* interpretation (equivalent to using either of these overt prepositions in the theme-object structure), while goal-object *spray* only supports on *onto* interpretation.

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<sup>11</sup>More details of Damonte's approach and a full critique are presented in chapter 5, section 5.2.3.2.

- (39) a. John loaded the box with the books.  
       ≈ John loaded the books into the box.
- b. John loaded the table with the books.  
       ≈ John loaded the books onto the table.
- (40) a. John sprayed the wall with the paint.  
       ≈ John sprayed the paint onto the wall.
- b. ?? John sprayed the air with the paint.  
       ≠ John sprayed the paint into the air.

As we will see later, none of the paraphrases above are quite right, as they don't capture the holistic effect.<sup>12</sup> The point here is that *load with* supports readings where the goal of the loading is either something's surface (*onto*) or interior (*into*). In contrast, *spray with* only supports a reading where the goal of the spraying is a surface (*onto*).

In addition, we have the more general question of the semantic interpretation of P-conflation. In chapter 2, I made the assumption that V was a function from entities to predicates of eventualities (e.g.,  $\lambda x.\lambda e.\text{spray}(e, x) = 1$ ). The meaning of the semantic relation that relates the entity and the eventuality covered cases in which the relation is one we might describe as "theme," and also cases where the relation is one we might describe as "goal." However, in the structure in (38b), presumably it is  $P_{\text{Loc}_\emptyset}$  that is responsible for binding the goal argument, not V.

A first approach would be to assume that V indeed denotes a function from entities to predicates of eventualities, as stated above, with the semantic relation it invokes broad enough to cover cases in which its entity argument is the theme or the goal of the eventuality.  $P_{\text{Loc}_\emptyset}$  could combine with this function and place additional restrictions on the resulting function such that only a goal interpretation would be possible. For instance:

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<sup>12</sup>I return to this question in section 4.2, where I endorse Rapoport (2014)'s account of the meaning of *with*, who proposes a meaning for it that accounts for the holistic effect in the goal-object structure. The holistic effect in the theme-object structure would have to have a different source, however.

- (41) a.  $\llbracket \sqrt{\text{spray}} \rrbracket = \lambda x. \lambda e. \text{spray}(e, x) = 1$   
 where  $\text{spray}(e, x) = 1$  iff  $e$  is a spraying eventuality and  $x$  is a theme or a goal of  $e$
- b.  $\llbracket P_{\text{LOC}\emptyset} \rrbracket = \lambda P. \lambda x. \lambda e. P(e, x) \wedge \text{GOAL}(e, \text{on}(x)) = 1$
- c.  $\llbracket \sqrt{\text{spray}} P_{\text{LOC}\emptyset} \rrbracket = \lambda x. \lambda e. \text{spray}(e, x) \wedge \text{GOAL}(e, \text{on}(x)) = 1$

The semantics for  $P_{\text{LOC}\emptyset}$  in (41b) correspond to the *onto* reading it receives with *spray*. To account for its *into* readings with some verbs, we could suppose that there is a separate  $P_{\text{LOC}\emptyset}$  with this semantics, or else that its meaning is determined via contextual alloosemy. Alternatively, we could suppose that there is a relation  $R$  defined as follows.

$$(42) \quad P(e, R(x), \dots) = 1 \text{ iff } P(e, \text{on}(x), \dots) = 1 \text{ or } P(e, \text{in}(x), \dots) = 1$$

We could replace the relation *on* in (41b) with  $R$ . Then, in order to account for the fact that, e.g., *spray* only permits an *onto* reading of its goal-object, we could say that the semantic relation  $\text{spray}(e, x)$  is true iff  $e$  is a spraying eventuality and  $x$  is a theme or a surface onto which something is sprayed. Building this into the denotation of the semantic relation the verb *spray* invokes aligns with our intuition that the particular meaning that  $P_{\text{LOC}\emptyset}$  supports is idiosyncratically determined by the verb.

However, there are some reasons to disfavor building the particular resolution of  $P_{\text{LOC}\emptyset}$  as surface or interior into the semantics of the verb directly. If the meaning of the verb root required either only interior or only surface goals, we would have no way of explaining why cases like the following are felicitous.

- (43) a. The rocket sprayed fuel into outer space.  
 b. John spritzed water into the air.  
 c. John piled stones into the crevice. (cf. # John piled the crevice with stones.)

For instance, the data in (40) show us that in goal-object uses, the goal of the spraying event must be understood as a surface. But (43a) shows us that this requirement is not due to properties of spraying events generally, since it is perfectly felicitous to use the same root *spray* to describe events whose goals are volumes/interiors. Thus, the restriction observed in (40) cannot be attributed to a restriction on what kinds of events are sprayings.



In addition, the presupposition of a repetitive *again* in the theme-object structure does not rely on the prior eventuality having a goal characterized in the same way as in the previous event. That is, such a sentence can be felicitous if the current goal is a surface, even if the previous goal was an interior, and vice versa.

- (44) a. **Context:** John sprayed paint into the air to test the hose. Then, he took aim and...  
He sprayed paint again onto the wall.
- b. **Context:** John loaded clothes onto the table. Then, ...  
He loaded the clothes again into a box.

This makes it difficult to support the idea that the particular locative relation that holds of the goal in the goal-object structure comes from the verb. If it did, we would have to claim there are two verb roots here: one that specifies whether its goal is a surface or an interior, and one that does not. This does not seem like the best approach.

Additional problems arise, too; a prediction the underspecification approach in (42) makes is that it might be possible to get a goal-object reading even when  $P_{\text{LOC}\emptyset}$  does not conflate with the verb. This is because one could construct a context in which resolving an object as a goal rather than a theme would be more plausible, and thus this interpretation could be reached even without P-conflation. One could consider examples like the following as evidence:

- (45) **Context:** John set up the doors like dominos. He turned on the hose and ...  
He sprayed the first door onto the second one.

This looks like a theme-object structure, in that we have an overt locative preposition. One could take this as evidence that if the object is most compatible with a goal interpretation, that is how *spray*'s (underspecified) relation between its entity and event arguments will be resolved, even in the absence of P-conflation.

However, it is not clear that this case doesn't involve P-conflation. In fact, there is evidence that it does. The only reason we might think that it doesn't is because we have a locative preposition *low*, rather than *with*. But nothing I have said would require that the overt preposition in a goal-object structure be *with*. Certainly, having *with* would give us a

different interpretation. But the interpretation of (45) is one with two goals: the spraying of the first door (which is the goal of the event) causes the state of the first door on the second door. This is what we expect if the overt *onto* is contributing its own goal argument to the caused eventuality. In other words, this sentence has two goals, associated with different (sub)eventualities: the first door is the goal of the spraying eventuality, and the second door is the goal of the eventuality described by *the first door onto the second door*, which is related to the first one via *CAUSE*. Note that no unaccusative counterpart of this sentence exists:

- (46) \* The first door sprayed onto the second one.  
(under a reading where the first door is a goal)

Nor can *the first door* be what a nominal use of *spray* refers to in such a scenario. This behavior is diagnostic of goal objects and, as I will argue, follows from the presence of a preposition conflated with the verb. I conclude that (45) is a goal-object structure, but simply one where *with* is substituted for another preposition.

There is, of course, a more generous way of formulating the constraint, which is in fact more in line with what (42) proposes. The way that (42) formulates the restriction is such that it should only apply to goal-object sentences. This would mean that we cannot use theme-object sentences like the ones I have just used to argue against it. However, while this move is possible, it does not seem desirable to me. Simple concerns of parsimony lead me to propose that the semantics of the particular locative function should come from  $P_{\text{LOC}\emptyset}$ , and not from the verb. This is because the facts discussed above show us that the verb root itself need not be associated with a particular locative function in theme-object uses, meaning that the statement of the restriction would still need to be stipulated to hold only for goal-object uses. In addition, generally speaking, if there is a locative meaning, we might think that it should come from a preposition, which are typically associated with spatiotemporal functions of the relevant sort, rather than the verb, which typically encode event descriptions rather than locative functions.

Thus, I propose that there is no underspecification. If there is a goal-object reading, it must involve P-conflation, and if there is a theme-object reading, it must not. This seems to

me to be the most straightforward and attractive view, even if there might be some way to preserve the underspecification approach. But if we avoid underspecification, then we are back where we started, with determining how to semantically compose  $V$  and  $P_{\text{LOC}\emptyset}$ . There are a few alternative possibilities here, and I see no clear way to decide between them. It is possible they work out to be equivalent.

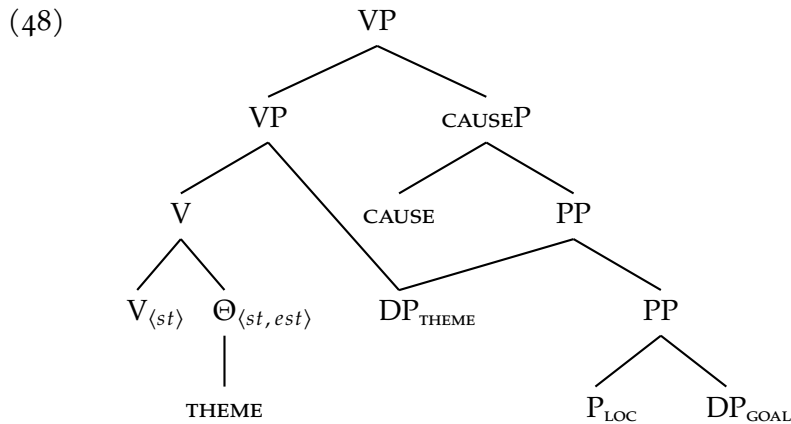
The first possibility is to suppose that  $[V+P_{\text{LOC}\emptyset}]$  constitutes a small idiom. It has a non-compositional meaning. Equivalently, we could say that there is contextual allosemy, where the meaning of either  $V$  or  $P_{\text{LOC}\emptyset}$  (or both) depends on the meaning of its sister. In other words, the meaning of  $\sqrt{\text{spray}}$  when it does not conflate with  $P_{\text{LOC}\emptyset}$  would be as in (47a), while the meaning of  $[\sqrt{\text{spray}}+P_{\text{LOC}\emptyset}]$  would be as in (47b).

- (47) a.  $[[\sqrt{\text{spray}}]] = \lambda x.\lambda e.\text{spray}(e, x) = 1$   
 where  $\text{spray}(e, x) = 1$  iff  $e$  is a spraying event and  $x$  is the theme of  $e$
- b.  $[[\sqrt{\text{spray}} P_{\text{LOC}\emptyset}]] = \lambda x.\lambda e.\text{spray}(e) \wedge \text{GOAL}(e, \text{on}(x)) = 1$   
 where  $\text{spray}(e) = 1$  iff  $e$  is a spraying event,  $\text{GOAL}(e, x) = 1$  iff  $x$  is the goal of  $e$ , and  $\text{on}(x)$  is the surface of  $x$

Thus, the first possibility is to do away to some extent with the compositionality of  $V$  and  $P_{\text{LOC}\emptyset}$ . This is not so bad as it might sound—after all, we know from (39–40) that the meaning of the goal-object structure depends on the identity of  $V$ , so we must confront the specter of idiomaticity in some way. The question is simply where precisely we wish to locate that idiomaticity.

In this spirit, I will present an alternative which localizes the idiomaticity of the goal-object structure to the contextual allosemy of  $P_{\text{LOC}\emptyset}$ . I do not believe this approach is any more principled than the one in (47) in light of what we have discussed so far. However, we will see in section 4.3 that doing this will help us account for non-agentive transitive uses of *spray/load* verbs and their kin. The basic idea is that we separate not only the goal argument from the verb as I proposed for the goal-object structure, but also separate the theme from the verb in the theme-object structure. This follows ideas from Borer (2005a,b, 2013) and Huang (2018). Borer and Huang extend Kratzer (1996)’s idea that external arguments are not present in the denotation of verbs to the idea that internal arguments are

not in verbs' denotations either. Instead, internal arguments are introduced by a functional head or heads, leading to a fully neo-Davidsonian syntax.<sup>13</sup> In the case of the theme-object structure, this head would presumably introduce a theme argument, as shown below. I have chosen a particular denotation for *THEME* which would lead to it composing with the verb first; this will have advantages that will become apparent in section 4.3.



As indicated, the denotation of *V* would be a simple predicate of eventualities (e.g.,  $\lambda e.spray(e) = 1$ ). The denotation of *THEME* would be a function from predicates of eventualities to functions from entities to predicates of eventualities.<sup>14</sup>

$$(49) \quad \llbracket \text{THEME} \rrbracket = \lambda P_{\langle st \rangle} . \lambda x . \lambda e . P(e) \wedge \text{THEME}(e, x) = 1$$

We should be cautious: Kratzer (2003) presents evidence against this kind of approach. She argues convincingly that the notion of theme that gets invoked in many theories of argument structure has little purchase when we consider the kinds of relations it would have to be true of, following work by Gropen (1989); Pinker (1989); Rappaport & Levin (1988); Rappaport et al. (1993, a.m.o.).<sup>15</sup> However, this criticism does not seem to apply here. In particular, while it is indeed difficult to identify similarities between the internal arguments of verbs as diverse as, e.g., *dig*, *plant*, and *buy*, as she notes, it is not that hard to

<sup>13</sup>See Davidson (1967, 1969), Higginbotham (1985, 2000, 2009), and Parsons (1990, 2000) for foundational works of (neo-)Davidsonian event semantics. Maienborn (2011) provides an overview of the historical development of this research program.

<sup>14</sup>One could imagine an alternative where *THEME* has a denotation that combines with *V* via Event Identification (Kratzer 1996) rather than Function Application:

$$(i) \quad \llbracket \text{THEME} \rrbracket = \lambda x . \lambda e . \text{THEME}(e, x) = 1$$

The reason for this choice will become apparent in section 4.3.

<sup>15</sup>It may also be non-cumulative, in contrast to most (if not all) semantic relations, though this argument is somewhat more delicate.

do so in the case of *spray/load* verbs. For *spray/load* verbs, the relation I have been calling *THEME* always involves movement of some substance or material. I have been calling this relation *THEME*, but this does not mean it is intended to cover all relations that term has been used to describe. I might have called it *GO*, *SUBSTANCE*, *MATERIAL*, or something else. The important thing is that there does appear to be some commonality across the objects of non-goal-object uses of *spray/load* verbs, and I have labeled that commonality “*THEME*.”<sup>16</sup>

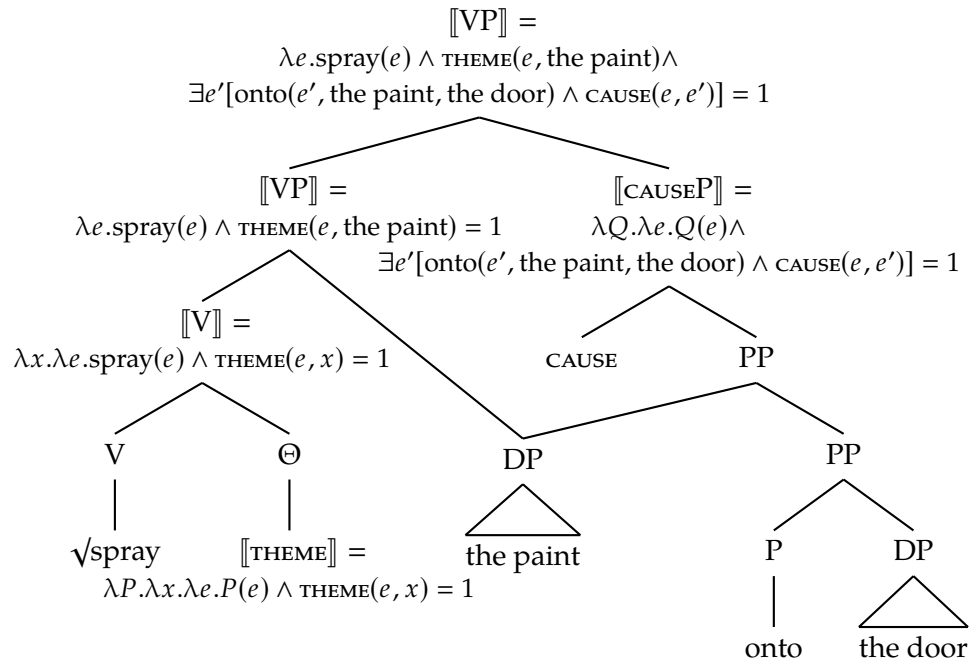
However, we must bite the bullet and posit that  $P_{\text{LOC}_\emptyset}$ 's meaning is non-compositional to an extent. It will always introduce a goal, but whether that goal can be interpreted as a surface or an interior depends on the particular verb it combines with. We might consider this lexically governed aspect of its meaning to be part of what forces it to first-merge with the verb, but this is no more than a suggestion. It is my hope that this could be derived from the meaning of the semantic relation the verb invokes, but I do not see how to do this, given that, e.g., *spray*'s goal-object use only supports an *onto* reading, but it is not conceptually incongruent to conceive of one spraying paint into a bucket, into the air, etc. It's just that such readings are not available in the goal-object structure.

Thus equipped, we can fill in the semantics of (38) as (50) once we have specified a verb (in this case, *spray*).

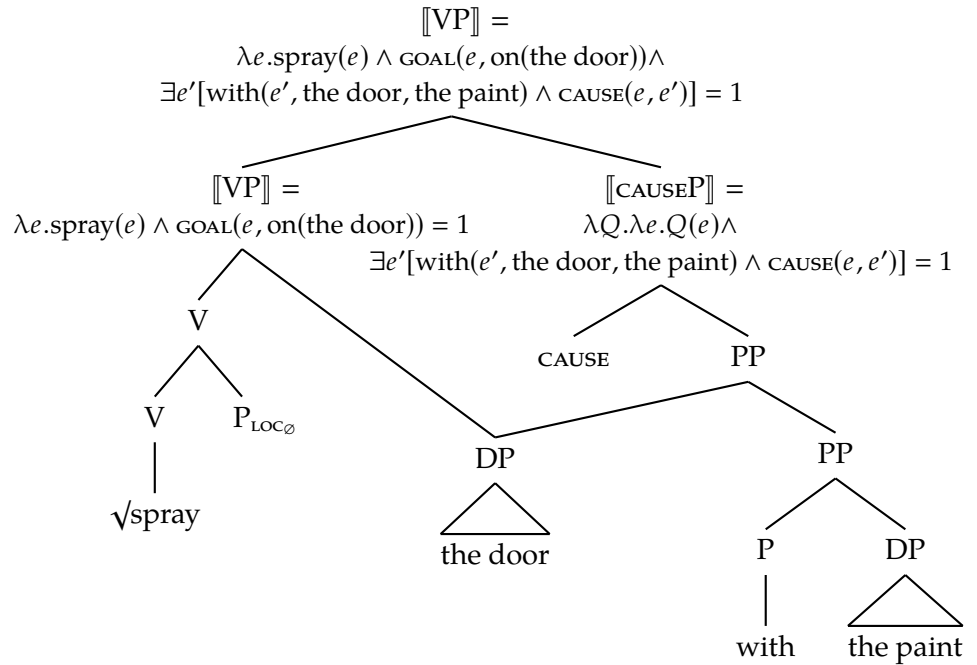
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<sup>16</sup>One might well wonder why the existence of *THEME* in the same position as  $P_{\text{LOC}_\emptyset}$  would not give rise to the behavior I have attributed to the presence of  $P_{\text{LOC}_\emptyset}$ . Put another way, why is  $P_{\text{LOC}_\emptyset}$  a preposition, but *THEME* is not? I discuss this in section 3.4.2.

(50) a. Theme-object structure:



b. Goal-object structure:



### 3.4.1 Choosing a Preposition

A minor but interesting point here has to do with the selection of the preposition that heads the small clause in each of these structures. In most cases, the theme-object struc-

ture has a small clause headed by a locative preposition (e.g., *into*, *onto*, etc.), while the goal-object structure has a small clause headed by *with*. In the structures in (50), it is not immediately clear what would lead to this pattern. I propose that this is no more than a pragmatic effect that has to do with the semantics of *THEME*,  $P_{\text{LOC}\emptyset}$ , and *with*.

First, consider the goal-object structure, which is typically associated with (in English) the preposition *with*. I presented evidence in the form of example (45) (and the ensuing discussion) that goal-object structures may involve prepositions other than *with*. The evidence was that even when the sentence contains a locative preposition, when the object is interpreted as a goal, it has the syntactic status of a goal. Thus, goal-object structures with prepositions other than *with* are possible. This nevertheless leaves us with the task of figuring out why most goal-object sentences use *with*. The answer, I believe, resides in the semantics of *with*, which I present a detailed semantics for in chapter 4, section 4.2. For now, an approximation will have to suffice: *with* encodes physical possession as spatial accompaniment, with the argument in its specifier in control of the location of the argument in its complement (Rapoport 2014). Thus, the meaning of the small clause *the door with the paint* could be loosely stated as a predicate of states where the door has paint stuck to it, such that wherever the door is, the paint is. The question we are asking then becomes why these kinds of physical accompaniment relations are so naturally expressed as result states of sprayings of goals. I suggest that this is pragmatic in nature: a common reason for spraying things is to coat them evenly with a substance, and is thus a semantic head that is appropriate for expressing this meaning is likely to be chosen with goal-object structures. The semantics of *with* (again, to be discussed in more detail in chapter 4, section 4.2) is well-suited to this purpose. However, it should be noted that even if this suggestion turns out to be on the wrong track, the empirical evidence shows clearly that goal-object structures that do not use *with* as the preposition are possible. Since these are syntactically and semantically possible, the common choice of *with* would seem to only be able to have a pragmatic source, whatever the proper account of that source may be.

Second, consider the theme-object structure, which is typically associated with a locative preposition (e.g., *into*, *onto*, etc.). The explanation of this trend is fairly easy to see, since the semantics of locative prepositions are somewhat more transparent than the more com-

plex semantics of *with*. In theme-object structures, *THEME* encodes motion of some entity. A natural result state to predicate of an entity in motion is one that describes where it ends up. This is precisely what a locative preposition does. Once again, the explanation is pragmatic in nature.

However, a small concern is why we could not use *with* in a theme-object structure, given the semantics I (informally) described for it above. The resulting meaning would be one where the object is described as moving (i.e., as a theme), and as a result, comes to control the location of some other entity. Here are two attempts to elicit this reading. One is only marginally successful in my judgment, while the other is entirely unsuccessful.

- (51) a. **Scenario:** John hooked up the end of a tube used to spray paint to a hose filled with water. He then sprayed the paint through the hose, thereby mixing it with the water.

?# John sprayed the paint with the water.

- b. **Scenario:** John suspended a piece of paper from a string. He then sprayed paint from a tube onto the paper. The stream of paint was strong enough that the string broke, resulting in the spray of paint pushing the paper through the air.

# John sprayed the paint with the paper.

Given the semantics I sketched for *with*, I think these might be predicted to be possible, but this prediction does not seem correct. If these were possible theme-object structures, (51a) should be a felicitous description of the corresponding scenario, because the paint moves, with the result that the paint is with the water. Of course, a possible concern here is that it is difficult to say in what sense the location of the paint would “control” the location of the water in this case, since they would presumably be equally mixed. But the same criticism might be leveled at the door controlling the location of the paint.

At any rate, the same issue occurs in (51b), which would describe sprayings whose theme is the paint, which result in a state of the paint being with the paper. In this scenario, the paint would control the location of the paper by virtue of the fact that the location of the end of the stream of paint is what pushes the paper through the air.



One thought is that the notion of control has to do with figure and ground, with the ground being the entity that controls the location of the other. It might be easy to think of the door as the ground and the paint as the figure, while it could be harder to do this with the paint and the water or the paper. Perhaps it is impossible: suppose that the semantics of being the ground of a figure/ground relation, as *with* might impose on its specifier, entail that the ground is a reference point. This might require that the ground not be described as in motion, since otherwise it could not serve as a constant point of reference to which the figure could be compared.<sup>17</sup> The semantics of *THEME* would of course entail that the ground of *with* would be in motion, and thus that it could not serve as a unchanging point of reference.

Another thought is that the restriction could be described syntactically (perhaps in addition to the semantic and/or pragmatic approaches discussed above). In this case, we would have to say that  $P_{\text{Loc}_\emptyset}$  somehow dictates what kinds of resultative predicates it can combine with syntactically, and these are only those headed by *with*.<sup>18</sup> How exactly this should be implemented is unclear to me, but there is some precedent for thinking this way. For instance, consider the following contrasts.

- (52) a. Bill shot John dead.  
 b. \* Bill shot John deceased.  
 c. \* Bill shot John angry.
- (53) a. John wiped the table clean.  
 b. \* John wiped the table dirty.
- (54) a. John painted the table red.  
 b. \* John painted the table clean.

Note that *shoot* can combine with *dead* as a resultative predicate, but not the semantically equivalent *deceased*. Nor can it take the semantically reasonable *angry* as a resultative pred-

<sup>17</sup>Of course, we would have to make reasonable exceptions here, since we can say things like *the man in the car*, where the car may well be in motion. The relevant notion may be relative to a perspective. However, given that the theme relation describes the theme as in motion, it may not be possible to come up with the appropriate perspective, which could thus require conceiving of the theme as simultaneously in motion and not in motion in the same context of utterance—presumably a contradiction.

<sup>18</sup>And in some cases with non-alternating goal-object verbs, a special use of *in*; see chapter 4, appendix.

icate either. Similarly, *wipe* can combine with *clean* but not *dirty*, while *paint* can combine with *red* but not *clean*. Thus, even particular verbs may be choosy about which resultative predicates they license, since *wipe* allows *clean* but *paint* does not. The source of these differences is unlikely to reside in the semantics, since all of the ungrammatical sentences would have quite clear and sensible meanings. Instead, there must be some syntactic way of enforcing a selectional restriction between a verb and a resultative predicate that combines with it. A similar mechanism might be what is needed to capture the fact that *THEME* cannot license *with* as the head of a resultative small clause,<sup>19</sup> if the semantic/pragmatic suggestions above do not pan out.

#### 3.4.2 *The Difference between THEME and P<sub>LOC $\emptyset$</sub>*

In the structures in (50), I presented  $P_{\text{LOC}\emptyset}$  and *THEME* as belonging to two different categories. But they are otherwise quite similar, since they occur in identical syntactic positions, and seem to have similar semantics, apart from the inclusion in the meaning of  $P_{\text{LOC}\emptyset}$  of a locative function that applies to its entity argument. The reason for choosing these labels is clear: goal objects behave like objects of prepositions, while theme objects do not. This constitutes the empirical evidence for proposing a different syntactic status for the head responsible for introducing themes and the head responsible for introducing goals.

However, it is prudent to ask why things must be this way. What, for instance, would rule out treating  $P_{\text{LOC}\emptyset}$  and *THEME* as belonging to the same syntactic category? If I did this, the explanation of the asymmetry of theme-objects and goal-objects would be lost. I do not have a full answer to this question, though I revisit it in chapter 6. For now, I will suggest that the difference has to do with Case assignment: by assumption,  $P_{\text{LOC}\emptyset}$  assigns Case to the object while *THEME* does not. If we assumed *THEME* assigned Case to its object, we would run the risk of greatly weakening the link between external theta-roles and accusative Case (Burzio 1986) (though of course this link is already known to not be absolute). More detailed thoughts, including thoughts on how this might relate to the proposal about labeling that I present later in this chapter, are presented in chapter 6. I leave the fuller discussion

<sup>19</sup>Note that the restriction would have to be associated with *THEME* and not with the verb root, since in goal-object uses the same verb root is compatible with a resultative small clause that is headed by *with*.

until then due to small revisions to the analysis I make later in this chapter and in chapter 4, making a full discussion at this point less useful.

### 3.5 P-stranding and Nominalization

Having examined the syntax and semantics of the P-conflation approach, I will now explore its advantages. In particular, the P-conflation analysis can explain the asymmetries regarding which object can promote to subject position and what nominalizations of these verbs can refer to, as under this approach the behavior conforms to independent patterns related to the possibility of P-stranding under A-movement and nominalization.

#### 3.5.1 *Passives, Unaccusatives, and P-stranding*

This section compares two kinds of argument structure configurations with regards to how they behave regarding P-stranding: passives and unaccusatives. Both configurations involve A-movement of an internal argument to Spec,TP, but they differ in two respects: (i) in passives, an external argument is semantically always present, while this is never true in unaccusatives; and (ii) in passives, the external argument may be optionally expressed as the complement of the preposition *by*. Passive sentences are (almost) always related to a corresponding active sentence;<sup>20</sup> this is also true in many cases for unaccusative sentences, though not every active sentence is associated with a corresponding unaccusative sentence.

- (55) a. John devoured the spaghetti. (active)  
b. The spaghetti was devoured (by John). (passive)  
c. \* The spaghetti devoured (by John). (unaccusative)
- (56) a. John bounced the ball. (active)  
b. The ball was bounced (by John). (passive)  
c. The ball bounced (\*by John). (unaccusative)

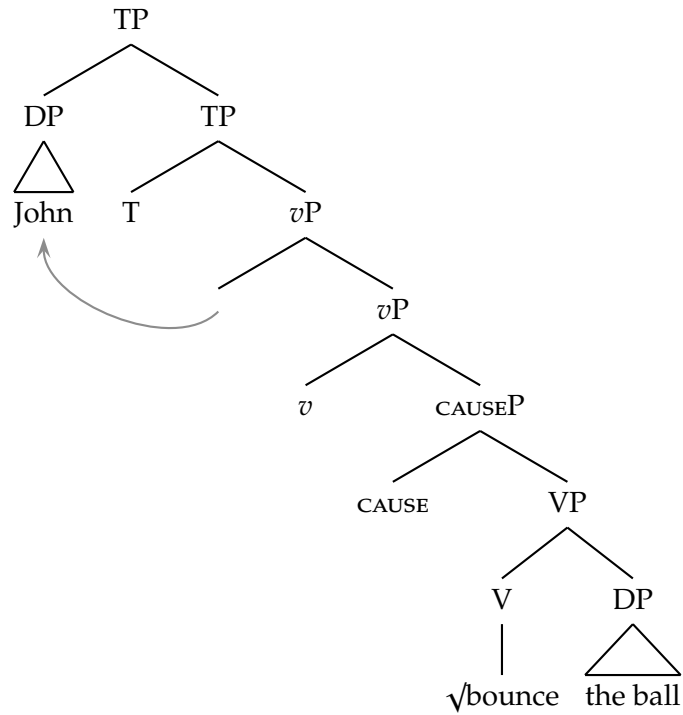
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<sup>20</sup>A very limited number of verbs in English seem to have only passive uses; Levin (1993, sec. 8.1) lists *reincarnate*, *rumor*, and *repute* (though I disagree with the inclusion of *reincarnate* and *repute*, which have active uses for me). We could imagine that something blocks these roots from surfacing in an active context. Alternatively, we might suppose that (for speakers who agree with Levin (1993)'s reported judgments), these are not verbs that occur in only the passive, but instead adjectives that look like passive participles. The (non-)existence of passive-only verbs does not affect any of the arguments made here, at any rate. See also chapter 5, footnote 22.

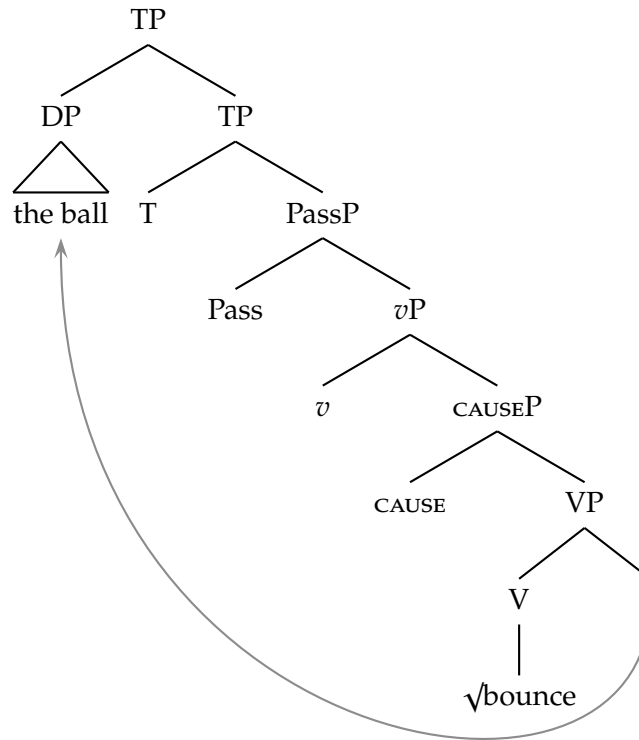
The evidence for the semantic presence of the external argument in passives even in the absence of a *by*-phrase are many; these are not strictly relevant here, so I refer the interested reader to Roeper (1987) and Baker et al. (1989) for evidence (though many other sources also discuss this).

A way of modeling the relationship between active, passive, and unaccusative sentences relies on movement.

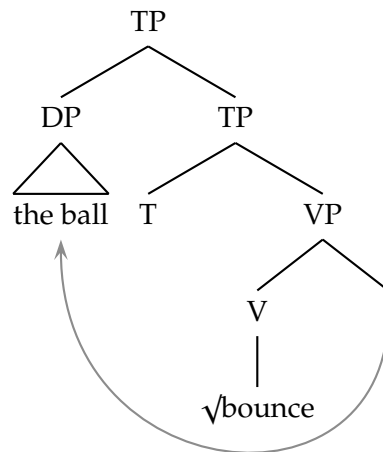
(57) a. Active:



b. Passive:



c. Unaccusative:



Why exactly the presence of Pass results in the non-projection of the external argument or its demotion to a *by*-phrase has been explained syntactically in many ways (Baker et al. 1989; Bruening 2011, 2014; Collins 2005, a.m.o.). For now though, all that matters is the descriptive fact that it does.

What distinguishes the passive and unaccusative structures above is that in the passive, *v* projects, and thus the semantics of the passive entails the existence of an external argu-

ment. In contrast, in unaccusatives, *v* does not project, and no such entailment arises.<sup>21</sup>

Interestingly, in certain circumstances, the movement of a phrase to a subject position in a passive can leave behind a preposition that governs it. Such cases are called pseudo-passives. In the following examples, I have represented the original position of the subject with a trace that is coindexed with it, but this should be understood as a notational convenience rather than a theoretical commitment.

- (58) a. The wild party<sub>*i*</sub> was talked about *t<sub>i</sub>* for many weeks afterward.  
b. The bed<sub>*i*</sub> was rarely slept in *t<sub>i</sub>*.  
c. The problem<sub>*i*</sub> was quickly dealt with *t<sub>i</sub>*.

There are some semantic/pragmatic restrictions on pseudo-passives. For instance, the following would-be pseudo-passive does not seem as well-formed as those in (58).

- (59) ?? New York City<sub>*i*</sub> was slept in *t<sub>i</sub>*.

One way of thinking about this has to do with a notion of affectedness—pseudo-passives sound best when their subject is interpreted as affected in some pragmatically well-defined way. That's why (59) sounds bad, but the similar (58b) is okay: sleeping in New York City does not affect the city much, but sleeping in a bed might affect the bed's appearance. We would have to extend this notion to something being talked about, which wouldn't usually seem to affect the topic of discussion itself, in order to account for the well-formedness of (58a).

At any rate, pseudo-passives are possible, at least in some cases. This means that the movement that is shown in (57b) seems to be able to strand a preposition, speaking descriptively. But interestingly, the same is not true for the superficially similar movement in (57c). It turns out that even though the source and destination of the movements in (57b) and (57c) are structurally identical, only in the former case can the movement target a DP and leave behind a preposition containing it. This is shown by the following data, which

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<sup>21</sup>Sometimes a distinction is made between unaccusatives and inchoatives. Inchoatives are a subclass of unaccusatives, so called because their semantics seems to involve events that can be characterized as becomings. But while many unaccusatives are inchoatives, not all are. For instance, verbs of motion like *go* are sometimes considered unaccusative, as are verbs like *exist*. But in neither of these cases (especially the latter) does it necessarily make sense to talk of these as describing inchoative events. While the examples I use of unaccusatives are often inchoatives, this is simply due to their prevalence. There are no crucial syntactic differences for my purposes between non-inchoative unaccusatives and inchoative unaccusatives.

establish that a particular verb root can occur in active (transitive), passive, and unaccusative contexts (a–c); and that when the same verb root occurs with a preposition, it can occur in active and passive contexts, but not unaccusative contexts (d–f). This shows that P-stranding is possible in passive A-movement, but not unaccusative A-movement—in other words, pseudo-passives are possible, but what we might refer to as “pseudo-unaccusatives” are not, even when the verb root can otherwise occur in unaccusative contexts.<sup>22</sup>

- (60) a. John broke the vase. (transitive)  
 b. The vase was broken (by John). (passive)  
 c. The vase broke. (unaccusative)  
 d. John broke into the house. (P-object)  
 e. The house was broken into (by John). (pseudo-passive)  
 f. \* The house broke into. (pseudo-unaccusative)
- (61) a. John moved the platform.  
 b. The platform was moved (by John).  
 c. The platform moved.  
 d. John moved into the new house.  
 e. The new house was moved into (by John).  
 f. \* The new house moved into.
- (62) a. John blew the whistle at five.  
 b. The whistle was blown at five (by John).  
 c. The whistle blew at five.  
 d. John blew onto the soup (to cool it down).  
 e. The soup was blown onto (by John) (to cool it down).  
 f. \* The soup blew onto.

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<sup>22</sup>Though note that, unsurprisingly, it is possible to “strand” a particle in an unaccusative:

- (i) The vase broke apart.

However, particles differ syntactically from prepositions, so this fact is not relevant to the P-conflation analysis. The prepositions in (60–64) do not have a double-life as particles (unlike many other English prepositions like *on*, *up*, etc.), and so represent the appropriate test case.

- (63) a. John turned the wheel.  
 b. The wheel was turned (by John).  
 c. The wheel turned.  
 d. John turned onto the driveway.  
 e. ? The driveway was turned onto (by John).  
 f. \* The driveway turned onto.
- (64) a. John hung the picture on the wall.  
 b. The picture was hung on the wall (by John).  
 c. The picture hung on the wall.  
 d. John hung onto the trapeze (for dear life).  
 e. The trapeze was hung onto (for dear life) (by John).  
 f. \* The trapeze hung onto.

A first attempt to explain this pattern might be to assume that the verb that occurs in (d–f) is different from the verb that occurs in (a–c). The phonological and semantic similarities between the transitive, object-taking verbs in (a–c) and the verbs occurring with PPs in (d–f) would be due to happenstance. However, in three of these cases (*break*, *blow*, and *hang*), we are able to firmly reject this possibility. This is because these verbs have irregular inflectional paradigms, which characteristically identify roots (e.g., Borer 2013). We would have to claim that these verbs are accidental doublets that also happen to be irregular in exactly the same ways—a far more tenuous position to take. In the cases of the irregularly inflected *hang* and *blow*, it is also difficult to see any clear semantic differences between their transitive and PP uses that would make us favor such a move. In addition, taking this approach would fail to state the generalization: we would have to claim that all these doublets independently stipulate that they cannot occur in unaccusative contexts. That would seem to be missing an important generalization exemplified across all the verbs above. I will thus assume that the same verbs occur in (a–c) and (d–f) above, and that whatever is responsible for the possibility of pseudo-passives and the impossibility of pseudo-unaccusatives must not be related to particular lexical items.



In addition, note that this restriction appears to only apply to A-movement. A preposition can be stranded in an unaccusative under  $\bar{A}$ -movement.

- (65) a. What<sub>*i*</sub> did John fall onto *t<sub>i</sub>*?  
b. Which train station<sub>*i*</sub> did Bill arrive at *t<sub>i</sub>*?  
c. Which shelf<sub>*i*</sub> did the vase break on *t<sub>i</sub>*?

Regardless, the differences between P-stranding in A- and  $\bar{A}$ -movement are well established. For instance, while there are particular semantic/pragmatic conditions on the formation of pseudo-passives, as in (59), no such constraints seem to govern, e.g., *wh*-movement.

- (66) Which city<sub>*i*</sub> did John sleep in *t<sub>i</sub>*?

I will not propose an explanation for this contrast.<sup>23</sup>

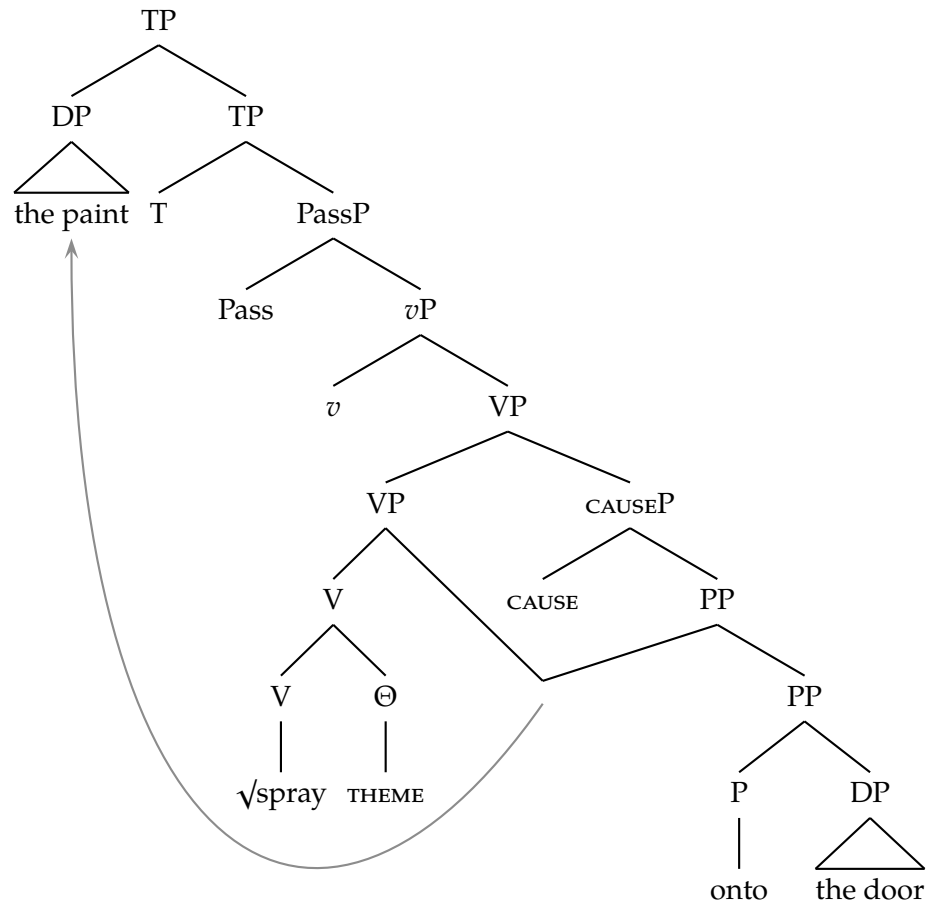
While I am not aware of an existing working analysis of data like the above,<sup>24</sup> the pattern seems robust: descriptively, P-stranding is possible in passives but not in unaccusatives. If we suppose that the incorporated null  $P_{\text{Loc}_\emptyset}$  in the goal-object variant of *spray/load* verbs is subject to this restriction, the fact that only themes can become subjects follows: only they can occur in unaccusative structures without stranding a preposition. In contrast, passives of goal-object *spray/load* verbs are possible, but they would be analyzed like pseudo-passives, as shown in (67).

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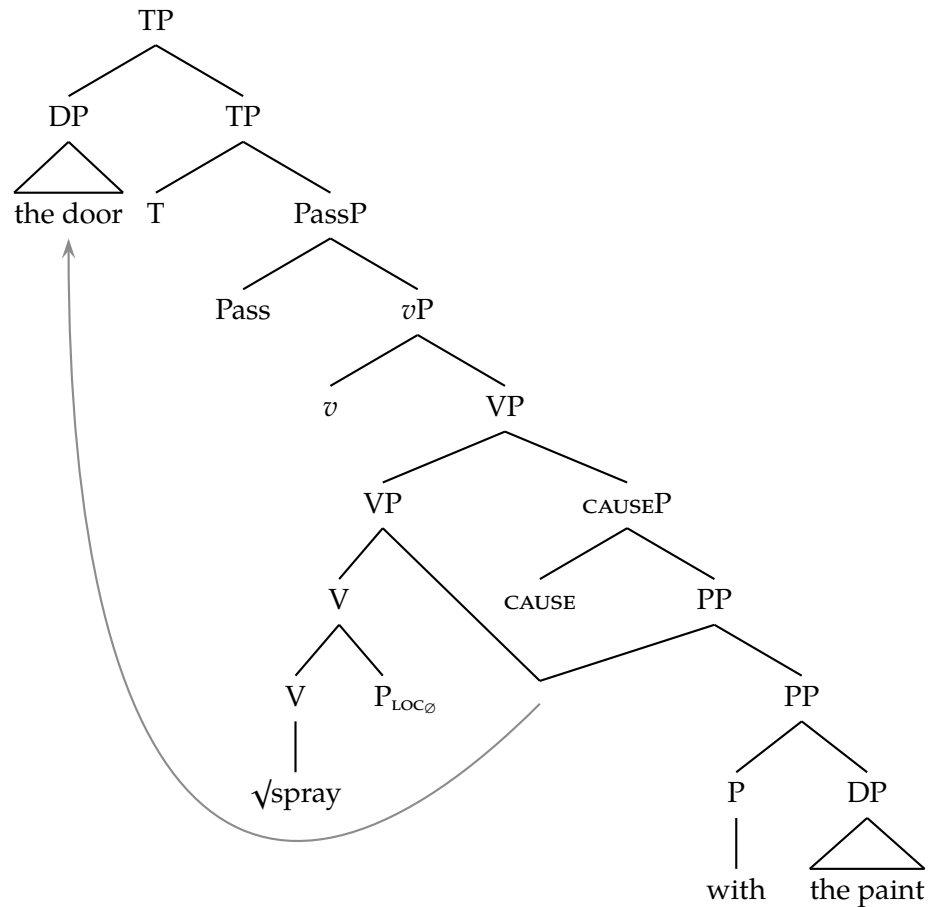
<sup>23</sup>In light of what is to come, we could suppose that P-stranding A-movement requires [V+P] to form a constituent, while this is not required in  $\bar{A}$ -movement. However, this does not explain the difference; it just formalizes the statement of it in a particular way.

<sup>24</sup>Keyser & Roeper (1984) and Fagan (1988) discuss data like these in a different context, with only Fagan (1988) providing some sort of analysis. In particular, Fagan argues that a lexical feature [+causative] determines the availability of unaccusativization, with non-causatives unable to form unaccusatives. She notes that *break* is causative, while *break into* is not, which explains why it cannot form an unaccusative. However, it is hard to adopt Fagan's analysis in a system where unaccusativity is derived in the syntax rather than the lexicon, as is currently popular. I discuss Fagan's proposal and alternatives more in section 3.5.2.

(67) a. The paint was sprayed onto the door. (theme-object passive)



- b. The door was sprayed with the paint. (goal-object passive)



What would distinguish the structures in (67) from their unaccusative counterparts in that in the latter, no PassP or *v*P would be projected. Instead, T would merge with VP. As we have just discussed, in structures like those, no P-stranding is possible. Thus, under the P-conflation analysis, the generalization that goal-object unaccusatives are impossible reduces to the generalization that P-stranding is never possible in unaccusatives.

The claim that goal-object passives are pseudo-passives could be seen as making a prediction that languages that have the *spray/load* alternation but disallow pseudo-passives should disallow goal-object passives.<sup>25</sup> On the surface this seems incorrect, but as I will ex-

<sup>25</sup>Treating goal-object passives as equivalent to pseudo-passives is also not inconsistent with the notion of affectedness that may play a role in licensing pseudo-passives, as shown earlier in (59). However, there are important caveats (presented in the discussion surrounding that example) that we probably do not have a very good understanding of these constraints (cf. the *talked about* example, which does not seem to clearly involve affectedness). Ultimately, I will claim that it is not the goal-object structure itself (nor P<sub>LocØ</sub>) that encodes the affectedness of the goal, but the preposition *with*, since the holistic effect seems to go away in goal-object structures that use locative prepositions (see this chapter, example (45); and chapter 4, section 4.2). Thus, the apparent (and poorly understood) link between the relevance of affectedness to both structures is not actually captured in my account, if indeed the link is real and not better explained in some other way (as I suspect).

plain, I do not believe it means the P-conflation analysis is wrong. Instead, the pattern might relate to what restricts P-stranding in languages that disallow pseudo-passives. First, here is relevant data from Spanish. Spanish disallows pseudo-passives, but nevertheless allows goal-object passives.

- (68) a. Lo rociamos sobre las naranjas.  
 it.ACC spray.1PL over the oranges  
 “We trickle it over the oranges.” (after Lewandowski 2014, (5a))
- b. Se roció el pelo con colonia.  
 REFL sprayed.3SG the hair with cologne  
 “He sprayed his hair with cologne.” (after Lewandowski 2014, (5b))
- (69) a. Un oficial fue rociado con combustible [...]  
 an officer was sprayed with fuel  
 “An officer was sprayed with fuel.”<sup>26</sup>
- b. \* José es contado con por todos.  
 José is counted on by everybody  
 “José is counted on by everyone.” (Campos 1991, (2b))

(68) establishes that the Spanish verb *rociar* ‘spray/sprinkle’ participates in the locative alternation, as it can take a theme argument and a locative PP headed by *sobre* ‘over,’ or a goal argument and a *con* ‘with’ PP. (69a) shows that the goal-object variant of *rociar* can passivize, while (69b) shows that pseudo-passives are not generally possible in Spanish. If the goal-object use of *rociar* is derived via P-conflation, and if the difference in the P-stranding possibility of passives and unaccusatives in English explained why goal-subject unaccusatives were impossible, the grammaticality of (69a) is unexpected.

However, there may be other reasons for this. Mateu (2000, 2017) has suggested that different languages may achieve the *spray/load* alternation in different ways,<sup>27</sup> related to Talmy (1991, 2000)’s distinction between verb-framed languages (like Spanish) and satellite-framed languages (like English). But even if the *spray/load* alternation is derived in similar ways in Spanish and in English, there are additional differences that may be relevant. In particular, P-stranding is more restricted in Spanish than in English. In English,  $\bar{A}$ -movement is able to strand prepositions; in Spanish, this is impossible.

- (70) What<sub>*i*</sub> are you talking about *t<sub>i</sub>*?

<sup>26</sup><https://www.facebook.com/Telemundo52/posts/un-oficial-fue-rociado-con-combustible-y-prendido-en-fuego-una-protesta-por-la-m/10158311463819431/>

<sup>27</sup>It should be noted, though, that Mateu (2000, 2017) adopts a uniform small clause syntax for *spray/load* verbs in English, which chapter 2 shows is incorrect.

- (71) a. \*¿Qué<sub>i</sub> estás hablando de t<sub>i</sub>?  
 what be.2SG.PRES talking of  
 “What are you talking about?”  
 b. ¿[De qué]<sub>i</sub> estás hablando t<sub>i</sub>?  
 of what be.2SG.PRES talking  
 “What are you talking about?”

This difference suggests that the impossibility of P-stranding in Spanish might have a different source. In particular, we could characterize it as a phonological constraint: in Spanish, prepositions require their complement to be phonologically overt and adjacent. Presumably, these phonological requirements might be lifted if the preposition itself is either phonologically null or part of another word, which is precisely what happens in passives of goal-object structures in Spanish.

There might be some evidence that supports this way of characterizing the restrictions on Spanish P-stranding. In particular, productive verbal prepositional affixes exist in Spanish, and verbs formed with these affixes can passivize. For instance, the preposition *sobre* ‘over’ (which has an independent life as a fully normal preposition as seen in (68a)) can be affixed to a verb like *volar* ‘fly,’ producing the verb *sobrevolar* ‘fly over.’ This verb can passivize.

- (72) Este cometa fue sobrevolado por la sonda espacial Deep Impact [...]  
 this comet was over.flown by the probe space Deep Impact  
 “This comet was flown over by the space probe Deep Impact ...”<sup>28</sup>

This shows that when a preposition is affixed to a verb, the restrictions on P-stranding are deactivated in Spanish.

To summarize, the general impossibility of P-stranding in Spanish might have a different source from the specific impossibility of P-stranding in English unaccusatives. I suggested that this might be because the ungrammaticality of P-stranding in Spanish is related to phonological constraints.<sup>29</sup> If we put a preposition in a syntactic configuration where it would make sense for those phonological constraints to be relaxed (e.g., if the preposition itself is null or is affixed to a verb), those constraints apparently can be relaxed. I propose

<sup>28</sup><https://es.thefreedictionary.com/sobrevolado>

<sup>29</sup>Another piece of evidence that might be relevant to this characterization of the constraints on P-stranding in Spanish as phonological is that *pro* cannot be the complement of a preposition in Italian, even though it is licensed in object position (Kyle Johnson, p.c.). Null direct objects are also possible in certain varieties of Spanish, though they are subject to certain semantic restrictions (Clements 2006).

that this is what is going on in cases like (69a). As a result, we cannot use the fact that goal-object structures can passivize in Spanish as direct evidence against the P-conflation analysis. There is a more general ban on P-stranding in Spanish that gets in the way of this, and this general ban might not apply in the case of goal-object passives.<sup>30</sup>

In contrast, the ban on P-stranding in unaccusatives might have a different source. A way of characterizing it is that in order to form a head consisting of [V+P], *v* must project. This generalization accounts for the fact that both active and passive uses of *spray/load* verbs are possible, and for the general possibility of pseudo-passives, while correctly disallowing the existence of pseudo-unaccusatives.

I will suggest that a possible explanation for this generalization might relate to labeling. After two items in a numeration merge, they are labeled with one of the labels of the daughter nodes. Consider the status of the label when the daughter nodes are heads labeled V and P. What label should be assigned to their mother node? How could the labeling algorithm choose V or P? Let us suppose that it cannot do so right away, but that labels might be assigned later on depending on where [V+P] ends up. A standard assumption is that

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<sup>30</sup>This account might predict that if a language allows P-stranding but disallows pseudo-passives, passives and unaccusatives of goal-object *spray/load* verbs should be impossible. The reason for this is that even in languages where P-stranding is generally possible like English, it is not possible in unaccusatives. Thus, goal-object unaccusatives are always predicted to be impossible. In contrast, passives of goal-object *spray/load* verbs are predicted to be possible if pseudo-passives are allowed. In a language like Spanish, the more general ban on P-stranding makes it difficult to evaluate why pseudo-passives are disallowed, and the proper statement of the conditions regulating the ban on P-stranding in Spanish might subvert this in the case of affixed verbs, which I just showed. However, in a language that generally allows P-stranding, this more general ban on P-stranding would not exist, and so would make it difficult to consider it a phonological constraint. As such, the prediction would be that both unaccusative and passive uses of goal-object *spray/load* verbs would be impossible, while these would be possible for theme-object *spray/load* verbs. Kyle Johnson (p.c.) has suggested to me that Icelandic has the relevant properties of permitting P-stranding but disallowing pseudo-passives, and so might provide the relevant test case. My expectation is that the prediction is wrong, and that passives but not unaccusatives of goal-object *spray/load* verbs will be possible, though of course this requires empirical evidence I do not have at present.

However, whether this in fact constitutes a prediction of my account is perhaps a bit trickier than that. I just showed evidence from Spanish that passives of verbs that are formed by P-conflation (i.e., *sobrevolar* ‘fly over’ in (72)) can passivize, even though pseudo-passives are impossible. This could mean that passives of goal-object structures are not really pseudo-passives—the comparison might just be a useful analogy. It could be that if goal-object passives are possible in Icelandic, the reason could be related to the difference between incorporation (which is responsible for licensing pseudo-passives) and conflation (which is responsible for goal-object *spray/load* verbs and (probably) verbs with prepositional affixes). One could suppose that Icelandic disallows pseudo-passives because P-incorporation is disallowed, while P-conflation is allowed. Alternatively, one could suppose that, if passives of verbs with prepositional prefixes are possible in Icelandic (as they are in Spanish), that this is because incorporation in Icelandic (and Spanish) requires realizing the preposition as an affix rather than as an independent phonological word as is possible in English. This would, as far as I can tell, make identical predictions to the proposal that P-incorporation is impossible in such languages, while P-conflation is permitted. Thus, while the prediction might seem clear at first glance, there are some issues that must be clarified in determining which data are truly relevant to evaluating it.

it will end up pronounced in *v*, since this makes sense of certain facts regarding the relationship between the possible readings of *again* and its syntactic position (as discussed in chapter 2) (Bale 2007; Beck & Johnson 2004; von Stechow 1996).

This means that like other verbs, goal-object *spray/load* verbs formed as  $[V+P_{Loc\emptyset}]$  will move to *v*, where they are pronounced. There is direct evidence for this, so in fact this is not really an assumption; *again* must receive a subject-ful repetitive reading when it precedes goal-object *spray/load* verbs, too.

- (73) a. John again sprayed the wall with paint. (subject-ful repetitive only)  
 b. John again drizzled the cake with icing. (subject-ful repetitive only)  
 c. John again loaded the truck with books. (subject-ful repetitive only)

Let us suppose that because *v* is in the extended projection of V, movement of  $[V+P]$  to *v* is able to resolve the labeling conundrum, in favor of V rather than P.

Now, consider that passives also contain *v* like actives do, but unaccusatives do not. This is established by Roeper (1987), who shows that the implicit agent in a passive can control the PRO subject of a purpose clause, but that no such thing is possible in an unaccusative. It is also established in Baker et al. (1989) via the existence of disjoint reference effects: the implicit external argument in a passive cannot be interpreted as coreferential with the subject.

- (74) a. The ship was sunk to collect the insurance. (passive)  
 "The ship was sunk so that the sinker could collect the insurance."  
 b. \* The ship sunk to collect the insurance. (unaccusative)  
 (cf. Roeper 1987, (3a,b))

- (75) The men were killed. ≠ The men committed suicide.  
 (cf. Baker et al. 1989, (10a,11a))

We conclude, following not only these facts but many other analyses (e.g., Collins 2005; Legate 2017, 2014, 2021; Legate et al. 2020), that *v* projects in passives. Accordingly, the labeling conflict can be resolved in passives in the same way it is in actives:  $[V+P]$  can move to *v*, which will provide a resolution to the labeling conflict.

The idea that  $[V+P_{\text{LOC}\emptyset}]$  must head-move to  $v$  in passives of goal-object *spray/load* verbs receives independent support from the behavior of pseudo-passives, since in these cases the verb and stranded preposition must be adjacent.

- (76) a. The committee talked about the problem forever.  
b. The committee talked forever about the problem.
- (77) a. The problem was talked about forever.  
b. \* The problem was talked forever about.

If a pseudo-passive requires the verb and preposition to be part of the same head (cf. Hornstein & Weinberg 1981), then we might expect to run into the same labeling problem. But it could be resolved in the way I suggested if  $[V+P]$  moves to  $v$ . That would explain why the preposition must be adjacent to the verb in pseudo-passives: it is part of the head that is pronounced in the position of  $v$ . To summarize the idea, pseudo-passives require the preposition to be part of a head with the verb. This leads to a labeling conflict. The head containing  $V$  and  $P$  can head-move to  $v$ , which resolves the conflict. This means that  $P$  (and, naturally,  $V$ ) will precede everything else in  $VP$ . This prevents an adjective from coming between  $V$  and  $P$ .

Unaccusatives, in contrast, do not contain  $v$ , which means there is no way to resolve the labeling conflict that  $[V+P]$  represents. As a result, pseudo-unaccusatives are impossible.

### 3.5.2 *Middles and P-stranding*

Actives and passives both allow  $P$ -stranding, but unaccusatives do not. I have related this not to properties of  $P$ -stranding, but instead to properties of  $v$ .  $A$ -movement that strands a  $P$  requires there to be a  $v$ . I proposed a mechanism to derive this that relied on a labeling conflict, but even if that explanation turns out to be wrong, the generalization linking  $P$ -stranding  $A$ -movement to  $v$  seems to hold.

A question now arises regarding the possibility of  $P$ -stranding in middles. Middles might involve the projection of a  $v_{\text{Middle}}$ , so if what I proposed above is right,  $P$ -stranding in middles should be possible, and so should goal-subject middles of *spray/load* verbs. Are these predictions correct?



As it turns out, there is no small amount of controversy regarding whether middles allow P-stranding. Keyser & Roeper (1984) claim that it is possible, which would fit with the generalization I proposed above.

- (78) a. \* The room broke into (because it was poorly secured).  
(pseudo-unaccusative)
- b. ? The room breaks into easily (because it is poorly secured).  
(pseudo-middle)

However, Fagan (1988) claims that pseudo-middles like (78b) are ungrammatical. She attributes the noticeable contrast in (78a) and (78b) to the middle being ill-formed merely syntactically, while the unaccusative is ill-formed semantically as well. In particular, she proposes that unaccusatives can only be formed from predicates that are lexically marked as [+causative]. As she says, because *break* is causative, but *break into* is not, the unaccusative is ill-formed semantically. The P-stranding merely adds a syntactic violation on top of this semantic violation. In contrast, middles can be formed by causative and non-causative predicates alike, so the middle only incurs a syntactic violation, making it ungrammatical but relatively better than the pseudo-unaccusative.

There are a number of problems with this proposed explanation. For one thing, it is not clear why a syntactic violation alone would not suffice to produce total ungrammaticality. Violations of the coordinate structure constraint involve only a single illicit movement, but they are strongly and unequivocally ungrammatical.

- (79) \* What did you eat strawberries and?

Thus, the claim that a single syntactic violation should not result in total ungrammaticality is dubious at best.

Another problem is the idea that the violation related to decausativization is semantic in nature. If [+causative] is a feature that is implicated in a syntactic process, then it is presumably visible to the syntax, and perforce a syntactic feature, not a purely semantic feature. However, we could say that there are two syntactic violations in (78a), and only one in (78b); ultimately what matters for Fagan (1988)'s approach here is the existence of two violations compared to one violation, regardless of what kinds of violations they are.

However, it is unclear that this is the right approach for pairs like *break/break into* and *blow/blow onto*. The reason for this is that the verbs in these pairs share identical irregular inflectional paradigms; e.g., the past tense of *break*—whether followed by *into* or not—is *broke*, not \**breaked*. This constitutes evidence that the same root is implicated in the transitive and P-object uses of these verbs, since phonological information like this is what characterizes roots (Borer 2013). If these are the same roots, we might expect that the same features would be present with each, and decausativization should be possible. Of course, this is not out of logical necessity; we might suppose that different uses of the same root come with different features. This is the case for features like [+topic] and [+focus]. Perhaps [+causative] could be a feature like these, and it would only be associated with verbs that do not take a prepositional object—though the correlation between the semantics associated with [+causative] and the syntactic fact that verbs bearing it do not take prepositional objects would remain mysterious.

More worryingly, if we follow Fagan’s approach and say that what rules out deriving an unaccusative from *break into* is the lack of a causative feature, we run the risk of making [+causative] mean nothing beyond “can occur as an unaccusative,” begging the question. Fagan (1988) does not provide independent evidence that would allow us to establish whether the [+causative] feature is present, beyond the asymmetry to be explained (though admittedly that is not the main point of her paper). Thus, the proposal as stated becomes hard to falsify. I conclude that we should not appeal to causativity in explaining the contrast between (78a) and (78b).

A more general criticism of Fagan (1988)’s appeal to causativity has to do with architecture of grammar that I assume. My system is one that does not contain a generative lexicon. There is no operation that could take a verb with a [+causative] feature that would syntactically project an internal and an external argument, and remove both that feature and the external argument. There is no way of stating such an operation in my system, since generative power is exclusively relegated to syntax. The corresponding way decausativization would have to work in a system like mine would involve projecting a verb, and if that verb bore a [+causative] feature, a higher functional head could existentially close the external argument. Of course, this would make decausativization the same as passivization, which

is clearly not the right approach. Instead, in my system, one can project the external argument (by merging *v*) or not, and it is this choice that determines unaccusativity. Some verbal roots will have to combine with *v* (e.g., *destroy*, which cannot occur as an unaccusative). But clearly, the verbal roots in (60–64) are not such roots, since the same roots can occur in unaccusatives when there is no P-stranding. Thus, I propose that there is no decausativization operation. The difference between (78a) and (78b) would have to do a different source, since one cannot violate the parameters of an operation that does not exist.

Newman (2020a) discusses additional examples of pseudo-middles, reporting contrasts between different predicates.

- (80) a. \* Gromit doesn't lie to easily.  
 b. \* WW2 doesn't talk about easily.
- (81) a. ? *v*P's don't extract from easily.  
 b. ? That shower doesn't walk into easily.

I share these judgments. Additional data supporting the idea that pseudo-middles are possible but often degraded for some reason comes from the following contrast Newman reports (I have supplied the transitive controls in (82c) and (82d)):

- (82) a. ? *v*P's don't extract from easily.  
 b. \* *v*P's don't extract easily from.  
 c. *Wh*-movement extracted that phrase from the *v*P easily.  
 d. *Wh*-movement extracted that phrase easily from the *v*P.

In (otherwise acceptable) pseudo-middles, just as in pseudo-passives, nothing can intervene between the verb and the preposition. If pseudo-middles involve the formation of a [V+P] head that moves to *v*<sub>Middle</sub>, then this identical pattern is entirely expected. What remains unexpected is why pseudo-middles often seem worse than pseudo-passives. However, middles already occupy an odd place in acceptability judgments, with some middles of many garden-variety transitive verbs sounding odd to begin with.

- (83) a. ? This music hears easily because it's so loud.  
 b. ? This TV watches easily because it's so bright.  
 c. ? This topic studies easily because it's so simple.  
 d. ? This topic teaches easily because it's so simple.

These all seem to be of the same status as (78b) in my estimation. They are not crashingly bad like (78a), but they are not so good either. It is likely that the conditions on the felicitous use of middles involve subtle semantic and pragmatic factors that go beyond the mere syntactic possibility of their existence. That might explain why (78b) is somewhat odd, without having to posit that the degradedness is due to P-stranding. Nevertheless, what seems to be consistent is that while perfectly acceptable middles exist, most to all pseudo-middles sound somewhat degraded. I have attempted to come up with a couple of examples that do not sound so bad to my ears, though.

- (84) a. This loose soil digs into easily, making this a great place to gather it.  
 b. This soft bread cuts into easily, making it great for sandwiches.

I suspect the relevant facts here have to do with affectedness. Middles seem best when the promoted object is interpreted as affected in some way. This would explain why the middles in (83) sound odd: none of these cases invoke affectedness (hearing music, watching TV, and studying/teaching a topic do not affect the music, the TV, or the topic, respectively). In contrast, middles that are clearly acceptable involve affected arguments (e.g., *Politicians bribe easily*), and the pseudo-middles that are acceptable in (84) fit this pattern as well.

It is unclear why pseudo-middles should be degraded so often. But returning to the larger picture, we are asking if middles provide any support for the P-conflation analysis of goal-object uses of *spray/load* verbs, and for the proposed explanation of the impossibility of pseudo-unaccusatives in terms of labeling. If the latter is correct, then pseudo-middles should be possible if middles are assumed to include a *v* like passives Alexiadou & Doron (cf. 2012); Keyser & Roeper (cf. 1984).<sup>31</sup> In some cases, pseudo-middles do appear possible,

<sup>31</sup>It should be noted that this is not universally assumed; see Rapoport (1999) and Newman (2020b) for representative analyses where middles lack *v* (*qua* agent-introducing Voice). However, something must distinguish middles from unaccusatives—otherwise, they would be identical and that is clearly incorrect. Even if the standard agentive *v* does not appear in middles, it is possible that some other kind of *v* does (perhaps with a

consistent with the proposed explanation under this assumption. The prediction is then that (pseudo-)middles of goal-object *spray/load* verbs should be possible. In addition, we might predict that such middles would often be somewhat degraded in the same way as many other pseudo-middles, especially compared to middles of theme-object *spray/load* verbs, which do not involve P-stranding. These predictions seem to be borne out.<sup>32</sup>

- (85)
- a. This paint sprays easily (once you've thinned it out). (theme middle)
  - b. ? This wall sprays easily (with paint) (once you've coated it with primer).  
(goal pseudo-middle)
  - c. This icing drizzles easily (because there are no lumps). (theme middle)
  - d. ? This cake drizzles easily (with icing) (because of its shape).  
(goal pseudo-middle)
  - e. These books load easily (because they're so light). (theme middle)
  - f. This truck loads easily (because it's low to the ground).  
(goal pseudo-middle)

Note that while all of the goal middles involve affectedness, the one that describes the most intuitively plausible scenario (*Which truck should I rent? The one that loads most easily.*) is the most acceptable. This suggests to me that the felicitousness of (pseudo-)middles is related to pragmatics, even if the suggestion above about affectedness turns out to be inadequate (which is likely).

Indirect evidence supporting the judgments in (85) comes from Google searches. While middles are generally uncommon to begin with, there is a clear difference in the theme middles and goal pseudo-middles. A search for the theme middle "paint sprays easily" returned 424 results, while searches for the goal middles "wall sprays easily", "fence sprays easily", and "patio sprays easily" all returned 0 results.<sup>33</sup> While such evi-

<sup>32</sup>Though note that it is well-established that goal objects of *spray/load* verbs are interpreted as affected, meaning that any oddness associated with middles of this sort would have to be for other reasons unrelated to affectedness.

<sup>33</sup>The double quotation marks ensure that Google searches for only literal matches of the entire string. When searching for "patio sprays easily", Google found no results for the literal string, but insisted on its suggestion of removing the quotation marks, allowing for results that included the keywords that did not occur

dence is never conclusive in the modeling of linguistic competence, the conspicuous absence of goal pseudo-middles of *spray/load* verbs is suggestive.

To summarize, we have the following picture about the status of middles of goal-object *spray/load* verbs and the proposed explanation linking P-stranding A-movement to the projection of *v*. Pseudo-middles are possible but often degraded. This is probably because of semantic and/or pragmatic factors, and not because of syntax. However, prepositions might carry with them particular semantic properties that run afoul of these semantic and pragmatic constraints on the felicitous use of middles, so pseudo-middles being somewhat degraded might be what results. *spray/load* verbs seem to fit into this general pattern, with their goal pseudo-middles being generally worse than their theme middles, but not always. In the end, the behavior of goal-object *spray/load* verbs is not inconsistent with the P-conflation analysis. However, the independent complexities surrounding pseudo-middles mean that this behavior should not be seen as strong evidence for the P-conflation analysis.

### 3.5.3 *Nominalizations*

Under the P-conflation analysis, the fact that nominalizations of *spray/load* verbs can refer to themes and not goals is part of a more general pattern that objects of prepositions are never referents of nominals derived by productive affixes.

What zero-derived nominal uses of roots that have verbal uses can refer to is somewhat idiosyncratic, and depends on the verb. Sometimes, they refer to eventualities, other times to what we might call “reified eventualities,”<sup>34</sup> and other times to their internal argument. Often, they are ambiguous between these, though sometimes certain usages do not seem to be available.

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in the specified order. This suggested search of `patio sprays easily` returned 22,000,000 results. I am not sure why Google did not insist on something similar for the other 0-result searches. In addition, an attempted search for `truck loads easily` was complicated by the inclusion of mostly irrelevant results like *There were four truck loads easily* and *(how to) secure truck loads easily*.

<sup>34</sup>Kyle Johnson (p.c.) suggested this term to me.

- (86) a. Did you see that **dance** just now? (eventuality nominal)  
 b. The school **dance** begins at 7 PM. (reified eventuality nominal)  
 c. The **report** lasted four hours. (eventuality nominal)  
 d. John submitted his **report**. (reified eventuality nominal)  
 e. The fisherman's **catch** weighed 55 lbs. (internal argument nominal)

The usage of the terms “eventuality nominal” and “internal argument nominal” should be fairly obvious; the former refers to nominalizations that denote eventualities, while the latter refers to nominalizations that denote entities that receive the same interpretation as the internal argument of the nominalized predicate. What is meant by “reified eventuality” is a bit more complex. For instance, consider that *the report* can refer to a physical object as opposed to an event. But this physical object need not be something created as the result of a reporting event—one can type up a report without ever having actually reported its contents to anyone. So a report cannot necessarily be something that is the internal argument of a reporting event. There is an interesting question about how to relate these nominals to the events they invoke, but the details are not particularly relevant here.

However, what is interesting is that most nominals seemingly cannot refer to objects of prepositions. That is, they cannot refer to subjects of pseudo-passives or objects of prepositions. They can only refer to eventualities, reified eventualities, and internal arguments.

- (87) a. the sleep (= event/≠ the bed)  
 b. the break (= event/= reified event/≠ the shelf)  
 c. the invite (= reified event)  
 d. the change (= event)  
 e. the construction (= event/= internal argument/≠ the job site)  
 f. the building (= event/= internal argument/≠ the job site)

There are a variety of other nominalizing suffixes in English, including *-al*, *-(a)tion*, *-ment*, and  $-\emptyset$  (a null affix), which show the same pattern.

There are a few exceptional suffixes which produce different readings. One is *-er*, which is compatible with a very wide variety of readings, though its agent-denoting use is the

most canonical. It can also more generally produce instrument and internal argument readings.<sup>35</sup>

- (88) a. The restaurant needed someone to broil chickens, and so hired a **broiler**.  
(agent nominal)
- b. The machine used to broil chickens broke, so they bought a new **broiler**.  
(instrument nominal)
- c. They were out of chicken, so they bought some more **broilers**.  
(internal argument nominal)
- d. The **door opener** stood at the ready. (agent nominal)
- e. The automatic **door opener** worked via radio waves.  
(instrument nominal)
- f. This fun house has a lot of fake doors in it that don't open, but that one over there is an actual **opener**. (internal argument nominal)

In at least one case, *-er* can refer to a location. In another case, it can refer to the object of *about*.

- (89) a. I love eating at that **diner**. (location nominal)
- b. That's a **thinker**. (a conundrum; something one must think about)<sup>36</sup>

However, it is worth noting that these uses of *-er* do not seem to be productive. To wit:

<sup>35</sup>Tom Roeper (p.c.) brought the productivity of examples like these to my attention.

<sup>36</sup>One could come up with a semantics that would not seem to model *thinker* as involving a preposition:

- (i)  $[[\text{thinker}]] = \lambda x.x \text{ makes one think}$

This semantics might imply *thinker* to instead be the result of binding the external argument of a causative use of *think*. This is somewhat appealing because it would identify this use of *-er* with its most typical use, where it binds an external argument (most often an agent, but also non-agent causers). However, something would have to be said about why this proposed causative use of *think* cannot surface as a verb.

- (ii) \* That puzzle really thought me! (under the reading "That puzzle really made me think!")

While this does not seem insurmountable, it is an obstacle to taking this approach. One could posit that it is *-er* itself that adds the external argument semantically, rather than its binding an external argument introduced by some other functional head. However, the fact that other verbs that are semantically similar to *think* (e.g., *understand*) that also lack causative uses disallow *-er* suffixation make this move dubious.

- (iii) a. \* That example really understood me!  
(under the reading "That example really made me understand!")
- b. \* That's an understander. ( $\neq$  a helpful example; something that helps one understand)

Perhaps the contrast is related to the fact that *think* is intransitive, while *understand* is transitive:



- (90) a. an eater (≠ a restaurant)  
 b. a buyer (≠ a store)  
 c. a reader (≠ a library)  
 d. a builder (≠ a job site)  
 e. an arriver (≠ a train station)  
 f. a talker (≠ a thing to talk about)

I have also found a single exceptional use each of *-ence* and *-ant*.

- (91) a. the residence (location nominal)  
 b. the confidant (one who is confided in)

*Confidant* is not really a location nominal, but its meaning is related to the prepositional object of *confide in*.

Even though it is difficult to clearly delimit the possible meanings of nominalizations, I do believe that a generalization holds regarding those derived via zero-affixation and *-ing*. These nominals can never refer to prepositional objects, while nouns derived via other affixes sometimes can, but apparently only in rare, probably idiosyncratic cases like those discussed above.<sup>37</sup> While the full range of possible meanings of nominalizations resists precise characterization given these facts, there is still a clear general trend towards the pattern shown in (87). The fact that nominalizations of *spray/load* verbs cannot refer to goals aligns with this more general pattern under the P-conflation analysis. Whenever nominalizations of *spray/load* verbs are derived via one of these affixes (most commonly  $-\emptyset$  or *-ing(s)*), they cannot refer to their goals, as shown in (6–9). This is consistent with the patterns discussed

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- (iv) a. John thought \* (about) the problem.  
 b. John understood (\*about) the problem.

But given the general pattern that it is arguments of transitive verbs that allow *-er* suffixation, this is actually the opposite of what we would expect, as it would link the existence of *thinker* under the “conundrum” reading to the fact that *think* takes a prepositional object. This leads us neatly back to the view presented in the text that *thinker* is exceptional (though it raises the question of why *understander* under the “helpful example” reading is impossible, if transitive *understand* is not synchronically analyzed as [V+P]).

<sup>37</sup> Apparent exceptions might exist, if we consider examples like *box*, *bag*, *bottle*, *lodge*, *house*, etc. Such words can occur as either nouns or verbs, and would seem to refer to the prepositional objects of their verbal uses, rather than their direct object (consider *John bagged the groceries in a sack*, where *the bag* does not refer to the groceries). However, it is unclear in these cases that the noun is actually derived from the verb—if anything, it is probably the other way around (cf. Hale & Keyser 2002).

above if the object of goal-object uses of *spray/load* verbs is introduced by a preposition. Otherwise, if the object of a goal-object use of *spray/load* verbs were a true internal argument, it would be unclear why goal nominals were impossible.

To explain why only theme nominalizations are possible requires saying one of two things. What is presented here of course will remain tentative, given the fuzzy borders of nominalization we have just surveyed. Nevertheless, I believe it is worth making an explicit suggestion in the service of defining the problem more concretely.

First, we could adopt the contextual allosemy approach to *spray/load* verbs presented in (47). This would mean that whenever  $\sqrt{\text{spray}}$  appears outside the context of  $P_{\text{LOC}\emptyset}$ , the verb takes a theme argument. Thus, when a nominalizer attaches directly to it, it can bind the theme argument (*the spray*  $\approx$  *the theme of some (salient) spraying event*), as follows.

- (92) a.  $\llbracket \text{NMLZ} \rrbracket = \lambda P_{\langle e, st \rangle}. \lambda x. \exists e [P(e, x) = 1]$   
 b.  $\llbracket \sqrt{\text{spray}} \rrbracket = \lambda x. \lambda e. \text{spray}(e, x) = 1$   
 c.  $\llbracket \sqrt{\text{spray}} + \text{NMLZ} \rrbracket = \lambda x. \exists e [\text{spray}(e, x) = 1]$

The result of saturating  $\llbracket \text{NMLZ} \rrbracket$ 's argument is a predicate of entities that describes objects of spraying events. Because this entity is the one introduced by the root, it is interpreted as the theme.

The other possibility would be to reject the contextual allosemy approach, and instead adopt the one in (50), where  $\sqrt{\text{spray}}$  always denotes a predicate of eventualities, with the theme argument coming from a separate thematic head. If this were the case, presumably in order to derive a nominal referring to a theme, the *THEME* head would have to be present in whatever structure gets nominalized:  $[\sqrt{\text{spray}} + \text{THEME}] + \text{NMLZ}$ .

In contrast, consider what would happen with a goal-object *spray/load* verb. I assume that  $[V + P_{\text{LOC}\emptyset}]$  does not introduce a theme, since when *again* modifies a constituent consisting of the verb and a goal-object, no implications regarding the theme seem to arise (see chapter 2).<sup>38</sup>

<sup>38</sup>Of course, the existence of a theme is still entailed by  $[V + P_{\text{LOC}\emptyset}]$ . I assume that this is not because  $[V + P_{\text{LOC}\emptyset}]$  contains the semantic relation *THEME*, but instead arises because of the meaning of *GOAL*, which specifies the endpoint of a path of motion. As such, there must be something that moves along that path, which would satisfy the semantic relation *THEME*. Alternatively, one could add to the denotation of  $P_{\text{LOC}\emptyset}$  that it existentially binds the entity argument of a theme relation; though I cannot foresee all the consequences of this move, I do

$$(93) \quad \llbracket \sqrt{\text{spray} + P_{\text{Loc}_\emptyset}} \rrbracket = \lambda x. \lambda e. \text{spray}(e) \wedge \text{GOAL}(e, \text{on}(x)) = 1$$

Note that the goal object of  $[\sqrt{\text{spray} + P_{\text{Loc}_\emptyset}]}$  must be a surface, as shown in (40). Thus, the locative part of  $P_{\text{Loc}_\emptyset}$  here is represented with *on*. Now, nothing would go wrong semantically if  $\text{NMLZ}$  were attached to  $[V + P_{\text{Loc}_\emptyset}]$ , as it is of the right semantic type. If this occurred, the resulting nominal would be a predicate of goals of spraying events (that are surfaces). However, as I showed in (6–9), this is not a possible reading of nominalized *spray*. We can now propose some idea about why this is that fits with the general patterns seen with nominalizations:  $\text{NMLZ}$  (the phonologically null nominalizer) cannot include a preposition within it (cf. Myers 1984; Pesetsky 1995). This would account for why location nominalizations are generally ruled out (though of course, it remains a bit unclear how to account for the limited exceptions).

### 3.6 An Alternative to Prepositions?

An alternative characterization of the facts I have presented in this chapter would not relate the ungrammaticality of pseudo-unaccusatives, the marginal status of pseudo-middles, and the impossibility of goal nominals to the syntax of prepositions. Instead, one might recast the constraint as one on processes that target themes (perhaps in the broader sense of “direct internal argument” that I earlier rejected). Perhaps only themes can become subjects of unaccusatives and middles, and the referents of zero-derived nominalizations. A possible semantic source for this generalization might be if themes are arguments of roots (Kratzer 2003), in contrast to what I’ve proposed here. The proposed constraint on nominalizations would also bear some similarity to Roeper & Siegel (1978)’s First Sister Principle (though the First Sister Principle was proposed to account for compounds and not bare nominalizations). Provided we could find a way of linking the semantic properties of themes to these syntactic processes, we might have an alternative way of describing the behaviors seen.

Of course, this characterization of the facts would be most satisfying if there were some principled syntactic explanation of why these processes targeted themes and not other

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not see any immediately obvious problems that would arise.

kinds of arguments. But I suggest that that explanation is precisely what I have proposed in this chapter. Suppose themes are not introduced by prepositions, but all other thematic relations are. Then my approach would constitute a closer step to an explanation of this alternative description of the facts in terms of themes rather than in terms of the syntax of prepositions. In the end, I suggest that this potentially viable alternative way of describing the facts is not incompatible with my proposal, and that my proposal might provide a deeper explanation of the link between syntax and semantics that it identifies. More work is needed, of course, to determine whether the analysis thus suggested is feasible, but at first glance it appears to hold some promise.

## CHAPTER 4

### THE THEME IN GOAL-OBJECT STRUCTURES

#### 4.1 Introduction

Grappling with the issue of two intersecting alternations and nominalizations in the previous chapter led us to an account of the *spray/load* alternation that made use of P-conflation. This chapter continues investigating the P-conflation proposal by examining the status of the theme in two goal-object structures: agentive transitive goal-object structures, and non-agentive transitive goal-object structures, shown here.

- (1) a. John sprayed the wall with the paint. (agentive transitive goal-object)
- b. The paint sprayed the wall. (non-agentive transitive goal-object)

The P-conflation analysis, which took the form it did partially due to the evidence from *again*, makes the claim that the theme is not a semantic argument of the verb in goal-object structures. However, prior literature on *spray/load* verbs has often assumed that it is. It is thus worth examining the status of the theme in goal-object structures. Ultimately, this examination reveals two things: the differing source of the holistic effect in theme-object and goal-object structures, which resides in the semantics of *with*; and the success of the P-conflation analysis in accounting for non-agentive transitive uses and non-alternating goal-object verbs, which can be accounted for with no unnecessary additional syntactic or semantic machinery.

## 4.2 The Holistic Effect and *With*

In this section, I investigate the status of the theme in (1a) by examining the semantics of *with*, the preposition that composes with it. More precisely, I examine the meaning of the semantic relation *with* that relates two entities to a state. The meaning of this relation is important to understanding the status of the theme in, and some of the semantic properties of, the goal-object structure. Two things are relevant: one is the holistic effect that results in the object being interpreted as completely affected in the way specified by the verb root (e.g., completely covered with sprayed paint, completely loaded with books, etc.). Many analyses link the holistic effect to the relevant argument occurring in an object position (or vice versa, with linking rules placing affected arguments in object positions) (Gropen 1989; Gropen et al. 1991a,b; Pinker 1989; Rappaport & Levin 1988; Tenny 1992, 1994, a.m.o.). I will instead follow Rapoport (2014), who proposes that the affectedness interpretation is not related to a particular semantics associated with the object position, but instead to the meaning of *with*.<sup>1</sup> With details to come, preliminary evidence for this is that the holistic effect seems diminished when using a goal-object structure that only contains the object, or when using a dual goal structure, as in example (45) from chapter 3 (repeated as (2b)).

- (2) a. John sprayed the door.  
(→ the door is covered with an even coating of the omitted theme)
- b. **Context:** John set up the doors like dominos. He turned on the hose and ...  
He sprayed the first door onto the second one.  
(→ the first door is covered with an even coating of the sprayed theme)

These facts lead me to follow Rapoport (2014) in believing that the origin of the holistic effect resides in the denotation of *with*. As for why *with* is used so often in the goal-object structure as opposed to other prepositions, that would probably have to do with facts about usage, and what kinds of situations it is useful to describe with goal-object structures.

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<sup>1</sup>However, note that even if one were to reject Rapoport (2014)'s account and my adoption of it, many explanations of the holistic effect would be compatible with the structures I posit. Indeed, explanations that posit an association between being in object position and the holistic effect are highly compatible with my account, since the verb takes an object. In contrast, accounts that posit a small clause syntax must find a different explanation. Thus, while I do favor an explanation that doesn't relate affectedness to object position as a primitive, other accounts are forced to that conclusion, while my account is more flexible, being more compatible with alternative approaches. I believe this flexibility is a strength of my approach.

In addition to *with* telling us how the goal is to be interpreted, its meaning is crucial to telling us about the status of the theme argument in goal-object structures. I suggested above that  $[V+P_{\text{LOC}\emptyset}]$  is associated with a single meaning that picks out a goal argument. None of what I presented assumed that there was a theme argument present semantically in the goal-object structure. If the theme is not present in the semantics of the goal-object structure, why do we seem to interpret *with*'s argument as the theme of the causing eventuality? Here, I will continue to follow Rapoport (2014), and suppose that this DP is not a theme of the verb. Instead, it is the argument of *with* alone. My suggestion is that the inference that *with*'s complement is the theme of the causing eventuality has to do with how the meaning of *with* relates to the meaning of the verb. This makes an empirical prediction that we will see appears to be borne out.

Rapoport (2014)'s idea is that there is a particular use of *with* that is associated with a meaning of central coincidence; that is the *with* that seems to be relevant here. Rapoport contrasts central coincidence with terminal coincidence, a distinction she credits to Hale (1986). Terminal coincidence has to do with a changing relationship between a figure and a ground, while central coincidence has to do with unchanging relationships between these.

- (3) a. The person ran to the hill. (terminal coincidence)  
 b. The person stood on the hill. (central coincidence)  
 (Rapoport 2014, (1))

It is important not to identify terminal and central coincidence with events and states, respectively. While stative relations always invoke central coincidence, the entailment is unidirectional, with some cases of central coincidence occurring with eventive predicates.

- (4) a. The horse ran along the river.<sup>2</sup> (event, central coincidence)  
 b. Reeds grow along the river. (state, central coincidence)  
 (Rapoport 2014, (2))

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<sup>2</sup>Though Rapoport (2014) herself does not break down what central coincidence means in more detail for this example, we can imagine the sentence as saying that all points in the path of the horse's running are included in the path defined by the river (which, because of the semantics of *along* and possibly pragmatic factors, will include nearby points on land that run parallel to the river's course).

In (4a), the predicate *run* is interpreted as a description of events, but this does not mean that the relationship between the horse and the river is one of terminal coincidence. The relationship between the horse’s trajectory and the location of the river remains constant, making this a relation of central coincidence, even though the sentence is a description of events. Of course, the coincidence is not literally “central” in (4a)—the horse is not running down the center of the river. The notion of what counts as central coincidence is pragmatically tempered; as Rapoport (2014) puts it, “the location of the figure, that is, its trajectory [(4a)] or its linear arrangement [(4b)], corresponds throughout to (and to the extent practical, coincides ‘centrally’ with) the place.”

Rapoport (2014) argues, following Hale & Keyser (2005), that the preposition *with* (among others) encodes central coincidence. She notes that there are many kinds of meaning associated with *with*, but that they all to some extent involve a type of constant relation between two things—definitional of central coincidence.

- (5) a. accompaniment or proximity:  
       *the child you were with, a steak with a bottle of wine*
- b. having or possession: *a shirt with a white collar, the man with a red moustache*
- c. instrument or means or material: *cut it with a knife, fill the bowl with water*
- d. manner or circumstances: *the children shouted with joy*
- e. proportion, relation or simultaneousness: *the pressure varies with the depth*

(Rapoport 2014, p. 160)

Rapoport (2014) proposes that these are all the same *with*, and that they are underspecified as the nature of the accompaniment, which gets filled out pragmatically.

If that is the case, we can see that the semantics of this *with* must relate two entities to an eventuality. Intuitively, this makes sense because central coincidence definitionally involves an unchanging relation between two entities. We can verify this intuition using sentences where *with* serves as the main predicate.



- (6)
- a. Are you with or without luggage?
  - b. I am with a car today, so I don't need a lift.
  - c. My friend is with a jacket, but not a tie.
  - d. Today, I am with my child.
  - e. If he is with a gun, then it's not Jesus.
  - f. He is with a hat and a red shirt.
  - g. If he is without a tie and jacket or suit, he is generally attired in a Polo sweater.
  - h. A lot of people don't understand why he is with an umbrella all the time.

(Rapoport 2014, (6))

If we make the standard assumption that every argument must receive an interpretation, then it seems clear that *with* delivers that interpretation for both arguments.

Rapoport (2014) summarizes her proposal as follows: *with* relates two arguments via central coincidence, which is a constant locative relationship. The second entity *with* combines with, the *with*-subject, controls this relationship. In other words, the location of the *with*-object depends on the location of the *with*-subject, and not the other way around. For instance, in (6h), it is the person referred to with *he* that determines the location of the umbrella, and not the umbrella that determines the location of the person. This notion of control is however, a bit subtle—if the relationship is constant, how can we consider one of the entities in it to be in control of the location of the other? Rapoport (2014) offers the following by way of explanation.

- (7)
- a. I am with a car now.
  - b. # I am with a table now.

(Rapoport 2014, (9))

The contrast in (7) can be attributed to the notion of locative control. In (7a), a car can accompany the speaker wherever she goes. However, tables do not usually have this property. For instance, (7b) cannot be used in a crowded café to announce to one's friends that one has found a table. A table does not typically follow a person wherever she goes, and

*with* is infelicitous. Note that if one constructs a different context, (7b) might be possible: consider someone who is setting up an event space using tables that can be rolled around on wheels. In this context, (7b) sounds fine as a way of describing what the speaker is currently on her way to set up.<sup>3</sup>

Rapoport (2014) notes that this definition is similar to definitions of possession (as distinguished from ownership), and proposes that the relation *with* imposes is a species of possession that we might refer to as “physical possession.” Note the following contrast.

- (8) a. John has an umbrella, but he left it at home today.  
b. ?# John is with an umbrella, but he left it at home today.

If *with* encoded possession *qua* ownership, this would be unexpected. But if it encodes physical possession, this makes sense: physical possession would require that John have the umbrella on his person, not merely that he own it. This idea allows her to further condense the interpretation of *with*: “*with* defines as (locative) accompaniment a central coincidence relation of physical possession” (Rapoport 2014, (10)).

In the context of *spray/load* verbs, Rapoport (2014) proposes that under this way of thinking, it is *with* that is responsible for the holistic effect discussed in chapter 1.<sup>4</sup> The idea is that in a sentence like *John sprayed the wall with paint*, the wall is interpreted as holistically affected not because it is in the object position of the sentence, but because it is the *with*-subject. The semantics of *with* that Rapoport proposes derives this because of the notion of locative control: it is the wall that controls the location of the paint, and not the other way around. For this to be true, Rapoport says that “the possessor [in Spec,PP is] the location that controls the location of the *with*-object, the possessee: wherever the wall is, the paint is,

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<sup>3</sup>However, consider the following pair of sentences:

- (i) a. John is with the car today.  
b. The car is with John today.

Both of these sound equally felicitous to me. If the *with*-subject is always the controller of possession, it is unclear how *the car* would be controlling John’s location. To my intuition, it seems like in these cases, the control relation is reversed: (i-a) describes situations where John is accompanying the car (for instance, if the car is parked in a lot and John is guarding it), while the (i-b) describes situations where the car is accompanying John (e.g., he has rented it for the day). This aside, the judgments in (7) also seem right to me. There is probably more to be said about how exactly the control relationship is defined in these cases. But for *spray/load* verbs, what Rapoport (2014) applies correctly.

<sup>4</sup>Rapoport (2014) assumes the small clause syntax discussed and rejected in chapter 2, but nothing crucial hinges on this.

as it were. Put differently, in order for *paint* to be considered to accompany the possessor *the wall* as required by *with*'s interpretation, the paint must be associated with the wall along the wall's spatial extent" (Rapoport 2014, p. 166). For Rapoport (2014), this is why we interpret the wall as being totally or holistically affected by the paint: because of the particular notion of central coincidence as physical possession associated with *with*. In the case of interior readings of *spray/load* verbs, like with *stuff*, the relevant notion would presumably be the volume defined by the boundaries of the container, which would be asserted to centrally coincide with whatever is stuffed inside.

Additional evidence for the identification of the holistic effect with the semantics of *with* comes from goal-object sentences that use a preposition other than *with*. I discussed one example from English in (2b), in a double-goal structure. Other examples come from Italian and Hebrew, which also allow the use of prepositions that do not correspond to *with* in goal-object structures.

- (9) Hebrew (Rapoport 2014, fn. 16, (i)):  
 Maraxti et ha-kir be-(ktsat) tseva  
 smear-1SG ACC the-wall in-(little) paint  
 "I smeared the wall in (a little) paint." (lit.)
- (10) Italian (Damonte 2005, (34)):  
 Ho caricato il camion di sabbia.  
 have.1SG loaded the truck of sand  
 "I have loaded the truck of sand." (lit.)

Both Rapoport (2014) (Hebrew) and Damonte (2005) (Italian) report that these sentences do not entail a holistic effect, while Damonte (2005) reports that the corresponding Italian sentence with *con* 'with' instead of *di* 'of' does display the holistic effect (see also the discussion in chapter 5, section 5.2.3.2).

A possible prediction of this analysis is that if the quantity of the *with*-object is specified to be a small amount, a holistic reading of the goal should not be required. While Rapoport (2014) presents the holistic effect as entailed in her account, it is not clear that this is correct. This is because a small amount of something being centrally coincident with a surface or container should not necessarily require the surface container to be completely covered/full, as long as the *with*-object is centrally coincident with it (cf. (6c), where the use of *with* certainly does not entail that the wearer of the jacket is not wearing any other clothing). The

notion of physical possession wouldn't seem to require *the wall with the paint* to necessarily describe states where the wall is covered with the paint, but could describe states where the wall controls the location of the paint simply by virtue of the paint being stuck to the wall, regardless of how much of the wall is covered. That is, the holistic effect should arise pragmatically, and most naturally when the quantity is left unspecified (as with the mass nouns commonly used in *spray/load* alternation sentences in the literature (Beavers 2006, 2017; Brinkmann 1995)). This prediction seems to be borne out for both alternating verbs like *load* and traditionally non-alternating verbs like *fill*.

- (11) a. John loaded the truck with the hay, #but left some space for the grain.  
 b. John loaded the truck with a little bit of hay, leaving plenty of space for the grain. (cf. chapter 1, (20))
- (12) a. John filled the bottle with water.  
 → The bottle is full of water.  
 b. John filled the bottle with a little bit of water.  
 ↯ The bottle is full of a little bit of water.

There seem to be two possible interpretations in these cases: one is that the container (the truck or the bottle) is very small and can only hold a little bit. Under this interpretation, the truck or the bottle might well be at capacity. But the more natural interpretation seems to me to be one in which the truck and bottle are normal-sized, and simply haven't been completely filled. Interestingly, while under this reading it is inaccurate to say, e.g., *the bottle is full of a little bit of water*, it is perfectly acceptable to say *the bottle is with a little bit of water*, with *with* used as the main predicate as in (6). While I have not checked these judgments with others, they seem fairly easy to get to me. If they are right, then it speaks to the advantages of location the holistic effect in the semantics of *with*, rather than in a relation between being a direct object and being interpreted as holistically affected.<sup>5</sup>

Note that under this analysis, the source of the holistic effect would have to be different in goal-object and theme-object structures, given that it occurs in both (Beavers 2017). However, given the analysis of theme-object structures I have proposed, there is a likely source

<sup>5</sup>But see Beavers (2006, pp. 51 ff.) for potentially important qualifications.

for it there already: the meaning of  $v_{\text{THEME}}$ . We might suppose that the semantic relation  $\text{THEME}$  that it invokes relates a theme to an eventuality incrementally, in the sense of Krifka (1998), or Borer (2005a, 2013) and Kiparsky (1998). Alternatively, we might derive this in a more general way, relating to the way in which movement of the theme takes place. Consider *push a cart* (preferentially atelic) and *spray a gallon of paint* (preferentially telic). When one pushes a cart, the cart is not “used up” by the pushing—pushing is simply a manner in which it can be moved. But if a context is provided in which the cart is pushed along a path, the cart’s motion along the path can define the boundaries of the predicate, and result in it being telic. We might suppose that this is what distinguishes *push a cart* (preferentially atelic) from *push a button* (preferentially telic).

Similarly, when one sprays paint, world knowledge dictates that the paint is gradually used up and made unavailable for further spraying. It is not generally possible to gather sprayed paint together again in a liquid form that would render it amenable for immediate further spraying. Similar facts might plausibly hold for other *spray/load* predicates. Supporting this idea, I note that if one does come up with a context whether continuous spraying of the same theme is possible, the theme-object predicate can be interpreted as atelic even if the theme is quantized, à la *push a cart*.

- (13) a. **Context:** To prevent the water in the small pond from becoming stagnant, it had to be continuously pumped. In order to accomplish this, a fountain was installed. Once it was turned on, a small inlet at the bottom of the pond took in the water from the pond, and ...

The fountain continuously sprayed the water into the pond.

Note that the use of *continuously* is degraded with telic predicates: ??*John continuously ate an apple*. Thus, (13a) might provide evidence that the holistic effect in the theme-object structure is based on the interaction of contextual and grammatical factors.

Returning to *with*, Rapoport (2014) extends her analysis to a class of predicates that differs from *spray/load* verbs that occur with *with*: the *swarm* class of verbs (Dowty 2001), and the *black with* class of predicates.<sup>6</sup>

<sup>6</sup>Rapoport (2014) notes that *black with* should be distinguished from *black from* (e.g., *His face was black from*

- (14) a. Bees swarmed in the garden.  
 b. The garden swarmed with bees.  
 c. Fireflies glowed in the field.  
 d. The field glowed with fireflies. (Rapoport 2014, (19–20))  
 e. Fish abound in the pond.  
 f. The pond abounds with fish. (Dowty 2001, (1))
- (15) a. The floor was black with ants.  
 b. The hills were white with snow.  
 c. The cave was red with paint.  
 d. The ceiling was black with soot.  
 e. The rocks were green with moss.  
 f. Her cheeks were wet with tears. (Rapoport 2014, (22))

The verbal predicates in (14) are interestingly different from *spray/load* verbs in many ways, despite the superficial similarities (i.e., the alternation between a structure with a locative preposition and a “flipped” structure with *with*). However, this alternation differs from the *spray/load* alternation in many ways, and should not be identified with it (e.g., Dowty 2001; Hoeksema 2009). One immediately relevant fact is that in the goal-object structure, the location can become the subject (even for predicates that do not alternate, like the adjectives in (15)). This contrasts with the behavior of the goal-object use of *spray/load* verbs, which do not allow location subjects. Note that this does not call into question the generalization regarding the impossibility of unaccusative uses of goal-object *spray/load* verbs: with *spray/load* verbs, the location argument is interpreted as a goal (that is, as the endpoint of a path); with *swarm* verbs, the location argument is interpreted as a mere location not associated with a path. We might expect that this semantic difference would correlate with a syntactic difference, though I will not pursue a full analysis here.

What is relevant for us is how Rapoport (2014)’s proposal regarding *with* could relate to the interpretation of *spray/load* verbs. I will (slightly) formalize her proposal below not

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*soot*. *Black with* relates to the discourse situation, while *black from* indicates causation (cf. *Her hair was grey with dust/#with worry*, Rapoport 2014, fn. 19, (iii-b)).

with regards to the preposition *with*, but with regards to the semantic relation *with*:

- (16) Let  $R$  and  $R'$  be contextually specified functions of entities that pick out some spatial property of their argument. Then,  $\text{with}(e, R(y), R'(x)) = 1$  iff  $e$  is an eventuality and ...
- a.  $R'(x)$  and  $R(y)$  are spatially related via accompaniment
  - b.  $R'(x)$  and  $R(y)$  are centrally coincident (as far as context permits)
  - c.  $R'(y)$  has control over  $R(x)$ 's location (i.e.,  $R'(y)$  physically possesses  $R(x)$ )<sup>7</sup>

This is essentially Rapoport (2014)'s definition of *with*. What I have added is the functions of entities  $R$  and  $R'$ , which return some space defined in relation to their argument. I will illustrate now how this small addition can account for particular properties of *spray/load* verbs. In particular, it provides a way of understanding how context "fills in" the notion of central coincidence in a specific way (16b). This helps us solve some problems I will present that relate to the kinds of restitutive readings that *again* can get with *spray/load* verbs, and how these relate to the restrictions on the kinds of relations that can hold between the goal and the theme in goal-object uses, shown previously in (39–40). I repeat these examples here as (17–18).

- (17) a. John loaded the box with the books.  
       $\approx$  John loaded the books into the box.
- b. John loaded the table with the books.  
       $\approx$  John loaded the books onto the table.
- (18) a. John sprayed the wall with the paint.  
       $\approx$  John sprayed the paint onto the wall.
- b. ?? John sprayed the air with the paint.  
       $\neq$  John sprayed the paint into the air.

Informally and intuitively, with *load*, the goal-object structure can describe the movement of the theme to the surface or the interior of the goal. In contrast, with *spray*, the goal-object

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<sup>7</sup>Interestingly, this means that *with* essentially reverses the usual semantics of prepositions, which tend to take the ground as their complement and the figure as their specifier: cf. *the book<sub>figure</sub> on the table<sub>ground</sub>*, *the table<sub>ground</sub> with the book<sub>figure</sub>*.

structure can only describe the movement of the theme to the surface of the goal, never its interior. That is, (19) can only be paraphrased as (19a) and never as (19b).

- (19) I sprayed the box with paint.
- a. “I sprayed the surface of the box with paint.”
  - b. “I filled the interior of the box with paint by spraying paint.”

In some cases, an interior reading for *spray* might seem possible, but I believe this is illusory. For instance, in (19a), the surface that is described could include the interior walls of the box—nothing rules that out. But what is ruled out in (19) is a reading where the goal of the spraying event is the volume delimited by the sides of the box—that is, a reading where the box was filled by spraying paint into it. Such a reading is not incompatible with the root  $\sqrt{spray}$  in general, as it is perfectly fine to say (20).

- (20) I sprayed paint into the box (and filled it up).

Thus, the root  $\sqrt{spray}$  can be used to describe events where the destination of the spraying is a volume. However, this reading is never associated with the goal-object structure. In contrast, such a reading is possible with the goal-object structure of *load*, contingent on the context and the physical properties of the goal (i.e., whether the goal most naturally defines an enclosed space or a surface, and contextual information).

- (21) I loaded the box with books.
- a. “I put books on top of the box by loading them.”  
(if an already full box is being used as a platform)
  - b. “I filled the box with books by loading them.”  
(if the box is being used as a container)

Ideally, we would be able to derive this difference, since the same pattern seems implicit in the use of *be-* in German, shown in (21) and (23). But I do not see precisely how to do that, given (20). For now, I will treat this as something that must be modeled as a reflecting lexical idiosyncrasy.

Now, I have talked about this before as reflecting something about the contextual allosemy of  $P_{\text{LOC}\emptyset}$ : in the context of  $\sqrt{spray}$ ,  $P_{\text{LOC}\emptyset}$  will be interpreted something like *on/surface*,



while in the context of  $\sqrt{\text{load}}$ ,  $P_{\text{LOC}_\emptyset}$  will be either underspecified, or have its meaning filled in by context.

Now, consider  $R$  and  $R'$  in the denotation of *with* I proposed. These relations encode the idea that the specific way that *with*'s central coincidence relation is determined is not underspecified, but is resolved contextually. Evidence for this claim comes from the particular readings that restitutive *again* can and cannot give rise to. In particular, when a restitutive *again* occurs with a goal-object structure, it can only presuppose the existence of a state that can be described by a goal-object structure with an identical sort of locative relation. This statement may sound a bit complex now, but the following discussion should clarify it.

First, we can establish a baseline for several *spray/load* verbs. These examples show us what kind of locative relations are associated with the goal-object uses of *slather*, *spray*, *stuff*, and *pack*.

- (22) John slathered the box with paint.
  - a.  $\approx$  John slathered paint onto the box.
  - b.  $\neq$  John slathered paint into the box.
- (23) John sprayed the box with paint.
  - a.  $\approx$  John sprayed paint onto the box.
  - b.  $\neq$  John sprayed paint into the box.
- (24) John stuffed the box with (cans of) paint.
  - a.  $\neq$  John stuffed paint onto the box.
  - b.  $\approx$  John stuffed paint into the box.
- (25) John packed the box with (cans of) paint.
  - a.  $\neq$  John packed paint onto the box.
  - b.  $\approx$  John packed paint into the box.

These examples establish that goal-object uses of *slather* and *spray* are compatible only with an *on/surface* reading of  $P_{\text{LOC}_\emptyset}$ , while goal-object uses of *stuff* and *pack* are compatible only with an *in/interior* reading of  $P_{\text{LOC}_\emptyset}$ .

Next, the following examples combine goal-object uses of these cases with restitutive *again*. What they show is that a prior eventuality of slathering/spraying that results in *the box with paint* can satisfy *again*'s presupposition when it occurs in a sentence with the opposite predicate of eventualities. The same is true for *stuff/pack*. In contrast, a prior slathering or spraying that results in *the box with paint* cannot satisfy *again*'s presupposition when it occurs with *load/stuff*, nor vice versa.

- (26) Both  $P_{\text{Loc}_\emptyset} \approx \textit{onto}$ :
- a. **Context:** John slathered the wall with paint, and then removed it. Then, ...  
He sprayed the wall with paint again. (restitutive)
  - b. **Context:** John sprayed the wall with paint, and then removed it. Then, ...  
He slathered the wall with paint again. (restitutive)
- (27) Both  $P_{\text{Loc}_\emptyset} \approx \textit{into}$ :
- a. **Context:** John stuffed the suitcase with clothes, and then removed them.  
Then, ...  
He packed the suitcase with clothes again. (restitutive)
  - b. **Context:** John packed the suitcase with clothes, and then removed them.  
Then, ...  
He stuffed the suitcase with clothes again. (restitutive)
- (28) Prior *into*, current *onto*:
- a. **Context:** John stuffed/packed the box with silly string, and then removed it. Then, he mashed the silly string together in his hand, and ...  
# John slathered the box with silly string again. (restitutive)
  - b. **Context:** John stuffed/packed the box with silly string, and then removed it. Then, he hooked up a hose that could spray silly string, and ...  
# John sprayed the box with silly string again. (restitutive)

- (29) Prior *onto*, current *into*:
- a. **Context:** John slathered/sprayed the suitcase with a lot of silly string, and then he gathered it all up. Then, ...  
 # John stuffed the suitcase with silly string again. (restitutive)
- b. **Context:** John slathered/sprayed the suitcase with a lot of silly string, and then he gathered it all up. Then, ...  
 # John packed the suitcase with silly string again. (restitutive)

In (26–27), we see the presupposition of *again* is satisfied by an eventuality that can be described with a goal-object sentence that has an identical reading of  $P_{\text{LOC}_\emptyset}$  to its interpretation in the asserted content. In contrast, in (28–29), we see that when the presupposition is described by a goal-object sentence where  $P_{\text{LOC}_\emptyset}$  receives a contrasting reading from the one it receives in the sentence *again* attaches within, the result is infelicitous.<sup>8</sup>

In (26–27), *again*'s presupposition does not include the verb, because the prior eventualities are described by different verbs from the present ones. A spraying is not necessarily a slathering, nor is a packing a stuffing (one can pack a suitcase without stuffing it, and vice versa, provided a proper packing does not simply involve cramming things into a suitcase willy-nilly). For this reason, I conclude that *again* must attach to a syntactic phrase whose denotation is a predicate of eventualities that is at least no higher than PP.<sup>9</sup> (Note that given

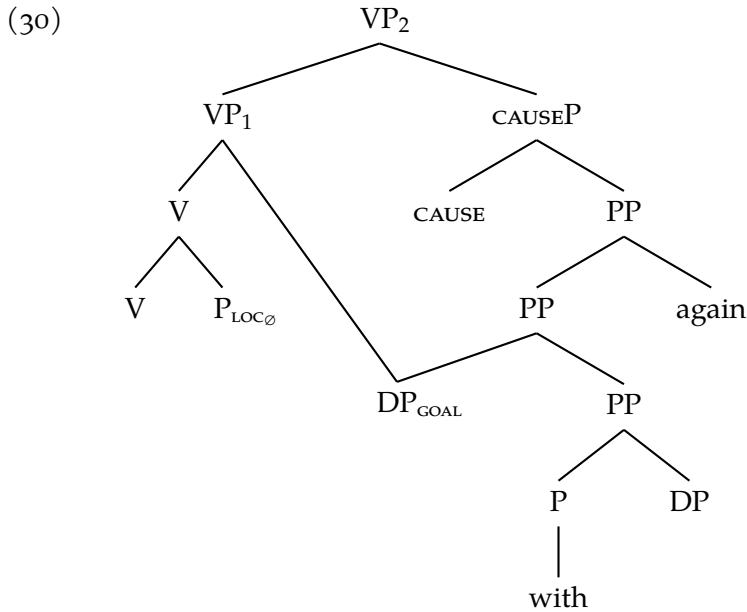
<sup>8</sup>Note that these diagnostics weigh in favor of saying that the reading  $P_{\text{LOC}_\emptyset}$  receives with *load* is not unspecified, but always corresponds to *in*, at least in English:

- (i) a. **Context:** John sprayed the box with silly string, and then took it all out. Then, ...  
 # He loaded the box with silly string again. (restitutive)
- b. **Context:** John stuffed the box with silly string, and then took it all out. Then, ...  
 He loaded the box with silly string again. (restitutive)

When *again*'s presupposition has an *onto* goal, *load with* is infelicitous. In contrast, when it contains an *into* goal, *load with* is felicitous. This would be most compatible if  $P_{\text{LOC}_\emptyset}$  always receives an *into* reading with *load*. Intuitively, we could think of this as reflecting the fact that even if the goal of the loading could be characterized as a surface, that is not what defines the loading—what defines the loading is a volume defined by the boundaries of (the edges of) a surface or an enclosed space. If one loads the table, what matters is that there is a volume that one can define by projecting the space defined by the table's surface upward. However, this picture would not necessarily explain why it is possible to nevertheless use *be-* with *laden* 'load' in German only when it receives an *onto* reading, as Brinkmann (1995) reports.

<sup>9</sup>An astute reader will note that the contexts described in (26–29) do not necessarily force a restitutive reading for *again*—in particular, there were prior events where the suitcase came to have things in/on it. However, all that is important here is that the reading of *again* excludes the verb root, which is clear. Even if *again* could attach to CAUSEP to receive a repetitive reading, this would not affect the point here. I show it attached to the PP because the semantic type I have assumed for CAUSEP would lead to a type mismatch if *again* were to attach to it.

the preceding discussion regarding the meaning of *with*, it no longer seems appropriate to refer to its complement as the theme, so I no longer do so.)



If *again* attached to  $VP_2$ , for instance, its presupposition would necessarily ensure that the prior eventuality could be described by the same verb as in the asserted content. But that is not the case in (26) or (27): a slathering is not a spraying, nor is a stuffing a packing. This means that *again*'s presupposition cannot include *slather*, *spray*, *stuff*, or *pack*.

As a result, whatever *again*'s presupposition includes is described by just the PP: [DP<sub>GOAL</sub> with DP]. But this leaves us with a conundrum: if this is all that is included in *again*'s presupposition, then (29) and (28) should be felicitous if the reading of *with* is identical across *slather*, *spray*, *stuff*, and *pack*. Since we know *again* need not scope over the verb root because its presupposition can be satisfied in examples like (26–27), we cannot ascribe (29–28)'s infelicitousness to *again*'s presupposition necessarily including the verb root.

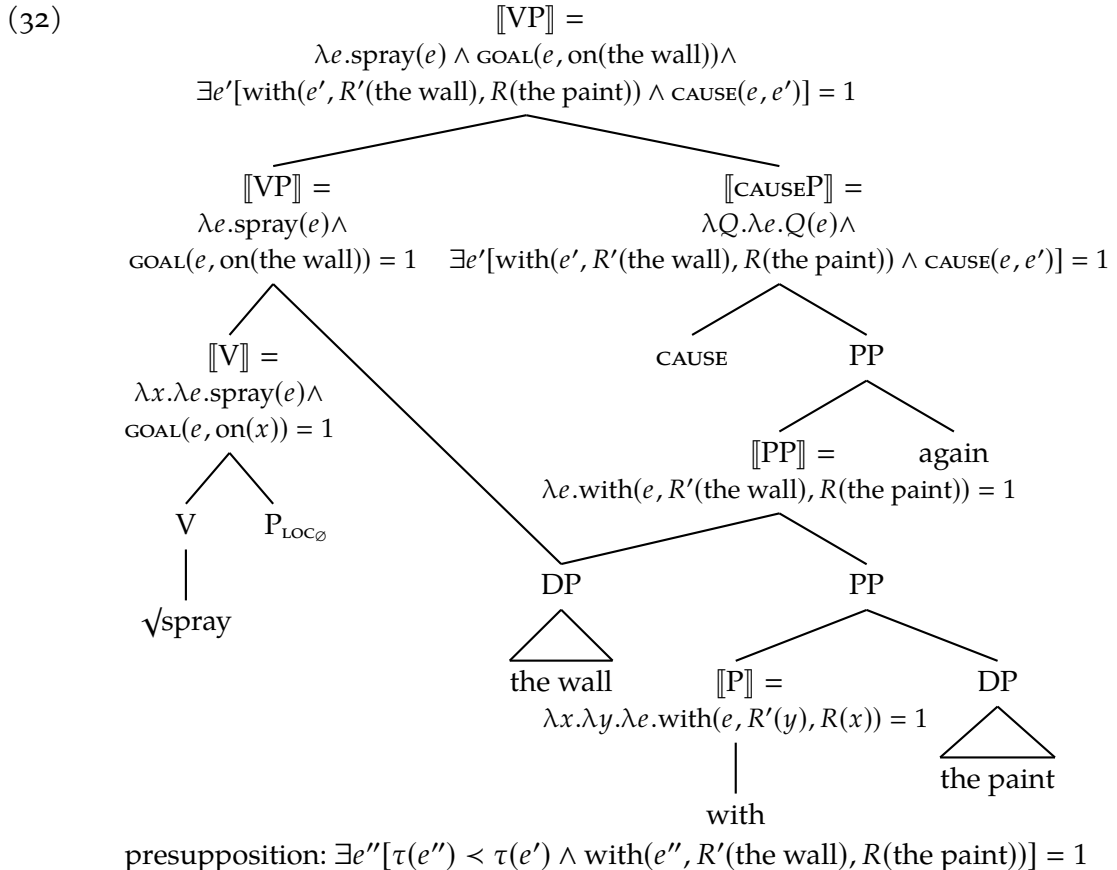
Instead, the source of the infelicitousness seems to come from the differing interpretations forced on  $P_{LOCØ}$  with *slather* and *spray*, on the one hand; and *stuff* and *pack*, on the other. But if *again* occurs where it does in (30), then it should not include the meaning of  $P_{LOCØ}$  in its presupposition either, since that is adjoined to the verb and likewise not in *again*'s scope. This is where  $R$  and  $R'$  become relevant: they allow the context of utterance to do some work in resolving this issue. Suppose that what *with* does is pick out the locations of both of its arguments and relate them in the way described in (16). Because  $R$  and  $R'$

are resolved according to the context of the utterance in this way, they could be resolved to any number of locative functions (including potentially *ad hoc* ones that are pragmatically constructable). We might think that is what is going on in cases like the following:

(31) The horse was running with the river. (cf. (4a))

Here,  $R(\text{the river})$  would be resolved in context to pick out an area defined as an extension of the river's edge onto land, and this would be identified as centrally coincident with  $R'(\text{the horse})$ , where  $R$  could pick out the trajectory of the horse.

Now consider what would happen in a goal-object *spray/load* sentence. In this case,  $P_{\text{LOC}\emptyset}$  will already specify the function that picks out the correct part of the goal by virtue of the particular verb it combines with; that is, for  $\sqrt{\text{spray}}$ ,  $P_{\text{LOC}\emptyset}$  would identify the goal as the surface of the object. We could consider that because  $P_{\text{LOC}\emptyset}$  has already specified the function that picks out the surface of the goal, this is the most likely function (or alternatively, the only function) that could stand in for  $R'$ . That is, a goal-object VP with a *spray/load* verb would have the following structure and semantics.



Since the goal of the spraying event is identified as the surface of the wall, and this event causes the eventuality of the wall being with the paint, we could imagine that the interpretation is that  $R'$  corresponds to *on*. To do otherwise would require that the result of spraying the surface of the wall with the paint be interpreted as directly causing some other part of the location of the wall to be with paint—presumably an incoherent notion.<sup>10</sup> Thus, the semantics of direct causation will require the accommodation of a context where  $R'$  is identical to the locative function present in the denotation of  $P_{\text{LOC}\emptyset}$ . And because  $R'$  is specified in the context, it will necessarily be resolved identically to how it is in the asserted content in *again*'s presupposition, under the standard assumption that sentences are evaluated with respect to only a single context.<sup>11</sup> The pattern in (26–29) is thus derived via indirectly: the verb specifies the specific locative function in  $P_{\text{LOC}\emptyset}$ , the semantics of direct causation require this to be identified with the contextually specified function  $R'$  in the denotation of *with*, and the fact that sentences are evaluated relative to a single context of utterance ensures that  $R'$  in the presupposition of *again* is identical to the  $R'$  in the asserted content. This explains the complex behavior in (26–29) that shows the verb root is not included in *again*'s presupposition, but the locative function in  $P_{\text{LOC}\emptyset}$ 's denotation is, despite the fact that  $P_{\text{LOC}\emptyset}$  is not present in the small clause.

<sup>10</sup> Another suggestion about how to force the locative function  $R'$  to be interpreted in the same as the locative function that  $P_{\text{LOC}\emptyset}$  invokes is related to the exhaustivity of thematic roles (see Williams 2015, ch. 8.2). The idea is that if a participant in an event is specified as bearing some relation to that event, then that relation is borne only by that participant. However, for this to work here, the implication would have to be reversed: we would have to say that because the goal of the eventuality is the surface of the wall, only the surface of the wall can be the goal. But this reversal is empirically inadequate. One and the same entity may bear multiple relations to an event, even if they exhaust each.

(i) John shaved (himself).  $(\lambda e.\text{AGENT}(e, \text{John}) \wedge \text{shave}(e, \text{John}) = 1)$

Exhaustivity of thematic relations says that (i) specifies that the only agent of  $e$  is John, and that the only shaver of  $e$  is John. But exhaustivity clearly does not require that the role John play in  $e$  be only the agent or else only the shaver. Otherwise, the use of reflexives should be impossible. In other words, just because the surface of the wall is the only goal of  $e$  in (32), it should not entail that the only locative function that could apply to the wall in  $e$  is the function that returns its surface. Double-goal sentences like (45) also speak against this. Exhaustivity of thematic relations will not quite do the job here, then.

<sup>11</sup> Barring special circumstances that are probably not met in these circumstances; see Deal (2020) for an overview.

#### 4.2.1 *Interpreting Themes in Goal-object Structures*

This section has been animated by the question of what the meaning of *with* contributes to the meaning of the goal-object structure. I have just proposed that it is *with* that is responsible for the holistic effect that holds of the goal, following Rapoport (2014). The other question we began with was related to the interpretation of *with*'s complement, and what happens to the theme argument in the goal-object structure. If what I have argued about *with* is on the right track, then the goal-object structure has no theme argument. Nevertheless, we arrive at the inference that the complement of *with* is the theme of the event. For instance, if one says *John sprayed the wall with paint*, we understand that the theme of the spraying event was the paint. It is what moved to result in the state described by *the wall with paint*. We cannot use this sentence to describe scenarios where the wall ended up with paint as a result of some other substance being sprayed.

While the present analysis does not encode this inference directly, I believe it does so indirectly. In particular, consider that the semantics of the goal-object structure entail that, e.g., (the surface of) the wall is the goal of the spraying event. As the goal of this event, it defines the endpoint of a path that the spraying event follows. This spraying event causes a state described as some location related to the wall being with paint, which context requires us to resolve to the surface of the wall being with paint. In addition, the semantics of *with* mean that it will control the central coincidence relationship that holds between it and the location of *with*'s complement: it is the wall that determines the location of the paint, and not the other way around. Now, the inference that the other argument of the *with* state is what moves arises naturally. The spraying that proceeds along a trajectory to the surface of the wall causes the surface of the wall to be with paint. Since the surface of the wall is the endpoint of this trajectory, and the controller of the central coincidence relation that results, it does not traverse this trajectory. Thus, in order to be true, something else must traverse the trajectory to the wall.

Because this "something else" isn't entailed to be the paint, we could imagine that the wall ends up with paint as the result of something else traversing that trajectory—for instance, John could spray the wall with paint by virtue of spraying water towards the wall

and knocking over a bucket of paint that spills all over it. But then again, this would not be a spraying event whose goal is the surface of the wall: it would be an event whose goal is the surface of the bucket. Correspondingly, using the sentence *John sprayed the wall with paint* to describe this scenario would be false: not because the paint is not the theme of the spraying event, but because the surface of the wall is not its goal. It seems quite clear that in order for the wall to end up with paint as a result of a spraying event whose goal is the surface of the wall, the only possible thing that can be sprayed is the paint. This will lead to *R* being resolved in such a way that it picks out the trajectory of the paint. This results in us interpreting it as the theme of the spraying event, even though the *THEME* relation is not directly encoded in the semantics of that sentence under my analysis.

Seth Cable (p.c.) has pointed out to me that there is empirical evidence that bears on this claim. This evidence not only supports what I have just argued—that the interpretation of the object of *with* in goal-object sentences as the theme is an inference rather than an entailment—but in doing so makes it difficult to maintain analyses where the object of *with* bears the same thematic relation in the theme-object structure as in the goal-object structure. The latter proposal is a common feature of some of the most popular existing accounts of the *spray/load* alternation (Brinkmann 1995; Rappaport & Levin 1988; Wunderlich 1997), which I will discuss in chapter 5. This evidence also makes it difficult to maintain a small clause analysis of the syntax of theme-object structures, which is common in previous syntactic approaches (Damonte 2005; Larson 1990, 2014; Mateu 2000, 2017).

The relevant evidence comes from examples like the following.

- (33) **Scenario:** You've (unknowingly) put a bunch of people with COVID-19 onto the bus that you're about to drive. Somehow, I find out about this, and I want to warn you that it's not safe to drive the bus.
- a. (You idiot!) You've loaded the bus with COVID-19!
  - b. # (You idiot!) You've loaded COVID-19 onto the bus!

(Seth Cable, p.c.)

Note that in the scenario given, the goal-object sentence is felicitous, but the theme-object sentence is not. This contrast follows straightforwardly in my account but is not predicted in



other accounts. In the scenario above, presumably COVID-19 is not the direct theme of any loading event. Instead, the people are the direct theme of the loading event—they are who was directly loaded onto the bus. But the event of loading the people onto the bus directly causes the state of the bus being with COVID-19. That explains why the goal-object sentence is felicitous, but the theme-object sentence is not—because the theme-object sentence entails that COVID-19 is the direct theme of a loading event, which is not the case in the scenario given.

An alternative explanation for this contrast might relate it to a different explanation of the holistic effect than the one I have proposed. In the scenario in (33), the bus is holistically affected since it is full of people with COVID-19. This could lead to a preference for using the goal-object structure, which encodes the goal being holistically affected. But this explanation fails to explain the following modification to the scenario does not improve (33b).

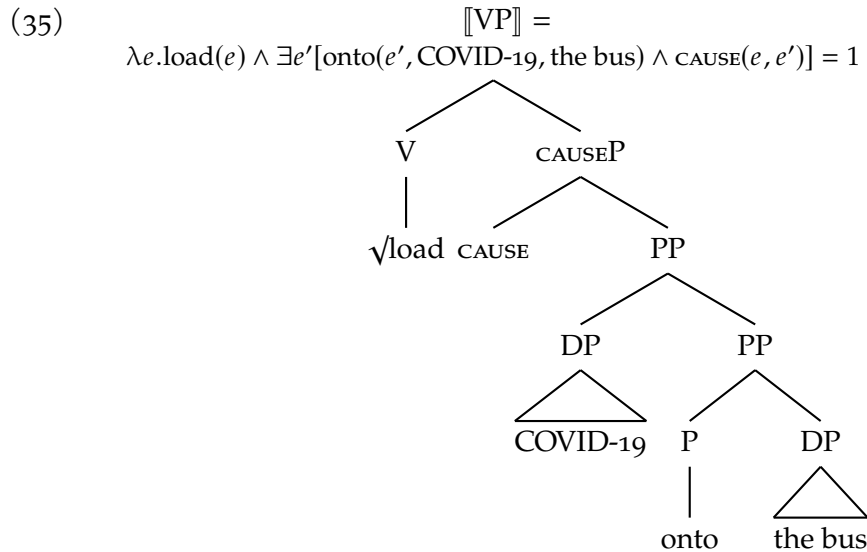
- (34) **Scenario:** You've (unknowingly) put one person with COVID-19 onto the bus that you're about to drive.
- a. # You've loaded COVID-19 onto the bus!

(Seth Cable, p.c.)

In this scenario, the bus is no longer holistically affected by the loading, meaning there should be no pressure from the holistic effect to use the goal-object structure (and this also makes (33a) infelicitous in the scenario in (34)). But this new lack of pressure to use the goal-object structure does not mean that (34a) is felicitous. Instead, a better explanation of the contrast in (33) is the one my account gives, which says that *COVID-19* is the theme in (33b), but only a participant in a caused eventuality in (33a).

The examples in (33) and (34) are also difficult to accommodate in many previous accounts of the *spray/load* alternation. In particular, any account in which *COVID-19* bears the same thematic role in the theme-object and goal-object structures would fail to predict the contrast in (33), given the data in (34). This is because these accounts claim that the object of *with* in the goal-object structure bears the same thematic relation to the event as it does in the theme-object structure. However, these data show that this is not the case,

and that the difference is unlikely to be due to the holistic effect. Furthermore, these data also make it difficult to maintain small clause analyses of the theme-object structure. This is because in those analyses, the most natural semantics would treat the theme in the theme-object structure as **also** just a participant in a caused eventuality, as shown below.



The semantics here describe loading events that cause states of COVID-19 being on the bus (keeping in mind the caveat about prepositions I observed in chapter 2). But this semantics accurately describes the scenarios in (33) and (34): in both cases, the loading event directly causes COVID-19 to be on the bus. Yet as we just observed, theme-object sentences cannot be used to felicitously describe these scenarios. My account explains why not, since the semantics I propose require COVID-19 to be interpreted as the theme of the loading event, which is not satisfied in these scenarios. These data thus show that the theme must be interpreted as the theme of the loading event in the theme-object structure, and that it must not be so interpreted in the goal-object structure. Previous accounts that say differently with regards to either of these points would run into difficulty accounting for the contrasts in (33–34), while my account of the differing semantic status of the theme in theme-object and goal-object structures handles them correctly.

### 4.3 Non-alternating Goal-object Verbs and Non-agentive Transitive Uses

In addition to *spray/load* verbs, which alternate between theme-object and goal-object uses, there is a class of verbs in English that have very similar meanings to *spray/load* verbs, but which nevertheless occur only (or with very few exceptions) in the goal-object structure.<sup>12</sup> These are the *cover/fill* verbs (Levin 1993).

- (36) a. John covered the screen with the blanket.  
b. \* John covered the blanket over/onto the screen.
- (37) a. John filled the glass with water.  
b. ?\* John filled water into the glass.
- (38) a. The crew blocked the street with cones.  
b. \* The crew blocked cones into/onto the street.
- (39) a. The priest anointed the child with oil.  
b. \* The priest anointed oil onto the child.

For some of these verbs, *with* can alternate with *in* (but never *into*) (Levin 1993, sec. 9.8). This sounds most natural to me if the theme is non-quantized (that is, if it is a bare plural or a mass noun).

- (40) a. ?? John covered the screen in a blanket.  
b. The storm covered the mountains in snow.  
c. \* John filled the glass in water.  
d. \* The crew blocked the street in cones.  
e. ? The priest anointed the child in oil.

Whether this is possible seems to be somewhat idiosyncratic, but a regularity is that it is only possible if the goal is specified as a surface, and never when it is specified as in interior (see the appendix for a list).

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<sup>12</sup>There are also many verbs that occur in only the theme-object structure, such as *put*, *place*, etc. However, the relation of these verbs to *spray/load* verbs seems less clear in many cases. While some are likely to be non-alternating theme-object *spray/load* verbs, others behave quite differently (see the discussion in chapter 2, section 2.4.2 for details). Including them would thus introduce additional complications.

In some ways, these restrictions bear certain similarities to restrictions on the use of *di* to introduce themes with *spray/load* verbs in Italian (Damonte 2005), suggesting some underlying commonality. In some cases, *in* can be used with alternating *spray/load* verbs, though this seems rarer in English than in Italian.

- (41)
- a. \* John loaded the truck in hay.
  - b. \* John sprayed the wall in paint.
  - c. \* The chef drizzled the cake in icing.
  - d. The monk wrapped the Pharaoh's body in bandages.

I will ignore this complication, while noting that the restrictions are worth exploring, even if they will be somewhat idiosyncratic.<sup>13</sup>

We might take two approaches to these verbs. The first would be to suppose that despite the superficial syntactic and semantic similarities they bear to goal-object *spray/load* verbs, they are unrelated. Their basic use is a goal-object use, and does not involve P-conflation. Another approach we could take would be the one I suggested in the previous section: these verbs are non-alternating *spray/load* verbs either because their roots can only surface when P-conflation applies, or else because they are so strongly associated with a result interpretation that the manner interpretation imposed by the theme-object structure is hard to achieve.

I believe there is evidence that supports the second kind of approach. The *cover/fill* verbs require (or strongly favor) the P-conflation syntax due to either a syntactic requirement or a semantic preference. The evidence for this is that, with five exceptions, they pattern exactly like *spray/load* verbs in disallowing theme subjects, and their nominalizations can only refer to their themes, never their goals. This is especially interesting because they never surface in theme-object structures. (Of course, as with *spray/load* verbs, some of these verbs disallow non-agentive uses and/or nominal uses for presumably independent reasons.)

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<sup>13</sup>In particular, Damonte (2005)'s examples show that the Italian equivalent of *load*, *caricare*, can occur with *di* (provided semantic conditions are met), while English *load* cannot occur with *in*.

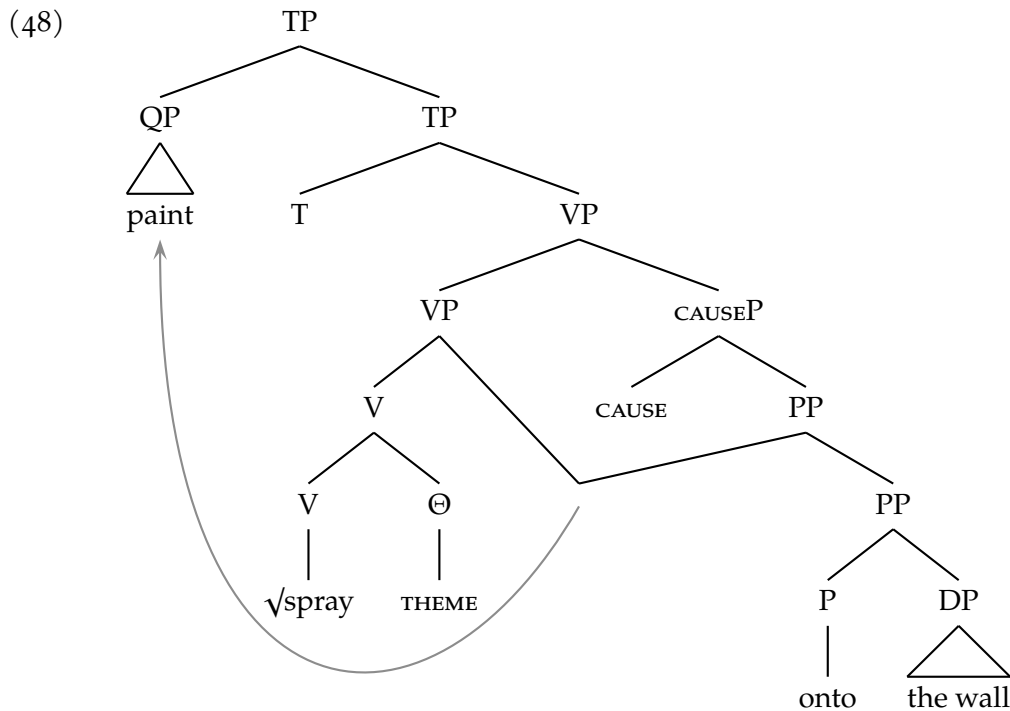
- (42) a. The blanket covered the screen.  
 b. \* The screen covered with the blanket.  
 c. the cover (= the blanket/≠ the screen)
- (43) a. Traffic cones blocked the road.  
 b. \* The road blocked with traffic cones.  
 c. the blockage (= the traffic cones/≠ the road)
- (44) a. Curlicues embellished the invitations.  
 b. \* The invitations embellished with curlicues.  
 c. the embellishment (= the curlicues/≠ the invitations)
- (45) a. Thick molasses coated the countertop.  
 b. \* The countertop coated with thick molasses.  
 c. the coat(ing) (= the molasses/≠ the countertop)

If the verbal use of these roots requires P-conflation, the patterns reported in (42–45) would be explained in the same way they are for *spray/load* verbs.

However, there are some additional complications to address. First of all, the non-agentive uses of these verbs do not appear to correspond precisely to the ones discussed above. In particular, there is no overt preposition introducing the theme as there is for unaccusative uses of *spray/load* verbs.

- (46) *Spray/load* verbs:
- a. Paint sprayed onto the wall.  
 b. Icing drizzled onto the cake.  
 c. Rain sprinkled onto the ground.
- (47) *Cover/fill* verbs:
- a. The blanket covered (\*onto) the screen.  
 b. Traffic cones blocked (\*onto) the road.  
 c. Thick molasses coated (\*onto) the countertop.

This is an important difference. I have supposed that the theme-object unaccusatives are syntactically derived in the following way.<sup>14</sup>



In contrast, goal-object unaccusatives are ruled out because prepositions, even ones that might form a unit with the verb, cannot be stranded in unaccusatives. I suggested that this is because stranding a preposition under A-movement requires [V+P] to form a head, and that doing this requires the projection of *v*, but whether that is the right explanation is currently beside the point. What is important for now is that the derivation in (48) will result in an overt locative preposition being spoken after the verb, as in (46).

In contrast, there is no locative preposition pronounced after the verb in (47). If such cases were derived in a way parallel to (48), we would expect this to be possible. Of course, it is fairly clear why this doesn't happen: the locative prepositions possible in unaccusative uses of *spray/load* verbs are precisely those that occur in their theme-object uses. But the verbs in (47) do not have theme-object uses with a locative preposition. They only have goal-object uses, with *with*.

The question is thus not why a locative preposition is impossible in (47). Instead, the question is whether these are unaccusative uses at all, since they are transitive at least on

<sup>14</sup>I am again not treating movement as Remeige as I might have, for simplicity's sake.

the surface. A related question is where *with* has gone in such uses, if they are indeed unaccusative; this question applies to non-agentive transitive uses of alternating verbs as well.

Before that, though, there is an additional contrast between (46) and (47) worth noting: unaccusative uses of *spray/load* verbs appear to describe events. In contrast, non-agentive uses of *cover/fill* verbs can describe states or events. We can see this clearly because adverbs that are only compatible with events can occur with non-agentive uses of both classes of verbs, while adverbs that modify states can only occur with non-agentive *cover/fill*.

For instance, the adverbs *gradually*, *quickly*, and *slowly* are only compatible with eventive predicates.

- (49) Eventive:
- a. The hurricane gradually drifted out to sea.
  - b. The manager quickly dispatched a memo.
  - c. The diver slowly entered the cave.

- (50) Stative:
- a. ?\* The employee gradually resented his boss.
  - b. ?\* The flour quickly weighed five pounds.
  - c. ?\* The problem slowly appeared intractable.

Note that the stative examples can be rescued by coercion, which is generally possible. But in such cases, the only reading is one where, e.g., *resent* means “come to resent”—an eventive predicate.

In contrast, the adverbs *completely*, *totally*, and *entirely* in non-intensifier uses are only compatible with predicates of gradable states. In those uses, they modify not the causing event, but only the resulting gradable state.<sup>15</sup>

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<sup>15</sup>Some verbs seem to include both an event and a result state (e.g., *flatten*). In these cases, adverbs like *completely*, *totally*, and *entirely* can modify the result state, even when they occur before the verb: *John completely flattened the metal*. I have no explanation for why this is possible, assuming that *flatten* is pronounced in *v*, and given the apparent contrast between these cases and those in (52), where the position of the adverb before the stative predicate is crucial.

- (51) Eventive:
- a. ?\* The runner completely ran.
  - b. ?\* John totally ate dinner.
  - c. ?\* John entirely discovered the answer.
- (52) Stative:
- a. The metal became completely flat.  
(cf. ?\*The metal completely became flat.)
  - b. His cheeks turned totally red.
  - c. The car looked entirely new.

We can see that event-modifying adverbs can occur with unaccusative uses of *spray/load* verbs and non-agentive transitive uses of *cover/fill* verbs. In contrast, state-modifying adverbs cannot occur with unaccusative uses of *spray/load* verbs, though they can occur with non-agentive transitive *cover/fill* verbs.

- (53)
- a. Paint gradually sprayed onto the wall.
  - b. Icing quickly drizzled onto the cake.
  - c. Rain slowly sprinkled onto the ground.
- (54)
- a. ?\* Paint completely sprayed onto the wall.
  - b. ?\* Icing totally drizzled onto the cake.
  - c. ?\* Rain entirely sprinkled onto the ground.
- (55)
- a. The blanket gradually covered the screen.
  - b. ? Traffic cones quickly blocked the road.
  - c. Thick molasses slowly coated the countertop.
- (56)
- a. The blanket completely covered the screen.
  - b. Traffic cones totally blocked the road.
  - c. Thick molasses entirely coated the countertop.

This suggests that non-agentive *cover/fill* verbs must be derived in a different way from unaccusative uses of *spray/load* verbs, beyond the quirk of the locative preposition being



absent. If the absence of the locative preposition were unimportant, we would not expect such differences.

In addition, some *spray/load* verbs allow non-agentive uses that similarly lack a locative preposition (though judgments on these examples vary from speaker to speaker in my experience, and once more, some verbs simply disallow these for possibly idiosyncratic reasons).

- (57) a. ? Paint sprayed the wall.  
b. ? Boxes loaded the truck.  
c. ? Rain sprinkled the ground.

Interestingly, in cases like these, the use of stative adverbs does not sound quite as bad as in (54).<sup>16</sup>

- (58) a. ? The paint completely sprayed the wall.  
b. ? The boxes totally loaded the truck.  
c. ?? The rain entirely sprinkled the ground.

Furthermore, with *spray/load* verbs, we can observe that the locative function applied to the goal-object in non-agentive transitive uses must be the same as the one expressed in the agentive goal-object structure.

- (59) a. John sprayed paint onto the wall. ≈  
John sprayed the wall with paint.  
b. John sprayed paint into the air. ≠  
?? John sprayed the air with paint.
- (60) a. Paint sprayed onto the wall. ≈  
Paint sprayed the wall.  
b. Paint sprayed into the air. ≠  
?? Paint sprayed the air.

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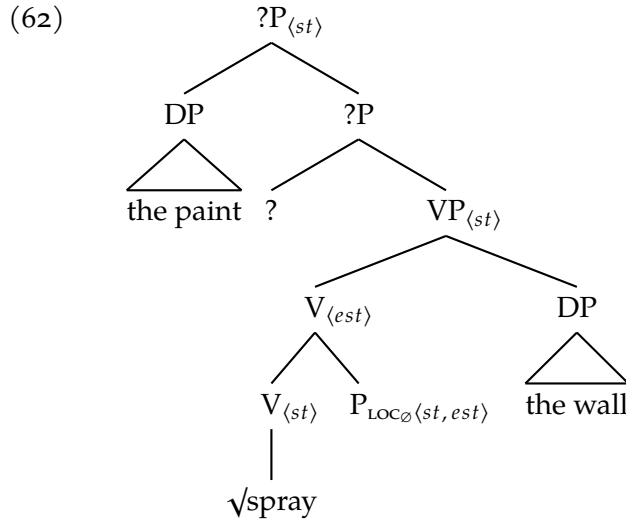
<sup>16</sup>The judgments reported here are mine—others have reported theirs differ. I will reiterate that I indeed find these not so good, as the question marks indicate, but they do seem improved related to (54).

And finally, we can see that non-alternating theme-object verbs can never occur in non-agentive transitive uses.

- (61)
- a. Water poured into the glass.
  - b. \* Water poured the glass.
  - c. The oar dipped into the water.
  - d. \* The oar dipped the water.
  - e. The ball dropped onto the ground.
  - f. \* The ball dropped the ground.

These facts suggest that the non-agentive transitive sentences without locative prepositions are derived in an importantly different way from the non-agentive unaccusative sentences with locative prepositions. (60) shows that the locative function applied to the goal object in non-agentive transitive uses must match the one invoked by  $P_{\text{LOC}\emptyset}$  in agentive goal-object structures. In addition, only when a verb can occur in agentive goal-object structures can it support a non-agentive transitive structure, as verified in (61). Taken together, this strongly suggests that non-agentive transitive uses of *spray/load* and *cover/fill* verbs are related to the goal-object structure rather than to the theme-object structure—despite the fact that in both cases, the theme is the subject. Thus, my proposal is that the sentences with locative prepositions are derived from theme-object structures, while the sentences without locative prepositions are derived in a different way.

In the P-conflation analysis, what would naturally unite non-agentive transitive structures with goal-object structures is P-conflation: verbs that support P-conflation could occur in both structures (barring idiosyncratic restrictions). In this case, it is clear why non-agentive transitive structures license goal-objects: because they are goal-object structures. However, the difference between agentive and non-agentive transitive structures remains somewhat elusive. In addition, while the presence of  $P_{\text{LOC}\emptyset}$  would explain the presence of the object argument, it would not on its own explain how the subject is related to the eventuality the sentence describes.



To confront the puzzle related to the identity of ?P, I begin by examining the readings that *again* can receive in structures like (46) and (57). When a locative preposition is present, the readings *again* can receive are precisely those that it can receive in a transitive theme-object sentence in the same positions, modulo the movement of the internal argument to Spec,TP. In other words, when *again* occurs after the verb, it receives a repetitive reading that includes the (promoted) internal argument and the verb; when it occurs at the end of the VP, it can receive a restitutive reading that includes the promoted subject and the rest of the PP, but excludes the verb.

- (63) a. **Context:** The paint-spraying machine was set up to face the door. After a while, it broke down. The workers managed to fix it and set it up to face a wall instead of a door. So, when they turned it on, ...  
 Paint sprayed again (this time) onto the wall. (repetitive<sup>-onto</sup>)
- b. **Context:** The door was made of painted boards of wood. Over time, the paint flaked off. The workers set up the paint-spraying machine to face the door, and turned it on. So, ...  
 Paint sprayed onto the door again. (restitutive)

As noted in chapter 2, getting the repetitive<sup>-</sup> reading is facilitated by the use of the parenthetical *this time*, but it is not required. These readings are entirely expected given the analysis presented in the previous chapter, and show that it easily extends to unaccusative uses.

Now, let us consider what readings *again* can get in cases like (42–45) and (57). Because the non-agentive sentences without locative prepositions are already somewhat odd for *spray/load* verbs, I will present data representative of the pattern with *spray/load* verbs and *cover/fill* verbs. In these cases, *again* cannot occur between the verb and the object. It can occur after the object, or before the verb. However, unlike in other cases, the reading it receives seems to be identical in either case. Whether the reading is best characterized as repetitive or restitutive seems to depend on the particular verb.

- (64) a. **Context:** The workers had the spraying machine set up to spray paint on the door. It broke down, so they fixed it. So, when they turned it on, ...  
 Paint sprayed the door again. (repetitive)  
 Paint again sprayed the door. (repetitive)
- b. **Context:** The house was made with insulation in the walls. However, during the strong earthquake, the walls split open and most of the insulation came out. During the repairs, the workers put more insulation back into the walls, so that ...  
 Insulation packed the walls again. (restitutive)  
 Insulation again packed the walls. (restitutive)
- c. **Context:** John's new glasses were made with a special protective coating. Over time, this coating wore off and needed to be reapplied. After John's optometrist applied the coating to the glasses, ...  
 A protective layer coated the glasses again. (restitutive)  
 A protective layer again coated the glasses. (restitutive)

Crucially, neither a subjectless repetitive nor a subjectless restitutive reading is available.

- (65) a. **Context:** The broken fire hydrant kept spraying the wall with water. Eventually, it washed off all the paint. So the workers set up the paint-spraying machine in front of the wall and turned it on, so ...
- # Paint sprayed the wall again. (subjectless repetitive)
- # Paint again sprayed the wall. (subjectless repetitive)
- b. **Context:** The door was made of painted boards of wood. Over time, the paint flaked off. The workers set up the paint-spraying machine to face the door, and turned it on. So, ...
- # Paint sprayed the door again. (restitutive)
- # Paint again sprayed the door. (restitutive)
- (66) **Context:** The house was built with foam insulation in the walls. However, the owners decided they wanted to replace it with fiberglass. So they removed all the foam, and put fiberglass, so that ...
- # Fiberglass packed the walls again. (subjectless restitutive)
- # Fiberglass again packed the walls. (subjectless restitutive)
- (67) **Context:** John's new glasses were made with a layer of coating that protected against UV exposure. When that wore off, John decided he no longer wanted it, but that he did want a layer of coating that filtered out blue light. He took his glasses to the optometrist, and within the hour, ...
- # A layer of blue light coating coated the glasses again. (subjectless restitutive)
- # A layer of blue light coating again coated the glasses. (subjectless restitutive)

The fact that a subjectless restitutive reading is unavailable is not so surprising, given that Bale (2007) has shown such readings are generally unavailable.<sup>17</sup> It is a bit surprising that the subjectless repetitive reading for verbs like *spray* does not exist, though, since this goes

<sup>17</sup>An interesting wrinkle arises due to the behavior of *cover* in the following sentences. Unlike *coat* (and the behavior of most other verbs like *coat*), *cover* might allow a subjectless restitutive reading. The following examples are from Seth Cable (p.c.).

- (i) **Context:** A towel was partially covering the screen earlier, but then it fell off. We couldn't find the towel, so we tried to fix this with a blanket. After we got it in place...  
A blanket partially covered the screen again. (subjectless restitutive)

Interestingly, a subjectless reading only seems to be possible for the (apparently) stative reading of *cover*. When the sentence forces an eventive reading, a subjectless repetitive reading is impossible:

against the general pattern identified in Bale (2007). That alone should be enough to clue us in that something interesting is going on in these cases. In addition, these readings provide evidence that while non-agentive transitive uses are related to goal-object structures, they are not identical to them. If they were derived from a goal-object structure, there should be a phrase somewhere that corresponds to *the wall with paint* that describes a state of the wall being with paint. Without additional stipulations, we would expect that *again* could attach to such a phrase and receive a restitutive reading, even for eventive verbs like *spray*. However, a restitutive reading is not possible for this use of *spray*.

Like Bale (2007), I will take this to indicate that in the non-agentive uses of *spray/load* verbs and *cover/fill* verbs that lack a locative preposition, there is no predicate of eventualities that includes the verb and object that excludes the subject or the verb root. There is only one phrase that denotes a predicate of eventualities, and that includes the subject, the verb, and the object. Thus, the structure in (62) will have to be revised, since its VP is a predicate

- 
- (ii) **Context:** A towel was quickly thrown over the screen, covering it. But it fell off. So, we tossed a blanket over the screen, and ...  
 # A blanket quickly covered the screen again.

These judgments seem right to me, and they are interesting in two ways. The first way is that the judgment for (i) differs from the judgment reported in (67) for post-VP *again*. Both judgments seem relatively clear to me, and the source of the difference is unclear. I am tempted to attribute the behavior to the adverb *partially*, though I admittedly have no real reason to do so. This raises the possibility that the structural analysis of non-agentive *cover* would differ from the structural analysis I propose for other non-agentive transitive goal-object verbs, or that I have not characterized the facts in (67) correctly. Ultimately, this would require only a small adjustment to my analysis, which would be that (to preview) instead of *THEME* merging inside the verb, it would merge with VP. This would in fact simplify the semantics to be presented. The source of the asymmetry in “stative” and eventive uses would remain mysterious though.

The second way that these facts are interesting is that even outside my analysis this behavior is mysterious. Bale (2007) examines the possible readings of *again* with different kinds of verbs, and identifies the following pattern: subjectless repetitive readings are possible with eventive transitive verbs (e.g., *hit*), but not with stative transitive verbs (e.g., *hate*).

- (iii) a. **Context:** After Seymour’s TV went all fuzzy, the repairwoman corrected the situation by hitting it quickly. after a while it started to return to its fuzzy state. Seymour saw how the repairwoman had fixed it, so ...  
 Seymour hit it again. (Bale 2007, (35a,b))
- b. **Context:** Seymour’s mother loved Frank, although she was the only one who did. After a while she no longer cared for Frank. However, Seymour became attached to the man, and developed strong feelings for him after his mother’s love subsided. So ...  
 #Seymour loved Frank again. (Bale 2007, (47a,b))

Bale (2007) shows that the lack of a subjectless restitutive reading is not restricted to psych-verbs, as the same pattern occurs with *own* and *owe*. In this light, the behavior of *cover* in (i) and (ii) is quite surprising: it displays precisely the opposite pattern from what we might expect given (iii). While (iii) shows that (in most cases), subjectless presuppositions are only possible with eventive transitive verbs, (i) and (ii) show that stative transitive *cover* does support a subjectless presupposition, while eventive transitive *cover* does not. While I do not have an analysis here that would derive this, the topic seems ripe for further investigation.

of eventualities that excludes the subject.

One way to model this fact would be to say that there are separate verbs that directly encode relationships between the subject and object, and that these are the verbs that produce such structures. Denotations for these verbs would look like the following.

- (68) a.  $\llbracket \sqrt{\text{spray}} \rrbracket = \lambda x. \lambda y. \lambda e. \text{spray}(e) \wedge \text{onto}(e, y, x) = 1$   
 b.  $\llbracket \sqrt{\text{pack}} \rrbracket = \lambda x. \lambda y. \lambda e. \text{pack}(e) \wedge \text{in}(e, y, x) = 1$   
 c.  $\llbracket \sqrt{\text{coat}} \rrbracket = \lambda x. \lambda y. \lambda e. \text{coat}(e) \wedge \text{on}(e, y, x) = 1$

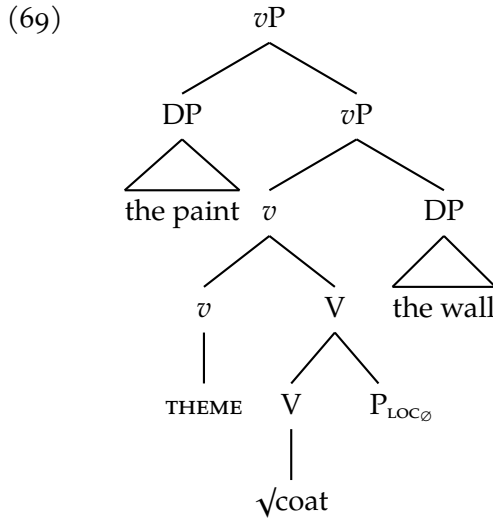
This is certainly a possible analysis. However, this runs the risk of making any similarities between the *spray* that occurs in agentive and unaccusative contexts, on the one hand, and the *spray* that occurs in non-agentive contexts, on the other hand, entirely coincidental. It would also eliminate our explanation of how non-agentive transitive uses and goal-object uses are related via P-conflation. I will suggest a way of thinking that could resolve these issues.

My suggestion is that we think of *THEME* as not being of the syntactic category  $\Theta$ , which I used mnemonically above, but instead as being a kind of *v*. In the same way that there is a *v* that introduces an agent argument, there would be a *v* that introduces a theme argument.<sup>18</sup> What relates the eventuality described by the verb to its object is  $P_{\text{LOC}\emptyset}$ , and what relates the verb to the eventuality described by the subject of these transitive non-agentive uses is *v*.<sup>19</sup>

However, the theme-introducing *v* cannot be where it is shown in (62). If it did occur there, it should be possible to adjoin *again* to a phrase that does not contain its meaning or argument. The result would be that *again*'s reading could exclude the subject of a non-agentive transitive use, which I just showed is impossible in (65–67). Instead, I will suggest that *THEME* merges with  $[V+P_{\text{LOC}\emptyset}]$ , as in (69).

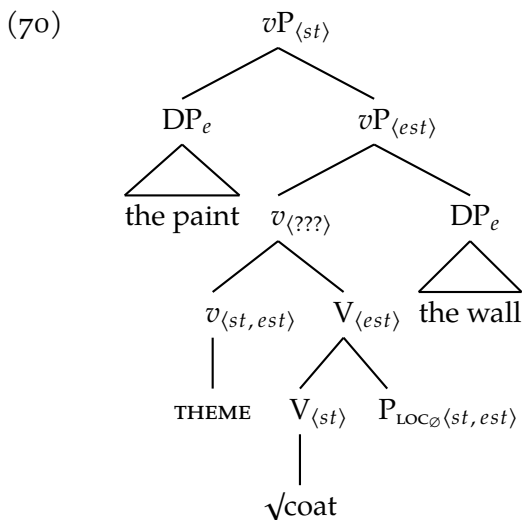
<sup>18</sup>I remind the reader here that my use of the term theme is restricted specifically to the object of non-goal-object uses of *spray/load* verbs.

<sup>19</sup>Note that I assume that *THEME*, unlike  $v_{\text{AGENT}}$ , does not assign Case to the object— $v_{\text{AGENT}}$  does that, in accordance with Burzio (1986), Johnson (1991), and Kratzer (1996). This would constitute a syntactic difference between  $v_{\text{AGENT}}$  and *THEME*. Such a difference within a single syntactic category is not unprecedented—there are, after all, prepositions that assign Case to their complement (e.g., *to*, *with*, *through*, etc.), and prepositions that do not (e.g., *abroad*, *away*, *downward*, etc.).



Note that in this structure, there is no phrase smaller than the maximal  $vP$  that is a predicate of eventualities. Both heads that introduce arguments are in the complex  $v$  head, meaning that  $v$  will be of type  $\langle e, \langle e, st \rangle \rangle$ . Thus, when *again* attaches to this structure, it can attach no lower than the highest  $vP$ , and its presupposition will necessarily include the subject, the verb, and the object.

However, how exactly this structure will compose semantically is still to be explained. Currently, there will be a type mismatch when *THEME* is to compose with  $[V+P_{LOC\emptyset}]$ , given the denotations for each of these that I have been using throughout.



In particular, we know that the highest  $v$  should be of type  $\langle e, est \rangle$ , as it will combine with the object and then the subject to yield a predicate of eventualities. If it were instead of type  $\langle est \rangle$ , we would expect *again* to be able to receive subjectless readings, contrary to fact.



However, the denotation of  $v_{\text{Max}}$  should be a function of the denotation of its daughter nodes, which are of type  $\langle st, est \rangle$  and  $\langle est \rangle$ . Standard modes of composition such as Function Application and Predicate Modification will not apply here, nor will availing ourselves of variants of them, such as Event Identification (Kratzer 1996), do the trick.

Instead, I will follow previous work by Keine & Bhatt (2016) and Di Sciullo & Williams (1987), and propose that  $v_{\text{THEME}}$  composes with  $[V+P_{\text{LOC}\emptyset}]$  via Function Composition, defined in (71).<sup>20</sup>

(71) a. Simple Function Composition:

$$(B \rightarrow C) \circ (A \rightarrow B) := (A \rightarrow C)$$

b. Generalized Function Composition:

$$(C \rightarrow D) \circ (A \rightarrow (B \rightarrow C)) := (A \rightarrow (B \rightarrow D))$$

(Keine & Bhatt 2016, (29))

Keine & Bhatt (2016) illustrate Function Composition with kinship terms in Swedish. Basic terms for mother, *mor*, and father, *far*, combine in a predictable way, giving rise to terms for more distant relations. For instance, *farfar* is one's father's father—one's paternal grandfather—while *morfar* is one's mother's father—one's maternal grandfather. This productivity is captured by combining the simple denotations of *mor* and *far* via Function Composition.

(72) a.  $\llbracket \text{far} \rrbracket = \lambda x.1y.\text{father}(x, y)$

b.  $\llbracket \text{mor} \rrbracket = \lambda x.1y.\text{mother}(x, y)$

c.  $\llbracket \text{farfar} \rrbracket = \llbracket \text{far} \rrbracket \circ \llbracket \text{far} \rrbracket = \lambda x.\llbracket \text{far} \rrbracket(\llbracket \text{far} \rrbracket(x))$   
 $= \lambda x.1y.\text{father}(1z.\text{father}(x, z), y)$

d.  $\llbracket \text{morfar} \rrbracket = \llbracket \text{far} \rrbracket \circ \llbracket \text{mor} \rrbracket = \lambda x.\llbracket \text{far} \rrbracket(\llbracket \text{mor} \rrbracket(x))$   
 $= \lambda x.1y.\text{father}(1z.\text{mother}(x, z), y)$

(Keine & Bhatt 2016, (30))

Keine & Bhatt (2016) extend this kind of analysis to account for possible readings of German verb clusters, though the details of their particular implementation are not relevant

<sup>20</sup>See also Ades & Steedman (1982); Jacobson (1990, 1992); von Stechow (1992); Steedman (1985), and Gärtner (2011).

here.<sup>21</sup> Thus, Function Composition must be a method of semantic composition that is available to natural language.<sup>22</sup>

Function Composition will allow  $v_{\text{THEME}}$  and  $[V+P_{\text{LOC}\emptyset}]$  to compose, as follows. Slight differences arise since we are composing functions of type  $\langle st, est \rangle$  and  $\langle est \rangle$ , rather than two functions of the same type  $\langle e, e \rangle$ , as in (72), so I present each step of the process in (73c).

$$\begin{aligned}
 (73) \quad & \text{a. } (B \rightarrow C) \circ (A \rightarrow B) := (A \rightarrow C) \\
 & \text{b. } (\langle st \rangle \rightarrow \langle est \rangle) \circ (e \rightarrow \langle st \rangle) = (e \rightarrow \langle est \rangle) \\
 & \quad \quad \quad \llbracket \text{THEME} \rrbracket \quad \quad \quad \llbracket [V+P_{\text{LOC}\emptyset}] \rrbracket \quad \quad \quad \llbracket v \rrbracket \\
 & \text{c. } \llbracket v \rrbracket = \llbracket \text{THEME} \rrbracket \circ \llbracket \sqrt{\text{coat } P_{\text{LOC}\emptyset}} \rrbracket \\
 & \quad = \lambda x. \llbracket \text{THEME} \rrbracket (\llbracket \sqrt{\text{coat } P_{\text{LOC}\emptyset}} \rrbracket (x)) \\
 & \quad = \lambda x. \llbracket \text{THEME} \rrbracket ([\lambda z. \lambda e'. \text{coat}(e') \wedge \text{GOAL}(e', \text{on}(z)) = 1](x)) \\
 & \quad = \lambda x. \llbracket \text{THEME} \rrbracket (\lambda e'. \text{coat}(e') \wedge \text{GOAL}(e', \text{on}(x)) = 1) \\
 & \quad = \lambda x. [\lambda P. \lambda y. \lambda e. P(e) \wedge \text{THEME}(e, y) = 1] (\lambda e'. \text{coat}(e') \wedge \text{GOAL}(e', \text{on}(x)) = 1) \\
 & \quad = \lambda x. [\lambda y. \lambda e. [\lambda e'. \text{coat}(e') \wedge \text{GOAL}(e', \text{on}(x)) = 1](e) \wedge \text{THEME}(e, y)] = 1 \\
 & \quad = \lambda x. [\lambda y. \lambda e. \text{coat}(e) \wedge \text{GOAL}(e, \text{on}(x)) \wedge \text{THEME}(e, y) = 1] \\
 & \quad = \lambda x. \lambda y. \lambda e. \text{coat}(e) \wedge \text{GOAL}(e, \text{on}(x)) \wedge \text{THEME}(e, y) = 1
 \end{aligned}$$

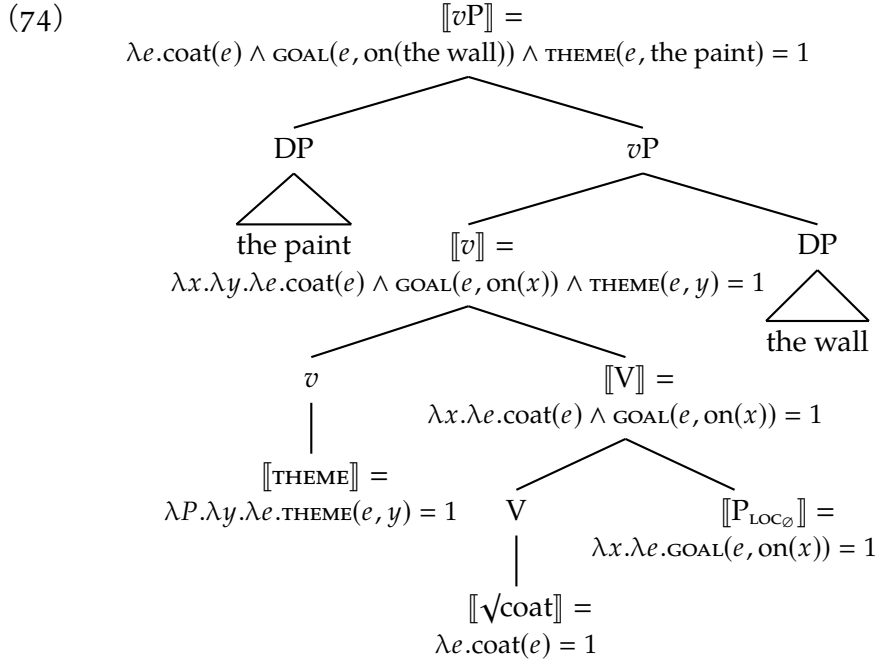
Essentially, what this does is create a new semantics from the semantics of *THEME* and  $[\sqrt{\text{coat } P_{\text{LOC}\emptyset}}]$ . This occurs by means of saturating the entity argument of  $[\sqrt{\text{coat } P_{\text{LOC}\emptyset}}]$  with a variable I have labeled  $x$ . The result of doing this becomes the first argument of  $\llbracket \text{THEME} \rrbracket$ , with a new lambda operator added to bind the variable  $x$  that was introduced.

Thus, we have the following structure and semantics for non-agentive transitive uses of *spray/load* verbs and *cover/fill* verbs.<sup>23</sup>

<sup>21</sup>The differences have to do with verb movement, which will not play a role in my account.

<sup>22</sup>It is possible that this mode of composition is only available below the word level (Kyle Johnson, p.c.), though this point does not become crucial here.

<sup>23</sup>I label the binder of the entity argument of  $\llbracket \text{THEME} \rrbracket$  here as  $y$  to make following derivation easier—nothing would go wrong if  $x$  were used instead, but this makes it harder to see how the arguments map to the right places in the semantic representation. Note also that the semantics given here would mean that the subject of a non-agentive transitive *spray/load/cover/fill* verb would have to be interpreted as the theme, in contrast to the object of the *with* phrase, as discussed in section 4.2.1. While I have an intuition that this is the case, I have so far not been able to come up with a good example to test this prediction.



There is one difference between *spray/load* verbs and *cover/fill* verbs that is not explained directly by these semantics, and that is the difference in the possibility of event-modifying and state-modifying adverbs shown in (53–56). My suggestion is that this is due to a difference in the denotations of the verbs involved. In particular, I will suggest that both verbs denote events, and not states. This requires some justification given that the most natural way of characterizing the reading that *again* receives in examples like (64) is as a state-modifying, restitutive reading. Furthermore, this raises a puzzle regarding how exactly we are to interpret the goal of a state, which may be an incoherent notion. Thus, it is important to precisely characterize the semantic status of seemingly state-denoting verbs like *cover*, if I am to argue that they involve the very same  $P_{\text{LOC}\emptyset}$  that the event-denoting *spray/load* verbs do. Otherwise, there might be issues of ineffability, since it is unclear that states can have goals of the sort that  $P_{\text{LOC}\emptyset}$  invokes.

However, not all states are created equal in linguistic terms. Some states instead seem to behave syntactically more like events. We can diagnose this in English by examining whether the most natural way of expressing a current, non-habitual situation involving these verbs occurs in the simple present or the progressive. In English, stative verbs most naturally occur in the simple present tense with this meaning, while eventive verbs most naturally occur in the progressive. If stative verbs occur in the progressive, they can often

be coerced into an eventive reading, though this is intuitively quite noticeable; for some verbs, this coercion is difficult or impossible to support conceptually (e.g., *own*). In addition, eventive verbs can occur in the simple present, but in this case they must receive a habitual or generic reading.<sup>24</sup>

(75) Eventive, progressive:

- a. John is running to the store.
- b. John is painting a picture.
- c. John is approaching the door.

(76) Eventive, simple present:

- a. John runs to the store. (habitual only)
- b. John paints a picture. (habitual only)
- c. John approaches the door. (habitual only)

(77) Stative, progressive:

- a. # John is owning a car.
- b. # John is being tall.
- c. # John is knowing the answer.

(78) Stative, simple present:

- a. John owns a car.
- b. John is tall.
- c. John knows the answer.

Interestingly, the putative stative verbs *coat*, *cover*, and so on, actually pattern with eventive verbs in this regard.

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<sup>24</sup>There are also cases of the narrative present, which can be euphemistically referred to as the sportscaster present tense or historical present tense, in cases like the following.

- (i) a. James gets the ball, he shoots and... he scores!
- b. We turn to the story of the Great Depression. It is October 24, 1929...

I leave these aside, as they are clearly irrelevant for present purposes.

- (79) a. The blanket is covering the screen.  
 b. The blanket covers the screen. (habitual/modal only)  
 c. The paint is coating the wall.  
 d. The paint coats the wall. (habitual/?modal only)

This is perhaps not so surprising, given that these predicates can occur with event-modifying adverbs, as I showed in (55). In this behavior, *cover/fill* verbs pattern like another class of predicates, the Davidsonian states, or D-states (Maienborn 2008). These include—perhaps unsurprisingly—verbs that describe the physical position of their subject, just as I have proposed *coat* and *cover* do.

- (80) a. The boy is standing in the room.  
 b. The boy stands in the room. (habitual only)  
 c. The diamond is gleaming on the pedestal.  
 d. The diamond gleams on the pedestal. (habitual only)

There are other tests we can use to distinguish true statives from these more eventive D-statives. For instance, D-statives can occur in a small clause complement of a perception verb, as can eventives, while true statives cannot (Maienborn 2008).

- (81) a. I saw the boy stand in the room. (D-stative)  
 b. I saw the diamond gleam on the pedestal. (D-stative)  
 c. I saw John run to the store. (eventive)  
 d. I saw John paint a picture. (eventive)  
 e. I saw John approach the door. (eventive)  
 f. I saw the blanket cover the screen.  
 g. I saw the paint coat the wall.  
 h. \* I saw John own a car. (stative)  
 i. \* I saw John be tall. (stative)  
 j. \* I saw John know the answer. (stative)

In addition, D-statives combine with locative modifiers (already shown in (81a–81b) for uncontroversial cases of D-statives), while true statives do not (Maienborn 2008).

- (82)
- a. The blanket is covering the screen in Bill's office.<sup>25</sup>
  - b. The paint is coating the wall near the edge of campus.
  - c. \* John owns/is owning a car at his home.
  - d. \* John is (being) tall in the office.
  - e. \* John knows/is knowing the answer in class.

Finally, D-statives support manner adverbs (and similar expressions), while true statives do not (though we must be careful to test the relevant cases with manner adverbs that do not invoke agency) (Maienborn 2008).

- (83)
- a. The boy was calmly standing. (D-stative)
  - b. The diamond was brilliantly gleaming. (D-stative)
  - c. John was carefully running. (eventive)
  - d. John was absent-mindedly painting a picture. (eventive)
  - e. John was cautiously approaching the door. (eventive)
  - f. The blanket was haphazardly covering the screen.
  - g. The paint was beautifully coating the wall.
  - h. \* John frequently owns/is owning a car. (stative)
  - i. \* John awkwardly is (being) tall.<sup>26</sup> (stative)
  - j. \* John carefully knows/is knowing the answer. (stative)

In sum, verbs that receive stative readings in the *cover/fill* class seem to pattern more like D-statives than like true statives. D-statives, as we have just seen, are treated semantically more like eventives than like true statives, as shown by their ability to occur in the particular semantic environments outlined above. We might assume that this semantic similarity to

<sup>25</sup>I do not know of a way to rule out an alternative parse for this string where *in Bill's office* is a DP-internal modifier. Preposing the PP might work, but requires a particular context. It is my hope that the relevant difference between *coat/cover* and true statives is still fairly easy to intuit.

<sup>26</sup>Note that *John is awkwardly tall* has a different reading, where *awkwardly* refers to a degree of tallness, rather than to the manner in which John is tall.

eventive predicates leads to their ability to take goal and theme arguments as well, despite seeming on the surface like they are predicates of states rather than predicates of events.<sup>27</sup>

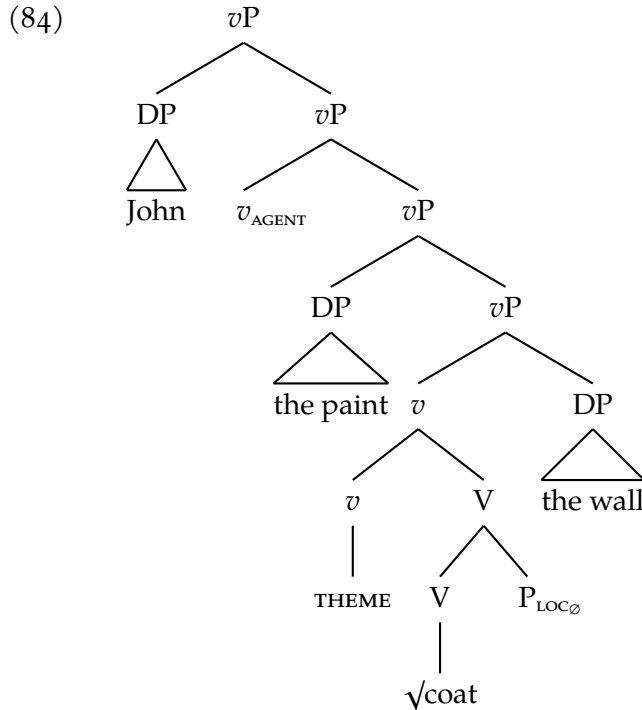
This could resolve the remaining semantic puzzle I noted, as it would provide us a way of thinking about how these apparent states can combine with a preposition that introduces a goal argument: they are not descriptions of states, but descriptions of events of active maintenance of states. What I mean by this is the same sort of thing that is described in a sentence like *John held the door shut (by going limp against it)*; at an intuitive level, this could be thought of as a description of an event (described by *holding*) that is actively maintaining the state of the door being shut. We could think of verbs like *cover* in the same way, as describing the active maintenance of particular kinds of states.<sup>28</sup>

A syntactic puzzle arises when we attempt to determine why such a structure could not lead to an agentive use. I will make a suggestion, but more needs to be said. That suggestion has to do with an idea related to accusative Case assignment. First, I present the structure that would result from making (69) a complement to  $v_{\text{AGENT}}$ .

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<sup>27</sup>Note that nothing would rule out verbs like *cover* having some sort of stative substructure. We might suppose that the verb root denotes a predicate of states, which combines with a functional head that introduces an event. All that is relevant here is that there be an event at the point when  $P_{\text{LOC}\emptyset}$  combines with the verb, so that a goal can be specified coherently.

<sup>28</sup>This might suggest a decompositional analysis of these verbs, where they combine an event part and a stative part. This seems potentially promising to me, but unifying it with the analysis I have proposed would require no small amount of work, and I will not pursue it further here.



There might be two possible strings that could result from this initial structure, depending on whether the lower  $v$  head-moves to  $v_{AGENT}$ . Both are, of course, ungrammatical.

- (85) a. \* John coated the paint the wall. (with head-movement)  
 b. \* John the paint coated the wall. (without head-movement)

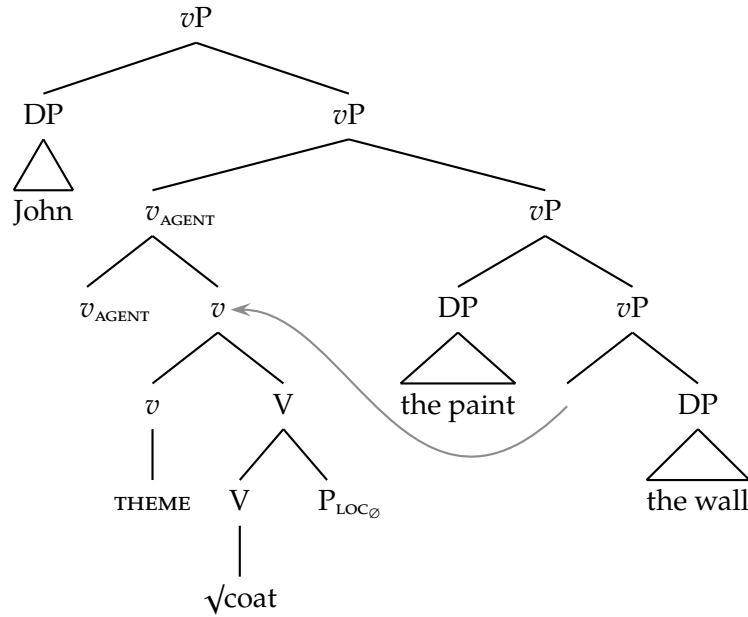
Let us suppose that there is a requirement that  $v$  be pronounced as part of the main verb of its clause, and that a means the syntax has to achieve this is head-movement. This would derive the behavior discussed in chapter 2 regarding the difference in the possible readings of *again* when it occurs before and after the verb, which I suggested showed that the verb root moved to  $v$ . This requirement would immediately rule out the possibility in (85b), since  $v_{AGENT}$  would not be pronounced as part of the verb.

Thus, movement of the lower  $v$  to the higher  $v_{AGENT}$  would be required.<sup>29</sup>

<sup>29</sup>I represent movement here in a traditional way that does not use multidominance. However, in this case the choice may be important. Under a copy theory approach, we would say that only the higher head can assign Case; under the multidominance approach, we would say something similar but slightly different, that where a head can assign Case depends on its highest dominating node. This way, the result is the same regardless of how movement is modeled. The Rmerge/multidominance approaches raises additional questions: for instance, what would happen if a head did not have a “highest” position (for instance, if a head were multidominated by two nodes, where one node did not asymmetrically c-command the other)? The answer to this question is not, however, relevant here.



(86)



However, I suggest that a problem might arise in this structure as well. First, movement of  $P_{LOC\emptyset}$  might mean that it cannot assign Case to *the wall*, because there is a closer target for Case assignment: *the paint*. Alternatively, we could suppose that something special occurs when two Case assigners are part of a complex head. In this instance, the two Case assigners would be  $v_{AGENT}$  and  $P_{LOC\emptyset}$ . What we might imagine happens is that the Case assigning ability of these two heads merge, so that only a single Case can be assigned. Perhaps there is a grammatical constraint that ensure a single head—regardless of its inner complexity—can only Case-license a single DP. Then, with only one Case assignment possible, there would be a problem since one DP would not have a source for Case, most likely *the wall*.<sup>30</sup> While tentative, this might be able to rule out the other illicit structure, in (85a). This could account for why (69) cannot form part of an agentive sentence. However, similarities between the structure in (86) and proposals about the double-object structure in the dative alternation would need to be addressed—in particular, Larson (1988), Pesetsky (1995), Harley (2002), Beck & Johnson (2004), and Johnson (2018) have proposed that the double-object structure involves a lower element that assigns Case to the second object moving into a higher position. Yet this does not remove its ability to assign Case to the lower object. If this is the right way of thinking about the double-object structure, then something else would have

<sup>30</sup>In the multidominance approach, the issue would be more general, since it would not rely on the idea that Case can only be assigned from the highest position of a head, just that a single head can only assign Case to one DP. In addition, note that this might affect the analysis of pseudo-passives above.

to rule out (86).

There is another puzzle that we run into: why couldn't  $P_{\text{LOC}\emptyset}$  and *THEME* merge in the opposite order, producing a sentence where the interpretations of the subject and object flip?

- (87) The wall coated the paint.  
 meaning: The paint coated the wall.

Nothing would rule this out semantically in my analysis. I will not resolve this puzzle fully, but I will make a suggestion. Before this, it is worth noting that one way to fix this hole would be to say that the denotation of  $P_{\text{LOC}\emptyset}$  is of type  $\langle e, st \rangle$  and combines with *V* by Event Identification (Kratzer 1996), rather than Function Application (see the denotation of  $P_{\text{LOC}\emptyset}$  in (41b)).<sup>31</sup> If this occurred, the denotation of  $[V+\text{THEME}]$  would be of type  $\langle e, st \rangle$ , as would the denotation of  $P_{\text{LOC}\emptyset}$ , which would merge with them. This would result in them combining by some form of conjunction, identifying their arguments.

- (88) a.  $\llbracket [V+\text{THEME}] \rrbracket = \lambda x. \lambda e. V(e) \wedge \text{THEME}(e, x) = 1$   
 b.  $\llbracket [P_{\text{LOC}\emptyset}] \rrbracket = \lambda x. \lambda e. \text{GOAL}(e, \text{on}(x)) = 1$   
 c.  $\llbracket [[V+\text{THEME}]+P_{\text{LOC}\emptyset}] \rrbracket = \lambda x. \lambda e. V(e) \wedge \text{THEME}(e, x) \wedge \text{GOAL}(e, \text{on}(x)) = 1$

This would mean that the verb would combine with only a single argument, which would have to be interpreted as both the theme and the goal of the same eventuality. We could imagine that theme and goal are semantically incompatible notions: a goal is the endpoint of a path that constitutes a reference point, while a theme undergoes movement. Maybe it is contradictory to assert that one and the same entity is the theme and the goal of the same eventuality—or that it is syntactically illicit to do so without using a reflexive pronoun to signal this (e.g., Reinhart & Reuland 1993).

However, I'm not sure this constitutes a real solution. It is perfectly possible to write a reasonable denotation for  $P_{\text{LOC}\emptyset}$  that is a function from a predicate of eventualities to a

<sup>31</sup>To clarify this point, throughout most of the presentation of this analysis, I have been focusing on the denotation of the complex head  $[V+P_{\text{LOC}\emptyset}]$ , which is of type  $\langle e, st \rangle$ . However, I have considered  $P_{\text{LOC}\emptyset}$  itself to be of type  $\langle \langle st \rangle, \langle est \rangle \rangle$ , as in (41b). I have avoided showing the composition of *V* with  $P_{\text{LOC}\emptyset}$  in my graphs as it makes them become quite visually cluttered and harder to follow, instead focusing on the denotation of  $[V+P_{\text{LOC}\emptyset}]$ .

function from entities to predicates of eventualities ( $\langle st, est \rangle$ ). Explaining the impossibility of (87) in this way could amount to little more than playing with the formalism.

Another suggestion is less detailed, but might also resolve the problem. We know that the interpretation of  $P_{LOC\emptyset}$  depends on the particular V it combines with, while we have no evidence that this is the case for the denotation of *THEME*. Suppose that whatever allows V to fill in the choice of *in* or *on* as the appropriate function in  $P_{LOC\emptyset}$ 's denotation is a relation that only holds between a head and its first sister. That is, it has to do with the domain over which  $P_{LOC\emptyset}$ 's idiosyncratic meaning can be defined. In this case, merging *THEME* first would entail that V would not be  $P_{LOC\emptyset}$ 's sister. As such,  $P_{LOC\emptyset}$ 's denotation could not be properly filled in, and semantic composition would have no way of proceeding. Furthermore, this might lead to syntactic ill-formedness, too, under the common assumption that all syntactic heads must have at least some phonological and/or semantic content. If  $P_{LOC\emptyset}$ 's denotation could not be properly retrieved, it would leave it semantically and phonologically empty, and this requirement would remain unmet.

Looking at the more general picture, a crucial part of accounting for the *again* facts in (64–67) in this analysis was the idea that  $v_{THEME}$  could combine directly with the verb (or, more specifically, with  $[V+P_{LOC\emptyset}]$ ).<sup>32</sup> This might be a possibility for agentive *v* as well, if we assume that *again* cannot attach to a head. Consider Bale (2007)'s data that *again* cannot produce a subjectless reading with unergative verbs.<sup>33</sup>

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<sup>32</sup>There is evidence that this might be possible more generally for *v*. As I mentioned before, Bale (2007) shows that stative transitive structures do not support subjectless readings of *again*.

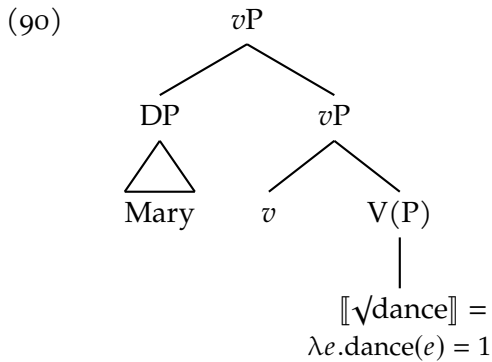
- (i) **Context:** Seymour's sister hated George. But she seemed to be the only one who did. After a while George worked his charm on her and the hatred subsided. After a few months, Seymour realized that George's charm was all an act. Underneath, he was pure evil. So ... (Bale 2007, (46a–b))  
#Seymour hated George again.

This pattern is not restricted to subject experiencer psych-verbs like *hate*, but is a general pattern that occurs with all transitive stative verbs. Nevertheless, in such cases we have no reason to think that these verbs take two internal arguments. They pass tests for transitivity (in contrast to object experiencer psych-verbs, which pattern differently—see Belletti & Rizzi 1988, Dowty 1991, Pesetsky 1995, Landau 2009, Cheung & Larson 2015). Now, if we suppose that transitivity is correlated with the projection of a *v*, we could explain why such verbs nevertheless disallow subjectless readings of *again*: the *v* that they involve is merged with the verb directly, which means there is no phrase that has a proposition consisting of the verb and the object to the exclusion of the subject.

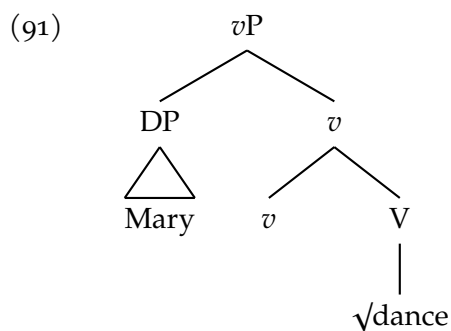
<sup>33</sup>Subjectless presuppositions are also impossible with unaccusative verbs, but this is less surprising given that unaccusative subjects are assumed to be semantic arguments of the verb rather than of *v*.

- (89) **Context:** This morning, Bob danced until he dropped from exhaustion. Mary was inspired by his moves. So ...  
 #Mary danced again. (subjectless repetitive)  
 (Bale 2007, (56a–b))

Under standard assumptions about the syntax of unergative verbs, this is surprising.



There is a predicate of events that excludes the subject in unergative sentences under standard assumptions. That predicate corresponds to  $V(P)$  in (90). Usually, *again* can attach to VPs that describe predicates of eventualities, but it apparently cannot do this in unergatives. We might suppose that the reason for this is that in unergatives,  $v$  does not merge with a phrasal projection of  $V$  to form a  $vP$ ,<sup>34</sup> but instead merges directly with  $V$  to form a complex head. That would give us the following:



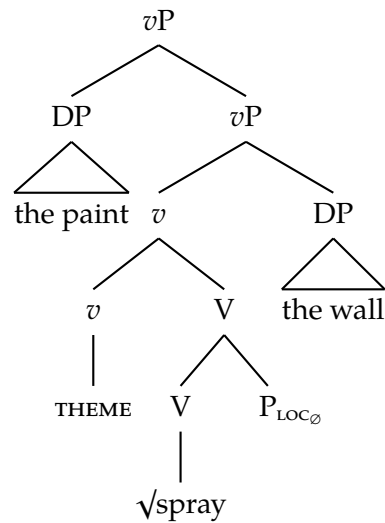
In (91), there is no (phrasal) predicate of eventualities that excludes the subject, since  $v$  merges directly with the verb. If we suppose that *again* cannot merge within a head—probably a reasonable assumption—this structure would explain why no subjectless repetitive reading can exist for (89). A general way of thinking about what would force this

<sup>34</sup>While  $V$  may not necessarily have a phrasal projection in (90), we could force one by the inclusion of a modifier such as *quickly*. In this case, the same judgment that subjectless readings are impossible holds.





c. Non-agentive transitive:<sup>38</sup>



By definition, *spray/load* verbs are those verbs that can occur in either structure in (93a–93b). Non-alternating goal-object verbs are those that require conflation with  $P_{\text{LOC}\emptyset}$ , while (some) non-alternating theme-object verbs are those that disallow such conflation (n.b. chapter 2, section 2.4.2). Some theme-object verbs can occur in (93a) without  $v$  projecting, which results in unaccusative uses. Some verbs that allow P-conflation (alternating *spray/load* verbs and non-alternating goal-object verbs) can occur in in (93c); verbs that disallow P-conflation (non-alternating theme-object verbs) never occur in non-agentive transitive structures, as they disallow P-conflation.

#### 4.4.1 Unresolved Issues

There are some open issues in this analysis that I will briefly discuss before concluding.

First, the analysis in this chapter posited one way of thinking about the denotations of verbs like *spray*: they are simple predicates of eventualities, with the theme argument coming from a separate functional head,  $v_{\text{THEME}}$  (at one point categorized as  $\Theta$ ). Of course, an advantage in the last chapter of treating *spray/load* verbs as functions from entities to predicates of eventualities was that it provided a semantic explanation for their apparent transitivity requirement: they must combine with an entity argument. This would account

<sup>38</sup>An important question I do not address is why this structure seems to be available only for  $v_{\text{THEME}}$ , and not  $v_{\text{AGENT}}$ . The difference may have to do with a better understanding of what distinguishes external thematic roles like  $\text{AGENT}$  from internal thematic roles like  $\text{THEME}$ .

for why an intransitive small clause parse is impossible. But now, if these are just predicates of eventualities, we have lost an explanation for why they must be transitive. One possibility would be to reject the  $v_{\text{THEME}}$  approach, and return to the contextual allosemy approach in (47). In this case, the denotation of these verbs when they do not merge with  $P_{\text{LOC}\emptyset}$  is a function from entities to predicates of eventualities, and when they do, they are a different function from entities to predicates of eventualities. However, for this to work, we must suppose that there are two semantic relations corresponding to *spray*. The first would be in *spray*'s denotation when it occurs without  $P_{\text{LOC}\emptyset}$ , and be true of an eventuality  $e$  and an entity  $x$  if  $e$  is a spraying of  $x$ . In contrast, the second would be in the denotation of  $[\sqrt{\text{spray}+P_{\text{LOC}\emptyset}}$ ], and would be true of an eventuality  $e$  if it is a spraying. However, this would leave us without an idea of how the subject argument gets introduced in non-agentive transitive uses. Regardless, we are left with either a need to stipulate either the transitivity of *spray/load* verbs, or else to stipulate the existence of two semantic relations. I don't see any particular reason to favor one approach over the other, and so I have assumed that we can simply stipulate that *spray/load* verbs are transitive, similarly to obligatorily transitive causative verbs like *destroy* (see Folli & Harley 2005).

Next, I have analyzed the structure of non-agentive transitive uses of *spray/load* and related verbs as involving both P-conflation and  $v_{\text{THEME}}$ . However, the data I presented showed only a clear relationship between the possibility of agentive goal-object uses and non-agentive transitive uses. Agentive goal-object uses do not implicate  $v_{\text{THEME}}$ . As such, while the inclusion of  $P_{\text{LOC}\emptyset}$  in non-agentive transitive structures is well-motivated, the inclusion of  $v_{\text{THEME}}$  is somewhat more tenuous: we do not always have independent evidence that verbs that allow non-agentive transitive uses can occur with  $v_{\text{THEME}}$ . For instance, verbs like *cover* allow goal-object uses and non-agentive transitive uses, but not theme-object uses.

- (94)
- a. John covered the screen with the blanket.
  - b. \* John covered the blanket onto the screen.
  - c. The blanket covered the screen.

A thought about this is that such verbs must be merged with  $P_{\text{LOC}\emptyset}$ . If they then merge with  $v_{\text{THEME}}$ , a non-agentive structure is all that can result, since adding  $v_{\text{AGENT}}$  would lead to



an impossible derivation (perhaps as suggested in the discussion about (86)). If they do not merge with  $v_{\text{THEME}}$ , an agentive structure would be possible. However, independent evidence of the compatibility of these verbs with  $v_{\text{THEME}}$  would constitute more direct evidence for the analysis in (93c).

In addition, I alluded earlier to some exceptions to the generalizations regarding goal-object unaccusative uses of *cover/*fill verbs: *fill, flood, clog, stop up, interweave, interlace*.<sup>39</sup>

- (95) a. Water filled the room. (theme unaccusative)  
 b. The room filled with water. (goal unaccusative)
- (96) a. Water flooded the room.  
 b. The room flooded with water.
- (97) a. Gunk clogged the drain.  
 b. The drain clogged (up) with gunk.
- (98) a. Gunk stopped up the drain.  
 b. ? The drain stopped up with gunk.
- (99) a. ?? Blue threads interwove red threads in the tapestry.  
 b. Red threads interwove with blue threads in the tapestry.
- (100) a. ?? Blue threads interlaced red threads in the tapestry.  
 b. Red threads interlaced with blue threads in the tapestry.

Unlike the putative exceptions that *swarm* verbs and *black with* predicates constitute (see (14–15)), these do not uniformly have location subjects. In (95–98), for instance, the subject

<sup>39</sup>Interestingly, the goal-subject sentences these sentences display seem to pattern differently when using a theme that can subvert the holistic effect (see (11–12)). While the theme-subject sentences clearly require the goal to be read as completely affected, the goal-subject sentences do not. I illustrate with *fill*, but the pattern seems to me to hold more generally.

- (i) a. A little bit of water filled the bottle.  
 → The bottle was full of a little bit of water. (small bottle only)  
 b. The bottle filled with a little bit of water.  
 ↗ ?? The bottle was full of a little bit of water. (normal-sized & small bottle possible)

In (i-b), the reading where the bottle is normal-sized seems most natural, but this reading is impossible in (i-a) (given an appropriate contextual specification of *a little bit*). Interestingly, the fact that there does not appear to be a holistic effect in (94b) is precisely what we would **not** expect if this were derived as the unaccusative form of the goal-object structure, since that is associated with a holistic reading of the goal.

is indeed interpreted as a goal of an event, not merely a location. In (99–100), the subject could be interpreted as a location, but the verbs *interweave* and *interlace* do not seem to properly belong with the class of *swarm* verbs, as the meaning in this case is quite distinct. These do seem to constitute true exceptions to the generalization that goal-subject unaccusative uses of *cover/fill* verbs are impossible. However, these verbs do still display the pattern of nominal readings where a nominal can only refer to the theme and never the goal (sometimes with additional restrictions on the particular kind of theme).

- (101)
- |    |                    |                             |
|----|--------------------|-----------------------------|
| a. | the filling        | (= the apples/≠ the pie)    |
| b. | the flood          | (= the water/≠ the town)    |
| c. | the clog           | (= the gunk/≠ the drain)    |
| d. | ? the interweaving | (= the threads/≠ the shirt) |
| e. | ? the interlacing  | (= the threads/≠ the shirt) |

Whatever makes these cases exceptional seems restricted to their verbal uses, then. Interestingly, no truly clear exceptions to these generalizations exist for alternating *spray/load* verbs (see the appendix to this chapter).

There are, however, four different exceptions to the generalization regarding nominal uses, though these exceptions again occur only with non-alternating verbs—in this case, with non-alternating theme-object verbs. These exceptions are *place*, *position*, *dip*, and *dump*. Of these, *place* and *position* do not have unaccusative uses, while *dip* and *dump* allow only the theme to become an unaccusative subject.

- (102)
- |    |                                    |                          |
|----|------------------------------------|--------------------------|
| a. | * The books placed onto the table. | (theme unaccusative)     |
| b. | * The table placed with the books. | (goal unaccusative)      |
| c. | the place                          | (≠ the books/=the table) |
- (103)
- |    |  |                          |
|----|--|--------------------------|
| a. | * The books positioned on the table.   |                          |
| b. | * The table positioned with the books. |                          |
| c. | the position                           | (≠ the books/=the table) |

- (104) a. The oar dipped into the water.  
 b. \* The water dipped with the oar.  
 c. the dip (≠ the chip/= the salsa)<sup>40</sup>
- (105) a. The water dumped into the reservoir.  
 b. \* The reservoir dumped with water.  
 c. the dump (≠ the trash/= the place where one dumps trash)

I have no account for these exceptions or the previous ones at present, and must leave them as exceptions here. What is interesting is that the exceptions with non-alternating goal-object verbs all occur in unaccusative uses, while the exceptions with non-alternating theme-object verbs all occur in nominal uses. It is not clear to me what would derive this, but given the limited number of exceptions to begin with, it could be accidental. Interestingly, however, none of these exceptions occurs with alternating *spray/load* verbs. This might tell us that there is some underlying structural difference between those verbs that alternate and those that do not that goes beyond the kinds of morphological idiosyncrasy I have discussed here (i.e., whether a verb may, must, or must not combine with P<sub>LOCØ</sub>).

Finally, it is well-known that particular *spray/load* verbs are choosy about which arguments may be optional and which may be obligatory, as well as about which kinds of arguments can alternate.

- (106) Theme optional, goal optional:  
 a. John loaded the hay (onto the wagon).  
 b. John loaded the wagon (with the hay).
- (107) Theme optional, goal obligatory:  
 a. John stuffed the feathers \* (into the pillow).  
 b. John stuffed the pillow (with the feathers).
- (108) Theme obligatory, goal optional:  
 a. John piled the stones (onto the deck).  
 b. John piled the deck \* (with the stones).

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<sup>40</sup>Cf. *John dipped the chip into the salsa*, \**John dipped the chip with salsa*.

- (109) Theme obligatory, goal obligatory:
- a. John slathered the plaster \* (onto the walls).
  - b. John slathered the walls \* (with the plaster).
- (Beavers 2017, (59–62))
- (110)
- a. John spread glue on the paper.
  - b. John spread the paper with glue.
  - c. John spread a map on the bed.
  - d. # John spread the bed with a map.
- (Iwata 2008, ch. 3, (30,32))

Like many other analyses, my analysis does not provide an explanation for these facts. Of course, one can always appeal to lexical idiosyncrasy as is common in confronting these issues, but this is not an explanation. Pinker (1989)'s account in terms of lexical subclasses (or conflation classes) attempts an explanation of these patterns. However, as Beavers (2017) notes, it fails in particular ways; see Beavers (2017, section 6) for discussion.

#### 4.4.2 *The General Picture*

My goal at the outset of this chapter was an account of the *spray/load* alternation; in particular, an account of what relates the theme-object structure to the goal-object structure. In addition, I raised the question of how these structures relate to non-agentive transitive structures, which are usually not dealt with explicitly. In light of the structures in (93), I am now in a position to provide some answer to these questions.

What relates the theme-object and goal-object structures in (93a–93b) is the presence of overlapping sets of lexical and functional heads, which get deployed in different syntactic ways. The inventory of (relevant) heads common to these particular theme-object and goal-object structures consists just of  $\sqrt{\textit{spray}}$ , *CAUSE*, and a locative preposition (either overt or null). The semantics of these heads will account for the near-paraphrase relationship that holds between the theme-object and goal-object structures, the first desiderata of an account of the *spray/load* alternation identified in (Rappaport et al. 1993). What distinguishes these

structures can be boiled down to whether  $\sqrt{spray}$  combines first with a thematic relation ( $v_{\text{THEME}}$ ), or a locative preposition ( $P_{\text{LOC}\emptyset}$ ). If it combines with a locative preposition, its object will be interpreted as a goal and not a theme. If it then combines with a resultative small clause, the subject of the result state will be identified as the goal of the spraying under the multidominance analysis. In many cases, this is natural if the result state is described using *with*, but this need not always be the case (cf. (45)).

If, on the other hand,  $\sqrt{spray}$  combines with  $v_{\text{THEME}}$  first, the object will be interpreted as the theme of the spraying event, with this relation entailing some sort of movement. If it then combines with a resultative small clause, the theme will be identified as the subject of the result state under the multidominance analysis, with its destination specified by the choice of locative preposition. Essentially, then, the alternation is ultimately reducible to whether a *spray/load* verb merges with  $P_{\text{LOC}\emptyset}$  or  $v_{\text{THEME}}$ .

Next, we can ask what relates the structures in (93a–93b) to the one in (93c). In fact, there are relations between it and both of the others. Non-agentive transitive uses of *spray/load* verbs involve the verb,  $v_{\text{THEME}}$ , and  $P_{\text{LOC}\emptyset}$ . In this way, they represent a sort of hybrid structure. What distinguishes them from agentive uses is the absence of a small clause introduced by *CAUSE*, which explains why these do not have resultative readings. This is unexpected on accounts where goal-object uses of *spray/load* verbs denote a result state, since these are goal-object uses and yet do not necessarily denote a result state. In my analysis, this difference is expected. What distinguishes these structures, then, boils down to whether  $[V+P_{\text{LOC}\emptyset}]$  merges with  $v_{\text{THEME}}$  or not. In agentive structures, this does not occur, while in non-agentive structures, these merge to form a complex head. What distinguishes agentive structures from non-agentive structures, then, is both the inventory and configuration of the heads they implicate.

The more general picture we reach, then, is one where what is responsible for argument structure alternations is not transformational in nature. Instead, argument structure alternations are defined by different syntactic arrangements of overlapping sets of lexical and functional heads. This is in line with much current thinking on such alternations, especially the dative alternation (see, e.g., Beck & Johnson 2004; Harley 2002; Johnson 2018; Pesetsky 1995). It is also true of the active/passive alternation, even though these are still often

thought of as transformationally related. In most current analyses, passives are essentially the same as actives, modulo the addition of a single functional head that has little (or no) semantic effect<sup>41</sup> (e.g., Baker et al. 1989; Bruening 2011, 2013, 2014; Collins 2005). Because the inventory of heads in active and passive sentences is nearly (or exactly) identical, the active/passive alternation is not associated with a difference in meaning like other alternations are. The causative/inchoative alternation is also thought to work this way, with the difference being the absence of *v* in inchoatives. This means no agent is semantically represented in inchoatives, with their meaning being otherwise identical to the meaning of the causative.<sup>42</sup>

Other alternations exist (we have also seen the *swarm* alternation, but there are many others besides), but the general picture is clear. Alternations, and the relations between sentences that result, are due to a certain amount of (sometimes idiosyncratically) restricted lexical and syntactic flexibility. Some verbs require the parts of their meanings to be deployed in very specific ways, which means these verbs show few alternations. Other verbs may have few parts to their meanings (e.g., simple transitive verbs like *eat*), and so occur in a limited number of syntactic contexts. But as the inventory of parts of meanings associated with verbs increases, so too might their syntactic complexity. The more elements co-occur with a verb, the more ways these elements could in principle be arranged, simply as a mathematical fact. Though the grammar will place constraints on which of the logically possible ways of arranging these elements are actually possible, we expect the correlation to hold in general.

This idea could explain why verbs associated with more complex event structural meanings tend to occur in more syntactic frames. A non-alternating unaccusative verb with a

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<sup>41</sup>Though there are some semantic (possibly pragmatic) effects associated with passivization.

- (i) a. Londoners inhabit London.
- b. London is inhabited by Londoners.
- c. Sherlock Holmes inhabits London.
- d. ??# London is inhabited by Sherlock Holmes.

Something about the fact that Sherlock Holmes is a fictional character who nevertheless lives in (a version of) a real city makes the passive in (i-d) odd. (These examples are poorly recalled versions of better counterparts that Barbara Partee came up with in a question to an invited speaker at the University of Massachusetts Amherst.)

<sup>42</sup>I am not sure exactly who to credit with this modern version of the causative/inchoative alternation, but it seems to be what is generally assumed. The general idea that what sets apart unaccusatives is the lack of an agent/external argument could be traced back to Perlmutter & Postal (1984).

very simple logical meaning like *exist* might occur very few distinct event structural configurations (possibly only one) because it is associated with a single head,  $\sqrt{\textit{exist}}$ . In contrast, verbs like *spray/load* verbs, barring idiosyncratic morphological and syntactic restrictions, can occur in a much wider variety of contexts, including agentive transitive theme-object and goal-object structures, unaccusative theme-object structures, and non-agentive transitive goal-object structures. In the way of thinking I have suggested, this is because these verbs are associated with other parts of meaning: *v*, *CAUSE*,  $P_{\text{LOC}}$  (null or overt), and (in some goal-object structures) *with/v\_{\text{with}}*. This increased flexibility arises naturally due to the larger inventory of syntactic components that go into constructing the complex event structures they are associated with.

#### **Appendix: Tables of Non-agentive and Nominal Uses of *Spray/load* Verbs**

This appendix lists each of the *spray/load* verbs, *cover/fill* verbs, and *put/place* verbs identified in Levin (1993), along with some facts about what kinds of syntactic environments they can occur in. In her terms, these groups are alternating theme/goal-object verbs, non-alternating goal-object verbs, and non-alternating theme-object verbs, respectively.

Table 4.1 shows properties of alternating *spray/load* verbs.<sup>43</sup> It indicates whether they occur in unaccusative theme-subject and/or goal-subject uses, as well as what their nominal uses can refer to. Finally, I indicate what I take to be the meaning of  $P_{\text{LOC}_\emptyset}$  in the goal-object structure. In some cases, a theme nominal is zero-derived, while in other cases particular suffixes may be optional or required; this is not indicated below. A dash in a cell indicates that neither a theme nor a goal usage is possible (though other presently irrelevant uses might be possible). A question mark preceding an entry indicates that I find the judgment hard to make with certainty. I suspect there is a lot of variation that is not captured here or in the following tables. This appendix is intended as a starting point for future work, rather than as a definitive reference.

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<sup>43</sup>Levin (1993) also lists *prick* and *wash* as marginally alternating, and *stick* as alternating. I do not have an alternating use of these, so I have omitted them here.

Table 4.1: Summary of some properties of *spray/load* verbs

Verb	Unaccusative subject(s)	Nominal referent(s)	P <sub>Loc<sub>o</sub></sub> meaning
brush	?theme	theme	onto
cram	theme	–	into
crowd	theme	theme	into
cultivate	–	–	?into
dab	–	theme	onto
daub	–	theme	onto
drape	theme	?theme	onto
drizzle	theme	theme	onto
dust	?theme	theme	onto
hang	theme	theme	onto
heap	–	theme	onto
inject	–	theme	into
jam	theme	–	into
load	?theme	theme	into <sup>44</sup>
mound	–	theme	onto
pack		?theme/goal <sup>45</sup>	into
pile	theme	theme	onto
plant	–	theme	?into
plaster	–	theme	onto
pump	theme	–	into
rub	–	theme	onto
scatter	theme	theme	?into
seed	–	?theme <sup>46</sup>	?into
settle	theme	–	?into
sew	–	–	?into
shower	theme	theme	onto

<sup>44</sup>See discussion in section 4.2, fn. 8.

<sup>45</sup>There are at least two potentially relevant nominal uses of this verb: *pack* (i.e., backpack, knapsack, etc.) and *package*. *Pack* could be argued to be a goal nominal, but its usage is restricted in particular ways. Packing the car does not mean the car is a pack, for example. *Package* is hard to identify as clearly theme or goal, given that the verb *pack* entails arranging the theme in a particular way.

<sup>46</sup>Arguably, the noun *seed* is not derived from the verb, so this may not be true nominal use of the verb.



Table 4.1: Summary of some properties of *spray/load* verbs

slather	?theme	theme	onto
smear	?theme	theme	onto
smudge	–	theme	onto
sow	–	?theme	?into
spatter	theme	theme	onto
spray	theme	theme	onto
spread	theme	theme	onto
sprinkle	theme	theme	onto
spritz	?theme	theme	onto
squirt	theme	theme	onto
stack	–	theme	onto
stock	–	theme	?into
strew	–	–	?onto
string	–	–	onto
stuff	?theme	theme	into
swab	–	?theme	onto
vest	–	theme	onto
wrap	theme	theme	onto

Table 4.2 summarizes some properties of Levin (1993)'s non-alternating goal-object verbs.<sup>47</sup> The patterns found with non-agentive subjects and nominal references with alternating verbs extend to these cases as well, with the limited exceptions of non-agentive uses of *clog*, *fill*, *flood*, *interlace*, *interleave*, and *stop up* (though note that even these exceptions are completely regular with regards to their nominal uses). The meaning of *with* for these exceptions is universally *into*, which might be significant in some way that I do not yet understand.

Even though these verbs can only surface in agentive uses with goal objects, in the majority of cases goal subjects and nominals are not generally possible. Note that I list these here as “non-agentive” rather than “unaccusative,” since the non-agentive uses of these verbs do not introduce their theme arguments with prepositions (except for the exceptions

<sup>47</sup>Note that some people may marginally accept these in alternating uses: cf. chapter 1, example (17a): %The chef filled the mixture into the zucchini.

noted above, which in goal-subject uses introduce the “theme” argument using *with*), in contrast to the standard behavior of non-agentive uses of *spray/load* verbs. Levin (1993) also lists *face*, but I do not have a use of this verb with *with*. She also lists *interlard* and *lard*, which are not present in my speech.

Table 4.2 also shows whether these verbs allow *in* to alternate with *with* in the agentive goal-object structure. Regarding the readings of *with* they allow, a few of these verbs do not seem to have an *into* or *onto* reading, but a rare *around* reading. Note that no verb with an *into* meaning for *with* allows *with* to alternate with *in* in goal-object structures (though not all verbs with an *onto* meaning for *with* allow this). I have no explanation for this generalization, but it seems robust.

Table 4.2: Summary of some properties of non-alternating goal-object verbs

Verb	Non-agentive subject(s)	Nominal referent(s)	P <sub>LOC<sub>o</sub></sub> meaning	◇[ <i>with</i> = <i>in</i> ]
adorn	theme	theme	onto	✓
anoint	theme	–	onto	✓
bandage	theme	theme	onto	✓
bathe <sup>48</sup>	theme	theme	?into/onto	✓
bestrew <sup>49</sup>	–	–	?onto	?✓
bind	theme	theme	onto	✓
blanket	theme	theme	onto	✓
block	theme	theme	into/onto	✗
blot	theme	theme	onto	✗
bombard	theme	theme	onto	✗
carpet	theme	theme	onto	✓
choke	theme	–	?into	?✓
cloak	theme	theme	onto	✓
clog	theme/goal	theme	into	✗
clutter	theme	theme	?into/onto	✗
coat	theme	theme	onto	✓

<sup>48</sup>I believe this is the *The sun bathed the room with light* sense of the verb, rather than the personal grooming sense.

<sup>49</sup>Note that this non-alternating verb involves an overt *be-* prefix, in contrast to the alternating verb *strew*. Interestingly, the overtly prefixed verb does not allow non-agentive or nominal uses, even with a theme subject or referent.

Table 4.2: Summary of some properties of non-alternating goal-object verbs

contaminate	theme	theme	?into/?onto	X
cover	theme	theme	onto	✓
dam	theme	theme	into	X
dapple	–	–	onto	X
deck	theme	–	onto	✓
decorate	theme	theme	onto	✓
deluge	–	theme	?onto	?✓
dirty	?theme	–	onto	X
douse	theme	theme	onto	✓
dot	theme	theme	onto	?✓
drench	theme	theme	onto	✓
edge	?theme	theme/goal <sup>50</sup>	onto	X
embellish	theme	theme	onto	X
emblazon	theme	theme	onto	X
encircle	theme	theme	around	X
encrust	theme	theme	?onto	X
endow	–	theme	into	X
enrich	theme	theme	into	X
entangle	theme	theme	around	X
festoon	theme	theme	onto	?✓
fill	theme/goal	theme	into	X
fleck	?theme	theme	onto	X
flood	theme/goal	theme	into	X
frame	?theme	theme	around	X
garland	theme	theme	onto	X
garnish	theme	theme	onto	?✓
imbue	theme	theme	into	X
impregnate	theme	theme	into	X
infect	theme	theme	into	X
inlay	?theme	theme	into	X
interlace	?theme/goal	theme	into	X

<sup>50</sup>The nominal *edge/edging* is similar to *pack/packing*. See fn. 45.

Table 4.2: Summary of some properties of non-alternating goal-object verbs

interleave	?theme/goal	theme	into	X
intersperse	–	theme	into	X
interweave	–	theme	into	X
inundate	–	theme	into	X
lash	theme	theme	onto	X
line	theme	theme	onto	X
litter	theme	theme	onto	X
mask	theme	theme	onto	X
mottle	–	–	onto	X
ornament	theme	theme	onto	X
pad	theme	theme	onto	X
pave	theme	theme	onto	✓
plate	theme	theme	onto	✓
plug	theme	theme	into	X
pollute	theme	theme	?into	X
replenish	?theme	theme	into	X
repopulate	?theme	–	?into	X
riddle	?theme	–	into	X
ring	–	–	around	X
ripple	–	–	?onto	X
robe	–	theme	onto	✓
saturate	theme	theme	into	X
season	theme	theme	onto	X
shroud	theme	theme	onto	✓
smother	–	theme	onto	✓
soak	theme	–	into	X
soil	?theme	theme	onto	?X
speckle	?theme	theme	onto	X
splotch	?theme	theme	onto	X
spot	–	theme	onto	X
staff	theme	theme	?into	X
stain	theme	theme	onto	✓

Table 4.2: Summary of some properties of non-alternating goal-object verbs

stipple	–	theme	onto	?✓
stop up	theme/goal	–	into	✗
stud	theme	theme	onto	✗
suffuse	theme	theme	into	✗
surround	theme	theme <sup>51</sup>	around	✓
swaddle	?theme	theme	around	✓
swathe	–	theme	?onto	?✓
taint	theme	theme	onto	✗
tile	–	theme	onto	?✓
trim	–	theme	onto	?✓
veil	theme	theme	onto	✓
vein	theme	theme	into	✗
wreathe	theme	theme	around	✓

Finally, table 4.3 summarizes the behavior of Levin (1993)'s non-alternating theme-object verbs. As discussed in chapter 2, section 2.4.2, some of these are likely very different from *spray/load* verbs, such as *put*; these are nevertheless included here in the interest of completeness. Note that since these do not occur with  $P_{\text{Loc}\emptyset}$ , no meaning for it is provided. Four exceptions to the generalization regarding nominals exist in this list: *place*, *position*, *dip*, and *dump* seem to refer to goals of the events they describe, rather than themes.

Table 4.3: Summary of some properties of non-alternating theme-object verbs

Verb	Unaccusative subject(s)	Nominal referent(s)
arrange	–	–
immerse	–	–
install	–	theme
lodge	theme	–
mount	–	–
place	–	goal <sup>52</sup>
position	–	goal <sup>53</sup>

<sup>51</sup>The nominal use is *surroundings*, which has limited uses but cannot refer to the thing surrounded.

<sup>52</sup>See fn. 45.

<sup>53</sup>See fn. 45.

Table 4.3: Summary of some properties of non-alternating theme-object verbs

put	–	–
set	–	–
situate	–	–
sling	–	–
stash	–	theme
stow	–	theme
dangle	theme	–
lay	theme <sup>54</sup>	–
lean	theme	–
perch	theme	–
rest	theme	–
sit	theme	–
stand	theme	–
suspend	–	–
bang	–	–
channel	–	–
dip	theme	goal <sup>55</sup>
dump	–	goal <sup>56</sup>
funnel	?theme	–
hammer	–	–
ladle	–	–
pound	–	–
push	theme	–
rake	–	–

<sup>54</sup>Note that the unaccusative use of this verb is *lie*.

<sup>55</sup>Here is the relevant paradigm:

- (i) a. John dipped the chip into the hummus.  
 b. \* John dipped the hummus with the chip.  
 c. The chip (was) dipped into the hummus.  
 d. \* The hummus (was) dipped with the chip.  
 e. the dip (≠ the chip/= the hummus)

Note that the uses of *dip* are restricted to a thick viscous semi-liquid, usually food, though the verb can be used in any context involving a dipping manner. For instance, we can say *John dipped his toe into the water*, though we would usually not refer to *the water* as *the dip* in such a scenario.

<sup>56</sup>Note that the nominal use of *dump* is restricted to a particular institutionalized place where one dumps trash. It cannot refer to any place that is the goal of a dumping event; e.g., in *John dumped water into the sink*, *the dump* cannot refer to the sink.

Table 4.3: Summary of some properties of non-alternating theme-object verbs

ram	theme	–
scoop	–	theme
scrape	–	theme
shake	theme	theme
shovel	–	–
siphon	?theme	–
spoon	–	–
squeeze	theme	theme
squish	theme	–
squash	theme	–
sweep	–	theme
tuck	?theme	–
wad	?theme	theme
wedge	theme	?theme
wipe	–	–
wring	–	–
drop	theme	theme
hoist	–	–
lift	–	–
lower	theme	–
raise	theme <sup>57</sup>	–
dribble	theme	theme
drip	theme	theme
pour	theme	?theme
slop	theme	?theme
slosh	theme	–
spew	theme	?theme
spill	theme	theme
spurt	?theme	theme
coil	theme	theme
curl	theme	theme

<sup>57</sup>The unaccusative use of this verb is *rise*.

Table 4.3: Summary of some properties of non-alternating theme-object verbs

loop	theme	theme
roll	theme	–
spin	theme	–
twirl	theme	–
twist	theme	–
whirl	theme	–
wind	theme	–

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## CHAPTER 5

# COMPARISON TO PRIOR WORK ON THE *SPRAY/LOAD* ALTERNATION

### 5.1 Overview of This Chapter

With the end of chapter 4, my analysis of the syntax and semantics of the *spray/load* alternation has been presented in full. This chapter thus takes a step back to compare my approach to prior work. To do this, I present a detailed critical evaluation of relevant prior analyses of the *spray/load* alternation, with an eye to evaluating their performance with regards to the desiderata outlined in chapter 1: acquisition/productivity, near-paraphrasability, linking, and affectedness. I discuss these separately for each analysis, since they differ considerably in how they address them. Following this, I briefly summarize how all previous analyses fail to account for the readings of *again* examined in chapter 2, and the asymmetries between theme-objects and goal-objects discussed in chapters 3–4. This can be done together, since these analyses fail to extend to these data in similar ways.

Following this, I discuss how my analysis might be extended to account for the four desiderata, which it was (for the most part) not explicitly designed to do. The fact that my analysis can be naturally extended in ways to account for phenomena that were not explicitly considered during its construction provides strong suggestive evidence of its promise.

I now turn to the review of specific prior proposals about the *spray/load* alternation. I will present the lexicalist approach of Rappaport & Levin (1988), and a construction gram-

mar approach from Goldberg (1995). These approaches currently enjoy the most popularity among those who work on the *spray/load* alternation.

However, there have been analyses that take a syntactic approach, including Larson (1990, 2014), Damonte (2005), D'Elia (2016), and Mateu (2000, 2017). A common feature of Larson (1990, 2014)'s and D'Elia (2016)'s approaches is the reduction of the *spray/load* alternation to the dative alternation (also suggested in Speas (1990), who adopts Rappaport & Levin (1988)'s lexicalist approach). However, as D'Elia (2016) notes, this approach leaves differences in the behavior of goal-object and ditransitive structures mysterious and unexplained. Damonte (2005)'s analysis is somewhat different as he proposes that the goal-object structure is transformationally related to the theme-object structure, with the differences between them coming down to whether the locative preposition is phonologically overt or not. Finally, Mateu (2000, 2017)'s approach is focused on cross-linguistic differences, with languages varying in whether they achieve the alternation via Manner-conflation, Result-incorporation, or possibly both.<sup>1</sup>

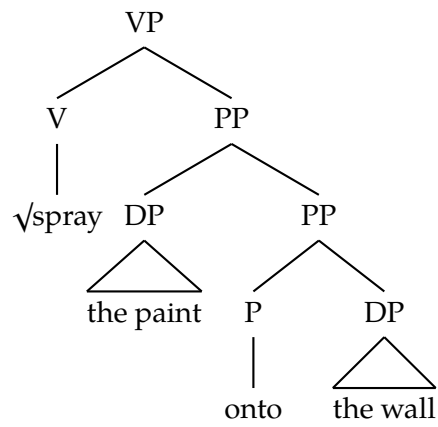
One way of classifying these analyses that is useful for present purposes is by whether they analyze the object and PP as a small clause, or as a transitive verb with a PP argument/adjunct. The contrast is sketched here with *spray*, though particular implementations vary in ways to be discussed.

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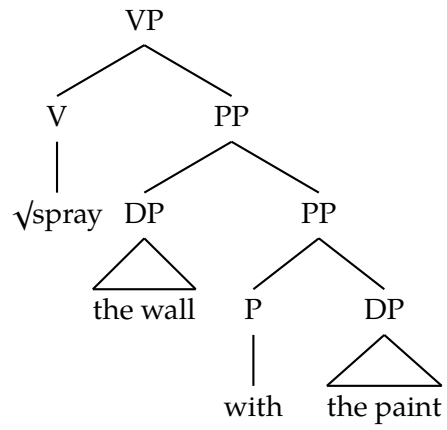
<sup>1</sup>It is worth noting that throughout the discussion, I have made and will make reference to Beavers (2017). The reader might be therefore curious why I do not discuss his approach. This is because Beavers (2017) provides an overview of the *spray/load* alternation for a handbook; he does not present an original account. Similarly, I do not discuss Beavers (2006) lexicalist approach in detail because it is couched in a larger systematic analysis of verbs as encoding various kinds of scalar change, and is otherwise similar to Rappaport & Levin (1988)'s analysis in ways that are relevant for the ensuing discussion here. Finally, I have also failed to cover many other analyses; the literature on the *spray/load* alternation is vast, and I have striven to provide in this chapter depth more so than breadth, focusing on the analyses that have seemed to me to enjoy relatively greater popularity, and which are more straightforwardly compared to my own.

(1) Small clause approach:

a. Theme-object structure:

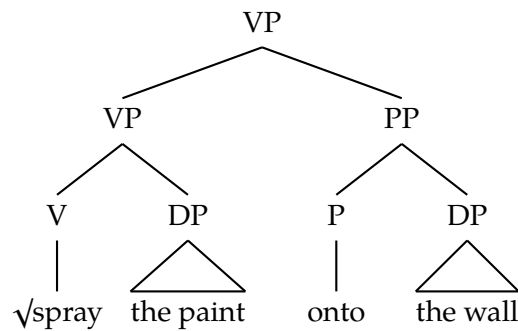


b. Goal-object structure:

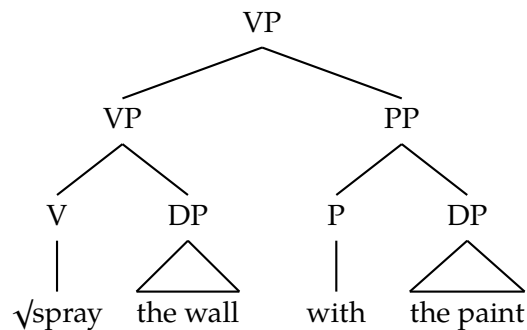


(2) Transitive + PP argument/adjunct approach:

a. Theme-object structure:



b. Goal-object structure:



Of the analyses I have mentioned, the lexicalist analyses of Rappaport & Levin (1988) and Brinkmann (1995) and Wunderlich (1997), along with the construction grammar analysis of Goldberg (1995), imply a transitive approach, while most of the syntactic analyses converge on something like the small clause approach, though implementations vary considerably.

First, I will discuss Rappaport & Levin (1988)'s lexicalist analysis, which has enjoyed no small measure of popularity, being endorsed and refined in various forms by Pinker (1989), Gropen (1989), Gropen et al. (1991a,b), Speas (1990), and Rappaport et al. (1993). Second, I will discuss an alternative lexicalist approach proposed by Brinkmann (1995) and Wunderlich (1997). This analysis makes use of the idea of P-incorporation/conflation, which I implemented in my analysis in quite a different way in chapter 3. Next, I discuss Goldberg (1995)'s and Iwata (2008)'s construction grammar approach. Finally, I will turn to the various syntactic analyses; as I have also taken a syntactic approach, I will discuss the analyses of Larson (1990, 2014), Damonte (2005) (who implements P-incorporation syntactically), D'Elia (2016), and Mateu (2000, 2017) in somewhat more detail, highlighting what they

have in common and where they differ as appropriate.

## 5.2 Prior Approaches

### 5.2.1 Lexicalist Approaches

#### 5.2.1.1 Rappaport & Levin (1988)'s Lexicalist Approach

The task Rappaport & Levin (1988) set for themselves is to understand how lexical semantics influences syntax. Prior work at this time had largely converged on the idea that predicates (most relevantly, verbs) come with a list that indicates the quantity and grammatically relevant part of the interpretation of their arguments. These “grammatically relevant parts of interpretation” are termed “theta-roles,”<sup>2</sup> and the list of theta-roles that a word comes with is its “theta-grid.” The following is a sample theta-grid for the word *put*.

- (3) *put*: ⟨Agent, Theme, Location⟩

This theta-grid encodes the fact that *put* combines with three arguments, and that those arguments are interpreted as the agent, theme, and location of the event it describes.

- (4) John<sub>Agent</sub> put the books<sub>Theme</sub> on the shelf<sub>Location</sub>.

One thought about the utility of such theta-grids and their theta-roles is that linking rules could ensure that particular theta-roles would end up in particular syntactic positions. This would account for long-noted regularities in how the syntactic positions of various arguments relates to their interpretation. For instance, Agents (possibly uniformly) map to the subject position, while themes typically though not always map to object position, and locations (again typically but not always) map to the object of a preposition. If linking rules like the following are part of the grammar, it would explain why these similarities hold across different predicates, if theta-roles are indeed the only parts of the interpretation of arguments relevant to determining their underlying positions.

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<sup>2</sup>Or the equivalent but typographically more seemly “ $\theta$ -role,” or the more explicit “thematic role.”

- (5) Linking rules:
- a. Agent is linked to Subject.
  - b. Theme is linked to Object, unless there is no Agent. Then, link Theme to Subject.
  - c. Location is linked to Oblique, unless there is no Agent and no Theme. Then, link Location to Subject.

Further refinements posited theta-role and grammatical function hierarchies (e.g., Perlmutter 1978; Perlmutter & Postal 1984), which could reduce these rules at the cost of requiring the hierarchies to be primitives of the grammar.

- (6)
- a. Theta-role hierarchy:  
Agent < Theme < Location
  - b. Grammatical function hierarchy:  
Subject < Object < Oblique
  - c. Linking rule:  
In order of their position on the theta-role hierarchy, map each argument to the highest available grammatical function. A grammatical function cannot have an argument mapped to it twice.

This would equally account for why the Agent of *put* is its subject, its Theme is its object, and its Location is its Oblique, provided the syntax would translate the grammatical functions Subject, Object, and Oblique into the appropriate structural positions.

Rappaport & Levin (1988) point out several problems with this approach. One problem is that despite much work on the topic, no uniform set of theta-roles nor a universally agreed upon hierarchy has been achieved (even since the time of their writing), a criticism echoed in Dowty (1991). While this work arrived at very general patterns (Agent was always higher than Theme, for instance), the inconsistencies were apparent. Second, and more importantly for them, a universal set of linking rules based on theta-roles like in (5) or (6c) failed to account for the differing linking properties of sentences that are near-paraphrase relations of each other, such as the following.

- (7) a. We emptied water from the tank.  
 b. We emptied the tank of water.
- (8) a. Jacob bought his birthright from Esau.  
 b. Esau sold his birthright to Jacob.

(Rappaport & Levin 1988, (2–3))

These sentences seem to involve the same verbs, which would presumably have identical theta-grids associated with them.

- (9) a. *empty*: ⟨Agent, Theme, Location⟩  
 b. *buy*: ⟨Goal, Theme, Source⟩  
 c. *sell*: ⟨Goal, Theme, Source⟩

And yet, their linking properties are clearly different in the pairs in (7–8). In (7a), the Agent of *empty* is mapped as expected given standard universal linking rules, with Agent mapped to Subject, Theme to Object, and Location to Oblique. In contrast, (7b) retains the mapping of Agent to Subject, but instead maps Theme to Oblique, and Location to Object. Similarly, *buy* in (8a) maps Goal to Subject, Theme to Object, and Source to Oblique; while *sell* in (8b) maps instead Source to Subject, Theme to Object, and Goal to Oblique. To address this, one could claim that each use of *empty*, or that *buy* and *sell*, invoke different theta-roles. But then the similarities between the interpretations of their arguments are not expressed grammatically. Given that these similarities in meaning are part of the competence of a native English speaker, we might want to encode them in our model of grammar.

Most relevantly, Rappaport & Levin (1988) note that the same issue arises with the *spray/load* alternation,<sup>3</sup> given that the theme-object and goal-object structures are near-paraphrases of each other.

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<sup>3</sup>Rappaport & Levin (1988), as well as many others, refer to what I call the *spray/load* alternation as the locative alternation. However, as Beavers (2017) points out, there are other locative alternations in English.

- (i) The *swarm*-alternation (Dowty 2001; Hoeksema 2009; Rapoport 2014):  
 a. Bees swarmed in the garden.  
 b. The garden swarmed with bees.
- (ii) The *wander*-alternation (Levin 1993, sec. 1.4):  
 a. Bears wandered (in) the woods.  
 b. John leapt (over) the fence.

- (10) a. Jack sprayed paint on the wall.  
 b. Jack sprayed the wall with paint.  
 c. Bill loaded cartons onto the truck.  
 d. Bill loaded the truck with cartons.

(Rappaport & Levin 1988, (8–9))

To refer to the arguments, they use the terms Agent (*Jack* in (10a)), Locatum (*paint*) and Goal (*the wall*) (though ultimately they use these terms as helpful labels rather than grammatical primitives). Interestingly, there is an interpretive difference between the different structures as well, noted first by Anderson (1971). When the Goal argument appears as the direct object, it is understood as holistically or completely affected as a result of the action described by the verb. Intuitively, in (10c), the truck may or may not be full as a result of the loading, but it is understood as completely full (or full to a contextually defined capacity) in (10d).

This sets up the requirements that Rappaport & Levin (1988) and Rappaport et al. (1993) propose any account of the locative alternation should meet, presented before in (11). As they show in detail, theories that make use of lists of theta-roles in accounting for linking run into problems in attempting to fulfill these requirements. Theories that assume each structure is associated with identical lists of theta-roles fail to explain why the alternation is possible to begin with, and must stipulate special linking rules simply to capture the facts, failing to predict the positions of the arguments uniquely from their theta-roles. This approach would also require a special rule of interpretation to account for the holistic effect. On the other hand, analyses that propose each structure invokes different theta-roles fail to capture the near-paraphrase relationship between each structure.<sup>4</sup>

- 
- (iii) Locative inversion (Levin 1993, sec. 6.2):  
 a. A wizard sat in the corner.  
 b. In the corner sat a wizard.

Many others beside these exist as well. While there is a common temptation to reduce the *swarm* alternation to the *spray/load* alternation, Dowty (2001) cautions against it, noting they have a different syntax and semantics. The others are clearly unrelated to the *spray/load* alternation. For this reason, I have chosen to use the term *spray/load* alternation to be more specific about what I will address here.

<sup>4</sup>Another issue Rappaport & Levin (1988) discuss is that the analysis of the *spray/load* alternation ought to apply to similar verbs that involve removal of some substance/entity, which display a similar alternation with different prepositions.



Instead, they propose a linking theory that eschews theta-roles, with linking principles stated over informal semantic representations called lexical conceptual structures (see also Speas 1990). Lexical conceptual structures decompose complex meanings associated with verbs into relations between arguments and more basic semantic predicates, which are invoked across many verbs. For example, a lexical conceptual structure for *put* might be the following:

- (11) *put*: [ $x$  cause [ $y$  to come to be at  $z$ ]] (Rappaport & Levin 1988, (20))

The variables  $x$ ,  $y$ , and  $z$  stand in for *put*'s arguments. Square brackets delimit semantic primitive predicates. As these structures are posited to represent the grammatically relevant part of a verb's meaning, linking rules make reference to them, mediating between the lexical conceptual structure and the verb's predicate argument structure, which contains information about the syntax of a verb's arguments.

- (12) Linking rules:

- a. When the lexical conceptual structure of a verb contains the substructure ... [ $x$  cause  $P$ ]... (where  $P$  is a variable over descriptions of eventualities), link the variable represented by  $x$  to the external argument/Subject variable in the verb's predicate argument structure.
- b. When the lexical conceptual structure of a verb contains one of the following substructures, link the variable represented by  $x$  in either to the internal argument/Object variable in the verb's predicate argument structure.
  - i. ... [ $x$  come to be at LOCATION]...
  - ii. ... [ $x$  come to be in STATE]...

- 
- (i) a. Doug cleared dishes from the table.  
 b. Doug cleared the table of dishes.

I do not explicitly discuss these cases, though I believe the analysis I develop in chapters 2 and 3 could easily extend to them as well. It seems to me that the relevant patterns presented in those chapters mostly extend to these structures as well. The only point that would require clarification is the meaning of *of* in (i-b), which in my analysis would have to correspond to what is usually expressed as *without*. In addition, there appear only four verbs in English that participate in this alternation: *clear*, *clean*, *drain*, and *empty*, leaving any attempt to discover general patterns within this class in a difficult position. Something that does appear to distinguish this class from *spray/load* verbs is that *clear* verbs allow goal subjects in unaccusative uses; as I showed in chapter 3, this is universally impossible with (alternating) *spray/load* verbs.

Rappaport & Levin (1988) note that it is still useful to use terms like “Agent” and “Theme” to refer to particular arguments, but that these are to be understood as shortcuts for referring to variables occurring in particular positions in these more articulated representations. For instance “Agent” is a useful shorthand for referring to the variable  $x$  in either [ $x$  cause  $P$ ] or [ $x$  do  $P$ ], and so on. But the term “Agent” as such has no theoretical status beyond its invocation of a particular position in lexical conceptual structures.

To extend this to the *spray/load* alternation, Rappaport & Levin (1988) capitalize on the holistic effect, which in their data has to do with the Goal being understood as completely affected (see (10d)). They propose that this reveals that the goal-object structure has a more complex meaning than the theme-object structure, which they support with judgments about entailment. The goal-object structure entails the theme-object structure, but the opposite is not true.

- (13) a. Henry loaded hay onto the wagon.  $\nrightarrow$  Henry loaded the wagon with hay.  
 b. Henry loaded the wagon with hay.  $\rightarrow$  Henry loaded hay on the wagon.

In order to capture both this fact and the entailment facts, they propose that the lexical conceptual structure for *load* in the goal-object structure embeds the lexical conceptual structure of theme-object *load*, as follows.

- (14) a. *load* (theme-object): [ $x$  cause [ $y$  to come to be at  $z$ ]/LOAD]  
 b. *load* (goal-object): [[ $x$  cause [ $z$  to come to be in STATE]]  
 BY MEANS OF [ $x$  cause [ $y$  to come to be at  $z$ ]/LOAD]

The representation of the theme-object structure treats *load* as an event that involves some actor causing some thing to go to some other thing’s location (by loading). In contrast, the representation of the goal-object structure embeds this structure to derived a change of state predicate, which describes some actor causing some thing to come to be in a state by causing some thing to go to some other thing’s location. The shared variables in the main and embedded parts of the lexical conceptual structure represent that the participants involved in each subevent are understood as the same.

Given that we have added embedded lexical conceptual structures, the linking rules must be amended to deal with them. In particular, the representation of *with*-structure *load*

would result in contradictory mappings: by the rules in (12), both *z* and *y* would be linked to the direct object. Rappaport & Levin (1988) propose that the main clause of a lexical conceptual structure is what takes priority in this case, which would mean that *z* would be linked to the direct object. Thus, although Rappaport & Levin (1988) do not provide an explicit structural analysis of *spray/load* verbs, their description of their analysis (and of most analyses following them) is most compatible with the transitive approach in (2).

As the linking rule for *x* will apply without problems, we are just left with the question of why *y* is realized as the object of *with*. Rappaport & Levin (1988) propose that this is predictable, since *with* introduces so-called “displaced themes” with other alternating verbs as well.

- (15)
- a. The jeweler inscribed a motto on the ring.
  - b. The jeweler inscribed the ring with a motto.
  - c. The judge presented a prize to the winner.
  - d. The judge presented the winner with a prize.
  - e. Kevin hit the stick against the wall.
  - f. Kevin hit the wall with the stick.

We could presumably state a linking rule that would account for such cases more generally; something along the lines of (12b), but with an alternate realization in case the direct object already has a variable linked to it, or a linking rule that makes specific reference to the status of *y* as part of an embedded clause in the lexical conceptual structure. They suggest that the reason *with* is used might relate to its use with instruments, as both involve arguments that are found in embedded lexical conceptual structures that are linked to the main clauses with the relation BY MEANS OF.

Returning to the desiderata in (11), Rappaport & Levin (1988) argue that their approach addresses all three. First, the near-paraphrase relation is captured because the lexical conceptual structure of the goal-object use embeds the lexical conceptual structure of the theme-object structure. Second, the linking of the arguments is predictable in terms of their positions in the lexical conceptual structures using the linking rules in (12) (plus one of those suggested above for embedded theme arguments). Finally, the affected interpre-

tation is encoded as part of the lexical conceptual structure since it is the argument of a change of state predicate.

This analysis has enjoyed no small amount of popularity. In particular, a series of publications by Pinker and Gropen (Gropen 1989; Gropen et al. 1991a,b; Pinker 1989) argue that Rappaport & Levin (1988)'s analysis can be naturally extended to account for the productivity and acquisition of the *spray/load* alternation. What makes the alternation productive is a regular and productive process that allows lexical conceptual structures to be combined via embedding. A change of state predicate can embed a predicate that describes how the change of state came about. This is possible when the lexical semantics of the verb encodes both how a change of location comes about (= the verb's "manner") and a state that predictably results from such a change of location (= the verb's "result"). New verbs that meet these criteria will alternate, while verbs that only describe either manner or result will only be compatible with one lexical conceptual structure.

Acquisition of the alternation consists of the child learning the meanings of particular verbs accurately; overgeneralization errors (as in (6–7)) occur when the child has not yet learned that a verb's meaning is restricted to encoding either manner or result. For instance, a child may misunderstand *fill* as encoding not the fact that a container ends up full, but instead as meaning something more like "put into." In contrast, a child might misunderstand *pour* as encoding not only the manner in which some thing moves (downward in a continuous stream), but as encoding some result state as well (i.e., *full*, *wet*, etc.). Until the child understands precisely what a verb encodes, they will overgeneralize, once they have understood how the embedding process works. What allows them to then restrict overgeneralization could be the use of verbs in particular circumstances where either manner or result is clearly not entailed (for instance, if they hear *fill* used to describe an event achieved by scooping water rather than pouring it, or they hear *pour* used to describe an event with no noticeable effect on the goal). This explanation would account for the U-shaped learning curve that children display with these verbs, noted first in Bowerman (1982), with early high accuracy associated with listed idiosyncratic structures associated with particular verbs, later lower accuracy associated with the over-application of a newly-acquired productive rule relating each structure due to imprecisely specified verb meanings, and late

high accuracy reflecting the final acquisition of the correct meaning for each verb.

In addition, Pinker (1989) proposes that finer-grained meanings of verbs determine which arguments can be expressed optionally. Some *spray/load* verbs can omit either (internal) argument, some only one or the other, and some neither.

- (16) Theme optional, goal optional:
- a. John loaded the hay (onto the wagon).
  - b. John loaded the wagon (with the hay).
- (17) Theme optional, goal obligatory:
- a. John stuffed the feathers \* (into the pillow).
  - b. John stuffed the pillow (with the feathers).
- (18) Theme obligatory, goal optional:
- a. John piled the stones (onto the deck).
  - b. John piled the deck \* (with the stones).
- (19) Theme obligatory, goal obligatory:
- a. John slathered the plaster \* (onto the walls).<sup>5</sup>
  - e. John slathered the walls \* (with the plaster).

(Beavers 2017, (59–62))

Pinker relates this to the meanings of these verbs. Those verbs that can omit either argument might allow each structure to be derived from the other, those that require expressing only the goal encode primarily result, those that require expressing only the theme encode primarily manner, and those that require expressing both encode both manner and result.

Pinker (1989)'s extension of Rappaport & Levin (1988) has enjoyed popularity as well, as it would have not only the advantages of their approach, but additional advantages re-

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<sup>5</sup>Some I have spoken to dispute this judgment. Regardless, other verbs seem to show the same pattern more clearly:

- (i)
- a. John crammed the boxes into the storage cabinet.
  - b. John crammed the storage cabinet with the boxes.
  - c. \* John crammed the boxes.
  - d. \* John crammed the storage cabinet.

Thus, the point remains even if the judgment Beavers (2017) reports is disputable.

lated to acquisition and finer-grained properties of *spray/load* verbs. The notion that verbs encode manner or result and that these are grammatically relevant for the locative alternation is now widespread even among analyses very different from Pinker (1989)'s, such as Mateu (2000, 2017)'s, Brinkmann (1995)'s, and Wunderlich (1997)'s, and even common in analyses of verbal argument structure more generally (e.g., Alexiadou & Anagnostopoulou 2013; Beavers & Koontz-Garboden 2020; Beavers et al. 2010; Folli & Harley 2005, 2020; Husband 2011; Krifka 1999; Levin & Rappaport Hovav 1991, 1995, 2006, 2013; Mateu & Acedo-Martellán 2012; Ramchand 2008; Rappaport Hovav & Levin 2007, 2010; Talmy 1991, 2000).

However, as Beavers (2017) points out, Rappaport & Levin (1988)'s analysis of the *spray/load* alternation itself, while impressive, remains imperfect, as does Pinker (1989, et seq.)'s extension. For one thing, it is not clear why specifying that the goal undergoes a change of state results in a holistic interpretation—the state of a wagon changes by virtue of having any amount of hay on it, not only if it is completely loaded. The lexical conceptual structures themselves thus do not actually account for the holistic effect; instead it would have to come down to the pragmatics of what counts as a state change. Furthermore, even if the change of state were responsible for the holistic effect, it would not account for why quantized themes are interpreted as completely affected as well (see (19)).<sup>6</sup>

A further problem has to do with the relation *BY MEANS OF* in (14b). Crucially, *BY MEANS OF* embeds the substructure encoding caused motion under the substructure encoding change of state. This is a critical part of Rappaport & Levin (1988)'s analysis, as it is what derives the answer to the question of how arguments' position can be predicted from their interpretations. But as Beavers (2017) notes, *BY MEANS OF* simply encodes causation, and Rappaport & Levin (1988)'s lexical conceptual structures already invoke a causative relation—namely, “cause.” If *cause* were used to link the change of location and change of state substructures, exactly the wrong precedence relations would be achieved. Thus, it is critical for Rappaport & Levin (1988) that causation is expressible with two lexical conceptual relations that exactly reverse the relative prominence they assign to causing and caused events. More

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<sup>6</sup>Recall that I have argued that the holistic effect in the goal-object structure is due to the meaning of *with* (Rappaport 2014), while its origin in the theme-object structure is pragmatic and defeasible. See chapter 4, section 4.2, and cf. Jeffries & Willis (1984).

bluntly, *BY MEANS OF* sneaks into the lexical conceptual structure in (14b) a syntactic fact about where the goal argument surfaces—even though that is what the analysis is supposed to derive.<sup>7</sup> Other analyses that link affected arguments to object positions Dowty (e.g., 1991); Tenny (e.g., 1992, 1994) suffer from similar problems: without some independent reason for linking objects with holistic readings, linking affected arguments to Object merely states the problem in a different way (Beavers 2017).

These problems aside, Rappaport & Levin (1988)'s analysis was and remains very influential. While their analysis in the end relies on some stipulations, the three-fingered gauntlet they throw down regarding what an analysis of the *spray/load* alternation should account for has remained the target for essentially all future analyses, with the addition of Pinker (1989)'s call for addressing acquisition influential as well. In part, the contributions of chapter 2 and 3 were to add a few more items to their list of what defines a successful analysis of the *spray/load* alternation, which should also address facts about modification with *again*, and uses of *spray/load* verb roots in unaccusative, nominal, and non-agentive transitive contexts.

#### 5.2.1.2 Brinkmann (1995) and Wunderlich (1997)'s Lexicalist Approach

Another lexicalist approach is developed in Brinkmann (1995) and Wunderlich (1997) (and see also Wunderlich 1987).<sup>8</sup> While this analysis has not become as popular or influential as Rappaport & Levin (1988)'s approach, it is worth presenting because it is the source of the idea of that the *spray/load* alternation is derived via P-conflation/incorporation, which I implement in my syntactic approach in chapter 3 (see also Mateu (2000, 2017) for a dif-

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<sup>7</sup>Though to be fair to Rappaport & Levin (1988), the fact that the overt preposition *by* exists and encodes this “flipped” causation (e.g., *John cleaned the car by washing it*) might lead us to believe it is not so implausible to posit a similar operator at the level of lexical conceptual structures (see also Levin & Rapoport 1988, p. 283). But if lexical conceptual structures are supposed to involve minimal and reusable primitive predicates, proposing that both *cause* and *BY MEANS OF* exist as independent semantic primitives would require further justification.

<sup>8</sup>The chronology of publication of Brinkmann (1995) and Wunderlich (1997) is likely to lead to some confusion, since I note that Brinkmann (1995)'s analysis draws on Wunderlich (1997)'s. Regrettably, time-travel is not responsible. Instead, Brinkmann (1995) bases her analysis on an earlier unpublished version of Wunderlich (1997), dating from 1992. I have cited the final published version of Wunderlich (1997)'s proposal here, which seems to be little changed from the 1992 version based on what Brinkmann (1995) describes. Nevertheless, I primarily cite Brinkmann (1995) because her work was the first to appear, and there may be slight differences between what she attributes to Wunderlich (1992) and what later appeared as Wunderlich (1997) that I have overlooked.

ferent syntactic approach that makes use of P-conflation, which I detail in section 5.2.3.4 of this chapter).

While Brinkmann (1995) and Wunderlich (1997)'s formalism differs from that of Rappaport & Levin (1988), it really contains the same sort of ingredients, though they are named in overlapping ways that can make this fact difficult to see. What Rappaport & Levin (1988) call "lexical conceptual structure" corresponds to Brinkmann (1995) and Wunderlich (1997)'s "predicate-argument structure," and what Rappaport & Levin (1988) refer to as "predicate-argument structure" is split into two levels, a "thematic structure" and a "syntactic complement structure." Of course, the incompatible uses of the term "predicate-argument structure" hinder comparison a bit. For this reason, I will use Rappaport & Levin (1988)'s terminology, even as I discuss Brinkmann (1995) and Wunderlich (1997)'s analysis. But I will adopt Brinkmann (1995)'s formalism, since it makes certain features of their analysis easier to grasp.

To illustrate their system, consider the lexical conceptual structure associated with transitive *open*.

$$(16) \quad \textit{open}: (\text{CAUSE}(x, \text{BECOME}(\text{OPEN}, y)))(e)^9$$

Similarly to Rappaport & Levin (1988)'s lexical conceptual structures, this structure encodes an event description associated with *open*: it describes events where  $x$  causes a becoming event, which describe  $y$  entering an open state. We could write this using Rappaport & Levin (1988)'s formalism as follows:

$$(17) \quad \textit{open}: [x \text{ cause } [y \text{ to come to be at STATE}_{\text{OPEN}}]]$$

What is useful about Brinkmann (1995)'s formalism, however, is that her linking rules make reference to how deeply embedded an argument is in a lexical conceptual structure, which her system makes somewhat easier to visually parse.

In particular, Brinkmann (1995) makes use of Bierwisch (1988)'s hierarchy principle to link arguments in a lexical conceptual structure to a thematic structure. However, it should be noted that a thematic structure does not invoke theta-roles, despite its name. Instead, it

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<sup>9</sup>Those who are familiar with von Stechow (1996)'s approach to *again* ambiguities should find this event decomposition quite familiar.



represents an ordering of the argument variables, as the following definition demonstrates.

(18) Hierarchy Principle (after Brinkmann 1995, ch. 3, (24)):

In the thematic structure, the hierarchy of arguments in the [lexical conceptual structure] is preserved in the inverse order.

What this means is that the least embedded argument will be the last one to saturate its corresponding variable in the lexical conceptual structure, as is standard in semantic analysis.

Thus, we can derive the thematic structure of *open*.

(19)	Thematic Structure	Lexical Conceptual Structure
	$\lambda y$ $\lambda x$ $\lambda e$	$(\text{CAUSE}(x, \text{BECOME}(\text{OPEN}, y)))(e)$

Each argument is represented as bound by a lambda operator, with the order of the operators determined according to the Hierarchy Principle. For example, note that the most deeply embedded argument, *y* is the first argument in the thematic structure, and the most deeply embedded argument in the lexical conceptual structure.

The final step links the thematic structure to the syntactic complement structure, which associates each argument with a Case.

(20) Linking rules:

- a. The rightmost argument in a thematic structure is linked to nominative.
- b. The leftmost argument in a thematic structure is linked to accusative.
- c. Other arguments are linked to dative or oblique, depending on semantics.

(In case there is only one argument, presumably (20a) takes precedence over (20b).) Provided that the linking rules ignore the event argument—not necessarily a completely innocent move, but one which Brinkmann (1995) does not explicitly address<sup>10</sup>—these rules allow us to derive the syntactic complement structure of *open* as follows.

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<sup>10</sup>In her text, Brinkmann (1995) presents the analysis without event arguments, and then briefly shows how they could be included in an appendix. She does not address how to reformulate the linking rules once these event arguments are added.

$$\begin{array}{rcccl}
 (21) & & \text{Thematic Structure} & & \text{Lexical Conceptual Structure} \\
 & & \lambda y & \lambda x & \lambda e & (\text{CAUSE}(x, \text{BECOME}(\text{OPEN}, y)))(e) \\
 & & | & | & & \\
 & & \text{ACC} & \text{NOM} & & 
 \end{array}$$

Thus equipped, we can start to understand Brinkmann (1995)'s approach to the *spray/load* alternation. The basic argument structure of a *spray/load* verb is represented as in (22).<sup>11</sup>

$$\begin{array}{rcccl}
 (22) & \text{spray (theme-object):} & & & \\
 & & \lambda P_{\text{DIR}} & \lambda y & \lambda x & \lambda e & (\text{CAUSE}(x, P_{\text{DIR}}(y)) \wedge \text{SPRAY}(y))(e) \\
 & & | & | & & & \\
 & & \text{ACC} & \text{NOM} & & & 
 \end{array}$$

Here,  $P_{\text{DIR}}$  represents a preposition that is part of the argument structure of *spray*. Note that we must assume that prepositions are a special case—here the preposition is actually less embedded than  $y$ , which would mean it should go to the right of  $y$  in the thematic structure by the Hierarchy Principle. In addition,  $P_{\text{DIR}}$  is not linked with a Case, which makes sense because prepositions cannot bear Case. This might be related to why the Hierarchy Principle applies differently to prepositions.

The argument structure for *spray* in (22) does not tell us about where the goal argument comes from in the argument structure—the reason for this is that the goal is not represented in the argument structure of the verb itself, but in the argument structure of the preposition, which looks like the following.

$$\begin{array}{rcccl}
 (23) & \text{onto:} & & & \\
 & & \lambda z & \lambda y & \text{BECOME}(\text{LOC}(y, \text{on}(z))) \\
 & & | & & \\
 & & \text{ACC} & & 
 \end{array}$$

Note that despite the linking rules,  $y$  is not linked to a Case in the argument structure of the preposition. This is probably related to the fact that the subjects of prepositions must receive Case from outside the PP, though Brinkmann (1995) does not explicitly address this point.

<sup>11</sup>Note that Brinkmann (1995)'s presentation in her main text intentionally omits the event argument as a simplification; I restore it here as she proposes in her appendix 1.

To saturate the prepositional argument of (22), the preposition must combine with its leftmost argument first so that it can be of the right type to take a single argument  $y$ . This will give us the following representation of the preposition, if its leftmost argument is *the wall*.

(24) *onto the wall*:

$$\lambda y \text{ BECOME}(\text{LOC}(y, \text{on}(\text{the wall})))$$

$$\quad \quad \quad |$$

$$\quad \quad \quad \text{ACC}$$

We are left with a puzzle of how the preposition integrates with the rest of the sentence, since we need to identify its argument with the next highest argument of (22). Brinkmann (1995) does not explain precisely how this works, and refers her readers to Bierwisch (1988), Higginbotham (1985), and Wunderlich (1991). We may assume that it works out correctly, giving us the representation below.

(25) *spray – onto the wall*:

$$\lambda y \quad \lambda x \quad \lambda e \quad (\text{CAUSE}(x, \text{BECOME}(\text{LOC}(y, \text{on}(\text{the wall})))) \wedge \text{SPRAY}(y))(e)$$

$$\quad | \quad \quad | \quad \quad \quad \quad \quad |$$

$$\quad \text{ACC} \quad \text{NOM} \quad \quad \quad \quad \quad \quad \quad \text{ACC}$$

The remaining steps of composition with  $y$  and  $x$  should be fairly straightforward, so I will not step through them. Something that is not fully spelled out in Brinkmann (1995)'s approach is how exactly the arguments are associated not only with Case but also syntactic positions, but the way she discusses things makes it seem as though the lowest argument of the verb is associated with direct object position.

To derive the goal-object structure, Brinkmann (1995) follows Wunderlich (1997),<sup>12</sup> who proposes that it is derived by P-incorporation.<sup>13</sup> What this means in Wunderlich (1997)'s system is that the argument structure of the P is unified with the argument structure of the verb, before the argument of the P is saturated rather than after, which we could think of semantically as involving Function Composition.<sup>14</sup> However, it should be understood

<sup>12</sup>See footnote 8 for clarification on the timeline of these analyses.

<sup>13</sup>Chapter 3, section 3.3 presents the evidence from German that leads Brinkmann (1995) and Wunderlich (1997) to the P-incorporation analysis. I do not discuss it again here, since as I explained there, it is more suggestive than conclusive.

<sup>14</sup>See the discussion in chapter 3, section 4.3, starting around example (71).

that “incorporation” here is not used in the same sense as in Baker (1988a), who uses it to describe syntactic movement of one head into another; it is Baker (1988a)’s usage that is commonly adopted today. Thus, this incorporation is crucially not syntactic, in contrast to my approach in chapter 3 and Damonte (2005)’s approach. Instead, it takes place in the lexicon, at the level of lexical conceptual structure.

(26) *spray* (goal-object):

$$\begin{array}{ccccccc}
 \lambda z & \lambda y & \lambda x & \lambda e & (\text{CAUSE}(x, \text{LOC}(y, \text{ON}(z))) \wedge \text{SPRAY}(y))(e) \\
 | & | & | & & \\
 \text{ACC} & \textit{with} & \text{NOM} & & 
 \end{array}$$

Once the argument structure of the preposition has incorporated with the argument structure of the verb, the most embedded argument is the internal argument of the relation corresponding to the incorporated preposition, *z*. This means it will be the leftmost argument in the thematic structure, which means it will be linked to accusative Case. Because of this change, *y* is no longer the leftmost argument in the lexical conceptual structure, and is linked to a semantically appropriate Case marker, which Brinkmann (1995) and Wunderlich (1997) identify as *with*. (The linking of *x* to nominative is identical in both structures, though note that it is unclear why *y* should count as more embedded than *x* given this lexical conceptual structure, given the unembedded status of the conjunct *SPRAY*(*y*). Brinkmann (1995, p. 68) in fact explicitly ignores this verb-specific conjunct when presenting her analysis of the alternation, though its presence causes non-trivial complications for her approach.)

An interesting effect of this approach is that the result of saturating the lexical conceptual structures of the theme-object and goal-object *spray/load* verbs results in identical lexical conceptual representations. What matters for Brinkmann (1995), then, is essentially whether the preposition combines with the verb or its internal argument first. Understood in this way, her approach bears similarities to the one I presented in chapter 3, though I in my approach the process of combining the preposition and the verb is crucially syntactic, as this was what accounted for certain facts related to unaccusative and nominal uses of *spray/load* verbs. It is unclear to me how Brinkmann (1995)’s approach could account for

these facts, as once the prepositional relation is incorporated, the resulting verb behaves just like a standard verb for linking purposes, and so presumably the innermost argument ( $z$  in (26)) would be realized as the verb's object. However, it is difficult to make such a prediction given the lack of a fully worked out syntax for her examples—unlike Rappaport & Levin (1988), who propose links to grammatical functions that could plausibly be associated with particular syntactic positions, Cases are not in a one-to-one mapping with syntactic positions, making any attempt to derive syntactic predictions from her analysis difficult.

Since the final results of the lexical conceptual structures in theme-object and goal-object structures are identical, Brinkmann (1995) proposes a different kind of explanation for near-paraphrasability and the holistic effect than Rappaport & Levin (1988), which she attributes to Wunderlich (1997). This is called the homogeneity presupposition.

(27) Homogeneity Presupposition:

If  $P$  is directly predicated of  $x$ , assume  $x$  to be homogeneous with respect to  $P$ .

The idea here seems to be that if a predicate directly applies to some  $x$ , we assume all parts of  $x$  to be equally affected in the way described by  $P$ .

The result of this applies differently in the theme-object and goal-object argument structures, because of a difference in the directness of the predication: in the theme-object structure, the verb is predicated of the theme only, and so we assume the predicate to apply homogeneously with respect to the theme—in other words, that all parts of the theme are equally affected by the event. In contrast, a preposition intervenes between the verb and the goal argument, so the relationship of direct predication between the goal and the spraying is broken, meaning that the goal is not homogeneously affected with respect to the spraying. Thus, in a sentence like *John loaded the hay onto the wagon*, all of the hay is assumed to have been loaded, but not all of the wagon.

In the goal-object argument structure, in contrast, the verb is directly predicated of the goal, which means that every part of the goal is interpreted as affected by the spraying. Note that the relevant notion here is of “being equally affected”—though there are links between this and telicity, they are not identical. When I say *John pushed a cart*, it can be interpreted

as atelic, but the understanding is that every part of the cart was affected by the pushing, satisfying the homogeneity presupposition. Thus, in a sentence like *John loaded the wagon with the hay*, all of the wagon is assumed to be homogeneously affected by the loading.

However, it is also true that the verb is directly predicated of the theme in the goal-object argument structure—yet the theme in this structure does not seem to influence the holistic effect. To account for this, Brinkmann (1995) extends Wunderlich (1997)’s account and proposes what she calls the Nonindividuation Hypothesis: “in order for a transitive verb to take its goal as direct object, the quantificational properties of its theme must be irrelevant: the verb must allow speakers to assume that the theme is nonindividuated when it is not specified [= omitted from the sentence, MW]” (Brinkmann 1995, p. 80). In other words, she proposes that in order for P-incorporation to take place, when the theme can be omitted, it must be understood as having cumulative reference. More bluntly, the goal can become the direct object of a *spray/load* verb only when the theme plays no role in determining the telicity of the VP.

Correlated with the ability of an omitted object’s quantificational properties to be understood as irrelevant to determining the truth of an event is whether the verb admits of an atelic activity reading. In order for the quantificational properties of the object to be irrelevant in determining the truth of the event, it must be the case that the verb denotes a particular way of doing something (an activity) that is independent of achieving a particular result. This essentially means that Brinkmann (1995)’s approach predicts that only manner-denoting verbs should alternate—verbs that denote result predicates rely on the quantificational properties of their argument to define when the result is achieved. While Brinkmann (1995) uses quite different terminology to discuss this prediction, she argues it is borne out in German. (Though as I will discuss, the domain of facts she considers relevant to the *spray/load* alternation is quite a bit smaller than one might hope, so there is room for doubt.)

We might also take as evidence for the nonindividuation hypothesis a fact that Beavers (2017) notes, which is that most examples of *spray/load* verbs in the literature involve bare mass noun or bare plural DPs as themes, and definite DPs as goals. Since bare mass nouns and bare plurals express non-quantized meanings, they would be the most natural DPs to

use in goal-object structures.

However, it is clear that quantized DPs can be used in goal-object structures—the nonindividuation hypothesis does not rule that out. Instead, it simply says that the quantization cannot be relevant to defining the endpoint of the event if the object is omitted. Brinkmann (1995)’s evidence for the homogeneity presupposition and the nonindividuation hypothesis comes from the fact that goal-object uses of *spray/load* verbs allow telic and atelic readings, against the predictions of Rappaport & Levin (1988)’s approach.<sup>15</sup>

- (28) a. He sprayed the lawn with water for hours / in an hour.  
b. The farmer sowed his fields with cotton seeds for days / in a day.  
c. She rubbed her leg with ointment for half an hour / in an hour.

(Brinkmann 1995, ch. 2, (47))

Recall that in Rappaport & Levin (1988)’s approach, the goal-object structure is associated with a lexical conceptual structure that encodes a change of state achieved by some process—essentially an accomplishment (cf. Rothstein 2004). Accomplishments most naturally receive telic interpretations, as shown by their compatibility with modifiers like *for a time* (atelic) and *in a time* (telic).

- (29) a. John built a house <sup>??</sup>for days / in a day.  
b. John dismantled the car <sup>?</sup>for an hour / in an hour.  
c. Bill drove John to the store <sup>??</sup>for an hour / in an hour.

In contrast, the sentences in (28) do not seem to be preferentially telic, which Brinkmann (1995) takes to show that they do not describe changes of state. However, in these cases, both the homogeneity presupposition and the nonindividuation hypothesis seem to hold: every part of the lawn, fields, and leg are interpreted as affected, even if they are not understood to change state. In addition, the quantificational properties of the theme do not seem to play a role in determining telicity, since both telic and atelic readings are equally possible even though in these cases the theme is non-quantized.

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<sup>15</sup>Brinkmann (1995) also cites as evidence for the nonindividuation hypothesis that verbs like *eat* can omit their arguments and receive activity readings only when their themes are understood as nonindividuated, but I do not fully understand this argument.

Brinkmann (1995) notes that implementing the nonindividuation hypothesis requires a revision to the Wunderlich (1997)'s approach. Rather than proposing that the theme is still an argument in the goal-object argument structure, she proposes it is existentially bound, leading to the following argument structure representation (Brinkmann 1995, appx. 1, (5)).

$$(30) \quad \textit{spray} \text{ (goal-object):}$$

$$\begin{array}{cccc} \lambda z & \exists y & \lambda x & \lambda e \quad (\text{CAUSE}(x, \text{BECOME}(\text{LOC}(y, \text{ON}(z)))) \wedge \text{SPRAY}(y))(e) \\ | & & | & \\ \text{ACC} & & \text{NOM} & \end{array}$$

As a result of existentially binding the theme, it must no longer be an argument of the verb, so Brinkmann (1995) proposes it is an adjunct that specifies additional information about *y* via its argument, which is related to the lexical conceptual structure of the verb by the event argument.

Brinkmann (1995)'s main concern is with a prediction of the nonindividuation hypothesis: it should be easier for children to acquire the goal-object structure with verbs that most naturally describe events with nonindividuated themes than with verbs that most naturally do not. For instance, *spray* most naturally (perhaps only) describes events where the theme is a substance, which is easily construed as nonindividuated. On the other hand, *load* can describe events with both individuated and nonindividuated themes, and is perhaps more natural with individuated themes. As a result, children must learn how to deindividuate themes that are most naturally conceived of as individuated to use the goal-object argument structure of *load*. A production experiment bore out these predictions, with young children using mass-object verbs (e.g., *spray*) accurately more often in the goal-object structure to describe videos than count-object verbs (e.g., *load*). This was true regardless of whether the verb specified a change of state, with children's understanding of this fact assessed through an independent pre-test.

Under Brinkmann (1995)'s account, then, the acquisition of the alternation consists of the acquisition of P-incorporation and the ability to understand omitted themes as nonindividuated. This accounts for why children acquire verbs that most naturally occur with nonindividuated themes earlier than verbs that are less natural with nonindividuated themes.



Overextension of the alternation to non-alternating verbs can be attributed to children not understanding semantic restrictions on the particular preposition that incorporates. Regarding the near-paraphrasability of the two structures, Brinkmann (1995)'s and Wunderlich (1997)'s account would attribute this to the shared final lexical conceptual structure of each structure. The reason the paraphrasability is not exact is due to the different interpretations associated with each structure because of the homogeneity presupposition and the nonindividuation hypothesis. The position of the arguments is predictable from their locations in the lexical conceptual structure of the verb in a general way. And the holistic effect is captured by the homogeneity principle.

However, there are shortcomings in this account. In particular, Brinkmann (1995) is concerned with German, where the *spray/load* alternation is associated in some cases with a morphological reflex, as described in chapter 3: for some verbs, the goal-object structure is associated with the verb bearing the prefix *be-*.

- (31) German (Iwata 2008, ch. 10, (1–2)):
- a. Die Randalierer spritzten Farbe auf das Auto.  
the vandals sprayed paint onto the car  
“The vandals sprayed paint onto the car.”
  - b. \* Die Randalierer spritzten das Auto mit Farbe.  
the vandals sprayed the car with paint
  - c. \* Die Randalierer bespritzten Farbe auf das Auto.  
the vandals BE-sprayed paint onto the car
  - d. Die Randalierer bespritzten das Auto mit Farbe.  
the vandals BE-sprayed the car with paint  
“The vandals sprayed the car with paint.”

Note that for the verb *spritzen* ‘spray,’ the goal-object structure can only occur if the verb is prefixed with *be-*. Brinkmann (1995) identifies *be-* with the incorporated preposition, given its use with other verbs (see chapter 3, section 3.3 for additional data).

However, some *spray/load* verbs alternate without taking *be-*, or take *be-* only optionally. When optional, *be-*'s presence requires that the goal be understood as a surface, rather than the interior of something.

- (32) German (Brinkmann 1995, ch. 3, (9)):
- a. Wenn's in den Skiurlaub geht, packen Müllers ihr Auto immer als  
When in the ski-vacation go pack Müllers their car always as  
blieben sie ein halbes Jahr lang weg.  
stay they a half year long away  
"When leaving for the ski vacation, the Millers pack their car('s interior) as  
if they will be away for half a year."
  - b. Wenn's in den Skiurlaub geht, bepacken Müllers ihr Auto immer als  
When in the ski-vacation go *BE*-pack Müllers their car always as  
blieben sie ein halbes Jahr lang weg.  
stay they a half year long away  
"When leaving for the ski vacation, the Millers pack their car('s trunk and  
roof) as if they will be away for half a year."
- (33) German (Brinkmann 1995, ch. 3, (7))
- a. Sie stopfte die T-Shirts in die Tasche.  
she stuffed the T-Shirts into the bag  
"She stuffed the T-Shirts into the bag."
  - b. Sie (\**be*)stopfte die Tasche mit den T-Shirts.  
she *BE*-stuffed the bag with the T-shirts  
"She stuffed the bag with the T-shirts."

The verb *packen* 'pack' optionally occurs with *be-*, and when it does, the interpretation is that the goal of the packing includes a surface (the car's roof in (32b)).<sup>16</sup> When it does not, it describes an interior. Verbs that can be used if the goal is an interior and not a surface, like *stopfen* 'stuff,' can only alternate without *be-*.

This is an issue for Brinkmann (1995)'s analysis because she explicitly assumes that P-incorporation only accounts for alternating verbs that are prefixed with *be-*. While this displays a certain prudent morphological conservatism, it means that she explicitly considers *stopfen* 'stuff' and verbs like it outside the purview of her analysis. However, it is not so clear that these non-*be*-prefixed verbs should not be modeled as exemplifying the *spray/load* alternation. English verbs that correspond to non-*be*-prefixed German verbs alternate, for one thing. The holistic effect applies in these cases as well. It is not clear that they should be excluded from a model of the *spray/load* alternation.

<sup>16</sup>Note, however, that in Brinkmann (1995)'s description of the meaning of (32b), the trunk of the car (plausibly an interior) is also included. She does not explain how this is possible given her claim that *be-* requires goals that are surfaces. I have presented the data here under the assumption that her characterization of it is correct, and that there is some explanation for why the trunk can be included as well that does not compromise her claim. If her characterization is incorrect, it will not end up affecting my analysis in any important way.

As a result of this exclusion, Brinkmann (1995) proposes that the theme-object form is always the basic one, and the goal-object form is the derived one. When including only verbs that take *be-* in the goal-object form, this makes sense. But given that the criteria for inclusion in her analysis invokes morphological complexity to begin with, it is not surprising that her account is that the morphologically less marked form is the basic one. As a result of this exclusion though, it is hard to evaluate her approach to which verbs do not alternate, since she only considers why some verbs might appear only in the theme-object structure. She does not attempt to explain why some verbs might occur only in the goal-object structure. Essentially, she explains why some verbs cannot host *be-*, since for her that is the *spray/load* alternation. But then the alternation of verbs that do not take *be-* and their restrictions is left entirely unaddressed, which seems to leave a large gap in the empirical reach of her analysis.

Additional problems are related to the application of the homogeneity principle in Wunderlich (1997)'s account, which does not existentially bind the theme argument in the goal-object form. In this case, it is unclear why the theme should not be understood as homogeneous with respect to the verb in addition to the goal, because the verb also directly predicates of the theme.

Brinkmann (1995)'s modification involving existential binding of the theme addresses this concern, but raises an additional problem, since it requires her to treat the *with*-phrase as an optional adjunct, as it is not present in the goal-object argument structure. While there are problems treating the *with*-phrase as an adjunct generally (see discussion at the end of section 5.2.2), more specific problems are posed by treating it as an *optional* adjunct, given that sometimes it cannot be omitted, at least in English (cf. (18)). Whether there are verbs like this in German is something Brinkmann (1995) does not discuss, but a prediction of her account is that they should not exist.

In addition, it is unclear whether the homogeneity presupposition amounts to more than a restatement of the link between object position and the holistic effect. In particular, it must be excluded from applying to more deeply embedded arguments to derive the correct readings in Wunderlich (1997)'s approach. If this is the case, then it amounts to little more than saying that the most embedded (entity) argument of a verb is interpreted as directly

affected—and the most embedded entity argument of a verb is the one that will be realized with its accusative Case, making it a direct object. While the path getting us there is a bit less direct, it is once again simply stating the fact that direct object are interpreted as holistically affected.

The nonindividuation hypothesis is not without its problems, too. Some verbs, like English *pile*, do not allow the theme to be omitted in the goal-object structure (cf. (18)). Brinkmann (1995)'s account proves less informative for such verbs, since a prediction of the nonindividuation hypothesis cannot be verified. In addition, we might question the data in (28), which is supposed to show that the quantificational properties of the theme do not matter. In particular, diagnostics of (a)telicity like *in  $\alpha$  time* and *for  $\alpha$  time* do not so much reveal the existence of a particular reading as they reveal preferences for a particular reading. Take the following:

(34) John washed the car for an hour / in an hour.

The predicate *wash the car* is apparently compatible with both telic and atelic modifiers. This should indicate that the quantificational properties of its theme are irrelevant, meaning the verb *wash* has an activity/manner reading. This should make it possible to drop the object, but that is not possible.

(35) \* John washed for an hour / in an hour. (under a non-reflexive reading)

Instead, what seems to be going on in (34) is that the modifiers either create or force a particular kind of reading on the predicate, with an atelic modifier compatible only with what we might call a “partitive” reading, where John washed part of the car but possibly not the whole car. Different kinds of predicates might more naturally describe situations compatible with partitive readings, or particular contexts might make them more accessible. For this reason, the diagnostics in (28) cannot be clear evidence that goal-object structures lack a change of state reading—instead, it may be the case that they describe scenarios that are just easily compatible with partitive readings.

In sum, while I have shown that there are benefits to the P-incorporation analysis in chapter 3, there are general concerns having to do with the homogeneity presupposition and the nonindividuation hypothesis, with the former potentially reducing to a statement

of the holistic effect, and the latter's empirical adequacy being somewhat unclear. There is also an unfortunate and intentional limit to the reach of the analysis, given that Brinkmann (1995) explicitly considers verbs that alternate without taking the prefix *be-* to be outside the scope of her analysis. However, these verbs nevertheless appear to display some alternation that is much like the *spray/load* alternation, and they certainly alternate cross-linguistically. Without a full picture of how including these verbs in Brinkmann (1995)'s system might affect its accuracy, it is hard to evaluate her claims fully.

### 5.2.2 Goldberg (1995)'s Construction Grammar Approach

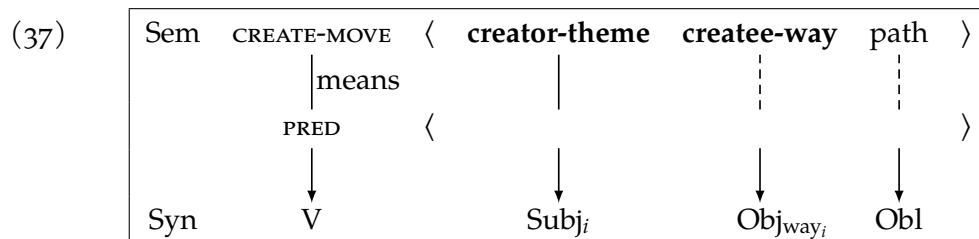
Goldberg (1995) models meaning in a different way from Rappaport & Levin (1988)'s, Brinkmann (1995)'s, and Wunderlich (1997)'s lexical conceptual structures, via constructions. While lexical conceptual structures are associated with individual verbs, constructions represent listed mappings between form and meaning that are not associated with verbs. The idea behind constructions as separate from verb meanings can be illustrated with the following example.

(36) Frank found his way to New York. (Goldberg 1995, ch. 9, (2))

(36) entails that Frank traversed some path and ended up in New York. In Rappaport & Levin (1988)'s system, the way this could be achieved is by positing a lexical conceptual structure associated with *find*. But this seems somewhat dubious given that the lexical conceptual structure would have to include a subpart that expresses caused motion, while *find* does not seem to encode this in more canonical uses. Goldberg (1995)'s proposal is therefore that the meaning of caused motion does not come from some structure associated with the verb, but an independent structure associated with a meaning of caused motion—a construction. Verbs have independent meanings that combine with the constructions to produce fleshed out event descriptions. Essentially, then, the difference between Rappaport & Levin (1988)'s approach and Goldberg (1995)'s relates to where the parts of meaning relevant for argument realization reside. For Rappaport & Levin (1988), lexical conceptual structures are (as the name suggests) associated with particular words. In contrast, Goldberg (1995)'s constructions pull out the event templatic information that Rappaport &

Levin (1988) put into the lexical conceptual structure and put it into constructions that any compatible word can combine with, thus avoiding the need to independently posit identical or near-identical lexical conceptual structures for each verb that realizes its arguments in similar ways.

The following will illustrate, using Goldberg (1995)'s example in (36). In this case, the arguments and meaning of the verb *find* will unify with a construction called the “*way*-means construction.” First, I will present the construction, following Goldberg (1995, fig. 9.1) and explain how to read the formalism. I will then show how its meaning is combined with the meaning of the verb *find* to produce (36) in her system.



The top line, indicated by “Sem” encodes the meaning of the construction in terms of the interpretations it links with particular arguments and its event structure. In this case, the event described is one of created movement, and there are three theta-roles it invokes: a creator-theme, a createe-way, and a path. Goldberg (1995) proposes treating the *way*-means construction as describing the means by which some moving entity (theme) creates a way along a path. Since the creator of the way in this construction is necessarily identical to the theme, the role is that of a creator-theme. (Note that, e.g., it is impossible for Frank to find Sam’s way to New York.) The second role is that of the created way, and the third role is the path that defines the path, or trajectory, of the way. Theta-roles in boldface must be expressed, while those in regular font weight are optional.<sup>17</sup>

The construction thus comes with three participants. The next line down represents how these participants are related to the meaning of the verb. A solid line indicates that that part of the meaning of the construction is identified with an existing part of the meaning of the verb. For instance, the CREATE-MOVE event is related to the PRED (the event described by the

<sup>17</sup>Note that regular font weight also means that no bearer of the argument need be identifiable in the context. Goldberg (1995) uses a special notation for arguments that can only be unrealized as definite null complements, which places square brackets around a boldface theta-role: e.g, [eatee].

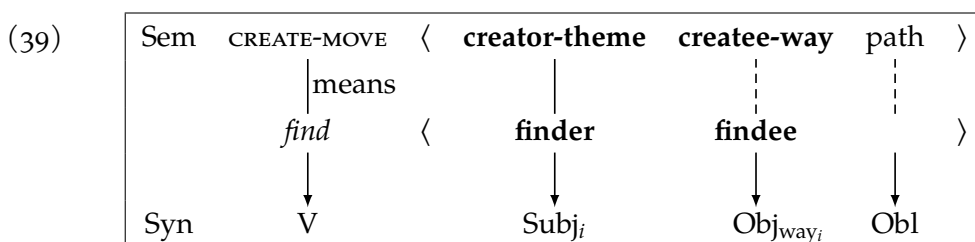
verb) because the verb describes the means/manner of the CREATE-MOVE event. The theta-roles provided by the construction unify with those provided by the verb (which are not filled in until we put the actual verb in). A solid line indicates that the verb must have an existing theta-role to unify with the corresponding role in the construction, while a dashed line indicates that the construction itself can license that role even if the verb lacks one corresponding to it.

Finally, the last two lines represent the syntax (“Syn”) associated with the construction in terms of grammatical functions, which the arrows showing which arguments are linked to which grammatical functions. In this case, the CREATE-MOVE event whose means are specified by PRED are expressed syntactically by the verb, while the creator-theme, createe-way, and path are linked to Subj(ect), Obj(ect)<sub>way</sub>, and Obl(ique), respectively. The indices on Subj and Obj<sub>way</sub> indicate that the subject must bind the possessor DP of the object, while the subscript *way* is a shorthand that expresses that the head of the object DP must be the word *way*. The path is expressed as Oblique—a PP or a locative adverb.

The meaning of *find* that will enter this construction is its theta-grid, which is the following.

(38) *find*: ⟨ **finder**, **findee** ⟩

We can then represent the fusion of *find* with the *way*-means construction as in (39).

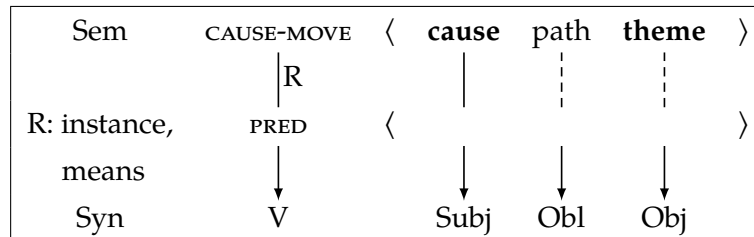


Combining *find* with the *way*-means construction thus results in a grammatical object that describes movements created by means of finding, where the creator-theme of the movement is the finder and the createe-way is the findee, with the path being added by the construction itself. Thus, the meaning of a sentence like (36) could be paraphrased as “there was movement along a path created by finding, where the finder, creator, and mover are Frank, the createe, way, and findee are Frank’s way, and the path was to New York.”

Of course, there are some constraints. If a verb obligatorily expresses a theta-role, it must fuse with a theta-role available in the construction. For example, if there were a verb that had to express two theta-roles and a construction that only contained one theta-role, that verb could not occur in that construction. In addition, filling out a construction with a verb is only possible if the meaning of the theta-roles in the representation of the verb are able to be construed as particular instances of the theta-roles provided by the construction in a natural way.

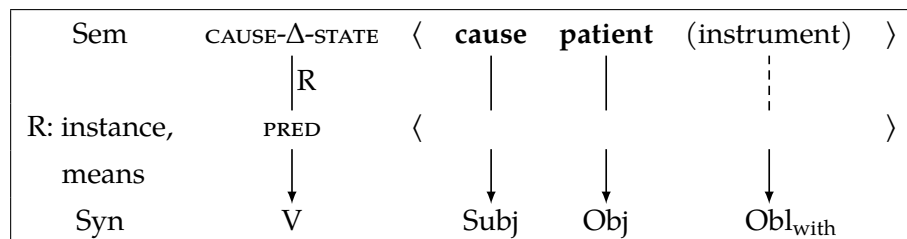
Thus equipped with an understanding of how Constructions are represented, we are prepared to examine Goldberg (1995)'s analysis of the *spray/load* alternation. In fact, in Goldberg (1995, 2002)'s view, there is no such thing as an "alternation," which would imply that it is the verb that carries particular meanings associated with different surface forms. Instead, two distinct constructions are implicated. The first is the caused-motion construction, while the second is the change of state construction (plus a *with* adjunct) (Goldberg 1995, ch. 7; Goldberg 2002).

(40) a. The caused-motion construction: (Goldberg 1995, fig. 7.3 A)



b. The change-of-state (plus *with* adjunct) construction:

(based on D'Elia 2016, ch. 2, (155b); Goldberg 2002, (54b))



Thus, in Goldberg (1995, 2002)'s account, there is no alternation as such. Instead, there are two independent constructions, both of which can fuse with a (partially) overlapping set of verbs. The idea that the *spray/load* alternation is not a transformational alternation, and



is instead the result of two different ways that arguments can be expressed, is shared by very different analyses, including those of D’Elia (2016) and Mateu (2000, 2017), as I will describe in sections 5.2.3.3 and 5.2.3.4.

As with Rappaport & Levin (1988), Goldberg (1995, 2002) does not provide a syntactic structure for her analysis. However, based on the grammatical functions each construction contains, we can assume that the analysis could look like the transitive + PP adjunct analysis in (2).<sup>18</sup>

The advantage of proposing that these two constructions are involved is that their applications go beyond the *spray/load* alternation. Under Goldberg (1995)’s approach, the caused-motion construction is implicated in many other cases. For instance:

- (41) a. Frank squeezed the ball.  $\nrightarrow$  The ball moved.  
b. Frank squeezed the ball through the crack.  $\rightarrow$  The ball moved.  
(Goldberg 1995, ch. 7, (12))

In (41a), the use of the verb *squeeze* does not result in the entailment that the ball moved. In contrast, the use of the same verb in the context in (41b) does entail that the ball moves. Goldberg (1995) attributes this to the caused-motion construction being used in (41b) but not (41a). Other cases seem to involve the construction occurring with verbs that would not ordinarily be able to encode caused motion.

- (42) In the last Star Trek episode, there was a woman who could think people into a different galaxy.  
(Goldberg 1995, ch. 7, (154))

If we were to instead take Rappaport & Levin (1988)’s approach, we would have to posit that there is a lexical conceptual structure that *think* directly encodes that entails caused motion—a somewhat dubious notion.

However, it is the change of state (plus *with* adjunct) construction that poses the most severe problems for Goldberg (1995, 2002)’s analysis. In particular, as is widely noted, the *with*-PPs that expressed the theme arguments of *spray/load* verbs do not behave like other instruments (Brinkmann 1995; Iwata 2008; Levin & Rappaport 1988; Rappaport & Levin

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<sup>18</sup>Though Goldberg herself assumes a quite different model of syntax that could mean this claim can be only approximate.

1988; Rissman 2010, 2011; Van Valin & LaPolla 1997; Wilson 2020). For instance, it is possible to add an instrumental adjunct to a goal-object structure. In this case, the instrument must occur outside the displaced theme *with* (to borrow Rappaport & Levin 1988's terminology) (Levin & Rappaport 1988).

- (43) a. John loaded the truck with hay with a pitchfork.  
 b. # John loaded the truck with a pitchfork with hay.

In addition, while (43a) shows that it is possible to adjoin both a displaced theme *with* PP and an instrumental *with* PP in the same structure, attempting to join two *with* phrases of the same type is degraded.

- (44) a. # John sprayed the wall with paint with water.  
 b. John sprayed the wall with paint with a hose.  
 c. ?# John sprayed the wall with a hose with a machine.

When a VP is replaced by *do so* ellipsis, a displaced theme *with* cannot be the correlate of an instrumental *with*.

- (45) a. ? John loaded the truck with hay (and removed it) and Bill did so with a crane.  
 b. ?? John loaded the truck with hay (and removed it) before Bill did so with boxes.  
 c. John loaded the truck with a forklift and Bill did so with a crane.

(The inclusion of “and removed it” is intended to defuse the holistic effect, due to which it would be difficult to load the truck a second time after it is already completely loaded.) In particular, (45a) seems to only receive one of three possible readings. The most natural reading seems to be one where both *hay* and *a crane* are interpreted as displaced themes. Another possible reading is one where both are instruments, though it is quite odd to consider *hay* as an instrument (one imagines that John somehow fashioned a tool out of hay that he used to help him load the truck with something else—odd but not impossible). Finally, there is a reading where *with hay* is included in the ellipsis site, and *with a crane* scopes over it. Compare this to *John ate dinner, and Bill did so with a fork*, which states that Bill ate

dinner with a fork (and implies that John ate dinner without a fork). Crucially, a reading where *hay* refers to something that ends up on the truck and *a crane* refers to an instrument seems to be impossible. Furthermore, (45b) seems quite degraded, with both *withs* introducing displaced themes. If displaced themes are arguments rather than adjuncts, this would make sense, since *do so* ellipsis typically must elide all arguments.<sup>19</sup> Finally, when both *with* phrases refer to instruments, stranding one is perfectly acceptable.

These arguments aside, Goldberg (2002) addresses some of these concerns. Regarding the ordering facts in (43), she appeals to facts about scope: the outermost *with* phrase must scope over the innermost. In one order, this is natural, because it is clear how a pitchfork would facilitate the loading of the truck using hay; while in the other case it is not, because it is unclear how hay could facilitate loading the truck using a pitchfork. This is also her explanation of facts like those in (44). Regarding the *do so* test in (45), she appeals to the notion of which roles are obligatory (profiled, in her terms) with particular verbs and the construction. If the verb requires its instrument to be obligatorily present at a semantic level, as she posits *load* does, then ellipsis might treat them differently.

That said, there is an increasingly popular line of work that attempts to reduce these apparently disparate uses of *with* to a single *with* with a single meaning (Jerro 2017; Koenig et al. 2003, 2007; Rapoport 2014; Rissman 2011). Thus, the criticism that *with* does not introduce instruments in the *spray/load* alternation may be defused if we instead replace the construction in (40b) with one where the meaning of *with* is defined a bit differently, without drastically changing the core of the analysis. The more general criticisms of Goldberg (1995, 2002)'s approach thus have more to do with how one views her model of grammar.

More general concerns are raised by the treatment of the *with* phrase as an adjunct, regardless of its particular interpretation, as noted by D'Elia (2016). In general, omitting adjuncts does not result in an entailment regarding the existence of something filling its role. When such an entailment does result, it is typically taken as evidence of an implicit argument.

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<sup>19</sup>However, Rissman (2010) reports that subjects in a rating study failed to distinguish between stranded displaced theme cases like (45b) and stranded instrument cases like (45c).

- (46) a. John ate dinner.  $\nrightarrow$  John ate dinner with someone.  
 b. John ate.  $\rightarrow$  John ate something.

In this way, we conclude that the object of comitative use of *with* is an adjunct, since when a sentence occurs without a comitative *with*, no participant corresponding to its object is entailed. In contrast, while the object of the verb *eat* is omissible, a participant corresponding to it is entailed, revealing it to be an argument.

In fact, *spray/load* verbs in goal-object structures entail that a participant corresponding to the *with* object exists, even when the *with* phrase is expressed only optionally.

- (47) a. John sprayed the wall.  $\rightarrow$  John sprayed the wall with something.  
 b. John loaded the truck.  $\rightarrow$  John loaded the truck with something.

(after D'Elia 2016, ch. 2, (190c,e))

This is consistent with the view that the *with* that occurs with *spray/load* verbs is an argument (though, as I argued in chapter 3, footnote 38, it might have a different source).

In addition, adjuncts are typically less selective than arguments. But the *with* phrases that occur with *spray/load* verbs appear to be quite selective, as they cannot occur with a broad range of predicates.

- (48) a. John sprinkled the cake with coconut.  
 b. \* Sam placed the table with shopping.  
     (under the reading "Sam placed shopping on the table.")  
 c. \* I broke the table with books.  
 d. \* John rolled the tube with paper.  
     (under the reading "John rolled the paper onto the tube.")

If the *with*-phrase is an adjunct, the reason that it cannot occur with verbs other than *spray/load* verbs (and related but non-alternating verbs) is unclear.

How does Goldberg (1995)'s analysis fare with regards to acquisition and the desiderata outlined in (11)? Acquisition would likely proceed in much the same way as in Pinker (1989)'s account, with it consisting of learning how the particular meanings of verbs could interface with the meanings of the caused-motion and change-of-state constructions. If a

child has not acquired quite the right meaning for a particular verb, it could lead to them being able to fuse it with a construction that it should not be able to fuse with, given its meaning in the adult grammar. This would lead to the same pattern of initial correctness, which would take place prior to children acquiring the constructions and associating each verb with idiosyncratic restrictions, overapplication once the constructions have been learned but verb senses have not been properly nailed down, and later return to adult usage once verb senses have been precisified. A possible prediction of Goldberg (1995)'s account is that there should be correlations between when children acquire the *spray/load* alternation and when they acquire other uses of the caused-motion and change-of-state constructions, since these are what underlie it. But it is possible that this would make the same predictions as the lexical conceptual structure approach, which could account for any correlation by positing that it is related to when children acquire the correct linking rules.

Regarding the other desiderata, Goldberg (1995)'s analysis fares rather poorer. The near-paraphrasability of the two structures, and the fact that the goal-object structure asymmetrically entails the theme-object structure is entirely lost: all the constructions have in common is that they encode causation of some event (motion or state) and a cause thematic role. Unfortunately, the cause argument and meaning is not what is most interesting with regards to the near-paraphrase relation, which has to do with the interpretations of the non-subject arguments. In this case, however, the theme of the caused-motion construction is the correlate of an instrumental adjunct in the change-of-state construction, and the path of the caused-motion construction is the patient of the change-of-state construction. Goldberg (2002, 2006) addresses this by claiming that the overlap in meaning between the structures comes from the verb itself, which will of course profile the same theta-roles when it fuses with either construction. But this requires the overlap in meaning to be specified idiosyncratically with each verb—which must profile all three arguments for paraphrasability to be derived. Thus, this account provides a way of stipulating the near-paraphrasability of the structures at the level of individual verbs, but does not derive it.

The predicability of which grammatical function is associated with each argument (i.e., linking) is not addressed explicitly, but we may assume that it is not derived. The reason for this is that constructions are posited to be non-compositional (except in special

circumstances where two constructions may be combined). A construction is therefore a non-decomposable mapping between structure and meaning. What this entails is that the fact that the cause theta-role in both the caused-motion construction and the change-of-state construction gets mapped in both cases to Subject is not derivable grammatically—instead, if there is a general pattern, it must be derivable from pragmatics or non-linguistic cognitive factors. Goldberg (1995) herself makes this claim, by proposing that construction-independent linking rules cannot account for all mappings. However, those taking a lexicalist approach would be no strangers to the fact that stating universal linking principles is a difficult task. Nevertheless, there do seem to be linking regularities that hold across a variety of different syntactic contexts (Baker 1988a; Belletti & Rizzi 1988; Dowty 1991; Kratzer 1996, see), and these would seem to be left entirely unexplained on Goldberg (1995)'s account.

For similar reasons, the affectedness interpretation of goal objects would be left unexplained under Goldberg (1995)'s account. The fact that there is a construction where the goal is interpreted as changing state does not in fact explain this—it just builds it into the account axiomatically. In the absence of universal linking rules that link arguments of change of state events to Object, the affectedness interpretation can only be stated, not derived. The reason we may think of this fact as derived in Rappaport & Levin (1988)'s approach, in contrast, is because the linking rules that place the argument of a change of state event in object position are predicted to mean something outside the particular domain of *spray/load* verbs. If this prediction is borne out, we may ask why the linking rules are this way, but we would have evidence that they are, and then their existence constitutes the explanation we seek.

Iwata (2008) provides a different kind of Construction Grammar approach (Boas 2003, see also), where constructions encode event structures rather than theta-roles as in Goldberg (1995). However, Iwata (2008)'s analysis ends up being quite similar to Rappaport & Levin (1988)'s and Pinker (1989)'s. Iwata (2008) proposes that the core locative alternation constructions describe caused motion (following Goldberg 1995) and caused covering or filling (as opposed to the more general construction caused change of state). However, Iwata (2008) places a greater emphasis on lexical meaning and how it relates to a verb's ability to occur in particular constructions. Alternating verbs in his approach lexically en-

code both caused motion and caused covering/filling, and that is what allows them to occur in both of the relevant constructions. However, once this meaning has been associated not with constructions but with particular lexical items, it is unclear how it differs from Rappaport & Levin (1988) and Pinker (1989), who also posit these meanings are associated with lexical items (Beavers 2017). At that point, what is left for the constructions to do is simply to profile one or the other aspect of the event. But in the end, the alternation is made possible in the same way it is in lexicalist approaches.

Iwata (2008)'s analysis does cover other ground. Certain verbs do not encode either caused motion or caused covering/filling, but instead image-schema whose meaning is augmented by the construction (similarly to how Goldberg (1995) proposes a construction can unify its theta-roles with those of the verb, or contribute its own). An example is *spread*, which encodes an image-schema that represents only a theme that increases gradually in size over time. This meaning can be combined with the meaning of the caused covering/filling construction only when the meaning of the theme is compatible with a caused covering event.

- (49)
- a. He spread glue on the paper.
  - b. He spread the paper with glue.
  - c. He spread a map on the bed.
  - d. # He spread the bed with a map.

(Iwata 2008, ch. 3, (30,32))

It is important to note that although Iwata (2008) uses the term “covering” to describe the meaning of the related construction, it might be better glossed as “coating,” given what he says. In this way, the contrast between (49a–49b) and (49c–49d) is explained, because the meaning of *glue* is compatible with viewing the spreading as a event of coating the bed, while this is not possible with *a map*.<sup>20</sup>

However, as Beavers (2017) notes, this pattern must also be restricted to particular verbs to avoid overgeneration, which could be seen as reducing this approach to the lexicalist ap-

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<sup>20</sup>Though of course, if we were to literally interpret the construction as encoding covering, (49d) should be acceptable, as the map could cover the bed. But analyzing it as encoding coating instead, as Iwata (2008) does in practice if not in name, resolves this.

proach from a certain point of view. For instance, *load* does not show the same restrictions as *spread* in this regard, as it does not require its theme to coat the goal (and if we instead said *load* required its theme to cover the goal, we would be back to lacking an account for the infelicitousness of (49d)). However, as I will note later, this is probably not a valid criticism, as every account recognizes the existence of lexical idiosyncrasy. Thus, even if Iwata (2008)'s account requires lexically restricting the unification of verbs with particular constructions, there are still important differences between it and the kind of lexicalist accounts proposed in Rappaport & Levin (1988) and Brinkmann (1995) and Wunderlich (1997).

However, this criticism notwithstanding, Iwata (2008)'s approach remains flawed. As with Goldberg (1995)'s analysis, the fact that constructions are not themselves constructed means that paraphrasability, linking predictability, and affectedness criteria will be addressed inadequately or idiosyncratically rather than in a general way. In addition, the same general problems raised for Goldberg (1995, 2002)'s approach in chapters 2 and 3, which show that the meanings associated with *spray/load* verbs are syntactically decomposed, apply to Iwata (2008)'s approach as well (though as with Rappaport & Levin (1988) and Goldberg (1995) analysis, Iwata (2008) does not make explicit claims about syntactic structure).

### 5.2.3 *Syntactic Approaches*

In this section, I discuss several syntactic approaches to the *spray/load* alternation. Most of these take the small clause approach sketched in (1), though they differ regarding whether the P (locative or *with*), the verb, or both are the head of the small clause. (The exception is D'Elia (2016), who combines a transitive+PP argument/adjunct approach to the theme-object structure with a small clause approach to the goal-object structure.) A way in which we can distinguish them is whether they characterize the relationship between the theme-object and goal-objects structures as transformational. Larson (1990, 2014) and Damonte (2005) posit that the goal-object structure is derived from the same underlying structure as the theme-object structure. In contrast, D'Elia (2016) and Mateu (2000, 2017) propose that each use is associated with a different underlying structure.



Of these, I will go through D'Elia (2016)'s analysis in the most detail, as he provides the greatest number of distinct kinds of syntactic evidence for the structures he proposes. What is most relevant for me is that he also discusses in some detail several diagnostics that are problematic for his approach. This will be useful because it turns out that the structural analysis of *spray/load* verbs developed in chapter 2 performs no worse than his analysis on the diagnostics that support his analysis, and in fact accounts for much if not all of the behavior of *spray/load* verbs that is problematic for his analysis.

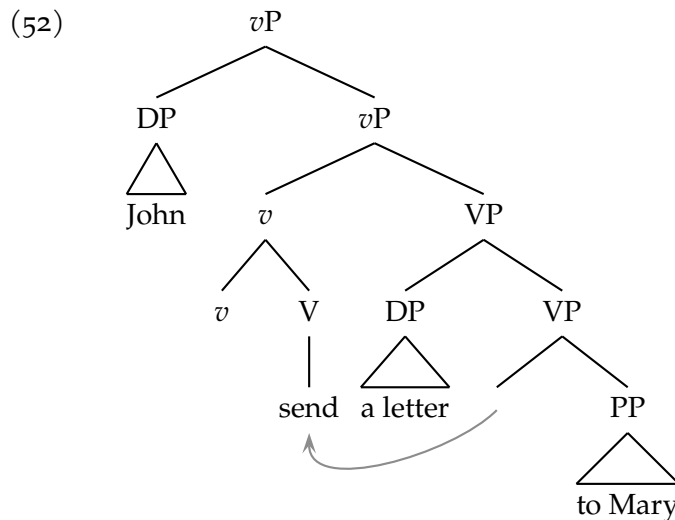
#### 5.2.3.1 Larson (1990, 2014)'s Transformational Approach

Larson (1990, 2014)'s approach to the *spray/load* alternation is based on his (1988) VP shell analysis of the dative alternation. This analysis was in turn inspired by certain facts regarding asymmetries noted by Barss & Lasnik (1986) having to do with c-command relations between the internal arguments of dative verbs. In particular, a number of diagnostics seem to show that in both the prepositional dative and double object dative structures, the linearly first object is higher than the second. I will not review all of their data, but two relevant examples involve Principle A binding and the licensing of Negative Polarity Items (NPIs).

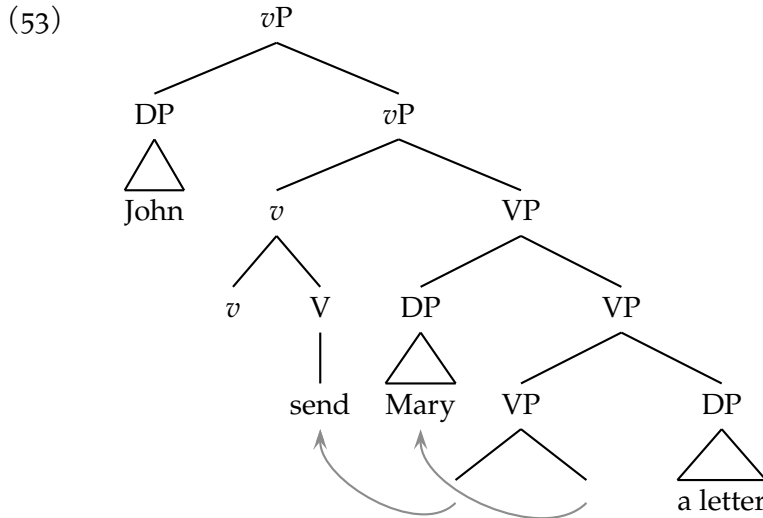
- (50) Principle A binding:
- a. John showed Bill<sub>i</sub> to himself<sub>i</sub>.
  - b. \* John showed himself<sub>i</sub> to Bill<sub>i</sub>.
  - c. John showed Bill<sub>i</sub> himself<sub>i</sub>.
  - d. \* John showed himself<sub>i</sub> Bill<sub>i</sub>.
- (51) NPI licensing:
- a. John showed nothing to anyone.
  - b. \* John showed anything to no one.
  - c. John showed no one anything.
  - d. \* John showed anyone nothing.

Barss & Lasnik (1986) suggest that such facts might require reformulating the standard explanations of anaphor binding and NPI licensing in terms of c-command.

Larson (1988) takes the opposite approach. He argues that we can maintain an explanation of the facts in (50–51) based on c-command if we posit a structure with multiple embedded VPs. Note that in Larson (1988), subjects were assumed to be generated internal to the VP (rather than *vP*). As such, the structures could be modernized to include *vP* as follows (Larson 1988, (14); Larson 2014).



To account for the double object structure, Larson (1988) proposes that it is derived in a similar way to the passive. However, Larson (1988) does not assume that passive is derivational as is common today. Instead, he assumes that passivization is derived by what is essentially a lexical redundancy rule that allows an argument of a predicate to be expressed as an adjunct. What happens in double-object structures is this very process or something much akin to it, which allows the theme argument to be expressed as an adjunct. This will result in the goal argument raising into the empty specifier position of VP (which Larson (1988) assumes is necessary), and the verb raising into *vP* (following our update to his original proposal).



Note that since *a letter* is assumed to be an adjunct in this structure, it does not require Case.

In responding to some criticisms of Larson (1988) by Jackendoff (1990), Larson (1990) proposes an extension of this basic analysis to other types of alternations, including most relevantly for present purposes the *spray/load* alternation. The basic idea is that derivation of the theme-object structure is like the derivation of the prepositional dative in (52), while the derivation of the goal-object structure is like the derivation of the double-object dative in (53). Larson (1990)'s argument for this rests on the fact that scope-freezing occurs in both double-object datives and goal-object *spray/load* structures (see also Aoun & Li 1989; Bruening 2001).

- (54) a. Bill gave a book to every student.  $(\exists > \forall; \forall > \exists)$   
 b. Bill gave a student every book.  $(\exists > \forall; * \forall > \exists)$
- (55) a. John loaded a box onto every truck.  $(\exists > \forall; \forall > \exists)$   
 b. John loaded a truck with every box.  $(\exists > \forall; * \forall > \exists)$

However, given that Larson (1990) himself does not propose an explanation for this contrast, the argument is somewhat weak. The reason for this is the following: double-object structures make it clear that there are at least some environments in which scope freezing is forced. But this does not mean that what forces scope freezing in double-object datives and goal-object *spray/load* structures must be the same thing. In fact, it would be quite surprising if there were only one way that scope freezing could arise if it is a resource available to the grammar. In addition, the parallel is only clearly established between the double-object

structure and the goal-object structure. The lack of scope freezing in both the prepositional dative and theme-object structures is less convincing regarding their putative related status, since a lack of scope freezing is fairly standard in English in many different syntactic environments.

Nevertheless, it is possible to strengthen Larson (1990)'s argument, since we can show that facts like Barss & Lasnik (1986)'s hold for both the theme-object and goal-object structures (cf. Bruening 2001). In particular, the object in both the theme-object and the goal-object structure asymmetrically c-commands the DP inside the following PP.

(56) Principle A binding:

- a. John sprayed the water<sub>*i*</sub> onto itself<sub>*i*</sub>.
- b. \* John sprayed itself<sub>*i*</sub> onto the water<sub>*i*</sub>.
- c. John sprayed the water<sub>*i*</sub> with itself<sub>*i*</sub>.
- d. \* John sprayed itself<sub>*i*</sub> with the water<sub>*i*</sub>.

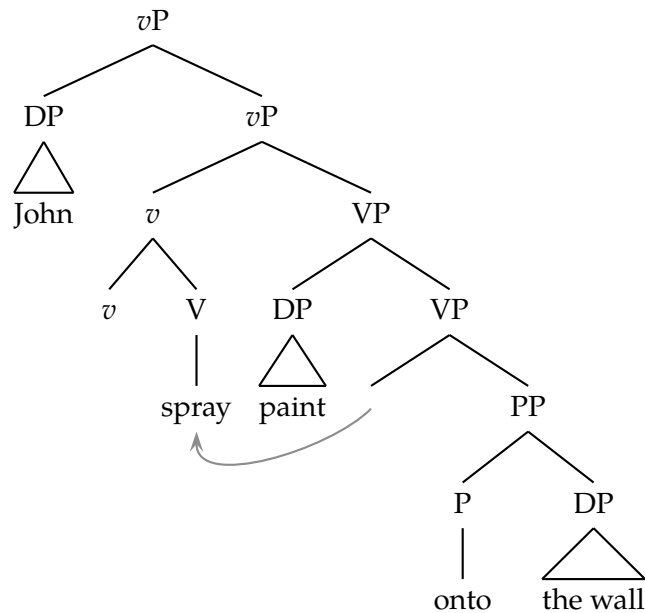
(57) NPI licensing:

- a. John sprayed nothing onto anything.
- b. \* John sprayed anything onto nothing.
- c. John sprayed nothing with anything.
- d. \* John sprayed anything with nothing.

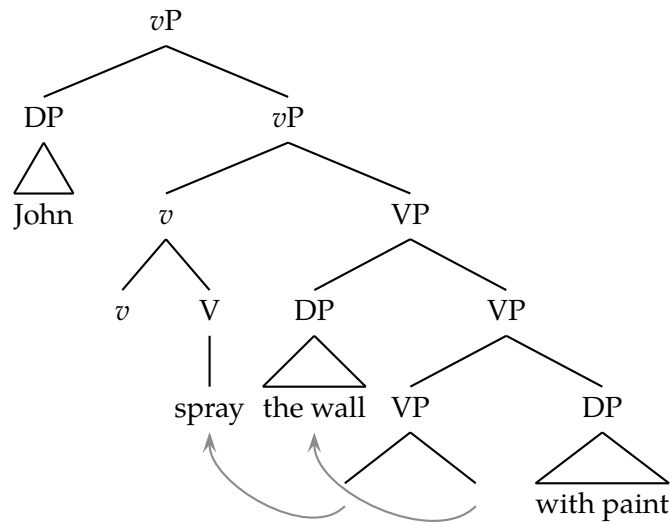
These similarities are more convincing, as they show analogous restrictions hold for both structures that are claimed to be parallel. In each structure, the object c-commands the PP.

Taking the facts in (56–57) as better evidence for the parallel between the dative alternation and the *spray/load* alternation, we continue following Larson (1990), who posits the following derivations for the *spray/load* alternation. These are of course entirely parallel to the derivations he posits for dative structures in (52–53), with the exception of the extra preposition *with* in the goal-object structure.

(58) a. Theme-object derivation:



b. Goal-object derivation:



There is a loose end here regarding the status of the preposition *onto* as well. In particular, the theme-object structure introduces the goal with a locative preposition, while the goal-object structure uses no preposition to do so. In regards to this fact, as well as the presence of *with* in the goal-object structure, Larson (1990) makes a suggestion that this is a way in which the *spray/load* alternation differs from the dative alternation: the *spray/load* alternation is essentially the dative alternation but with a locative constant “added on.” The locative constant shows up as *onto* or *into* in the theme-object structure and as *with* in the goal-object structure.

The obligatory presence of the preposition is said to be due to a requirement that it is recoverable. It seems that what Larson (1990) means by this is that some locative element must be expressed overtly, but the point is made somewhat vaguely. Nevertheless, in the theme-object structure, the locative constant is expressed by the locative preposition; while in the goal-object structure, the passivization process by which the verb “absorbs” this preposition would render the locative element unrecoverable were it not expressed in some alternative way. *With* expresses this locative constant, satisfying the recoverability requirement. Larson (1990) proposes that the choice of *with* has to do with the notion of central coincidence, which describes situations in which the centers of two entities are identified as located in the same space (up to pragmatic restrictions) (see also Hale 1986 and Rapoport 2014, as well as the discussion in chapter 4, section 4.2).

In this context, it is worth clarifying the reason we may consider Larson (1990)’s analysis transformational, despite the existence of two different underlying structures. This is because the relative positions of the two arguments, modulo the presence/absence of the prepositions that go along with them, start off the same. The theme is higher than the goal in both structures. Thus, the differences between the structures boil down to the application of P-absorption (roughly equivalent to passivization according to Larson (1990)’s characterization) and the movement and alternate expression of the locative component of *spray/load* verbs’ meanings that results.

Many of the shortcomings of Larson (1990)’s account have to do with the context in which he proposes it, which is a defense of his (1988) analysis of the dative alternation. As such, his concerns are not about capturing facts related to the *spray/load* alternation specifically, but instead about establishing the plausibility of the VP shell approach more generally. For this reason, he simply does not directly address the concerns that Rappaport & Levin (1988) raise in (11). Nevertheless, we can consider how his approach might fare according to those criteria.

Regarding acquisition, it seems clear that Larson (1990)’s approach would account for it as the result of the rule that allows an argument to be expressed as an adjunct. Recall that according to Larson (1990), this rule is implicated in passivization and the formation of double-object datives and goal-object *spray/load* structures. Thus, we might expect chil-

dren to begin applying this process productively in all these domains at roughly the same time. As Larson (1990)'s concerns are not with acquisition, he simply does not provide data relevant to this point.

Regarding productivity and its limitations, Larson (1990)'s account is simply inadequate. He proposes that the theme-object structure is basic, and that the goal-object structure is derived by a rule akin (if not identical) to passivization.<sup>21</sup> However, passivization is highly productive, while the formation of goal-object structures is less so. Passivization can apply to essentially any verb that assigns accusative Case, while deriving a goal-object structure from a theme-object structure seems to be restricted on semantic grounds (recall Pinker (1989)'s manner/ result distinction). In addition, passivization is rarely obligatory,<sup>22</sup> while many verbs occur in only goal-object structures (Levin 1993, sec. 9.8). Thus, we would have to posit that this operation is obligatory for particular verbs more often when it forms goal-object structures than when it forms passives.

More pressingly, there are semantic restrictions on the formation of double-object datives, which require the indirect object to be a potential possessor of the theme (e.g., Beck & Johnson 2004; Gropen et al. 1989; Harley 2002; Oehrle 1976; Pesetsky 1995, a.m.o.).

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<sup>21</sup>Larson (1988) himself identifies this rule as identical to passivization. But in the interest of evaluation the core features of his analysis, we might suppose it is not, especially given that Larson (2014) admits that identifying this operation with passivization became untenable in light of work following his original proposal.

<sup>22</sup>There are a few scattered examples of verbs in English that might only have passive uses; *rumor* is perhaps the most common example.

- (i) a. The player was rumored by fans to be out sick.
- b. \* Fans rumored the player to be out sick.

Note that this is to be distinguished from *wager*-class verbs (e.g., Kayne 1984; Postal 1974), which show a similar pattern, but whose active uses can be licensed by  $\bar{A}$ -movement of the object.

- (ii) a. \* John wagered Bill to be the best.
- b. Bill was wagered to be the best.
- c. Who did John wager to be the best?

In contrast, active uses of *rumor* are not rescued by  $\bar{A}$ -movement.

- (iii) \* Who did fans rumor to be out sick?

Thus, *rumor* appears to only be licensed in passive uses. However, regarding the main point, it is clear that *rumor* is quite exceptional in this regard; very few verbs exist that allow only passive uses, while many exist that allow only goal-object uses; see Levin (1993, secs. 8.1, 9.8).

- (59) a. John sent a package to the border.  
b. John sent a package to the boarder.  
c. # John sent the border a package.  
d. John sent the boarder a package.

(Gropen et al. 1989, citing Joan Bresnan's 1978 lecture notes)

However, these semantic restrictions are different from the semantic conditions on the alternation of *spray/load* verbs, which seem to have less to do with properties of the goal, and more to do with whether the verb receives a manner or a result reading. As such, it is difficult to claim that the same rule is responsible for the formation of both double-object datives and goal-object *spray/load* verbs. While it is possible to claim that a rule relates these structures, it would have to be a bespoke rule, with particular semantic and syntactic effects. This need to posit such a rule would do away with much of Larson (1990)'s motivation for treating the *spray/load* alternation as a special case of the dative alternation.

Larson (1990)'s analysis intuitively accounts for the near-paraphrasability of both structures and their linking properties, as both structures are underlyingly nearly identical, with the only difference being in which kind of locative relation they express and how they express it. However, given that it is difficult to determine what a compositional semantics for Larson (1990)'s structures would look like, it is difficult to establish that this claim goes beyond the intuition. In fact, Larson (1990) seems to assume that the syntax projects from a verb's theta-grid, with the possibility of two structures being due to the possibility of the passive-like rule that adjusts how the projection occurs.<sup>23</sup> However, this operation does not affect the verb's meaning nor its list of theta-roles—especially if we take it to be analogous to passivization, which affects neither truth-conditional meaning nor thematic structure. As such, there is a way of understanding Larson (1990)'s approach where each structure is predicted to have very close to the same meanings, with the only slight difference coming from the insertion of an appropriate locative preposition to satisfy the verb's need to project a locative constant syntactically. Note that this preposition in Larson (1990)'s approach is crucially not inserted to license Case on the theme in the goal-object structure, as

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<sup>23</sup>Thus, despite Larson (1990) providing explicit syntactic structures—an advantage over Rappaport & Levin (1988)'s and Brinkmann (1995)'s accounts—his account is in many ways a lexicalist one.



he assumes that the theme in this structure is an adjunct and as such does not need Case (cf. (53)).

Thus, Larson (1990) predicts that both structures should differ only in the meaning contributed by the choice of locative preposition, which must project because the verb projects a locative constant. But this is problematic, given that this locative constant does not always need to project overtly.

- (60)     a.    John sprayed the paint.  
          b.    John sprayed the wall.

While there may be differences in whether the missing PP in the above examples is interpreted as existential or indefinite, this is not relevant to Larson (1990)'s claims, who proposes that the locative constant must project or else it will be unrecoverable. However, it is clear that this is not the case: the locative component may project covertly or not at all, at least for some verbs. This means that even in its absence, it is recoverable. If this is the case, we may then ask why it cannot project covertly in the goal-object structure when the theme is overt, too, producing the following:

- (61)   \* John sprayed the wall the paint.

When considered in this way, Larson (1990)'s suggestion that the difference between double-object datives and goal-object *spray/load* structures reduces to the presence of an obligatorily projected locative constant in the latter becomes untenable.

Larson (1990) addresses the holistic effect only indirectly, but his suggestion is essentially the one I adopted in chapter 4, section 4.2 about *with* expressing a meaning of central coincidence. My approach thus constitutes a development of this idea, based on further work by Rapoport (2014).

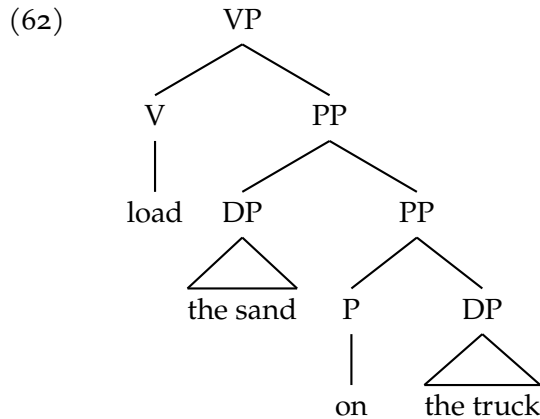
#### 5.2.3.2 Damonte (2005)'s Transformational Approach

Damonte (2005) takes a different kind of syntactic approach from Larson (1990, 2014), drawing inspiration from Brinkmann (1995), Wunderlich (1997), and especially Gronemeyer (1995).<sup>24</sup> He does not model the structures in which *spray/load* verbs are found as

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<sup>24</sup>Damonte (2005)'s approach basically represents a modernization of Gronemeyer (1995), who bases her

transitive with a PP argument/adjunct, as Larson (1990, 2014) does. Instead, he posits a small clause syntax as in (1). But like Larson (1990, 2014), Damonte (2005) posits that the relationship between the theme-object and goal-object structures is derivational, with the theme-object structure being the simpler one, as shown.



(after Damonte 2005, (4b))

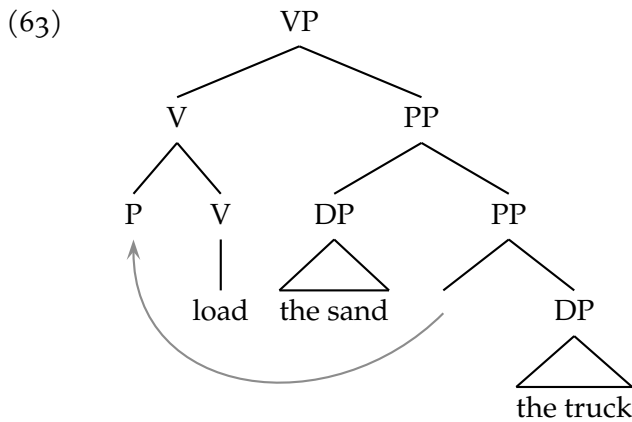
Following Baker (1988a)'s Uniformity of Theta-Assignment Hypothesis (UTAH), Damonte (2005) posits that (62) is the only possible underlying structure that the arguments of *load* (and other *spray/load* verbs) can project in. The UTAH states that arguments bearing identical theta-roles are linked to identical underlying structural positions. In effect, then, Damonte (2005) is breaking from Rappaport & Levin (1988)'s and Goldberg (1995)'s claims that the arguments bear different theta-roles in each structure.<sup>25</sup> Instead, he aligns himself with Brinkmann (1995) and Wunderlich (1997), who claim that both structures predicate the same theta-roles of their arguments.

The goal-object structure is derived from the structure in (62) by movement. However, the surface order is one in which the goal precedes the theme. Under a standard view where “rightward is downward” (Kayne 1994), this leads to a problem, since the goal is lower than the theme. Given standard assumptions about movement, a lower phrase of the same type as a higher phrase cannot generally be targeted for movement (see, e.g., Rizzi 1990). In

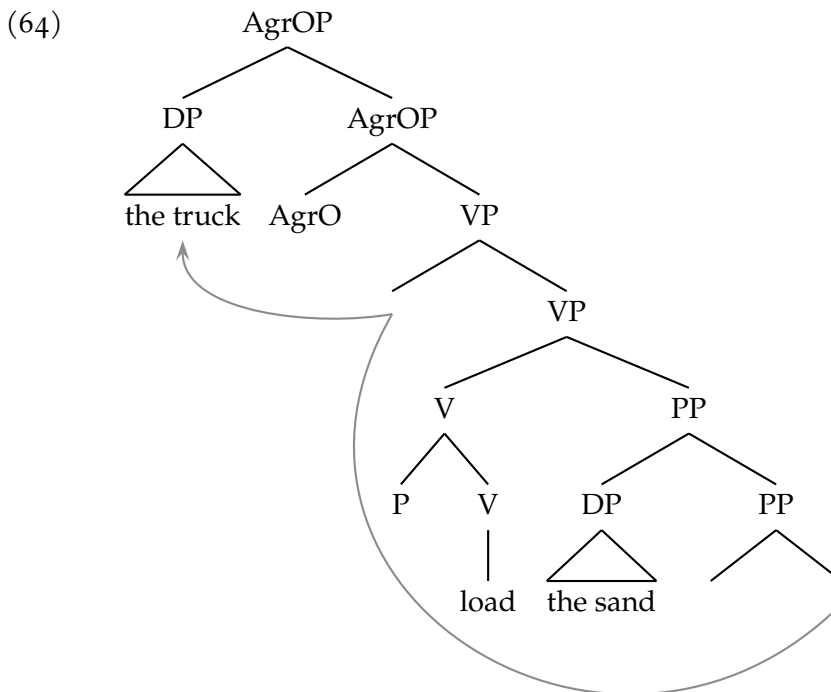
analysis on Baker (1988a,b)'s approach to incorporation. The derivation of the goal-object structure in Damonte (2005)'s approach also bears many similarities to Collins (2005)'s approach to the passive.

<sup>25</sup>Though n.b. that in Rappaport & Levin (1988)'s analysis the argument corresponding to the goal occurs in multiple positions in the lexical conceptual structure of the goal-object structure, being both the argument of a change of state and the goal of a motion event. Thus, while the theta-roles the goal bears in each structure are not identical, they are overlapping, since the same argument is an argument of more than one lexical conceptual predicate. This bears some similarities to my approach, where the object is an argument of the V (consisting of the root and a functional head) and a small clause predicate (most often a PP).

order to allow for this, Damonte (2005) proposes that *load* can license a small clause with an empty preposition as its head, though it must then move to incorporate into the verb.



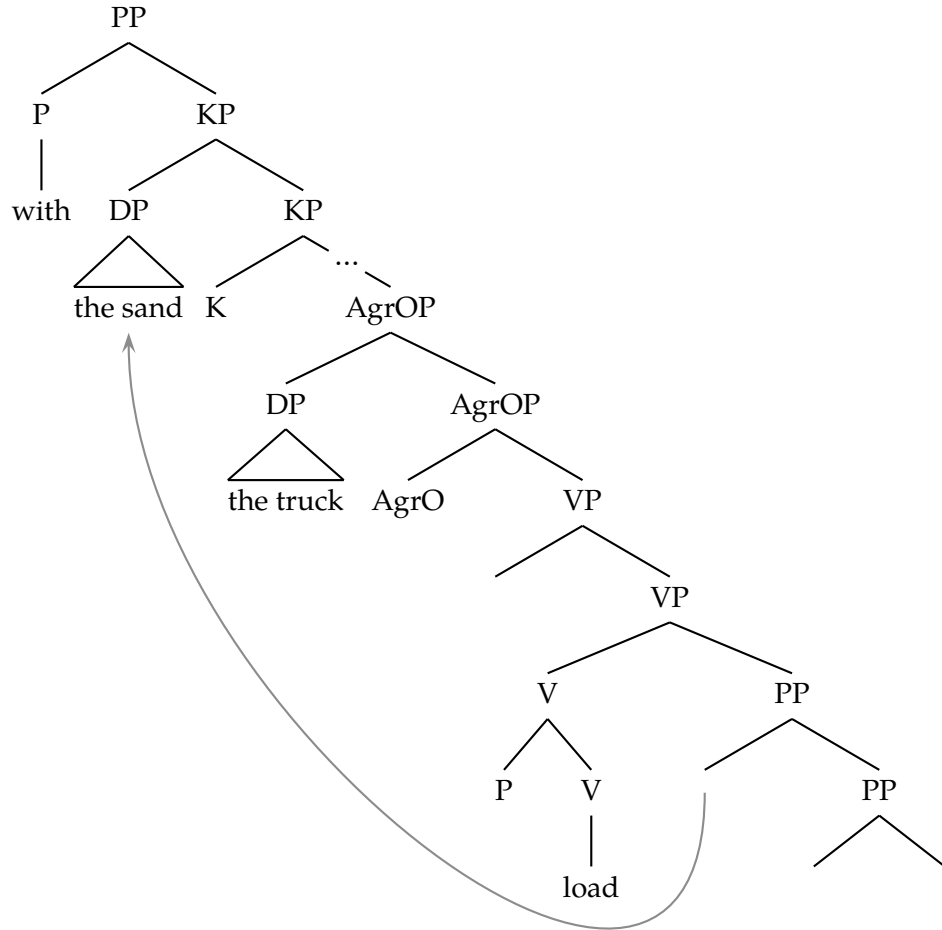
Following a proposal from Chomsky (1993), this makes Spec,VP equally distant from either argument. Thus, the goal can move to Spec,VP, and from there it moves to Spec,AgrOP for structural Case licensing.<sup>26</sup>



To account for the fact that the theme surfaces in a PP headed by *with*, Damonte (2005) proposes that *with* can be generated higher in the functional structure, and that the theme moves to the specifier of a case projection, KP, to receive Case.

<sup>26</sup>Damonte (2005) does not address why the theme instead could not move to Spec,AgrOP for Case licensing at this point.

(65)



At this point, we have not derived the correct word order; if the sentence were to be pronounced as shown, it would correspond to, e.g., *I with the sand the truck loaded*, which is not the right result. In regards to deriving the right word order, Damonte (2005) stops being as detailed at this point, but I will follow what he says, even in the absence of him providing explicit structures for each step.

First, he suggests that following movement of the theme to Spec,KP, the functional projection immediately below KP moves to Spec,PP<sub>with</sub>. Since he does not specify whether there are functional projections between AgrOP and KP, I will assume that AgrOP is immediately below KP for illustrative purposes.

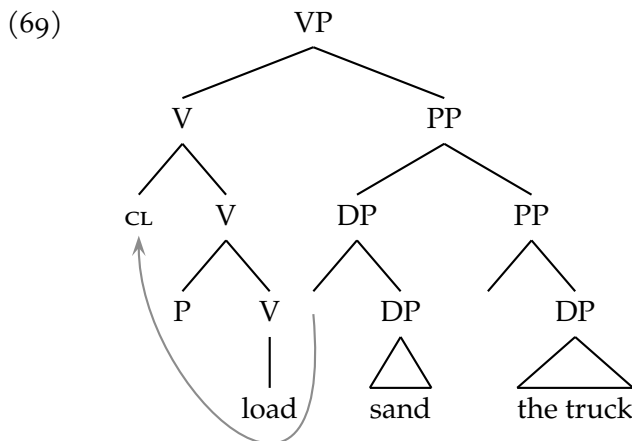




(68) Italian (Damonte 2005, (2b,26–28)):

- a. Definite theme:
- i. Ho caricato il camion con la sabbia.  
have.1SG loaded the truck with the sand  
“I have loaded the truck with the sand.”
  - ii. \* Ho caricato il camion della sabbia.  
have.1SG loaded the truck of.the sand  
“I have loaded the truck of the sand.” (lit.)
- b. Mass/bare plural theme:
- i. \* Ho caricato il camion con sabbia / tubi.<sup>28</sup>  
have.1SG loaded the truck with sand tubes  
“I have loaded the truck with sand / tubes.”
  - ii. Ho caricato il camion di sabbia / tubi.  
have.1SG loaded the truck of sand tubes  
“I have loaded the truck of sand / tubes.” (lit.)

Damonte (2005) proposes that in the *di* ‘of’ variant, the theme denotes a property and as such incorporates into the verb (cf. Chung & Ladusaw 2004; van Geenhoven 1998). He implements this syntactically, with the classifier of the theme incorporating, leaving it behind.



Damonte (2005) follows Baker (1988a)’s proposal that a DP from which an abstract noun (or classifier) has incorporated does not need structural Case, and thus in this instance, the theme DP will not move to Spec,KP to receive Case. Of course, since the theme surfaces with the overt preposition *di* ‘of,’ this is somewhat mysterious—Damonte (2005) proposes that *di* ‘of’ is generated internal to the DP (perhaps it heads a KP selected by *CL*). Thus, while the DP from which the classifier incorporates does not need to be Case licensed, the DP inside

<sup>28</sup>I have collapsed two of Damonte (2005)’s examples here; he reports that mass nouns receive a judgment of ‘?’ in this case, while bare plurals are “even more” degraded, which he represents as ‘\*.’ His analysis treats both as equally ungrammatical.

it (*sand*, in this instance) could be Case-licensed by *di* ‘of.’ This hypothesis predicts that *di* ‘of’ should have other uses in Italian that correspond to English *with*, which Damonte (2005) says is borne out (though he does not provide specific examples).

Because the incorporated classifier restricts the set of possible themes, Damonte (2005) proposes the DP that stays behind can be an empty category, explaining why the theme can be omitted in the goal-object structure despite being an argument. (He does not provide an example of this in Italian, but of course it is clearly possible in English: cf. *John loaded the truck*).

The analysis predicts that in Italian, only the *di* ‘of’ variant should show the holistic effect. The reason for this that Damonte (2005) provides is that *di* is only possible when the theme is non-referential and denotes a property, as described above. As a result, it cannot measure out the event, only the goal (which denotes an entity) can. This is what Damonte (2005) claims leads to the holistic effect, and accounts for its absence in sentences with *con* ‘with.’

(70) **Context:** One ton of sand has to be loaded onto a three-ton lorry.

- a. # Ho caricato il camion di sabbia.  
have.1sg loaded the truck of sand  
“I have loaded the truck of sand.” (lit.)
- b. Ho caricato il camion con la sabbia.  
have.1sg loaded the truck with the sand  
“I have loaded the truck with the sand.”

(Damonte 2005, (34))

To account for the holistic effect in English, despite the fact that *with* is used, Damonte (2005) proposes that the goal-object structure is ambiguous between the structure where the theme moves to Spec,KP and the structure where the classifier incorporates. The underlying structure depends on whether the theme is definite or not: if it is definite, then the structure is the one without classifier incorporation, and the holistic effect should not arise. In contrast, if the theme is indefinite, then the structure is the classifier incorporation structure and the holistic effect should arise. He reports that this is borne out in the following sentences from English and German, according to his consultants (though I disagree with the English judgments, agreeing instead with the judgments reported in Beavers (2017) that are endorsed in most work on the *spray/load* alternation).



- (71) a. I loaded the truck with sand.  
 b. I loaded the truck with the sand.
- (72) German (Damonte 2005, (36b,37b)):  
 a. Ich belud den Lastwagen mit Sand.  
 I loaded the truck with sand  
 "I loaded the truck with sand."  
 b. Ich belud den Lastwagen mit dem Sand.  
 I loaded the truck with the sand  
 "I loaded the truck with the sand."

In the (a) examples, the holistic effect holds, while in the (b) examples, it does not. The reason for this is that when the theme is a predicate, its quantity is, naturally, unspecified. This means that only the capacity of the goal is available to define the endpoint of the event.

Furthermore, since a dropped theme can only be licensed in the classifier incorporation structure, when the theme is dropped, the holistic effect should be present, which seems to be true.

- (73) I loaded the three-ton truck, #but only used one ton of hay.

Damonte (2005) suggests that these facts are related to Brinkmann (1995)'s nonindividuation hypothesis (see section 5.2.1.2). However, rather than nonindividuation being necessary to a verb taking a goal as its object, as it is for Brinkmann (1995), it is a necessary condition for the holistic effect. Instead, the ability of a verb to take its goal as an object is due to P-incorporation.

While Damonte (2005) motivates his approach based on linking, and spends much of his paper addressing the holistic effect, he does not explicitly address acquisition and productivity. We may assume that acquisition of the alternation consists of children acquiring P-incorporation under his account. Then, presumably children's overextension errors come about when they assume that any verb that occurs with the underlying syntax in (62) can license P-incorporation, when only some can. This makes a testable prediction that children should acquire other uses of P-incorporation around the same time as they acquire the locative alternation in a productive way. Of course, given that Damonte (2005)'s approach is a kind of syntactification of Brinkmann (1995) and Wunderlich (1997)'s lexicalist approach,

the predictions in this regard are largely similar, making it hard to use them to distinguish the two.

It is unclear how Damonte (2005)'s analysis would account for the fact that some verbs occur in only one or the other structure, and the relation of this to manner and result that Pinker (1989) identifies. One would have to posit that verbs that have only a manner reading never license null prepositions, while verbs that have only a result reading license only null prepositions. This is because otherwise, the underlying structures for each would be the same. Positing a link between manner and result and overt and null prepositions that occur in otherwise identical structures is an odd notion, which is presumably why he attempts to show that the result reading is an epiphenomenon that arises due to the semantic properties of structures that license classifier incorporation.

Given that both structures start off as underlyingly the same, Damonte (2005)'s approach clearly provides some explanation for the near-paraphrasability of the theme-object and goal-object structures. In fact, in the goal-object structure with a definite theme, the paraphrase should be exact, with each variant entailing the other (provided the denotation of the overt preposition matches the denotation of the null preposition, which Damonte (2005) seems to assume). This is because no semantic differences are implicated in the derivation of the definite theme goal-object structure. In contrast, the paraphrase should be only approximate only when the theme is indefinite, since in this case the structure is derived by classifier incorporation, with the small difference in meaning being due to the holistic effect in the way he describes.

However, despite the judgments Damonte (2005) reports from his consultants, it is not clear that this is the case. Beavers (2006, 2017) explicitly notes the importance of controlling for the definiteness of the theme. But in the judgments he reports in (19–20) show, the holistic effect is present even when the theme is definite. This is a problem for Damonte (2005)'s proposal regarding the possible reinterpretation of Brinkmann (1995)'s nonindividuation hypothesis, since it undermines his entire explanation of the holistic effect. His explanation crucially links the holistic effect to the theme being interpreted as a predicate, which should only be possible when it is not definite. In contrast, it does not directly undermine Brinkmann (1995)'s statement of the nonindividuation hypothesis, since her formu-

lation only proposes that the quantificational properties of the theme are irrelevant when the theme is omitted, not when the theme is overt and definite.

In addition, despite the initial motivation of his approach being a rigid approach to linking rules, it is not clear that it adequately addresses the predictability of where the various arguments arise on the surface. Underlyingly, all arguments are linked to the identical underlying positions, due to Damonte (2005)'s adoption of Baker (1988a)'s UTAH as a guiding principle. But this does not account for where each of those arguments surfaces, which is what Rappaport & Levin (1988)'s criterion describes. Instead, much of his approach is posited in an *ad hoc* way to ensure that the correct word order can be achieved in the goal-object structure, with only the theme-object structure having predictable linking. What is, for instance, the independent motivation for the existence of KP, for the position of *with* above it, and for the movement of (at least) AgrOP to *with*'s specifier? These functional projections would require independent support to ensure that they are not simply *ad hoc* ways of deriving the correct order.

Despite these weaknesses of Damonte (2005)'s approach, it is quite valuable. In particular, his syntactification of Brinkmann (1995)'s approach provides a compelling way of modeling the near-paraphrase relation between the theme-object and goal-object structures. Most of the problems regarding the use of functional projections and the holistic effect are related to the fact that he relates the theme-object structure to the goal-object structure via movement. Movement alone does not affect semantics, so he must posit that certain movements only occur when certain semantic criteria are met. Of course, the reason Damonte (2005) must use movement is related to his desire to explain the near-paraphrasability of the two structures in a syntactic approach, coupled with Baker (1988a)'s UTAH. If we reject the UTAH, then we no longer need to posit that the relation between the theme-object and goal-object structure is transformational. This is, in fact, the view that the most popular syntactic approaches to argument structure take nowadays (see, e.g., Alexiadou et al. 2015; Beck & Johnson 2004; Borer 2005b; Embick 2004; Folli & Harley 2005, 2007, 2020; Hale & Keyser 1993a, 2002, 2005; Harley 2002, 2008, 2011, 2013; Kratzer 1996; Kratzer:1994 1994; Marantz 1984; Pylkkänen 2002, 2008; Ramchand 2008). Under this view, rather than lexical meanings containing information that is projected into structures, structures produce par-

ticular kinds of meanings. The fact that Agents are in the specifier of *vP*, for instance, is not because of a linking rule that requires Agents to be placed in there. Instead, when something is merged in *Spec, vP*, the semantics of *v* result in it being interpreted as an Agent. As a result, linking rules are no longer required, and the UTAH is redundant, as it derives from the syntactic and semantic properties of functional heads.<sup>29</sup> Predictability then goes the other way around: rather than predicting an argument's position from its meaning, we predict its meaning from its position (relative to other syntactic elements).

If we no longer have this motivation to retain a transformational analysis, it is possible to make use of the basic idea of P-incorporation, while hopefully addressing some of the problems that result from the derivational approach. This is what I hope to have accomplished in chapters 3 and 4 by proposing a non-derivational P-conflation analysis. This allowed me to address the holistic effect and avoid some of the problems of Damonte (2005)'s approach.

The data motivating the non-derivational approach I take was presented in chapter 2, where I showed that in both the theme-object and goal-object structures, it is possible to modify a constituent consisting of the verb and its object. Under a derivational approach, this is not expected to be possible, especially when adopting the small clause structure that Damonte (2005) does. Thus, my approach improves on the basic idea behind Damonte (2005)'s P-incorporating/conflation analysis, while addressing the disadvantages noted above.

### 5.2.3.3 *D'Elia (2016)'s Non-transformational Approach*

D'Elia (2016)'s approach differs from Larson (1990, 2014)'s and Damonte (2005)'s in that he proposes that the underlying structures of theme-object and goal-object uses of *spray/load* verbs are different. His proposal rests on a particular implementation of Perlmutter & Postal (1984)'s Universal Alignment Hypothesis, which proposes that arguments higher on an ordered hierarchy of theta-roles are always initially projected in positions higher than arguments lower on this hierarchy (cf. example (6) earlier this chapter and surrounding discussion). The implementation of the UAH that D'Elia (2016) adopts is Rein-

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<sup>29</sup>Though note that in Borer (2005a,b, 2013)'s system, it is the syntax that derives the semantics—though she is not explicit about how compositionality works using standard terminology.

hart (1996, 2000, 2002, 2016)'s theta system.

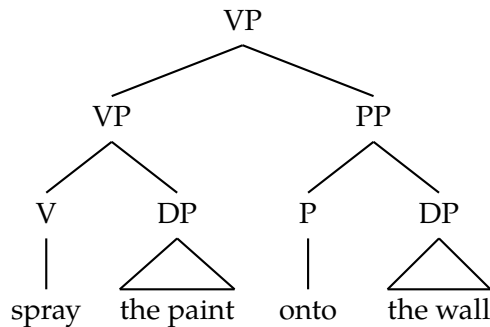
The theta system differs from previous approaches to theta-role hierarchies in that it treats theta-roles as feature clusters consisting of the binary and privative features  $[\pm c]$  (cause) and  $[\pm m]$  (mental awareness). The details are not relevant to evaluating the merits of D'Elia (2016)'s approach to the *spray/load* alternation, which only makes reference to two theta-roles:  $[-m]$  (Source or Subject Matter) and  $[-c]$  (Goal, Recipient, or Benefactor). I will continue the discussion of D'Elia (2016)'s analysis by using the terms "Source" and "Goal" to refer to these feature values, with the only difference related to this being in how his analysis relates to the theta system more generally, which is beside the main point of this section.

The upshot of D'Elia (2016)'s implementation of Reinhart (2002)'s theta system is that arguments are projected in a way consistent with a theta-role hierarchy that places Goal higher than Source. This means that both the theme-object and goal-object structures must place the Source lower than the Goal. This leads D'Elia (2016) to adopt essentially the mirror image of Larson (1990, 2014)'s analysis. Recall that Larson (1990) proposed that the Goal uniformly occurred lower than the Source/Theme in the initial structure, as in (58). D'Elia (2016) proposes precisely the opposite, as shown in (74).<sup>30</sup>

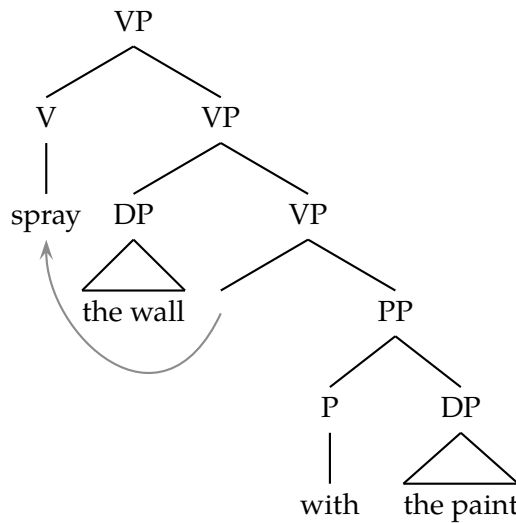
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<sup>30</sup>D'Elia (2016)'s goal-object structure does not include *v*, in contrast to Larson (2014)'s update to Larson (1990)'s analysis. For this reason, I have not included *v* in these structures like I did in the discussion of Larson (1990). I do not believe anything important would change in D'Elia (2016)'s goal-object structure if *V* moved to *v*, however.

(74) a. Theme/Source-object:



b. Goal-object:



As shown, the Goal projects in a position higher than the Source in both structures, regardless of whether it projects as a DP or a PP. Because of this move, D’Elia (2016)’s analysis is not transformational like Larson (1990, 2014)’s: while the verb still moves in both of these analyses, the goal only moves in Larson (1990, 2014)’s approach. Larson (1990, 2014) must require the Goal to move higher than the Theme/Source in order to capture the facts about frozen scope in (54–55), while these facts require no additional movement in D’Elia (2016)’s account. In addition, movement of the verb to a higher projection does not take place in the Theme/Source object structure, unlike in Larson (1990, 2014)’s approach, where both structures involve VP shells. In this, D’Elia (2016) follows Janke & Neeleman (2012), who propose that both VP shell and non-VP shell structures are possible.



- (76) a. Which book<sub>*i*</sub> did you give *t<sub>i</sub>* to every student? (Pair-list)  
 b. Which sheet<sub>*i*</sub> did he drape *t<sub>i</sub>* over every armchair? (Pair-list)  
 (Bruening 2001, (5))

As can be seen in (76b), a pair-list reading is possible for the theme-object structure of *spray/load* verbs—in this case, with the verb *drape*. In contrast, this is not possible in the goal-object structure.

- (77) a. Which student<sub>*i*</sub> did you give *t<sub>i</sub>* every book? (\*Pair-list)  
 b. Which armchair<sub>*i*</sub> did he drape *t<sub>i</sub>* with every sheet? (\*Pair-list)  
 c. Which wall<sub>*i*</sub> did he spray *t<sub>i</sub>* with every color of paint? (\*Pair-list)  
 (Bruening 2001, (6))

- (78) a. Which sheet<sub>*i*</sub> did he drape every armchair<sub>*i*</sub> with *t<sub>i</sub>*? (Pair-list)  
 b. Which color of paint<sub>*i*</sub> did he spray every wall with *t<sub>i</sub>*? (Pair-list)

D’Elia (2016) does not provide the relevant minimal pairs in (78) to establish that the goal c-commands the theme in the goal-object structure, but they seem to indicate that it does.

In addition, the goal can bind a variable in the theme in the theme-object structure, but the theme cannot bind a variable in the goal in the goal-object structure.

- (79) a. Maud draped a sheet that matched its<sub>*i*</sub> color over every armchair<sub>*i*</sub>.  
 b. \* Maud draped an armchair that matched its<sub>*i*</sub> color with every sheet<sub>*i*</sub>.  
 (Bruening 2001, (13))

- (80) a. Maud draped every sheet<sub>*i*</sub> over an armchair that matched its<sub>*i*</sub> color.  
 b. Maud draped every armchair<sub>*i*</sub> with a sheet that matched its<sub>*i*</sub> color.

Again, the minimal contrasting examples in (80) are not provided by D’Elia (2016), but they pattern as expected under his approach. Note, however, that these patterns show us only a fact about the goal-object structure, which is that in the structure that the semantics interprets, the goal is be c-commanded by the theme. It does not tell us much about the theme-object structure, since QR of the goal might be possible in that structure, barring some reason to think it is not. As we will continue to see, much of the evidence for the



theme-object structure that D'Elia (2016) proposes in (74a) is simply equivocal, not saying much conclusively one way or the other.

The next piece of evidence D'Elia (2016) discusses is deverbal event nominalizations. He presents data that shows that the theme-object structure has an event nominalization, while the goal-object structure does not.

- (81) a. The loading of the hay onto the wagon  
b. The loading of the wagon with hay (reported as \* in D'Elia 2016)  
(D'Elia 2016, (226a,229a))

However, while it seems clear that the theme-object event nominalization in (81a) is possible, I strongly disagree with the judgment he reports for (81b). I find this example entirely acceptable, and in fact quite unremarkable. A quick Google search of "loading of the wagon with" revealed around 10,500 results, most of which were relevant naturally occurring counterexamples. Replacing wagon with truck returned even more results—around 85,800. All of these occurred in various contexts, including in job descriptions and in legal proceedings and websites. I conclude that the judgment reported for (81b) is simply mistaken.

What is more interesting about these event nominalizations is a contrast that D'Elia (2016) does not make much of, given that it is masked by the ungrammatical judgment reported in (81b). Interestingly, I agree with this contrast: in a theme-object event nominalization, the theme can promote to become a genitive, while the goal cannot do so in a goal-object event nominalization.

- (82) a. The paint's spraying onto the wall  
b. \* The wall's spraying with the paint  
(D'Elia 2016, (227a',230a'))<sup>31</sup>

The analysis of the goal-object structure I proposed in chapter 3 that explained this contrast by means of a null preposition that is present in the goal-object structure.

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<sup>31</sup>Note that the original example in D'Elia (2016)'s (222a') reads *the paint's spraying of the wall*; while this is grammatical, it is likely to have a source different from the theme-object structure, given the absence of the locative preposition. I do not know whether this was a typo or intentional in the original.

Another piece of evidence D’Elia (2016) provides has to do with *do so* anaphora, which can replace a verb and its object, and optionally adjuncts as well.<sup>32</sup> Crucially, *do so* must include a verb’s object; the object cannot be a contrastive remnant.

- (83) a. John ate dinner at five, and Bill did so at six.  
 b. \* John ate lunch at noon, and Bill did so dinner at six.

D’Elia (2016) shows that in the theme-object structure, *do so* obligatorily includes the theme; and he claims that in the goal-object structure, it must include both the theme and the goal.

- (84) Source/Theme-object:  
 a. If John stacked the books onto anything, he did so onto shelves.  
 b. \* If John stacked anything onto shelves, he did so the books.  
 (D’Elia 2016, (243a,c))

- (85) Goal-object:  
 a. \* If John sprayed the wall with anything, he did so the paint.  
 b. \* If John sprayed anything with the paint, he did so the wall.  
 (D’Elia 2016, (247a,b))

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<sup>32</sup>D’Elia (2016) also provides examples of sluicing and multiple sluicing, but both structures seem to behave identically, making the diagnostic of limited utility. I present the examples here for completeness.

- (i) a. John loaded something onto the truck but I don’t know what.  
 b. John loaded the boxes onto something but I don’t know what.  
 c. John loaded the truck with something but I don’t know what.  
 d. John loaded something with boxes but I don’t know what.  
 (D’Elia 2016, (234))
- (ii) a. John loaded somebody onto something but I don’t know who onto what.  
 (e.g., a passenger onto a plane)  
 b. John loaded somebody with something but I don’t know who with what.  
 (e.g., a workman with tools to carry)  
 (D’Elia 2016, (238))

D’Elia (2016) reports that (ii-b) is only marginally acceptable for him, but I do not share this judgment; it seems fully acceptable to me. Perhaps loading a person with something instead of a goal could be considered an odd scenario, which might be responsible. Replacing *somebody* with *something* and *who* with *what* is also fine for me, though of course saying *what with what* is not stylistically great.

- (iii) John loaded something with something, but I don’t know what with what. (e.g., a truck with boxes)

Since I do not have the original contrast, I cannot say whether this is relevant to the judgment D’Elia (2016) reports.

D’Elia (2016) takes the ungrammaticality of (85a) to indicate that the verb and both arguments form a constituent in the goal-object structure, while the verb and only the theme or the verb and only the goal do not. However, it is unclear that this is what the data really show. In particular, adding *with* to a sentence like (85a) produces an acceptable sentence.

(86) If John sprayed the wall with anything, he did so with the paint.

This is entirely expected, since contrastive remnants of *do so* anaphora cannot omit prepositions.

(87) \* Bill ate dinner at five, and Bill did so six. (cf. (83a))

All that (85a) shows then, is that this well-known property of *do so* anaphora applies no less in goal-object structures than anywhere else. It does not show that a constituent in the goal-object structure that includes the verb and the goal must also include the theme.

The final piece of evidence that D’Elia (2016) provides to support his analysis has to do with floating quantifiers. A floated quantifier is possible after the object in both structures.

- (88) a. Sam loaded the boxes all into the lorry.  
b. Sam loaded the trucks all with the boxes.

(D’Elia 2016, (251a,253a))

It is unclear to me exactly how this supports his argument, given that he does not posit that the (surface) object in either structure moves in a way that would strand a quantifier. In fact, he explicitly distinguishes his analysis from Larson (1990, 2014)’s by claiming that theme-objects do not move. But this leaves the origin of the floated quantifier in (88a) mysterious. Similarly mysterious is how the goal-object can strand a quantifier in (88b)—especially given D’Elia (2016)’s claim that the verb moves to assign it Case in its base position. This would seem to indicate that it should not have reason to move to a higher position in a way that would strand a quantifier.

To be fair to D’Elia (2016), most of the data he provides is not directly aimed at supporting his analysis of the *spray/load* alternation. Instead, his goal is to provide a unified analysis of the *spray/load* alternation and the dative alternation, based on Janke & Neeleman (2012)’s analysis of the latter. This means that the majority of the data he provides is

aimed as establishing that there exists a parallel between the double-object dative structure and the goal-object *spray/load* structure, rather than establishing evidence for the particular structural analysis he advocates. In the end, given the problematic data related to event nominalizations and *do so* anaphora, the clearest data provided has to do with scope: in the goal-object structure, the goal c-commands the theme, as shown by frozen scope, the unavailability of pair-list readings, and the impossibility of variable binding from the latter into the former. Crucially, the flexible scope and variable binding afforded in the theme-object structure does not tell us anything except that QR of the goal is possible in those structures. Since QR is generally possible, we glean little evidence for D’Elia (2016)’s proposed theme-object structure one way or the other as a result.

#### 5.2.3.3.2 Problems

In addition to providing evidence that D’Elia (2016) claims to support his analysis, he also provides much data that inveighs against it. What these data seem to show is that the goal in the goal-object structure does indeed form a constituent with the verb that excludes the theme. They also show that movement of the goal in the goal-object structure is more restricted than movement of the theme. Of course, the analysis I presented in chapters 2 and 3 is consistent with much of these data, and in others intentionally designed to explain these exceptions, while retaining an explanation of the data that support D’Elia (2016)’s approach.

The first fact that D’Elia (2016) notes is that the theme can become a subject of non-agentive uses of *spray/load* verbs, but the goal cannot.

- (89)
- a. The paint sprayed onto the wall. (unaccusative)
  - b. The paint sprayed the wall. (non-agentive transitive)
  - c. \* The wall sprayed with the paint.
  - d. \* The wall sprayed the paint.

(D’Elia 2016, (263,265b))

The analysis in chapter 3 explained these facts by proposing that a null preposition conflates with the verb in the goal-object structure. This results in restrictions on the movement of

the goal.

Next, he notes verbal compounds allow incorporation of either the theme or the goal.

- (90) a. hay-loading  
b. truck-loading

(D’Elia 2016, (270))

Interestingly, he also notes that either argument can be the complement of *of* in an *-ing* nominal—nearly contradicting the ungrammatical judgment he reported for (81b) that I earlier disputed.

- (91) a. The loading of hay  
b. The loading of trucks

(D’Elia 2016, (272))

Interestingly, in at least some cases, prepositions can be absorbed in synthetic compounds (Roeper & Siegel 1978; Tom Roeper, p.c.).

- (92) a. ballroom-dancing (dance in a ballroom)  
b. pan-frying (fry in a pan)  
c. sky-diving (dive through the sky)  
d. spoon-feeding (feed with a spoon)

Thus, my analysis that posits P-conflation is not inconsistent with both theme and goals allowing for compounding. However, given these sorts of facts, it is unclear that D’Elia (2016)’s analysis predicts the wrong thing here—rather than (90b) telling us that the goal is an object, it could just be that the preposition introducing the goal in the theme-object structure can be absorbed by compounding. As such, this diagnostic can teach us little.

D’Elia (2016) also shows that when *spray/load* verbs occur with particles, the word *right* can modify the particle only when it occurs after the object.

- (93) a. \* He loaded right up the goods onto the wagon.  
 b. He loaded the goods right up onto the wagon.  
 c. \* Peter loaded right up the wagon with the goods.  
 d. Peter loaded the wagon right up with the goods.

(D'Elia 2016, (275a,b; 276a,b))

Interestingly, this also occurs with particles with non-*spray/load* verbs.

- (94) a. John looked up the number.  
 b. John looked the number up.  
 c. \* John looked right up the number.  
 d. John looked the number right up.

Assuming that *right* can only modify a stranded particle as the data here show, the analysis I provide in chapter 2 is consistent with these facts, if we assume that one thing I did not show is movement of the object to a higher position where it receives structural Case.

Finally, D'Elia (2016) provides evidence from various  $\bar{A}$ -movements: *wh*-movement, *tough* movement, and relativization. Interestingly, there is a difference between double-object dative structures and goal-object *spray/load* structures. In the former,  $\bar{A}$ -movement of the recipient is degraded (Hornstein & Weinberg 1981); while in the latter,  $\bar{A}$ -movement of the goal is perfectly acceptable.<sup>33</sup>

(95) *Wh*-movement:

- a. ? Who did John give a book?  
 b. What did John load with the books?

(96) *Tough* movement:

- a. \* Eager students are easy to lend books.  
 b. Empty trucks are easy to load with boxes.

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<sup>33</sup>D'Elia (2016) does not provide quite the right examples for these cases; instead he provides examples like *What did John load the truck with?*, which show movement of the second DP. What is relevant for the comparison to double-object dative structures is the movement of the first DP.

- (97) Relativization:
- a. ?? The student that John gave a book was at the library.
  - b. The boxes that John loaded with the books were large.

While my analysis does not explain this difference, since it is not concerned with the double-object dative structure, it is consistent with it.

In sum, what we learn from D’Elia (2016)’s problematic data is relatively little, except for the rather clear fact that there are restrictions on the movement of the goal in the goal-object structure that do not exist for theme objects in the theme-object structure. The remaining problems for his account have to do with his attempt to unify the double-object dative structure with the goal-object *spray/load* structure, since they pattern differently. Since my account does not propose that the goal-object structure is identical to the double-object structure, my account would not predict this similarity. Insofar as the restrictions noted above seem to target the double-object dative structure specifically, they are expected to be possible with other structures in general, and thus the facts are consistent with my account, even if an explanation of why additional restrictions on double-object structures exist is outside my purview.

#### 5.2.3.3.3 *Evaluation*

Many of the problems for D’Elia (2016)’s approach are similar to the problems I discussed for Larson (1990, 2014)’s approach, since simply flipping the order of the arguments and not moving the verb in the Theme/Source-object structure does not really change much of that discussion. As such, the discussion here will be relatively brief.

One thing that does change relates to the facts about scope and c-command in (56) and (57). As a consequence of the lack of movement in the Theme/Source-object structure that D’Elia (2016) proposes in (74a), his approach does not directly account for these scope facts. While the possibility of both scope relations for quantifiers shown in (54–55) could be due to the possibility of covert Quantifier Raising, it is unlikely that this could account for the binding facts and NPI licensing facts in (56) and (57), since QR is typically unable to license anaphors and NPIs.

- (98) Principle A binding:<sup>34</sup>
- a. John wrote a book about himself.
  - b. \* A book about himself struck John on the head.
- (99) NPI licensing:
- a. No one kicked anyone.
  - b. \* Anyone kicked no one.

D’Elia (2016)’s proposal is thus incompatible with the facts about Principle A binding and NPI licensing shown in (56) and (57), which shows that the verb’s object c-commands the object of the preposition.

Unlike Larson (1990, 2014), D’Elia (2016) does not directly address the existence of the prepositions in each structure.<sup>35</sup> He does not claim that one structure is derived from the other by a (lexical) process of passivization that would demote/promote one argument to/from an adjunct, instead claiming that they are simply both possible basic structures, where both phrases are arguments. Precisely what the acquisition and productivity of the acquisition consists of seems instead to reside for him in whether the Theme/Source or the Goal is more salient, which he studies by means of an experiment that manipulates the relative distance of each argument in participants’ visual fields. This could be seen to correlate with the manner/result distinction, since one could claim that manner verbs typically make salient their Theme/Source argument, while result verbs would make salient their Goal argument. In this respect, his explanation of the alternation and productivity would be similar to Gropen and Pinker’s view (Gropen 1989; Gropen et al. 1991a,b; Pinker 1989), but perhaps more subtle since it would not be about manner or result *per se*, but instead about which argument is made more salient by the verb in a particular context. This could explain why in some circumstances, verbs that typically encode only result, for instance, can be used in the theme-object structure as in (17a); and verbs that typically encode only

<sup>34</sup>My examples here involve Principle A anaphors inside subjects, rather than Principle A anaphors as subjects. This is because Principle A anaphors as subjects are likely ungrammatical for independent reasons. See Rizzi (1990) and Woolford (1999), a.o., for discussion.

<sup>35</sup>In D’Elia (2016)’s conclusion, he tentatively explores an analysis where *with* plays a role similar to the one that  $G_{\text{with}}$  and  $G_{\text{HAVE}}$  plays in Pesetsky (1995, ch. 5)’s approach to double-object constructions, but he ultimately does not fully endorse it and leaves the question open. He does not address the presence of the locative preposition at all.



manner can be used in the goal-object structure as in (43a). Thus, D’Elia (2016)’s approach to acquisition and productivity could be seen to represent a nuanced update to the popular view established by Gropen and Pinker.

As it is his main goal, D’Elia (2016) naturally accounts for the predictability of the relative positions of the arguments based on linking, since in both structures the same arguments occur in the same relative positions. Regarding the linear positions of the arguments, D’Elia (2016) adopts the common view that there is an adjacency requirement on accusative Case assignment; thus, whichever argument is realized as a DP must occur immediately to the right of the verb in order to receive Case. This, in fact, is what forces the movement of the verb in (74b): it must move to a position left of *the wall* in order to assign it accusative Case; if this did not occur, the derivation would ultimately fail. Presumably, the verb can only assign one Case,<sup>36</sup> explaining why the other argument must be realized as a PP. However, what regulates the identity of this preposition as a locative preposition or *with* is not fully addressed in D’Elia (2016)’s account (see fn. 35).

The paraphrasability of the two structures is naturally accounted for—they are, after all, the same structure modulo the precise identity of the prepositions. However, what remains unclear is exactly why the paraphrase is inexact—that is, what the source of the holistic effect is. Perhaps it is related to the idea of salience affecting whether the theme or the goal is expressed first: if something is holistically effected, it may be more salient than something that is not. However, it is not clear that this need be the case, since salience depends on many things. D’Elia (2016) simply does not address this point in his analysis, so there is little more to say than to note that it is not explained.

#### 5.2.3.4 Mateu (2000, 2017)’s Non-transformational Approach

Mateu (2000, 2017)’s analysis combines the importance of manner and result roots from Pinker (1989) and an idea from Mulder (1992) that goal-object *spray/load* verbs involve a

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<sup>36</sup>This is being somewhat generous—D’Elia (2016) assumes that the structure in (74b) is identical to the double-object dative structure, and proposes that the verb assigns Case to both arguments: once in its base position, and once in the higher position. Thus, it is unclear why the verb in (74b) could not assign Case to both arguments, obviating the need to project P.

small clause whose head describes a result state.<sup>37,38</sup> Mateu (2000, 2017)'s investigation relates the *spray/load* alternation to three distinct syntactic contrasts.

The first of these contrasts is Talmy (1991, 2000)'s distinction between satellite-framed and verb-framed languages. This difference relates to which of the manner and path of a bounded motion event is encoded in an adjunct (= satellite) and which is encoded in the verb. Satellite-framed languages typically encode manner in the verb and path in an adjunct, while verb-framed languages typically encode path in the verb and manner in an adjunct. English, for instance, is a satellite-framed language, while Spanish is a verb-framed

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<sup>37</sup>Mulder (1992)'s original analysis differs from Mateu (2000, 2017) in two respects: the first is that the PP in both structures is considered an adjunct, with the small clause that the verb takes consisting of the object and a (often phonologically null) predicate whose semantics entail total affectedness of that object, which is to account for the holistic effect. The second difference has to do with *be-* prefixation in Dutch: Mulder (1992) proposes that in cases without *be-* prefixation in Dutch, there is no small clause and the verb directly takes an object. He proposes that in such cases, the event described by the verb is interpreted as an event of creation. For instance:

- (i) Dutch (Mulder 1992, ch. 7, (46)):
  - a. Hij spuit de auto me verf.  
he sprays the car with paint  
"He sprays the car with paint."
  - b. Hij be-spuit de auto met verf.  
he BE-sprays the car with paint  
"He sprays the car with paint."

To describe the difference in interpretation between (i-a) and (i-b), Mulder (1992) says (p. 182):

"[(i-a)] means 'give the car a new finish'. It implies that the paint is an integrated part of the car. This would be typically done by a garage. One could say that *spuiten* 'spray' has an effected [n.b. not **affected** – MW] object, *de auto* 'the car'. The old car is simply the raw material for the new car. By contrast, the sentence in [(i-b)] typically implies ruining a car, by spraying paint all over it. The paint that is sprayed on is definitely not an integrated part of the car."

Despite this approach, I do not find the proposal that (i-a) describes a creation event convincing; if we instead propose that the presence of *be-* is optional but contributes some additional meaning, it would bring Mulder (1992)'s approach more in line with Mateu (2000, 2017)'s, barring the difference in the status of the PP. The status of the PP ultimately makes little difference in the presentation of the identical core idea underlying both approaches, which Mateu (2000, 2017) works out in more detail. Thus, I focus on Mateu (2000, 2017)'s implementation of the result-incorporation idea, even though the basic idea may be found in Mulder (1992).

<sup>38</sup>See Alexiadou & Anagnostopoulou (2013) for a similar analysis of the *clear* alternation, exemplified here:

- (i) a. John cleared the dishes from the table.
- b. John cleared the table of the dishes.

While the *clear* alternation is often reduced to the *spray/load* alternation, it is not obvious to me that this should be the case. For one thing, the *clear* alternation occurs with only four verbs in English: *clean*, *clear*, *drain*, and *empty* (Levin 1993, sec. 10.3), while the *spray/load* alternation is much more widespread. For another thing, these verbs all behave quite differently from *spray/load* verbs in non-agentive contexts, since they allow both theme and source subjects (e.g., *The clouds cleared from the sky*, *The sky cleared* (<sup>?</sup> *of clouds*)), while *spray/load* verbs do not (e.g., *Paint sprayed* (<sup>?</sup> *onto the wall*), \**The wall sprayed with paint*). (An exception is *clean*, which disallows any non-agentive use: \**The dishes cleaned* (*from the table*), \**The table cleaned* (*of dishes*). See chapter 3 for more details. Due to this and other differences, I do not intend my claims to necessarily extend to *clear* verbs, though the similar behavior of the alternation suggests some underlying similarity even if this similarity is not identity.

language. While in neither case is this absolute, it is a general trend regarding how manner and path are expressed in each language.

- (100) a. John ran<sub>Manner</sub> into<sub>Path</sub> the room.  
 b. Juan entró<sub>Path</sub> el cuarto corriendo<sub>Manner</sub>.  
 Juan entered the room running  
 “Juan ran into the room.”

The second contrast is Pinker and Gropen’s (Gropen 1989; Gropen et al. 1991a,b; Pinker 1989) distinction between manner and result as it relates to the *spray/load* alternation, though as we will see, Mateu (2017) ends up making rather different claims from Pinker and Gropen regarding the importance of this distinction to the alternation. Rather than focusing on standard alternating verbs, however, Mateu (2000, 2017) addresses data where the alternation is only licensed in the presence of an additional overt element that encodes a result state (cf. (17b)).

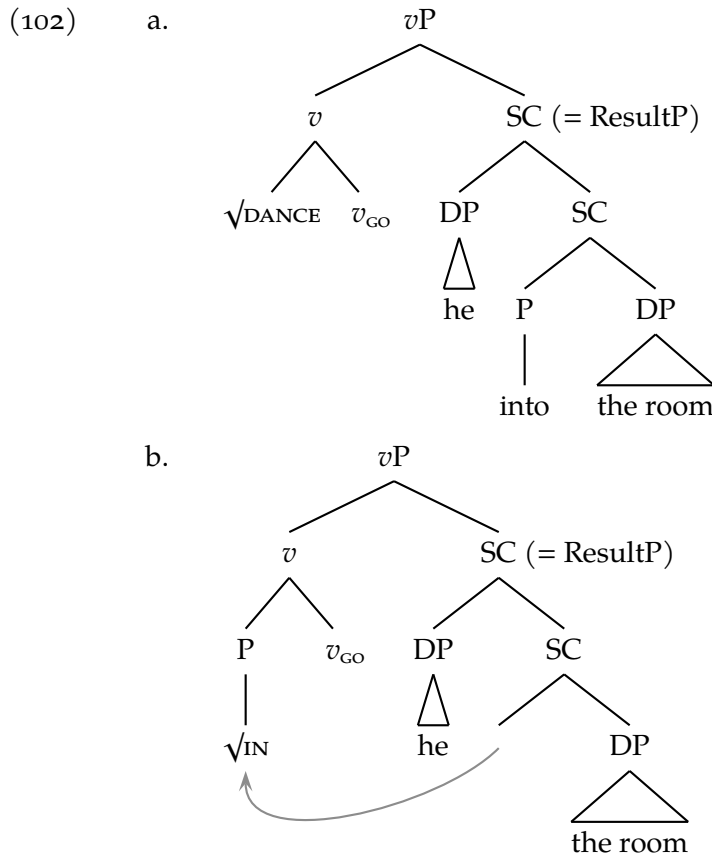
- (101) a. Gertrude sewed buttons on the dress.  
 b. Gertrude sewed up the entire dress with buttons.  
 c. \* Gertrude sewed the entire dress with buttons.  
 d. John poured water into the glass.  
 e. % John poured the glass full with water. (= (17b))  
 f. \* John poured the glass with water.

(Mateu 2017, (1,3))

The final contrast that is relevant to Mateu (2000, 2017)’s analysis is a distinction between incorporation and conflation (e.g., Folli & Harley 2005, 2020; Hale & Keyser 1993a; Harley 2005; Haugen 2009; Mateu 2012). Incorporation is when a root head-moves from a lower position to form a complex head with a higher head, while conflation is when a root directly merges with another head.<sup>39</sup> The distinction is particularly relevant in theories where all verbal heads are assumed to be underlyingly null, like Distributed Morphology, as the distinction is considered to delimit the possible ways that such null verbal heads

<sup>39</sup>Other terms used to refer to this distinction are “internal merge,” which corresponds to incorporation, as the root comes from an existing node in the derivation and is thus internal; and “external merge,” which corresponds to conflation, as the root enters the derivation when merged.

acquire phonological and semantic/conceptual content. In combination with a theory that assumes a split VP that distinguishes between process and result subevents (cf. Folli & Harley 2005; Ramchand 2008), a standard assumption is that verbs that denote manner/process receive phonological and semantic content via conflation, while verbs that denote result states receive phonological and semantic content via incorporation. For instance, the manner verb *dance* is assumed to involve conflation, while the result verb *enter* is assumed to involve incorporation, as shown (based on Mateu 2017, (14)).



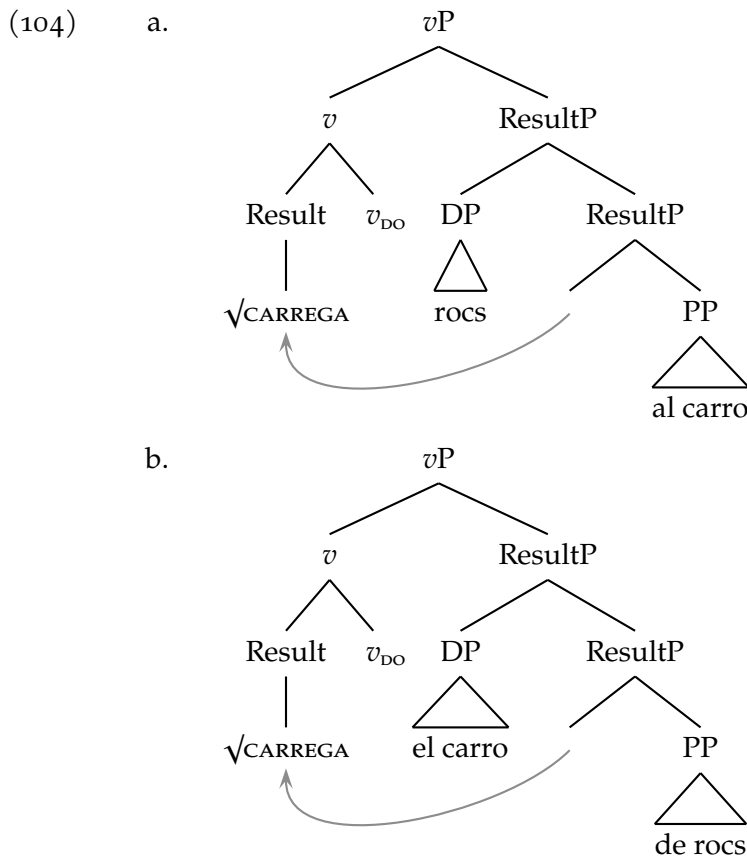
By assumption, the complex head [ $v$   $\sqrt{\text{IN}}$   $v_{\text{GO}}$ ] in (102b) is pronounced as the surface verb *enter*.

To combine these three ideas, Mateu (2000, 2017) proposes that the availability of conflation is restricted in verb-framed languages, which tend to express result in the verb. Under the assumption that result is expressed in a position lower than manner within the VP, we are naturally led to the idea that verbs in verb-framed languages acquire phonological content via incorporation, while verbs in satellite-framed languages acquire phonological

content via conflation. A consequence of this way of thinking is that verb-framed languages will not display patterns like those in (101), where the *spray/load* alternation is licensed by the presence of some overt head that encodes result. This is because verb-framed languages require result to be incorporated—under Mateu (2000, 2017)’s analysis, this requirement can be seen as precisely what makes them verb-framed languages to begin with.

Thus, in verb-framed languages like Catalan, Mateu (2000, 2017) claims the *spray/load* alternation involves two different base-generated small clause structures like those in (1).

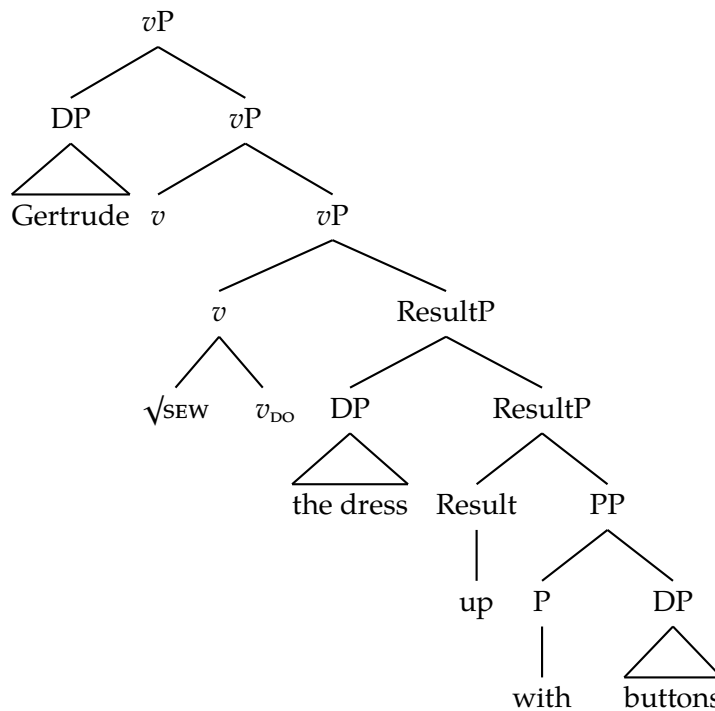
- (103) Catalan (Mateu 2017, (17)):
- a. En Ramon carregà els rocs al carro.  
DET Ramon loaded the stones at.the cart  
 “Ramon loaded the stones on the cart.”
  - b. En Ramon carregà el carro de rocs.  
DET Ramon loaded the cart of stones  
 “Ramon loaded the cart with stones.”



(Mateu 2017, (20))

In contrast to verb-framed languages like Catalan, satellite-framed languages are typically more flexible. In particular, Mateu (2017) notes that satellite-framed languages almost always have both verb-framed and satellite-framed structures, while verb-framed languages typically allow only verb-framed structures. As such, languages like English are expected to have two strategies by which they can form the locative alternation: incorporation of a result head into a light verb, which is the only option in a verb-framed language like Catalan; and conflation of a manner head into a light verb, in which case a separate result head should be licensed. This is precisely what Mateu (2017) claims occurs in examples like (101): in these cases, the separate result head indicates that the surface verb is formed via conflation rather than incorporation.<sup>40</sup>

(105)

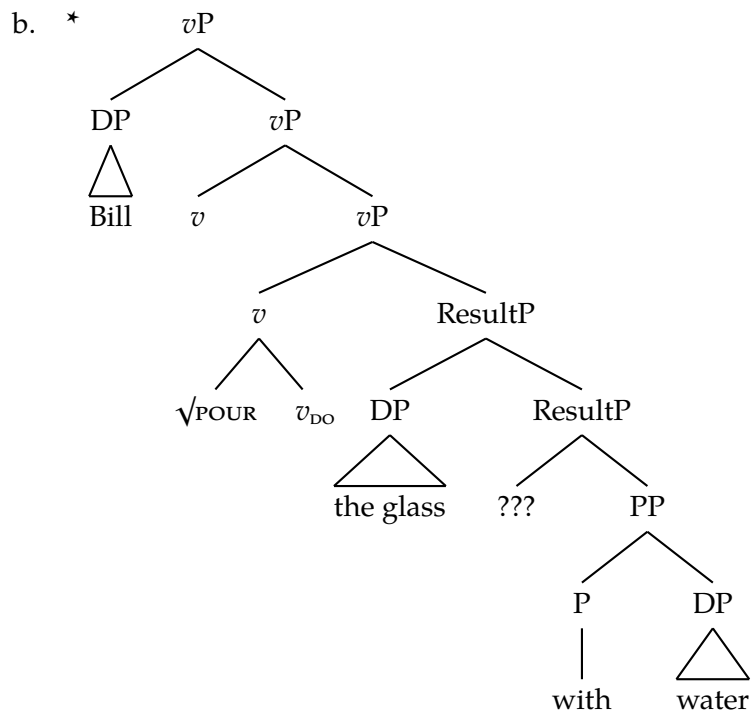
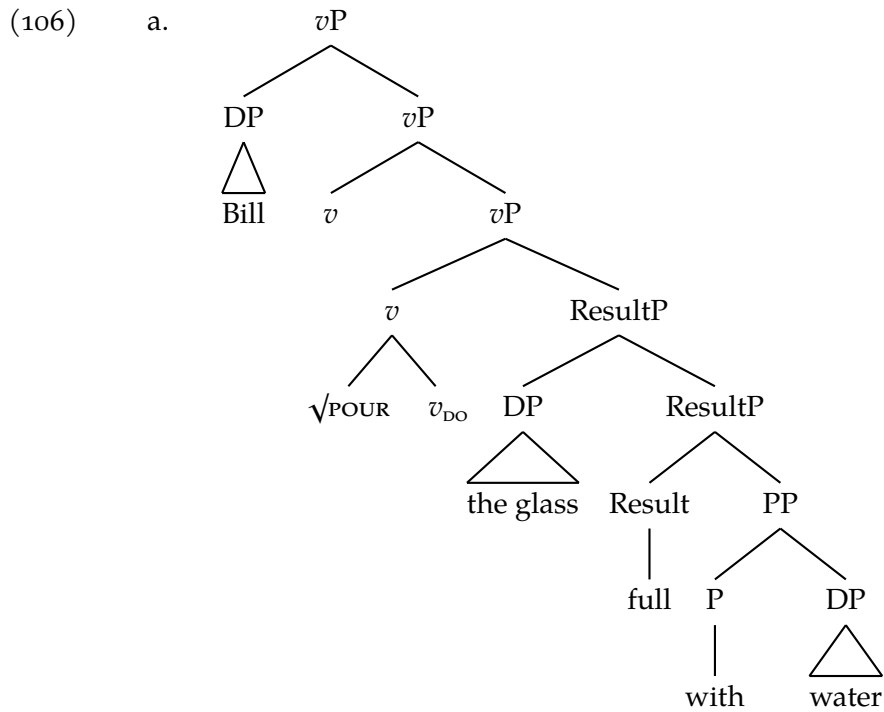


(based on Mateu 2017, (24b))

Mateu (2017) relates the availability of this kind of derivation to the possibility of using *pour* in the goal-object structure only when the result state is specified by *full*. This is because *pour* is assumed to not lexicalize result in adult English. As such, it cannot head ResultP. If

<sup>40</sup>Note that Mateu (2017) labels the head that introduces the external argument Voice, and a main verbal head *v*, following standard notation in the Distributed Morphology framework. I continue to represent the head that introduces the external argument as *v* here for consistency and distinguish it from the light verbal heads by the using subscripts with the latter, but the choice of what label to assign to the external-argument-introducing head does not affect Mateu (2017)'s analysis.

a result state is left unspecified, then there would be no head of ResultP, and as such *pour* in the goal-object frame would be ungrammatical.



(Mateu 2017, (28b,b'))

To account for uses of *pour* in the goal-object frame without a specified result state in child English as in (6), Mateu (2017) follows Pinker (1989)'s proposal that this reflects the child's

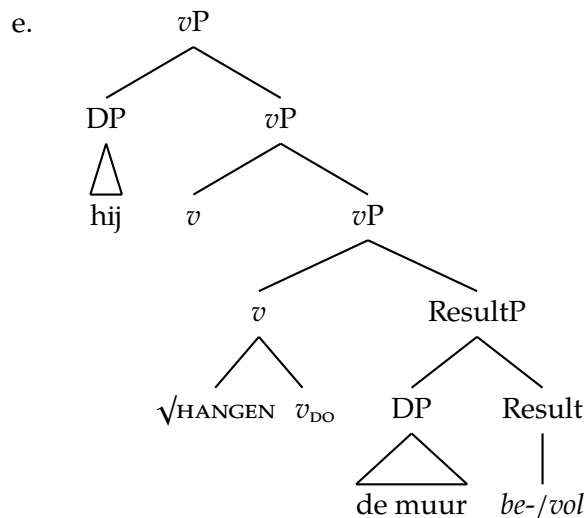
incomplete knowledge of what *pour* lexicalizes. In the child's grammar, *pour* may well lexicalize result, and as such  $\sqrt{POUR}$  can head the small clause ResultP, just as  $\sqrt{CARREGA}$  can in the Catalan examples in (104). Then, the child forms the goal-object structure by incorporation just as adult speakers of Catalan do.

Similar facts go the other way around, too: if a verb lexicalizes result, it can only head a ResultP in adult English, and thus the goal-object structure can only be formed by incorporation, as with *fill*. Thus, only the goal-object structure is possible in adult usage, while the theme-object structure is possible in child English because the child may posit that  $\sqrt{FILL}$  is available as a manner root that could be conflated with the light verb. Likewise, in languages where *fill* can occur in both the theme-object and goal-object structures like Hindi, Mandarin, and German as in (117–119), the verb is assumed to lexicalize manner and not result. A better translation of भर *bhar*, 装 *zhuāng*, and *füllen* for such languages, then, would be something more like *put into* or *insert* rather than *fill* (Pao 1996; Rosen 1996).

To account for languages where the *spray/load* alternation often involves prefixation of a prepositional element like German (see section 5.2.1.2 above, as well as chapter 3, section 3.3), Mateu (2017) follows Mulder (1992)'s proposal that the prefix originates as the head of the ResultP small clause and incorporates into the verb that is formed by manner conflation. This makes sense of the distribution of the word *vol* 'full' in Dutch, which can only occur if the prefix is absent. Both Mulder (1992) and Mateu (2017) argue that in such cases, the PP is demoted to an adjunct, with the small clause consisting just of the goal and the prefix or *vol* 'full.' Their reasons for doing this relate to the possibility of extraposition, omission, and clefting in Dutch. I will not review the arguments, but just report the analysis.



- (107) Dutch (Mateu 2017, (49)):
- a. hij hangt foto's op de muur.  
he hangs photos on the wall  
"He hangs photos on the wall."
  - b. hij behangt de muur met foto's.  
he BE-hangs the wall with photos  
"He hangs the wall with photos." (lit.)
  - c. hij hangt de muur vol met foto's.  
he hangs the wall full with photos  
"He hangs the wall full with photos." (lit.)
  - d. \*hij behangt de muur vol met foto's.  
he BE-hangs the wall full with photos



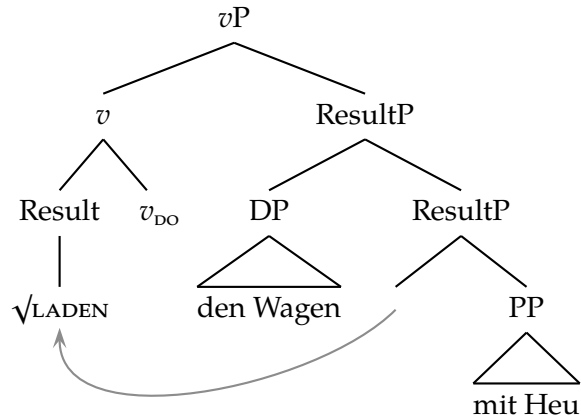
If the head of ResultP is *be-*, it head-moves into the verb due to a morphophonological requirement.<sup>41</sup>

For cases when the prefix is optional, Mateu (2017) assumes that two different derivations are involved. When the verb bears no prefix, it is derived via incorporation. When the verb is prefixed, it receives (most of) its phonological content via conflation and the head of ResultP is the prefix, which head-moves into the verb as proposed by Mulder (1992).

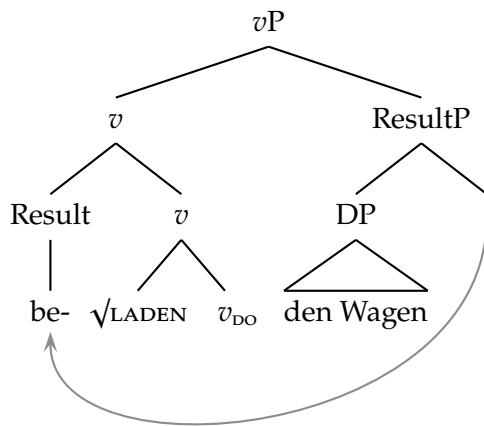
- (108) German (Mateu 2017, (52b)):
- a. Sie luden den Wagen mit Heu.  
they loaded the wagon with hay  
"They loaded the wagon with hay."
  - b. Sie beluden den Wagen mit Heu.  
they BE-loaded the wagon with hay  
"They loaded the wagon with hay."

<sup>41</sup>Though Mateu (2017) does not say this directly, this means we could consider prefixed cases to involve both manner conflation and result incorporation.

(109) a.



b.



In the end, Mateu (2017) proposes that the reason that the *spray/load* alternation is more productive in satellite-framed languages like English than in verb-framed languages like Catalan (cf. Lewandowski 2014) is because verb-framed languages can only derive the alternation via result incorporation, while satellite-framed languages can derive the alternation in both this way and via manner conflation.<sup>42</sup>

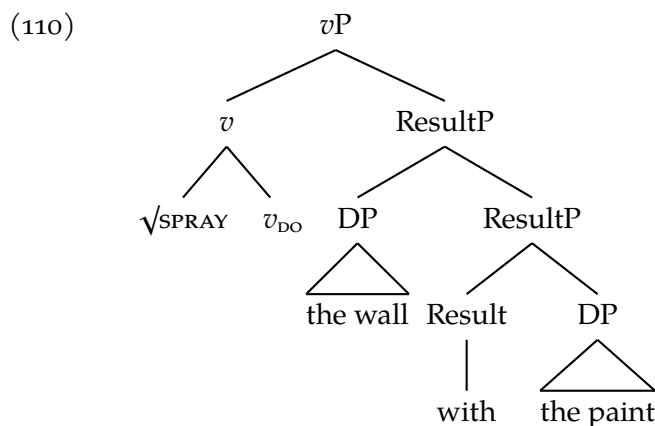
How does Mateu (2000, 2017)'s analysis fare regarding our four criteria of acquisition/productivity, the near-paraphrasability of each structure, the predictability of argument realization, and the holistic effect? Since the analysis draws heavily on the approach of Pinker and Gropen (Gropen 1989; Gropen et al. 1991a,b; Pinker 1989), we might expect it to fare similarly with regards to acquisition and productivity. Acquisition would presumably relate to a child acquiring the general processes of conflation and incorporation, as well as the specific meanings of particular roots. However, there are important differences between Mateu (2017)'s claims and the original claims of Pinker and Gropen. In particular, Pinker

<sup>42</sup>Mateu (2017) also discusses some predictions of his analysis for the related *clear*-alternation (see fn. 38), the details of which are not immediately relevant to presenting the core ideas of his analysis.

and Gropen claim that verbs that denote only manner will occur in only the theme-object structure, verbs that denote result will only occur in the goal-object structure, and verbs that denote a manner that leads to a predictable result state occur in both structures. We might interpret the last claim in Mateu (2017)'s approach as applying to verbs that have both manner and result interpretations available. Mateu (2000, 2017) details how to derive some of the exceptions to this claim in a general way, by proposing that verbs that have only manner interpretations are compatible with goal-object structures if some other head specifies a result state.

But on the other hand, in some cases Mateu (2017) proposes that a verb that denotes only a result state can occur in both structures. In fact, in his account, this is the only way that a verb-framed language can display the alternation, as in (104) above. As such, the putative link between the theme-object structure and manner roots, and between the goal-object structure and result roots, is entirely eliminated in Mateu (2000, 2017)'s approach unless we stipulate that the link between manner verbs and the theme-object structure applies only in satellite-framed languages. This seems to be the case despite the fact that Mateu (2017) presents the rest of his analysis following the proposal regarding the Catalan alternation in (104) as though the link is still present.

Similarly, it is unclear why the goal-object structure must be derived by result incorporation even in languages that allow manner conflation. Mateu (2017) does not address, for instance, why *with* could not serve as the head of ResultP, giving rise to the following structure.



This is especially problematic given that Mateu (2017) does assume that (certain parts of)

prepositions like *into* and *onto* can serve as the head of ResultP in manner conflation structures. Given a semantics for *with* that invokes central coincidence (Hale 1986; Rapoport 2014), which can plausibly characterize a result state, it is unclear what would rule this out. This would mean that manner roots should be able to occur in the goal-object structure, provided that *with* heads ResultP. Thus, under careful consideration, Mateu (2017)'s approach entirely severs the proposed link between the theme-object structure and manner roots and between the goal-object structure and result roots, since his system seems to be flexible enough to allow either kind of root to occur in either structure without making further stipulations. Such stipulations would have to be specific to satellite-framed languages in order to retain the core idea of his analysis that the alternation is only derived via result incorporation in verb-framed languages. Thus, Mateu (2000, 2017)'s analysis falls short in accounting for restrictions on the productivity of the alternation.

Regarding the near-paraphrasability of the two structures, Mateu (2000, 2017)'s analysis is rather vague. Presumably, the similarities in meaning are due to the identical roots involved. But it is difficult to determine if this goes beyond an intuition. In particular, in what sense is a manner root the same as a result root, even if both have the same pronunciation? We have the intuition that the meanings are related, but it is unclear what would relate them, given that each must be associated with a distinct interpretation. In the absence of a system that would derive similar meanings for, e.g., conflated manner-denoting  $\sqrt{SPRAY}$  and incorporated result-denoting  $\sqrt{SPRAY}$ , we would simply have to stipulate the overlap in their meanings and thus the near-paraphrasability of the two structures. Interestingly, we have to do the same thing even when there is only way of deriving the alternation, as in Catalan. Note that in examples like (104), the root must combine with the two arguments in precisely the opposite order to derive the alternation in verb-framed languages. As such, the semantics associated with the root must be different in each structure. Any overlap in conceptual meaning would simply have to be stipulated, since we would really be dealing with contextual allosemy or else two different roots, with different meanings.

Continuing with this line of thinking, it becomes clear that Mateu (2000, 2017)'s approach fails to account for the predictability of each argument's position based on the meaning it receives. Again, this is most obvious in cases like (104), where the very same roots

takes its arguments in the opposite order. As such, we cannot predict whether the specifier of ResultP is the theme or the goal, and likewise for the complement.

Finally, Mateu (2000, 2017)'s analysis does not directly address the holistic effect. One might assume that the structure associated with result incorporation is associated with the holistic effect. Whatever is the subject of the result state might be expected to define it. Something nice about this view is that it would account not only for the holistic effect with the goal-object structure, but also with the theme-object structure, since that also involves a ResultP headed by a preposition. However, whether this represents a valid way of thinking under Mateu (2000, 2017)'s approach is unclear, given that he does not directly address this question.

Where Mateu (2000, 2017)'s analysis goes beyond many others, though, is in its careful attention to cross-linguistic patterns in the *spray/load* alternation. However, given the fact that both structures are expected to be possible for both manner and result verbs under his analysis, it is unclear whether his system would be expected to overgenerate. In addition, the restrictions on goal-object structures with manner roots might be explainable in other ways. For instance, suppose that for some independent reason, the goal-object structure imposes a result interpretation on a verb root. If the verb root lacked some additional element that supported such an interpretation, the result would be ill-formed. This is more in line with Pinker (1989)'s original proposal regarding (17b). A particle or an adjective might provide the support necessary to achieve a result reading of the relevant root, as in *sew up* or *pour full*. The fact that such uses are still somewhat degraded for many speakers would then be explained as a result of the fact that even in the presence of such support, a result reading for the verb root might be difficult to achieve. In contrast, the degradedness of such cases is unexpected in Mateu (2000, 2017)'s approach, since the root is only interpreted as denoting manner in such cases, which is the root's typical use.

Mulder (1992)'s observations regarding the complementary distribution of *be-* and *vol* 'full' in Dutch might also be explainable in other ways. I see two possibilities. The first relates to the fact that, unlike in English, *vol* 'full' in Dutch can occur as a prefix.

- (111) Z'n dochter heeft 'r kamer volhangen met posters van Vince.<sup>43</sup>  
His daughter has her room full-hung with posters of Vince  
"His daughter has her room full-hung with Vince posters." (lit.)

If we thus assume that *vol* ‘full’ in (107c) is generated in a complex head with the verb, we could explain the complementary distribution by assuming that it takes up the same slot that *be-* would appear in. What would distinguish *be-* and *vol* would be that *vol* could be stranded when the verb root head-moves to a higher position since it is a separable prefix. In contrast, *be-* could not be stranded, since it is an inseparable prefix. This approach would essentially treat *vol* like particles in English, which are able to be stranded when the verb head-moves (Johnson 1991). Like *vol*, particles in English are incompatible with overt prefixes (Keyser & Roeper 1992).

- (112)
- a. John cleaned the counter.
  - b. John recleaned the counter.
  - c. John cleaned the counter up.
  - d. \* John recleaned the counter up.

Thus, the incompatibility of *vol* and *be-* need not relate to them both occupying the head of ResultP. Instead, it could be that they would initially have to occupy the same prefix slot of the verb, with the possibility of independent *vol* due to the possibility of stranding it when the verb head-moves to a higher position, perhaps  $v_{\text{AGENT}}$  (see the discussion in chapter 2, section 2.2).

Another possibility is related to the meaning of *be-* in German. (This is more speculative with regards to the claims about Dutch specifically, since I have not been able to verify that the same meaning of *be-* exists in Dutch). In particular, Brinkmann (1995) notes that for verbs in German that occur only optionally with *be-* in the goal-object structure, the presence of *be-* requires that the movement of the theme be to the surface of the goal. Consider (32), repeated here as (113).

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<sup>43</sup><https://context.reverso.net/translation/dutch-english/volhangen>

- (113) German (Brinkmann 1995, ch. 3, (9)):
- a. Wenn's in den Skiurlaub geht, packen Müllers ihr Auto immer als  
 When in the ski-vacation go pack Müllers their car always as  
 blieben sie ein halbes Jahr lang weg.  
 stay they a half year long away  
 "When leaving for the ski vacation, the Millers pack their car('s interior) as  
 if they will be away for half a year."
  - b. Wenn's in den Skiurlaub geht, bepacken Müllers ihr Auto immer als  
 When in the ski-vacation go *BE*-pack Müllers their car always as  
 blieben sie ein halbes Jahr lang weg.  
 stay they a half year long away  
 "When leaving for the ski vacation, the Millers pack their car('s trunk and  
 roof) as if they will be away for half a year."

If we make the assumption that the same meaning contrast might exist in Dutch, then the incompatibility of *vol* and *be-* can be easily explained as a semantic effect. *Be-* requires that the goal be interpreted as a surface, while *vol* 'full' would naturally require it to be interpreted as a container. If we suppose that asserting that one thing is simultaneously a surface and a container is incoherent semantically, we derive the incompatibility straightforwardly. If one of these alternative explanations regarding the complementary distribution of *be-* and *vol* is on the right track, we lose the motivation for positing that these are the head of ResultP.

In the end, then, Mateu (2000, 2017)'s proposal regarding two possible ways of deriving the *spray/load* alternation is quite interesting. However, it seems to overgenerate, and the facts that it explains might be more easily explained in other ways. In addition, we saw in chapter 2 that the small clause structure where the small clause is headed by the verb root fails to account for certain readings of *again* in goal-object structures, which indicate that the verb and the object form a constituent that excludes the result state. Mateu (2000, 2017)'s analysis also fails to account for the behavior of non-agentive and nominal uses of *spray/load* roots.<sup>44</sup>

<sup>44</sup>There are more syntactic analyses of *spray/load* verbs that I have not delved into in this section. One example is Borer (2005b)'s analysis, who proposes that either argument can occur in the specifier of an aspectual projection reserved for internal arguments, and the other can merge with the root. I do not address this analysis in particular because Borer (2005b)'s analysis does not address any of the concerns in (11); it does not address acquisition and productivity, near-paraphrasability, linking, or the holistic effect. This does not necessarily mean that it fails to account for them, just that it does not take up those questions and thus is difficult to evaluate by the metrics we have been employing in the course of this discussion. It comes closest to addressing

### 5.3 My Approach

Having presented a critical evaluation of previous approaches, I attempt to explain here how my approach could fare with regards to the four desiderata I have focused on. These have played a more limited role in motivating my analysis than in previous analysis, so it is worth making sure that my approach does not preclude adequately addressing them. If my account prevented an explanation of any of the four desiderata, this could signal the existence of serious flaws. No less than any other, my account must provide some way in which those desiderata could be explained, even if I do not provide a full explanation here. Thus, even though my analysis has at least two clear empirical advantages over previous analyses in that it accounts for the possible readings of *again* and the syntactic asymmetry of theme and goal objects, it is worth scrutinizing how it might fare on these four desiderata that have played a large role in shaping the literature on the *spray/load* alternation to date. If my analysis has inadvertently rendered addressing any one of these four desiderata impossible, it could constitute a serious misstep.

Prior to a discussion of the four desiderata, I briefly speak to the issue of the relation between manner and result readings and the *spray/load* alternation. The idea that manner-denoting roots occur in theme-object structures and result-denoting roots occur in goal-object structures is one that has enjoyed a lot of popularity in the literature on the *spray/load* alternation. Yet in my account, *spray/load* verbs always denote simple predicates of eventualities. I thus respond to the questions: is there a relation between manner and result roots and the different structures implicated in the *spray/load* alternation? If so, how is this relation captured in my analysis, given that the meaning of the verb root remains the same in both structures?

Following this, I address the four desiderata directly, with more focus on acquisition, since I have not directly raised the question of acquisition throughout the analysis. In contrast, though my primary focus was not on the other three desiderata, I have incorporated

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the holistic effect, since the object occurs in an aspectual projection associated with effects related to telicity. However, even this is inadequate, since the holistic effect is not the same thing as telicity; see (27) and surrounding discussion, as well as Beavers (2006, 2017). In addition, Borer (2005a,b, 2013)'s system relies on a notion of how semantics works that is quite different from what is standard, and which is not fully formalized, making it difficult to present her approach briefly and clearly.



discussion of them throughout where appropriate. Thus, I summarize how my account addresses them.

### 5.3.1 *Manner/result and P-conflation*

I will briefly comment here on some potential relations between the P-conflation analysis and the manner/result approach to describing which verbs alternate (Beavers 2017; Pinker 1989; Rappaport & Levin 1985, 1988), as well as cross-linguistic variation in the alternation.<sup>45</sup>

The manner/result approach to the *spray/load* alternation holds that verbs that denote a manner predicate occur in the theme-object structure, while verbs that denote a result occur in the goal-object structure. Verbs that alternate are manner verbs whose denotation is associated with a particular result state. This idea has played a large role in accounts of the *spray/load* alternation, particularly in those accounts primarily aimed at addressing questions of acquisition (Gropen 1989; Gropen et al. 1991a,b; Pinker 1989), but also in others (e.g., Mateu 2000, 2017).

My approach has not made a direct connection between manner/result and the *spray/load* alternation, in contrast to these previous accounts. Nevertheless, the descriptive generalization linking manner with theme-object structures and result with goal-object structures has enjoyed a great deal of popular support in the literature. The fact that I have not made this contrast a feature of my account might require us either to question therefore the accuracy of this generalization, or else to determine whether there is some way of integrating it.

As far as I can tell, the primary evidence for the link between manner/result and behavior in the *spray/load* alternation is at the level of intuitions, but it seems to me mostly solid. Lists of verbs that alternate and do not alternate were included in the appendix to chapter 4, and most seem to fall under this generalization. There are a few that do not in my judgment, which I list here.

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<sup>45</sup>The following discussion has benefitted greatly from the comments of two anonymous *Linguistic Inquiry* reviewers.

- (114) a. Alternating non-manner verbs:  
*cultivate, load, stock*
- b. Theme-object only non-manner verbs:  
*install, place, position, put, set*
- c. Goal-object only manner verbs:  
*bombard, ripple*

What is most instructive, however, are comparisons of some alternating and non-alternating verbs that seem potentially ambiguous. One might be tempted to classify these verbs as either manner-or result-denoting based solely on their behavior in the alternation, but comparing them leads one to question whether such classifications would have any external validity. Consider the following sets of verbs; the first member alternates, but the rest do not.

- (115) a. *wrap* (alternates), *ring* (goal-object only), *coil, wind* (theme-object only)
- b. *spray* (alternates), *splash* (theme-object only<sup>46</sup>)
- c. *cram* (alternates), *tuck, wedge* (theme-object only)

More examples could surely be found, but these suffice to illustrate the point. For instance, considering that *wrap* alternates, it seems attractive to consider it as denoting a manner of motion (wrapping) that produces a particular result state (a covered exterior, or something a bit more specific). But we also have to ask why the same sort of meaning isn't available to non-alternating verbs like *ring*, which occurs in only the goal-object structure, yet also seems intuitively to entail a particular circular manner of motion in the same way *wrap* does. Further complicating this particular set are the verbs *coil* and *wind*, which we could think of as denoting similar result states to the one *wrap* putatively entails, and yet only occur in the theme-object structure.

Further issues are raised by interspeaker variation. One speaker reports to me that for them, *spray* alternates, while *spritz* and *spread* cannot occur in the goal-object structure,

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<sup>46</sup>Note that it is of course possible to say something like *John splashed the boy with water*. But the reading this receives is an irrelevant instrumental adjunct reading, not one in which the boy is holistically affected by being with water. This contrasts with the behavior of *spray*, which does have this reading. This verb is also not listed among the *spray/load* verbs in Levin (1993)'s comprehensive survey of English verb alternations.

making sentences like *John spread the muffin with jam* ungrammatical for them (Seth Cable, p.c.). While these verbs are listed as alternating in Levin (1993)'s survey, we must have a theory of grammar that allows us to account for differences in speakers' I-languages. Under the manner/result hypothesis, one would have to claim that for this speaker, *spray* denotes a manner that produces a predictable result state, while *spritz* and *spread* produce no predictable result state. Such a move seems difficult to defend except as a way to rescue the hypothesis linking manner and result to the *spray/load* alternation. Other speakers allow alternating uses of verbs like *fill*, discussed briefly in chapter 1:

(116) % The chef filled the mixture into the zucchini.

If any verb is canonically taken to encode a result state in the context of the *spray/load* alternation, it might be *fill*. Yet such uses are possible for some speakers. We would have to claim that for these speakers, *fill* does not encode a result state, but a manner, again with little independent supporting evidence.

Nevertheless, the majority of verbs do seem intuitively to adhere to the manner/result generalization at a descriptive level, the complications discussed above notwithstanding. Given the popularity this idea has enjoyed in the literature, it seems difficult to claim that there is no connection between manner/result and the *spray/load* alternation. We are thus left with the question of its status.

In this spirit, I will suggest a different way of looking at the connection between the *spray/load* alternation and manner/result.<sup>47</sup> Rather than saying that a verb root comes with a manner or result denotation, and that this lexical semantic property determines its syntactic behavior, we might consider the opposite view, where the structure that a verb root occurs in influences how it is interpreted. That is, structure determines interpretation rather than the other way around.

Now, how would this idea explain the association between manner readings and theme-object structures, on the one hand, and result readings and goal-object structures, on the other, under my analysis? To begin, it is worth clarifying something: whether a verb occurs in the theme-object structure or the goal-object structure is, in my analysis, a purely syntac-

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<sup>47</sup>This is inspired by a *Linguistic Inquiry* reviewer's comments and Borer (2005a,b, 2013).

tic fact that cannot be derived from lexical semantics. Instead, certain verb roots syntactically require that they merge with only  $v_{\text{THEME}}$  or only  $P_{\text{LOC}\emptyset}$ , while others are flexible enough to permit merger with either. I therefore propose that it is this underivable lexicosyntactic fact that derives the association of manner and result interpretations with particular uses of *spray/load* verbs.

Consider first the theme-object structure, associated with manner readings of a verb root. In my analysis, the verb in a theme-object structure merges with  $v_{\text{THEME}}$ . The semantics of this functional head that describes an event participant that undergoes movement. Thus, in the theme-object structure, the verb (which is a complex head consisting of the verb root plus  $v_{\text{THEME}}$ ) encodes movement. Movement, of course, is associated with manner of motion readings. Thus, while a manner of motion is not necessarily entailed (see cases like *load*) the common impression of a manner reading of theme-object uses of *spray/load* verbs arises because the syntax of these structures results in a semantics where the verb encodes the motion of the theme.

Next, consider the goal-object structure, associated with result readings of a verb root. In my analysis, the verb in a goal-object structure merges with  $P_{\text{LOC}\emptyset}$ . The semantics of  $P_{\text{LOC}\emptyset}$  encodes the endpoint of a path of motion (i.e., a goal). Thus, the verb (which comprises the verb root and  $P_{\text{LOC}\emptyset}$ ) profiles the endpoint of a path and not what moves along this path in a goal-object structure. Given that the verb encodes information about the goal of an event, the impression of a result reading of the verb root arises naturally.

Now, the question is why verbs that do not alternate are associated with manner or result readings. This follows from what I have just said. Non-alternating *spray/load* verbs require merger with either  $v_{\text{THEME}}$  or else with  $P_{\text{LOC}\emptyset}$ . Those verbs that can only merge with  $v_{\text{THEME}}$  will of course always encode the movement of an event participant, and thus come to be associated with a manner reading exclusively. In contrast, those verbs that can only merge with  $P_{\text{LOC}\emptyset}$  will always encode the endpoint of a path, and correspondingly will come to be associated with a result reading exclusively. Meanwhile, verbs that can merge with either  $v_{\text{THEME}}$  or  $P_{\text{LOC}\emptyset}$  will be associated with both manner and result readings.

The manner/result proposal has played a large role in popular accounts of the acquisition of the *spray/load* alternation; Pinker (1989) proposes that children overextend the

alternation (as shown in some examples in chapter 1) because they have not yet developed adult-like meanings of non-alternating *spray/load* verbs. For instance, children may use verbs like *fill* in the theme-object structure because they have not yet determined that it makes reference only to a result state. In my approach, this idea is reversed. Children may use verbs like *fill* in the theme-object structure because they have not yet acquired the idiosyncratic syntactic property of *fill* that it can merge only with  $P_{\text{LOC}\emptyset}$ .<sup>48</sup> If children have not acquired this syntactic property of *fill*, it will be possible for them to associate it with a manner reading, when they merge it with  $v_{\text{THEME}}$ . In this way, we can reformulate Pinker (1989)'s semantic bootstrapping proposal; instead, it may be that the *spray/load* alternation and the meaning of the relevant verbs is acquired via a process of syntactic bootstrapping (see Gleitman 1990, et seq.).<sup>49</sup>

With regards to cross-linguistic variability, we now have a way of approaching puzzles such as why English *fill into* is degraded compared to *fill with*, while the Hindi, Mandarin Chinese, and German equivalents in (117–119) are equally acceptable. (These examples are repeated from chapter 1, (14–15).)

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<sup>48</sup>With caveats regarding inter-speaker variation for examples like *fill the mixture into the zucchini*, discussed above.

<sup>49</sup>An important caveat to note here relates to reported contrasts like the following:

- (i) a. \* John poured the glass with water.
- b. % John poured the glass full with water.

Pinker (1989) relates this contrast to the manner/result hypothesis: *pour* encodes only a manner, and so typically cannot occur in the goal-object structure which requires a result state. However, when a result state is explicitly specified with *full*, it is possible to use *pour* in the goal-object structure. However, we must stipulate in his account that *spray* denotes a manner that produces a predictable result state, while *pour* does not—even though we might be able to imagine one (e.g., covered with whatever was poured). Still, this does not absolve my account of accounting for the contrast. Something worth noting is that there is suggestive evidence that *pour* in its goal-object use might have a different syntax than the one I have proposed. In particular, it does not seem as though *again* can occur after the object.

- (ii) a. \* John poured the glass again full with water.
- b. \* John poured the glass full again with water.

This points to goal-object uses of *pour* possibly having different analysis. However, in my account *pour* would have to disallow a small clause syntax, since otherwise a small clause structure for theme-object uses would also presumably be possible. In addition, I do not find the example in (i-b) entirely acceptable, so it is difficult for me to investigate its syntax directly. For this reason, I raise the issue here, but must leave a solution to future research.

- (117) Hindi (Rajesh Bhatt, p.c.):
- a. युनुस ने कमरे में भूसा भर दिया है।  
Yunus ne kamre mẽ bhuusaa bhar diyaa hai.  
YUNUS ERG room in hay fill give.PFV is  
“Yunus has filled hay into the room.” (lit.)
  - b. तुमने सारा कमरा कीलों से भर दिया है।  
tum=ne saaraa kamraa kiilõ se bhar diyaa hai.  
YOU=ERG all room nails with fill give.PFV is  
“You have filled the entire room with nails.”
- (118) Mandarin Chinese (based on Pao 1996, (10); Rong Yin, p.c.):
- a. 我把一些水装在瓶子里了。  
wǒ bǎ yī xiē shuǐ zhuāng zài píngzi lǐ le.  
I BA one some water fill at bottle inside ASP  
“I filled water into the bottle.” (lit.)
  - b. 我把瓶子装了一些水。  
wǒ bǎ píngzi zhuāng le yī xiē shuǐ.  
I BA bottle fill ASP one some water  
“I filled the bottle with some water.”
- (119) German (Rosen 1996, (51)):
- a. John füllte Wasser in das Glas.  
John filled water in the glass  
“John filled water into the glass.” (lit.)
  - b. “John füllte das Glas mit Wasser.  
John filled the glass with water  
“John filled the glass with water.”

As discussed above, particular roots in particular languages may prohibit, permit, or require merger with  $v_{\text{THEME}}$  or  $P_{\text{LOC}_\theta}$ . If a root permits merger with only  $v_{\text{THEME}}$  in a particular language, it will only be able to occur in the theme-object structure. In a similar way, if a root can merge only with  $P_{\text{LOC}_\theta}$ , then it will only occur in the goal-object structure. This could lead to different kinds of meanings being associated with these verb roots by virtue of their differing syntax; interestingly, Pao (1996) proposes regarding Mandarin Chinese 装 *zhāng* ‘fill’ that it does not necessarily encode a state of fullness. My proposal would derive this from its greater syntactic flexibility compared to English *fill* (for most speakers).

In this way, my account is compatible with idiosyncrasy within semantic domains, which we have seen occurs both internal to English, as well as cross-linguistically. Previous accounts that derive the alternation from meaning would have difficulty accounting

for this kind of idiosyncrasy, as they should predict it would not exist. Since I derive the association in the opposite way, a few leaks of the sort described are not surprising.

Another way in which the *spray/load* alternation might vary cross-linguistically has to do with the possibility that my analysis might not be the only way to derive it. In particular, the Hungarian data presented in chapter 3, example (18) suggest that the goal-object structure in Hungarian is not derived by the incorporation of  $P_{\text{LOC}\emptyset}$ , because an overt  $P_{\text{LOC}}$  prefix (optionally) occurs in the theme-object structure, while the goal-object structure involves a perfective prefix.

- (120) Hungarian (Ackerman 1992, (2–3)):
- a. a paraszt (rá=)rakta a szénát a szekérre.  
the peasant (onto=)loaded.3SG.DEF the hay.ACC the wagon.SUBL  
“The peasant loaded the hay onto the wagon.”
  - b. \* a paraszt (rá=)rakta a szekeret szénával.  
the peasant (onto=)loaded.3SG.DEF the wagon.ACC hay.INSTR
  - c. \* a paraszt meg=rakta a szénát a szekérre.  
the peasant PERF=loaded.3SG.DEF the hay.ACC the wagon.SUBL
  - d. a paraszt meg=rakta a szekeret (szénával).  
the peasant PERF=loaded.3SG.DEF the wagon.ACC hay.INSTR  
“The peasant loaded the wagon (with hay).”

While the morphological reflex of the alternation in Hungarian suggests that it may still be derived, it may be derived in a different way from how the *spray/load* alternation is derived in English and German.<sup>50</sup> In addition, there may be non-morphological means of deriving the *spray/load* alternation. A different way of deriving the alternation might place different restrictions on the kinds of verbs that can alternate, which could appear as cross-linguistic differences; see the discussion of Mateu (2000, 2017) above. Since in my account the English *spray/load* alternation is derived from the interaction of lexical idiosyncrasy regarding the ability to merge with  $P_{\text{LOC}\emptyset}$  with general syntactic and semantic principles, nothing would in principle rule out another language making use of these same syntactic and semantic principles to derive an alternation that looks like the *spray/load* alternation in a different way (though of course, such a move is to be disfavored, and would need to be well justified).

<sup>50</sup>Though see footnote 6 in chapter 3 for important qualifications regarding the fact that these Hungarian data may prove misleading.

### 5.3.2 *Comparison with Previous Approaches*

The previous approaches described above, address different sets of facts about *spray/load* verbs, and do so in different ways from my approach. It is worth examining why I believe my approach represents an improvement upon those ones. There are two things worth considering in making such an evaluation.

- (121) a. Does my analysis provide a way of accounting for the behavior of the *spray/load* alternation identified in Rappaport & Levin (1988) and Pinker (1989) in principle?
- b. Does my analysis improve upon previous analyses beyond accounting for the novel facts in ?

I repeat the list based on Rappaport & Levin (1988) and Pinker (1989) from chapter 1, (11) here for ease of reference.

- (122) a. The productivity and acquisition of the alternation must be accounted for;
- b. The near paraphrase relation between the two variants must be captured;
- c. The linking of the arguments should be predictable in terms of their theta-roles;
- d. The affected interpretation of the goal as direct argument must be accounted for.

Make no mistake—I do not have a full account of how my analysis could explain every fact in (122). As the prior literature has shown, accounting for those facts is no small feat in itself, and I have primarily focused on a different set of facts entirely. But what is crucial is providing some reassurance that the questions posed by these facts can be asked in a sensible way in the approach I have developed, and that there are avenues of investigation into them that remain open. If my analysis were to make it impossible to provide a way of even stating these questions, it would be inadequate however many other facts it were to account for.

The second point, in (121b), is aimed higher. A clear improvement of my analysis over previous analyses is that it directly addresses facts that have often been overlooked in the



literature on the *spray/load* alternation. But failing to address certain facts to be no great sin of an analysis. All analyses leave behind an obstinate empirical detritus of known unknowns and unknown unknowns, which is to be expected. For this reason, it is worth asking whether there is merit to my approach beyond the specific set of facts I address, and the specific proposals I advocate. The goal here is to evaluate whether I have provided a useful perspective, which could inform investigations of argument structure and the syntax-semantics interface more generally. I postpone a detailed response to this point to chapter 6.

### 5.3.2.1 Adequacy of the Approach: Acquisition

There are four things to address in (122): acquisition, the semantic relationship between the theme-object and goal-object structures, argument linking, and the holistic effect. I will describe here how my analysis provides ways of investigating these questions in turn, even though I do not have fully worked out answers to these questions.

First, acquisition. In my approach, acquisition of the *spray/load* alternation is achieved once a child has reached a lexicon and a grammar comprising the following.

- (123)
- a. Lexicon: (a) an extensible set of verb roots that can be merged with either *THEME* or  $P_{\text{LOC}\emptyset}$ , (b) a set of locative prepositions (including *with* with the meaning of physical possession as central coincidence), and (c) a closed set of functional heads including *v*, *THEME*,  $P_{\text{LOC}\emptyset}$ , and *CAUSE*.
  - b. Syntax: Merge, including parallel uses, which allows for structures with multidominance.
  - c. Semantics: Function Application and Event Identification. (Function Composition required for non-agentive transitive uses.)

I assume by hypothesis that Merge, Function Application, Event Identification, and Function Composition are innate. Children do not have to acquire them, as they are given by Universal Grammar. (I will also assume that parallel uses of Merge do not need to be acquired in any special way, but are made available in the specification of Merge by Universal Grammar.) Thus, the question of acquisition comes down to the lexicon, and learning the idiosyn-

crasies of particular lexical items. This is entirely in line with how Pinker (1989) frames the question of acquisition, though differences between his approach and mine make different kinds of answers available to each of us, as I will describe shortly.

Regarding the lexicon, I will assume that a set of functional heads is made available by Universal Grammar, including *v*, *THEME*, and *CAUSE*. I find it less likely that  $P_{\text{LOC}\emptyset}$  is among this set, for the simple reason that the meanings and number of prepositions vary across languages. Given that  $P_{\text{LOC}\emptyset}$  is a preposition, the default position should be that it could vary similarly. Thus, children must acquire  $P_{\text{LOC}\emptyset}$ , but they are given *v*, *THEME*, and *CAUSE*, which are presumably available and used in all languages.

Thus, what remains of the acquisition problem in my account is the following: children must acquire a set of verb roots that can occur with either *THEME* or  $P_{\text{LOC}\emptyset}$ , and they must acquire some locative prepositions (including  $P_{\text{LOC}\emptyset}$ ). However, it is worth noting that the alternation in my account really does not depend on the existence of the locative PP in the theme-object structure nor the *with* PP in the goal-object structure. As shown in chapters 2 and 3, goal-object structures with locative PPs and APs are possible. So while the acquisition of overt locative prepositions is required to display the full pattern of what we classically think of as the *spray/load* alternation, we could reduce this to the acquisition of verb roots and  $P_{\text{LOC}\emptyset}$ , if we consider transitive uses of *spray/load* verbs with PPs to exemplify the same alternation as their counterparts with PPs (i.e., *John loaded the boxes*, *John loaded the truck*).

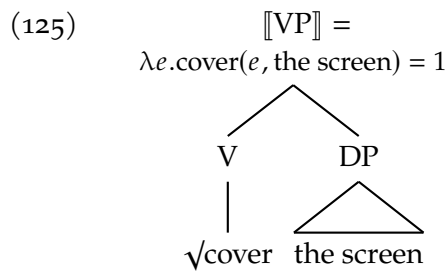
In other words, we could boil down the acquisition problem even further by eliminating the PP that follows the object, which is extraneous to the alternation itself in my approach, since it is simply a special case of a resultative structure. Eliminating this also means that parallel uses of Merge are not required to derive the alternation, since the structures without PPs do not seem to involve multidominance (though given that parallel uses of Merge are given by Universal Grammar in my view, this would not affect anything). Ultimately, then, what children must learn to acquire the *spray/load* alternation is a set of verbs, along with information about whether those verbs can, must, or may occur with either *THEME* or  $P_{\text{LOC}\emptyset}$ . The fact that children overextend the alternation could be taken to reflect a non-adult-like understanding of this property of particular verbs.

However, Pinker (1989) argues that children’s extension of the alternation does not seem to reflect just an imperfect understanding of syntax, but of semantics. In my approach, the acquisition is driven by syntax. But I believe there is merit in Pinker (1989)’s lexical semantic approach, and merit to the manner/result contrast, which my account does not directly address. As a way of beginning to address this concern, in an admittedly merely suggestive way, I will propose that the link between the syntax of *spray/load* verbs and their lexical semantics might reveal a principle of the syntax/semantics interface that constrains acquisition.

(124) The Goal-Preposition Principle:

DPs that are semantically interpreted as goals are always arguments of a preposition.

To consider why the Goal-Preposition Principle is necessary, consider that without it, nothing would rule out children acquiring a non-alternating goal-object verb without  $P_{\text{LOC}\emptyset}$ , as shown.



where  $\text{cover}(e, x) = 1$  iff  $e$  is a covering whose goal is the surface of  $x$ .

But this version of *cover* would not be expected to show the same properties as goal-object uses of verbs that involved  $P_{\text{LOC}\emptyset}$ . In particular, it should be possible to form nominalizations of this *cover* that referred to the goal, and to promote the goal to a subject position, barring these possibilities being ruled out independently. I argued that what generally blocks those things is the fact that goal-object structures involve  $P_{\text{LOC}\emptyset}$ , so if a child acquired a version of *cover* that did not involve  $P_{\text{LOC}\emptyset}$ , these things should be possible. The Goal-Preposition Principle blocks this possibility: it proposes that goals are universally introduced as arguments of a preposition as a principle of Universal Grammar. Thus, once a child learns that some argument is interpreted as a goal, they know that it must have been introduced by a

preposition. Grammars that do not meet this criteria are not part of the child's hypothesis space.

The Goal-Preposition Principle thus creates a link between the syntax for *spray/load* verbs I have proposed and semantic facts related to how their arguments are interpreted. How this link relates to the proposed link between manner/result and the *spray/load* alternation is a topic I must leave for future investigation (though see the discussion in chapter 3, section 5.3.1). But what is crucial more generally is that there is a way of defining the acquisition problem in my approach, and even possibly a way of defining an initially plausible condition on the syntax/semantics interface that makes investigating acquisition of the *spray/load* alternation possible under my approach. The fact that my approach offers a straightforward avenue of investigation into acquisition despite being aimed at very different goals constitutes strong proof of its general applicability.

#### 5.3.2.2 *Adequacy of the Approach: Other Facts*

The most significant general improvement of my approach over previous approaches is that it provides a full detailed syntax and a fully detailed compositional semantics for sentences with *spray/load* verbs. As should be clear from the preceding discussion, prior approaches have failed to do this. While I have not addressed acquisition in detail, I have addressed the other facts in (122) indirectly throughout the development of my analysis. Here I summarize how I have done so.

The near-paraphrase relation between the theme-object and goal-object structures is due to the overlapping sets of lexical and functional heads they involve: (*v*,) *V*, a locative preposition (overt or  $P_{\text{Loc}_\emptyset}$ ), and *CAUSE*. The reason the two structures of the *spray/load* alternation constitute near-paraphrases in my view thus has to do with the fact that the functional heads they contain create event structures that are composed in similar ways: both structures involve an event whose idiosyncratic properties are given by an identical lexical root (e.g.,  $\sqrt{\text{spray}}$ ), and which cause a state consisting of a locative relation holding between two entities.

Note that I showed in chapters 2 and 3 that other kinds of result states can occur with

*spray/load* verbs as well, including APs and locative relations in goal-object sentences. ((126b) is repeated from chapter 3, (45).)

- (126) a. John sprayed the well full of water. (AP result)  
b. John sprayed the first door onto the second one.  
(non-*with* goal-object structure)

However, these sentences do not show a near-paraphrase relationship with a theme-object structure. The explanation of these generalizations are thus restricted to the kinds of near-paraphrase relationships identified by Rappaport & Levin (1988), which uniformly involve a locative relation between two sentences.

So, what explains the near-paraphrase relation between the following sentences is not accidental: the sentences are constructed in such a way that they are near-paraphrases.

- (127) a. John sprayed the paint onto the wall.  
b. John sprayed the wall with the paint.

If we had chosen different kinds of result states, no near-paraphrase relationship would exist. For instance, if we had chosen to use *into* instead of *onto* in (127a), then the sentence would no longer be a near-paraphrase of (127b). This is because  $\sqrt{\textit{spray}}$  idiosyncratically requires  $P_{\text{LOC}\emptyset}$  to be interpreted as picking out the surface of its argument as the goal of the spraying event. Thus, the reason the sentences have similar meanings is partly because we have chosen an overt preposition that has a similar meaning to  $P_{\text{LOC}\emptyset}$  in this context, even though we didn't have to do this. In addition, we have chosen to specify result states that both involve locative relations: contact between one thing and another's surface, and central coincidence. This is not a requirement.

More generally, the reason these sentences are near-paraphrases are because they have been constructed that way. Asking us to provide an account of this property is thus much like asking to provide an account of why all the walls in my apartment are white: because someone chose to paint them that color. They didn't have to be painted that color, or even painted at all. In the same way, the sentences in (127) didn't have to be near-paraphrases—they were chosen (almost certainly unconsciously) to exemplify the alternation because they are near-paraphrases.

Turning to the question of linking, I follow Borer (2005b) and Harley (2011) that Rapoport & Levin (1988)'s framing is best reversed. In lexicalist approaches like Rapoport & Levin (1988)'s, a verb comes with its arguments pre-specified in its lexical entry. Linking rules can access (parts of) the meanings of these arguments in service of determining certain properties of their syntax. But neo-constructionist approaches like Borer (2005b)'s and Harley (2011)'s reject the premise that a verb comes with its arguments already specified. Instead, argument structure is syntactically constructed by combining a verb root with functional heads. These functional heads are what specify the arguments and the role(s) they play in the eventuality described by the verb. Thus, rather than treating the interpretations of arguments as given and their syntactic positions are derived, we can treat the syntactic positions of arguments as given, and ask how their interpretations are derived. Once we make this move, it is the semantics of the functional heads that add arguments that are of interest. These semantics can be defined using standard tools of compositional semantics as I did in chapter 3, and constitute a model of the linking properties of *spray/load* verbs.

Finally, I follow Rapoport (2014) in attributing the holistic effect to the semantics of *with* in the goal-object structure. To account for the holistic effect in the theme-object structure, I proposed that the functional head *THEME* introduces an incremental theme to a sentence's argument structure. Because incremental themes are linked to telicity, this makes an interesting prediction: the holistic effect in theme-object sentences should only be present when they are quantized, and thus should only arise with telic VPs. In contrast, the holistic effect should be present in goal-object structures regardless of the goal object's status as quantized or non-quantized, provided the preposition *with* is used. This prediction is borne out.

(128) Theme-object structure:

- a. John sprayed paint onto the wall (for hours), but there was paint left over.  
(no holistic effect, non-quantized theme)
- b. John sprayed the paint onto the wall (in an hour), #but there was paint left over.  
(holistic effect, quantized theme)

- (129) Goal-object structure:
- a. John sprayed walls with the paint (for hours), #but each wall had barely a speck of paint on it. (holistic effect, non-quantized goal)
  - b. John sprayed the walls with the paint (in an hour), #but each wall had barely a speck of paint on it. (holistic effect, quantized goal)

The link between quantization and the holistic effect for themes but not goals supports the view that the source of the effect is different in theme-object and goal-object structures. A plausible source for the effect in the theme-object structure is the incremental theme relation invoked by *THEME*, which ensures that if the theme is quantized, it measures out the eventuality: the moment when the paint is used up defines the endpoint of the spraying eventuality. In contrast, a plausible source for the holistic effect in the goal-object structure is the semantics of *with* as described by Rapoport (2014), since the effect is present whether the goal is quantized or not. Furthermore, the effect can disappear in goal-object structures that do not use *with* (provided that an alternative that would not produce the effect on its own is chosen).

- (130) **Context:** John set up a series of doors in front of the wall. Then, he took a pneumatic air hose, and ...  
John sprayed (the) doors onto the wall.

There is no obvious holistic effect here: the doors do not have to be completely affected by having been sprayed with compressed air—the most likely scenario is one in which the air does not materially affect the doors in any way, except by causing it to move. The fact that no holistic effect arises with either quantized or non-quantized goals in the goal-object structure when *with* is replaced with a preposition that does not have a similar semantics shows that the source of the effect is the meaning of *with*, just as described in Rapoport (2014). Finally, no holistic effect seems to arise in goal-object sentences that simply lack a PP altogether.

- (131) John sprayed the door.

In my judgment, (131) carries no entailment that the door is completely affected by the

spraying. It does not entail, for instance, that the door is uniformly coated in whatever unspecified material was sprayed.<sup>51</sup>

Thus, there is no unified holistic effect in my view: there is an interpretation associated with the theme-object structure that ensures quantized themes measure out the eventuality, and there is a preference to choose a preposition in the goal-object structure that leads to an interpretation where the goal is completely affected. These independent facts have conspired to give rise to the impression of a unified holistic effect, but closer examination reveals this to be illusory.

Essentially, then, my argument regarding the desiderata in (122) is that acquisition is (primarily) a question of syntax rather than semantics, while the other three points refer to behaviors that are revealed to be mirages under closer inspection. The idea that there is necessarily a near-paraphrase relation between the theme-object and goal-object structures is based on particular sentences that seem to have been chosen to have that property to begin with. Considering a broader range of possible sentences with theme-object and goal-object structures reveals this to be accidental, since many possible sentences can be constructed in each that do not have a near-paraphrase counterpart in the alternative structure. The idea that an argument's interpretation determines its syntactic behavior has no place in my theory: instead, an argument's syntactic position leads to the interpretation it receives via standard mechanisms of semantic composition. Syntactic restrictions on the positions of functional heads will create a link between an argument's interpretation and its syntactic position. Finally, the holistic effect as a unified phenomenon does not exist; instead, the

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<sup>51</sup>A small complication is the fact (discussed in the appendix to chapter 3) that some verbs that occur only in the goal-object structure can occur with *in* in place of *with*. In my judgment, these uses still display the holistic effect.

- (i) The storm blanketed the countryside in snow.

Nevertheless, it is not clear that this is a deathblow to the idea that *with* is primarily responsible for the holistic effect. In particular, the *in* used here does not seem to have the usual semantics associated with *in*; the sentence does not mean that the countryside is in(side) the snow, but that the snow is on the countryside. The semantics of this special use of *in* might have additional properties that could lead to it producing a holistic effect. In addition, these verbs, unlike (131), seem to display the holistic effect even in the absence of a PP, suggesting that maybe it is the verb itself that encodes the holistic effect in these cases.

- (ii) The storm blanketed the countryside.

The most natural reading of (ii) is, I posit, one in which the countryside is completely affected in some way by the storm (though the effect itself is left unspecified). This suggests that these particular verbs are responsible for the holistic effect in these cases, rather than *with*. Further investigation is, of course, needed.



putative holistic effect is the combination of the existence of an incremental theme object in the theme-object structure; and the meaning of *with*, which is often used in goal-object structures.

### 5.3.2.3 *Open Issues*

Of course, my analysis like any suffers from its share of issues. I levied criticism on some of these points in my discussion of previous accounts, and it is thus worth being explicit about the fact that my account is subject to similar criticisms. Other issues are simply raised by the fact that my analysis is unclear with regards to some important points. I flag these here as topics for future research.

First, consider the status of the commonplace *with* PP that occurs in goal-object uses. In my discussion of prior approaches, I criticized treating this PP as an adjunct, due to various pieces of evidence indicating that it behaved more like an argument (including its inability to be omitted with certain verbs, its order relative to other PPs, etc.). In accounts like Rappaport & Levin (1988)'s, this PP is an argument, and such accounts are not subject to these criticisms. However, my account does not treat the *with* PP as an argument. Is it subject to the same criticisms I made of accounts that treat it as an adjunct?

I believe the answer to this question resides in further investigation. My account posits that the *with*-phrase is in fact somewhere between an argument and an adjunct—it is a resultative small clause. The behavior of arguments of resultative predicates seems to fall somewhere between the behavior of verbal arguments and adjuncts (see Williams 2015, ch. 13 for an overview). It is my hope that this intermediate status would be able to make sense of the conflicting intuitions and judgments regarding the status of the *with* PP as an argument or an adjunct. However, I have not investigated the matter in enough detail to say more.

Related to this concern is that my account has no immediately obvious way of accounting for the fact that some verbs require expressing a “theme”<sup>52</sup> in the goal-object structure or a goal in the theme-object structure. I repeat the relevant data from (16–19) here.

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<sup>52</sup>Recall that in chapter 4, section 4.2.1, I presented evidence that the complement of *with* is not actually interpreted as a theme.

- (132) Theme optional, goal optional:
- a. John loaded the hay (onto the wagon).
  - b. John loaded the wagon (with the hay).
- (133) Theme optional, goal obligatory:
- a. John stuffed the feathers \* (into the pillow).
  - b. John stuffed the pillow (with the feathers).
- (134) Theme obligatory, goal optional:
- a. John piled the stones (onto the deck).
  - b. John piled the deck \* (with the stones).
- (135) Theme obligatory, goal obligatory:
- a. John slathered the plaster \* (onto the walls).<sup>53</sup>
  - e. John slathered the walls \* (with the plaster).

(Beavers 2017, (59–62))

In my approach, the non-object argument is not a semantic or syntactic argument of the verb. Thus, it is unclear how verb-specific information could ensure its realization.

A suggestion I will make here is has to do with the fact that verbs sometimes have a say in what kinds of resultative predicates can combine with them. I repeat some relevant examples from chapter 3 here.

- (132) a. John wiped the table clean.  
 b. \* John wiped the table dirty.
- (133) a. John painted the table red.  
 b. \* John painted the table clean.

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<sup>53</sup>Some I have spoken to dispute this judgment. Regardless, other verbs seem to show the same pattern more clearly:

- (i) a. John crammed the boxes into the storage cabinet.
- b. John crammed the storage cabinet with the boxes.
- c. \* John crammed the boxes.
- d. \* John crammed the storage cabinet.

Thus, the point remains even if the judgment Beavers (2017) reports is disputable.

In particular, certain verbs display idiosyncratic restrictions with regards to the resultatives they can combine with. *Wipe* can combine with *clean* as a resultative secondary predicate, but not *dirty*. In contrast, *paint* can combine with *red* as a resultative secondary predicate, but not *clean*—even though the latter can combine with *wipe*. This shows us that verbs have some say in what their resultative secondary predicates can be, however these restrictions may be implemented grammatically. Once we have evidence that a verb can enforce selectional restrictions on the resultatives that can combine with it, it is perhaps not so big a leap to suppose that certain verbs could require resultatives of a certain kind. However, absent an idea about how such selectional restrictions arise, it is unclear whether this idea could be used to address the issues for my analysis that (132–135) raise.<sup>54</sup>

Another set of facts not explained in my account (though these facts are not explained in many accounts) are those in (49d), repeated here.

- (134) a. He spread glue on the paper.  
 b. He spread the paper with glue.  
 c. He spread a map on the bed.  
 d. # He spread the bed with a map.

(Iwata 2008, ch. 3, (30,32))

The semantics I have proposed for *with* would not seem to properly exclude (134d). One could imagine that the central coincidence relation would require the kind of necessary accompaniment that could only be satisfied in a scenario where the *with*-object is stuck to the *with*-subject. However, this does not seem to be generally true of *with*, as the following example shows.

- (135) You can find the bed with the map in the general's quarters.

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<sup>54</sup>An addition minor issue has to do with the fact that I have proposed that the common use of *with* in the goal-object structure has a non-linguistic source, which I presented evidence for in chapter 3, around example 45, which showed a “double-goal” structure. Such double-goal structures do not seem to be available for verbs that Beavers (2017) identifies as having an obligatorily expressed theme.

- (i) **Scenario:** The board was hanging from a string that ran over a tree branch. John piled some things on the board, causing it to descend until it touched the ground.  
 # John piled the board onto the ground.

It appears that whatever selectional restrictions are at play here would require the use of a *with* PP with such verbs (provided (i) is representative, which I am not sure of).

The only suggestion I can make, which is admittedly unsatisfying, is that the nature of direct causation may be responsible. A spreading whose goal is the bed might result in states of the bed being with glue, but not states of the bed being with a map. This could be because the spreading does not directly cause the state of the bed being with a map; in the most natural reading, the bed is with a map because the map was already on it, and the spreading simply happens once the map is already present. Thus, it is difficult to consider the spreading eventuality to be the direct cause of the state of the bed being with the map. This might account for why verbs like *load* do not show the same restriction; the kind of idiosyncratic motion *load*'s eventuality encodes involves translational motion rather than extension in space, so a loading event can directly cause the bed to be in a state of being with a map (provided we think of the map as large enough to count as being associated with the spatial extent of the volume defined by the bed in the way *with* requires). Whether this suggestion is reasonable depends, of course, on the precise characterization of the notion of physical possession that I argued *with* invokes. If physical accompaniment does not require spatial coextension, then the explanation seems more reasonable than if it does. Of course, the latter is what I proposed might account for the holistic effect (following Rapoport 2014), though there were some exceptions to that behavior I discussed.

This discussion reveals a more general criticism, which is that precisely how *with* gives rise to the holistic effect in goal-object structures is not entirely clear. I argued that it is due to an interaction of *with*'s semantics of physical possession as central coincidence with pragmatic factors. However, the idea that physical possession requires co-location along the spatial extent of the entity that controls that relation is somewhat vague. Why couldn't physical possession simply involve control over the location of another entity, without requiring the spatial extent of the two entities to coincide as Rapoport (2014) proposes? It seems that more investigation into the semantics of physical possession and central coincidence is needed to determine whether this approach to the meaning of *with* can really explain the holistic effect or whether more is needed. The hope is that it could: if the holistic effect in goal-object structures is due to the meaning of *with*, then we would have some hope of achieving a truly explanatory account. Retreating to a *sui generis* link between the holistic effect and the syntactic position of objects of *spray/load* verbs puts us back at finding

new ways to state the existence of the effect without having a way to truly understand it.

Another shortcoming of my account has to do with cross-linguistic variability in the *spray/load* alternation. I have focused here entirely on English data, and as such my account is not intended as a universal account of the *spray/load* alternation. Indeed, I suggested that there might not be a unified *spray/load* alternation cross-linguistically. Perhaps other languages lack  $P_{\text{LOC}\emptyset}$ , and would thus derive an alternation similar to the *spray/load* alternation but in a different way. The similarity of these alternations to the *spray/load* alternation would then need to be accounted for in a natural way. It is possible that additional extensions would need to be made to account for small variations such as, e.g., the lack of an overt head corresponding to *with* in the goal-object structure in Mandarin, the use of *di* ‘of’ where in Italian and cognates in other Romance languages where English might use *with*, the use of *be-* ‘in’ in Hebrew in place of the same, the use of *in* in English non-alternating goal-object verbs, and so on. These seem to me promising topics for future research.

Finally, it might be possible to criticize my characterization of my analysis as deriving the alternation in the syntax. In particular, Beavers (2017) view that Goldberg (1995)’s and Iwata (2008)’s Construction Grammar approaches reduce to a lexicalist approach is based on the fact that they must say which lexical items can occur in which constructions to avoid overgeneration. Of course, I must say this, too, by saying that some verbs may combine with either  $v_{\text{THEME}}$  or  $P_{\text{LOC}\emptyset}$ , while others can combine with only one or the other. This restriction must be stated at the level of individual lexical items.

But whether this criticism is valid depends on whether one thinks that positing the existence of a lexicon entails that an approach is essentially lexicalist. Every account recognizes that some facts about particular lexical items must be simply memorized; trivially, at least any phonological and semantic properties of lexical items cannot be derived. Most theories also recognize the need to state syntactic idiosyncrasies over lexical items, with few to no exceptions.<sup>55</sup> Nearly any theory runs the risk of being labeled “lexicalist” by these strict cri-

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<sup>55</sup>Borer (2005a,b, 2013) claims to be an exception in this regard, since she posits that lexical items have no grammatical properties. However, in her system functional items are associated with grammatical properties, which would entail a lexicon that allows for stating properties of individual items, regardless of whether we call these lexical or functional. Furthermore, this result in her claiming that ill-formed sentences judged as ungrammatical are ill-formed uniformly because they have incongruous meanings (note that this does not mean they cannot compose semantically, but just that the resulting interpretation is incompatible with encyclopedic knowledge). This would seem to run the risk of reducing the study of ungrammatical sentences to the study

teria. It might be better to distinguish theories on a continuum of lexicalism, based on how much generative power they attribute to the lexicon. In this respect, my theory is weighted more towards the syntax. The only generative power present in the lexicon in my system is the power of particular lexical items to prevent or require the application of particular syntactic operations that might involve other specific lexical items. But all building of structure is accomplished by the syntax, and the lexical semantics of words does not directly project into syntax (only indirectly, by means of the syntactic diacritics they bear and the restriction that they must produce a structure that can compose semantically). To claim that every theory that recognizes lexical idiosyncrasy is lexicalist is in some sense technically correct, but misses important differences that are worth recognizing. The same could be said with regards to Construction Grammar; though I do not take such an approach, it has important differences from a lexicalist approach that are worth not glossing over simply because one must recognize lexical idiosyncrasy. The important commonality of my approach and Construction Grammar approaches is that they are focused primarily on capturing regularity in language over idiosyncrasy. Lexicalist approaches are of course, focused on this as well, but by putting some of the regularities of language in the same place as the idiosyncrasies, runs the risk of the regularity itself becoming idiosyncratic.

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of pragmatics, which does not seem tenable to me.

## CHAPTER 6

# MOLECULAR BONDING

### 6.1 Introduction

In chapters 2 and 3, I presented my analysis of the syntax and semantics of *spray/load* verbs. Then, in chapter 5, I showed how this compared to previous analyses with regards to different kinds of facts that have been identified as crucial in describing the *spray/load* alternation. Nevertheless, several questions remain to be addressed. What is the general picture of argument structure that emerges from the detailed study of the syntax and semantics of *spray/load* verbs in light of the analysis I presented? In other words, once we have subjected *spray/load* verbs to fission in order to determine their parts, what do we learn about how those parts combine?

This chapter addresses some questions related to this general picture. First, I provide a summary of the analysis developed in chapters 2 and 3. Then, I turn to the bigger picture, addressing the following questions:

- What is the axiom of my approach?
- What defines the space of possible argument structure alternations?

While brief, the answers to these questions describe a research program with applications that go beyond the *spray/load* alternation. What is crucial is not specific details of the analysis presented here, but instead the methodological and theoretical concerns, which all relate to the integration of the study of argument structure with independently motivated

approaches to syntax and semantics.

## 6.2 Summary of the Analysis

The analysis developed in chapters 2 and 3 is based on two sets of facts.<sup>1</sup>

- (1) a. The readings that *again* can receive in different positions in sentences with *spray/load* verbs reveal an apparent bracketing paradox (ch. 2).
- b. The grammatical status of theme objects and goal objects of *spray/load* verbs differ, as revealed by their asymmetric behavior in non-agentive uses of *spray/load* verbs and nominalizations (ch. 3).

My analysis explains these facts in the following ways.

- (2) a. The bracketing paradox in (1a) is best resolved by a syntax with multidominance (and leads to new questions about multidominance in general).
- b. The asymmetry in (1b) is explained by goal-object uses of *spray/load* verbs being derived via the conflation of a preposition with the verb.

In addition to these main points, chapter 4 also discusses how the atomic elements of *spray/load* verbs I identify can be assembled in non-agentive transitive uses of *spray/load* verbs, and the source of the holistic effect.

## 6.3 Methodological and Theoretical Evaluation

At the end of chapter 5, I showed how my analysis could naturally account for the four desiderata of acquisition, near-paraphrasability, linking, and affectedness. In addition, it was designed to account for previously overlooked facts related to *again* and non-agentive uses. Are there any methodological and theoretical advantages to my approach, beyond simply accounting for these newly considered facts? If my analysis turns out to be wrong, is there merit in the approach I have taken? This question takes the discussion beyond the *spray/load* alternation, since it is essentially asking if the methods I use could be applied

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<sup>1</sup>I thank Seth Cable (p.c.) for suggesting this way of framing the empirical and theoretical contributions of this dissertation.



fruitfully to other questions. My answer to these questions comes in two parts: first, I discuss what I have considered to be the guiding principle of my approach; and second, I discuss how this principle in combination with the tools of my analysis could be used to define the space of possible argument structure alternations.

### 6.3.1 *The Axiom*

Any empirical phenomenon is compatible with a large number of possible analyses. We cannot use mere data to determine what precisely a theory should look like. Instead, we (consciously or otherwise) use metatheoretical principles that help us select the best theory among these multitudes. For me, the overriding principle has been Chomsky (1965)'s criterion of explanatory adequacy. Explanatory adequacy pushes us to select models of grammar that achieve a correct description of a speaker's competence in a principled way. While I have, of course, not achieved full descriptive adequacy (there are too many recalcitrant facts I have noted, and surely others I have not noted), the analysis I have chosen is motivated by the theory that the faculty of language is minimal. In the present context, this has meant that I have striven to make use of no otherwise unmotivated grammatical modules or elements. Put another way, I have tried not to propose anything truly new; instead, I have approached the *spray/load* alternation by treating it as involving particular arrangements of independently well-motivated elements.

Explanatory adequacy as a guiding principle of linguistic analysis is well-motivated, of course. Chomsky (1965) argues that one of the main tasks of linguistic theory should be to account for language acquisition. Empirical study has shown that children do not have access to or make use of data that would lead them to acquire the grammar they eventually do, which constitutes the basis for arguments from the Poverty of the Stimulus.<sup>2</sup> This means that there must be some aspects of grammar that are innate, forming part of Universal Grammar. The complexity of human language has led to a view of a rich Universal

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<sup>2</sup>Much of the relevant evidence is summarized in Pinker (1994). Particularly interesting cases are those in which children repeatedly continue to ignore overt corrections of sentences that are not in the adult grammar. This shows that arguments that the stimuli children have access to is not impoverished, after all, must go a step further to show that not only do children have access to the necessary disambiguating stimuli, but that they actually use it. This last step is often crucially overlooked by those on both sides.

Grammar, since many properties of language could not otherwise be acquired on the basis of evidence children receive. However, this motivation for a rich Universal Grammar is balanced by Chomsky (1995)'s plea for a simplified Universal Grammar, based on the criterion of evolution. The evolution of human language does not appear to have been gradual, but instead occurred all at once. This motivates a simpler innate Universal Grammar, since the evolution of a complex Universal Grammar is less likely than a simple one. Thus, explanatory adequacy favors a theory of grammar that explains both acquisition and evolution. This is best achieved with a simple Universal Grammar, as simplicity limits both the number of kinds of rules that children have to acquire, as well as the content of Universal Grammar itself. If we can show that an adequate description of a particular linguistic phenomenon requires no theoretical apparatus that does not have an independent life in the grammar, we simplify acquisition, since a child will have more ways to arrive at the correct grammar than they would in a scenario where the account of a particular grammatical phenomenon requires reference to *ad hoc* machinery.<sup>3</sup> At the same time, we simplify evolution by treating a complex grammatical phenomenon as the interaction of simple parts. In this case, all that must have evolved are those smallest parts of grammar and the rules governing their interaction. An analysis that makes good use of independently well-motivated properties of the grammar thus does not complicate the problem of evolution, and an analysis that dispenses with grammatical machinery it shows to be unnecessary simplifies it.

While there are certainly open issues, my approach is aimed at achieving explanatory adequacy by proposing a syntax and semantics for sentences with *spray/load* verbs that requires no modules of grammar beyond those that are clearly required by the fact of language itself. These are syntax, semantics, and phonology (though of course I have had nothing to say specifically about the latter), whose status as necessary generative modules of language is beyond reasonable debate. I have chosen to formulate my theory in a way that makes no reference to modules of grammar beyond these (where modules of grammar are understood to define what is regular about language, and the lexicon is the requisite storehouse of the idiosyncratic).

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<sup>3</sup>A case in point is the kind of special machinery posited sometimes to account for the holistic effect that applies to only *spray/load* verbs.

The syntax I propose involves multidominance, which I have argued is necessary to account for the readings that *again* can receive in sentences with *spray/load* verbs. Fortunately, multidominance is well-motivated independently in accounts of a variety of grammatical phenomena (see Citko 2005; Engdahl 1980; Gärtner 1997, 1999; Hiraiwa & Bodomo 2008; Johnson 2012, 2018; Nunes 2001; Starke 2001). What I have done is merely shown one way in which multidominance can explain certain grammatical phenomena. I have not needed to invent a new syntax—I have merely made use of the tools of an existing syntax.

The semantics I use is standard. It consists of (at least) four operations, which are Function Application, Predicate Modification (and extensions like Event Identification), and Function Composition. There is strong evidence that all of these rules of semantic composition are independently needed. The semantics I propose integrates well with the binary-branching syntax with multidominance I propose, requiring no special stipulations to achieve the right results. While there are, of course, unresolved questions raised by the syntax and semantics I propose, the basic elements of each fit together seamlessly.

Unlike theories such as Rappaport & Levin (1988)'s, I do not divorce syntax, semantics, and linking. Put another way, a theory like Rappaport & Levin (1988)'s requires a module of grammar that serves as an interface between lexical semantics and syntax (at least) at the level of argument structure. This linking module's purpose is to state where each argument present in the lexical semantic structure of a verb goes in a syntactic structure, as described in chapter 5.

In contrast, my approach eschews linking rules. Instead, linking is derived from the syntax and the semantics. No special module of grammar is needed to say, for instance, that an argument interpreted as the agent of an eventuality goes in Spec,*v*P. Instead, this comes from syntactic and semantic facts: *v* has a semantics that ensures the DP in its specifier defines the agent of its eventuality argument, and syntax requires that *v* occur above V in the functional sequence.<sup>4</sup> Once we are able to state the relationship between arguments' interpretations and their syntactic positions using the existing vocabulary of semantics and

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<sup>4</sup>It is to be hoped that the functional sequence could itself be derived from the semantics of functional heads; Kyle Johnson (p.c.) has suggested to me a way of thinking about the semantics of thematic roles like *v* that aims to achieve this, though there are still details to be worked out, and a presentation of his idea would take us too far afield. Ramchand (2018) makes a related proposal about how to derive the functional sequence above *v*/VP from the semantics of functional heads.

syntax in this way, we sidestep the need for a specialized linking module, in line with proposals by Borer (2005b) and Harley (2011) (a.m.o.). Being able to avoid the need for special linking rules is an advantage of such approaches, since they allow us to simplify the grammar. A child does not need to acquire linking rules, nor do we alternatively need to posit that linking rules are part of Universal Grammar—all that is required is that a child recognize particular arrangements of morphemes that are licensed by the syntactic and semantic principles of Universal Grammar.

### 6.3.2 *What Is an Alternation?*

A successful descriptive theory of syntax and semantics accomplishes two things: it provides a model that will (i) generate all sentences of any given language, and (ii) fail to generate sentences that do not exist. My analysis has largely addressed point (i), with the explicit goal of developing a model that generates all of the correct structures and interpretations associated with sentences containing *spray/load* verbs. While I have not heretofore focused on point (ii), it is equally important: how do we rule out sentences that do not exist? We might refer to this as Kennedy’s question, after the famous quote by Robert F. Kennedy: “Some mean see things as they are, and say why. I dream things that never were and say why not.”<sup>5</sup>

There are two points worth making in response to this question. The first summarizes how I propose ruling out impossible sentences specifically with *spray/load* verbs. The second generalizes this point to describe what kinds of limits my theory places on the space of possible argument structure alternations.

#### 6.3.2.1 *Impossible Sentences with Spray/load Verbs*

Turning to the first point, the relevant question is why sentences with *spray/load* verbs must have the particular syntax they do in my analysis. I have answered questions related to this in chapters 2 and 3, so here I will just summarize what I said there. Perhaps the

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<sup>5</sup>Calling this Kennedy’s question was suggested to me by Kyle Johnson (p.c.). The quote itself is a revision of a line that George Bernard Shaw penned for act 1 of his play *Back to Methuselah*: “You see things; and you say ‘Why?’ But I dream things that never were; and I say ‘Why not?’” John F. Kennedy is also associated with the original version, which he quoted from Shaw in a 1963 address to the Irish Parliament.

most obvious question is why multidominance is not only possible with *spray/load* verbs, but seemingly required. Recall that the discussion in chapter 2 showed that a small clause syntax for *spray/load* verbs does not seem to be available, as revealed by the obligatory interpretation of the immediately post-verbal DP as the object of the verb even in structures with resultative secondary predicates. I repeat the relevant examples here for reference.

- (3) a. John sprayed the bucket dry.  
       = “John sprayed the bucket, with the result that the bucket became dry.”  
       ≠ “John sprayed, with the result that the bucket became dry.”
- b. **Context:** John squeezed the tube of icing over the cake, thereby drizzling icing onto the cake while emptying the tube of icing.  
    # John drizzled the tube empty.
- c. **Context:** John poured the contents of the glass into a bowl, thereby emptying the glass while filling the bowl.  
    # John filled the glass empty.
- d. **Context:** John took the contents of the truck and loaded them into shipping containers, thereby leaving the truck bare.  
    # John loaded the truck bare.

In these cases, the post-verbal DP cannot be interpreted as only the subject of the result state. If this were possible, the examples above should be felicitous in the contexts (or, in the case of (3a), which I have not provided a context for, receive a different possible interpretation). We know that these sentences should be felicitous if a small clause syntax were available because interpretations are possible for resultatives with non-*spray/load* verbs, as in Kratzer (2005)’s example in (4).

- (4) **Context:** John drank the tea in the teapot down to the last drop, so ...  
       John drank the teapot empty.

As Kratzer (2005) notes, *the teapot* is not the object of *drink*—John does not drink the teapot, but the contents of the teapot. She argues that this supports a small clause syntax for such resultatives (which she argues extends to all cases—an extension I have explicitly rejected in my analysis).



is that *spray/load* verbs must merge with either  $v_{\text{THEME}}$  or  $P_{\text{LOC}\emptyset}$ . A *spray/load* verb that does not merge with one of these—when it is used as a verb—is prohibited.

The fact that *spray/load* verbs are obligatorily transitive may seem stipulative, but it is not. It is, like most facts about lexical items, something that we know must be learned and not innate. Many non-*spray/load* verbs are obligatorily transitive (e.g., *devour*), making this a property of verbs that children must be able to acquire. The subcategorization properties of particular verbs is not consistently obviously derivable from their semantics—as is made clear because, e.g., *eat* is optionally transitive, the similar-in-meaning *devour* is obligatorily transitive, and the yet again similar-in-meaning *dine* requires the use of the preposition *on* to introduce an internal argument. Thus, whether a verb is obligatorily transitive cannot be derived from its meaning. However children learn that *devour* is obligatorily transitive while *eat* is not will be the same way that they can learn that *spray/load* verbs are obligatorily transitive.

Once we make this observation, the availability of the multidominance structure and the impossibility of non-multidominance structures is derived in an entirely predictable way. The multidominance syntax for *spray/load* verbs is merely the result of putting an obligatorily transitive verb in a resultative structure. The fact that *spray/load* verbs are obligatorily transitive means that they must take an object. Attempting to put them into a structure where the resultative small clause has a specifier that differs from that object fails because that specifier cannot be Case-licensed, as described in chapter 2. Thus, the Case filter, combined with the status of *spray/load* verbs as obligatorily transitive, means that when *spray/load* verbs occur in a resultative structure, they must involve multidominance. A different syntax would either violate the obligatory transitivity of *spray/load* verbs (i.e., by failing to merge the verb with  $v_{\text{THEME}}$  or  $P_{\text{LOC}\emptyset}$ , which would produce an intransitive small clause syntax), or else run afoul of the Case filter by merging an argument DP which cannot receive Case. Multidominance is how these requirements can be satisfied simultaneously, and gives rise to the readings of *again* we examined in chapter 2. And of course, if we consider sentences without resultative small clauses, then no multidominance is involved (as I also discussed in chapter 2).<sup>6</sup>

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<sup>6</sup>I will also note that I have intentionally left aside irrelevant non-resultative adjunct PPs. As an example,

Another issue I have not addressed is that the PP must be “transitive,” too (by which I mean that it must have a specifier and a complement).<sup>7</sup> What makes this issue potentially of concern is that not every PP is transitive. For instance, adjunct PPs are typically analyzed as predicates of eventualities that compose with their sister via Predicate Modification.<sup>8</sup>

- (7) John danced in the hallway.
- a.  $\llbracket \text{dance} \rrbracket = \lambda e. \text{dance}(e) = 1$
  - b.  $\llbracket \text{in the hallway} \rrbracket = \lambda e. \text{in}(e, \text{the hallway}) = 1$
  - c.  $\llbracket \text{dance in the hallway} \rrbracket = \lambda e. \text{dance}(e) \wedge \text{in}(e, \text{the hallway}) = 1$

Why couldn't we use a PP of this type as the complement of *CAUSE*? Since *CAUSE* semantically takes an argument of type  $\langle s, t \rangle$ , nothing would go obviously wrong.

However, there does appear to be a general restriction that *CAUSE* can only take small clause complements, which is not specific to PPs. Small clauses, of course, must be transitive. For instance, considering the following string, which has readings corresponding to (at least) two distinct sentences.

- (8) John saw the dog in the park.
- a. John saw the dog, and that happened at the park. (adjunct PP reading)
  - b. John saw something, and that was the dog in the park.  
(small clause PP reading)

Under common semantic analyses of these sentences, the PPs in each have the same semantic type; they are predicates of eventualities. However, it is clear that they cannot be

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the following string is ambiguous between a resultative reading and an adjunct reading of the PP.

- (i) John sprayed the paint on the wall.

One reading is the resultative reading, where John's spraying the paint causes the state of the paint being on the wall. Another reading is one in which the John spraying the paint event takes place on the wall (e.g., if John is standing on the wall while spraying paint). I have no reason to suppose that this reading corresponds to a structure with multidominance, and have ignored it throughout, following the tradition of prior literature that similarly considers such readings uninformative regarding the *spray/load* alternation. I have also argued that something similar is possible when the preposition used is *with*, which can result in a resultative small clause reading or an instrumental adjunct reading. This reading is also irrelevant to my analysis, since it would arise in an entirely unremarkable way.

<sup>7</sup>And, of course, the cases with adjectives discussed in chapter 2 require a specifier in AP—but that is more likely to be derived from the semantics of adjectives in a straightforward way.

<sup>8</sup>Though see Morzycki (2005) for a different view.



substituted for one another. *The dog in the park* cannot be interpreted as an adjunct PP, which would produce a semantics like the following.

- (9) a.  $\llbracket \text{see} \rrbracket = \lambda e. \exists x [\text{see}(e, x)] = 1$   
 b.  $\llbracket \text{the dog in the park} \rrbracket = \lambda e. \text{in}(e, \text{the dog, the park}) = 1$   
 c.  $\llbracket \text{see the dog in the park} \rrbracket = \lambda e. \exists x [\text{see}(e, x)] \wedge \text{in}(e, \text{the dog, the park}) = 1$

This might be ruled out as semantically impossible: a single eventuality cannot be both John seeing something and the dog in the park. The other case is slightly different, with the meaning that would result being one in which what John saw was an eventuality described by *in the park*.

- (10) a.  $\llbracket \text{see} \rrbracket = \lambda P. \lambda e. \exists e' [\text{see}(e, P(e'))] = 1^9$   
 b.  $\llbracket \text{in the park} \rrbracket = \lambda e. \text{in}(e, \text{the park}) = 1$   
 c.  $\llbracket \text{see in the park} \rrbracket = \lambda e. \exists e' [\text{see}(e, \text{in}(e', \text{the park}))] = 1$

This reading may or may not be semantically coherent, but it is clearly not available. Instead, it seems that we may need to distinguish between predicates of eventualities that can serve as adjunct modifiers but not arguments, and predicates of eventualities that are propositions, which show the opposite behavior. Possibly a distinction between eventualities and situations might make the right cut, with eventualities corresponding to (intransitive) adjunct PPs, and situations corresponding to (transitive) small clause argument PPs. Resultatives seem to only allow small clauses that have (underlying) subjects, like the transitive small clause PPs.

- (11) a. John hammered [the metal into a sheet].  
 b. \* John hammered [into a sheet].

For this reason, I do not believe my account requires a special stipulation to derive the fact that the PPs of *spray/load* verbs must be transitive: this is a general requirement of resultatives, and explains why a structure that would contain an object and an intransitive small clause would be ruled out.

<sup>9</sup>The real semantics here is probably intensional, but I am simplifying this to an existential binder to avoid overcomplicating things. I don't believe it substantially affects the argument.

Another question about the syntax of *spray/load* verbs has to do with the necessity of  $P_{\text{LOC}\emptyset}$ . Chapter 3 showed that the syntactic differences between theme objects and goal objects of *spray/load* verbs can be explained if goal objects are introduced by a phonologically null preposition. This unifies the behavior of goal objects with objects of overt prepositions, which similarly cannot promote to subject position in unaccusative structures, and are not possible referents of (most) nominal uses of verbs. In contrast, theme objects do not display this behavior, and so we have no evidence that they are introduced by a preposition. Upon observing these empirical patterns, we ask why this is. What is it that would rule out introducing a goal object without the use of a preposition, which would produce symmetrical behavior between theme objects and goal objects in non-agentive and nominal uses of *spray/load* verbs?

I do not have a full answer to this question, only speculation. One idea was presented near the end of chapter 5: the Goal-Preposition Principle, which said that only a preposition can introduce a DP interpreted as a goal. This, of course, is not an explanation, but an attempt at a descriptive generalization, which may or may not be accurate. If it does turn out to be accurate, one thought about what might underlie this generalization could relate to the semantics of locations. In standard semantics, locations tend to be treated as entities, of type *e*. But perhaps this is not quite right: after all,  $\llbracket \text{John} \rrbracket$  is an entity—though of course, we understand that  $\llbracket \text{John} \rrbracket$  denotes not John’s location but John himself. In order to refer to John’s location, we would need a preposition (e.g., *on*, *with*, *near*, etc.). One possibility this raises is that locations, including goals, might be of a different semantic type from entities. Much recent research has argued for a more complex syntax and semantics for prepositions (see Cinque & Rizzi 2010; Fábregas 2007; Gehrke 2008; Kracht 2002; Radkevich 2010; Roy & Svenonius 2009; Svenonius 2007, 2010). If this line of research is on the right track, it might speak to a way of generalizing the Goal-Preposition Principle to state that all DPs interpreted as locations must be introduced by prepositions. What would remain a mystery, of course, would be why prepositions would be the only lexical class with the privilege of having a semantics invoking locations. That would merit further research.

A related question has to do with the difference between  $v_{\text{THEME}}$  and  $P_{\text{LOC}\emptyset}$ . If we accept my proposal that these two functional heads are what introduce the internal arguments

of *spray/load* verbs, we must ask why they impose a different grammatical status on the objects they introduce. Put another way, why are goal objects subject to more restrictions than theme objects? Why doesn't the existence of  $v_{\text{THEME}}$  in theme-object structures give rise to the same patterns seen in goal-object structures, given that it occurs in the same syntactic position as  $P_{\text{LOC}\emptyset}$ ? I presented an idea about this in chapter 3 that suggested it has to do with labeling:  $v_{\text{THEME}}$  merging with V should not create a labeling conflict, since  $v$  is part of the extended projection of V. In contrast,  $P_{\text{LOC}\emptyset}$  merging with V could create a labeling conflict, which could be resolved by the merger of  $v$  in a higher position. This would account for why P-stranding A-movement seems to be possible only when  $v$  has merged (in passives and perhaps middles, but not in unaccusatives).

However, even this idea relies on my assignment of the two internal-argument-introducing heads to different syntactic categories: I called the theme-introducing head a  $v$ , and I called the goal-introducing head a P. But why couldn't I have proposed the opposite categorization, or that both are  $vs/Ps$ ? If that move is made, what would differentiate the status of each object? I do not have a full answer, but the difference may have to do with Case assignment:  $v_{\text{THEME}}$  is not considered to be responsible for assigning Case to the syntactic phrase that realizes its entity argument; while  $P_{\text{LOC}\emptyset}$  is. If  $v_{\text{THEME}}$  were what assigned Case to its argument, we would run the risk of rejecting Burzio (1986)'s generalization that accusative Case on an internal argument depends on there being an external argument. Perhaps the fact that  $v_{\text{THEME}}$  does not assign Case, while  $P_{\text{LOC}\emptyset}$  does, has to do with the syntactic differences of their arguments. Maybe with fuller consideration this could do away with the motivation for the labeling-based approach I sketched, though I do not see how this idea would extend to all the relevant similar cases at present.

So, the reason *spray/load* verbs must look the way they do in my analysis is because they are obligatorily transitive, and goals must be introduced by prepositions. But regardless of whether these generalizations are adequate, there is empirical evidence to favor the use of multidominance and P-conflation to account for the syntax of *spray/load* verbs. What remains more in question is whether my proposals about why multidominance and P-conflation are **required** with *spray/load* verbs are correct.<sup>10</sup>

<sup>10</sup>A fuller survey of the literature on P-conflation, including how it has been used and what it might yet be

### 6.3.2.2 Restrictions on Multidominance

Something else that my system requires to produce the correct results are restrictions on when multidominance is possible. Allowing Rmerge and parallel uses of Merge could produce many structures that would be semantically coherent yet which do not seem to exist. Most analyses that involve multidominance could massively overgenerate in this way. Though I do not have full explanations of what restricts multidominance in the proper ways, I describe some relevant problematic cases here and suggestions about where answers might reside for some of them. Note that I do not show these structures in the usual way that orders lexical items visually from left to right in approximately the order they are spoken. Most of the time, this is because reversing the order shown for a particular phrase results in greater visual clarity. This presentational choice does not carry any theoretical implications.

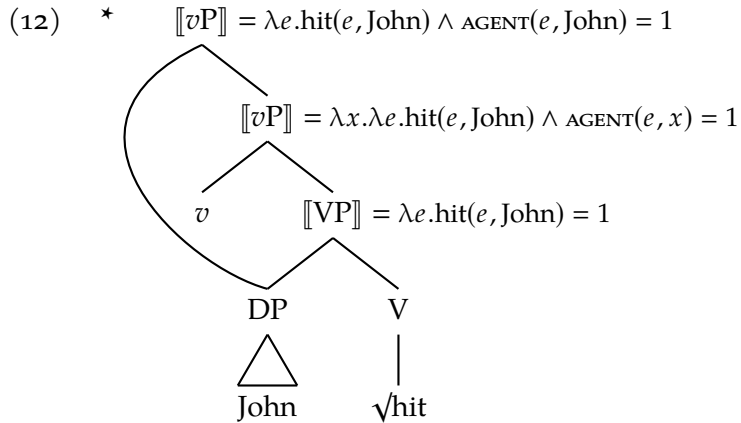
To take one problematic case, a single DP cannot occur in both Spec,*v*P and Comp,VP. This would produce a reflexive interpretation without a reflexive pronoun.

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used for would surely be of interest here. However, it would take us afield from the purposes of the dissertation, which is focused on the *spray/load* alternation, and so I must leave it for a later day. My hope is that P-conflation might be useful in analyses of locative alternations that involve an alternation between an overt and a null preposition, including the *swarm* alternation, the *meet* alternation, and the *wander* alternation:

- (i) *Swarm* alternation:
  - a. The bees swarmed in the garden.
  - b. The garden swarmed with (??the) bees.
- (ii) *Meet* alternation:
  - a. John met with Bill.
  - b. John met Bill.
- (iii) *Wander* alternation:
  - a. Bears roam in these woods.
  - b. Bears roam these woods.

However, there are clearly additional complications relating to these alternations that need to be carefully considered before proposing an analysis in terms of P-conflation. See Levin (1993, sec. 1.4) for overviews of the *meet* and *wander* alternations; and Levin (1993, sec. 2.3.4), Dowty (2001), and Hoeksema (2009) on the *swarm* alternation.

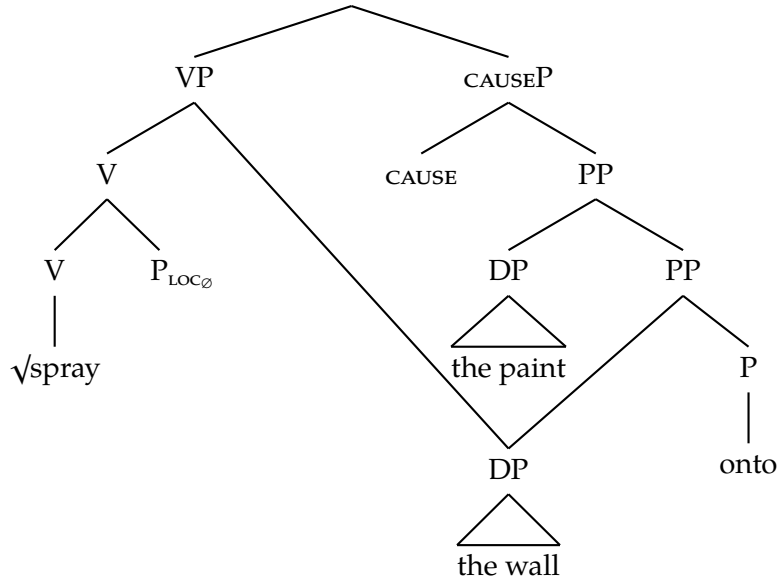


While there are a limited number of verbs related to personal grooming where the reflexive interpretation is possible without an overt reflexive (e.g., *shave*, *wash (up)*, *bathe*, *shower*, etc.), multidominance is almost certainly not the proper analysis of such cases, and is not available more generally. Given the way I have described this problem makes a suggestion clear: the answer might reside in a better understanding of the principles governing the realization of reflexives and pronouns (Reinhart & Reuland 1993; Seth Cable, p.c.): wherever a reflexive would have to go, multidominance is not possible. While this might accurately describe the pattern, deriving it requires additional work.

Other cases pose a problem for my analysis specifically. For instance, what would rule out a structure containing a *spray/load* verb where the multidominated phrase is the one in the complement of the small clause?

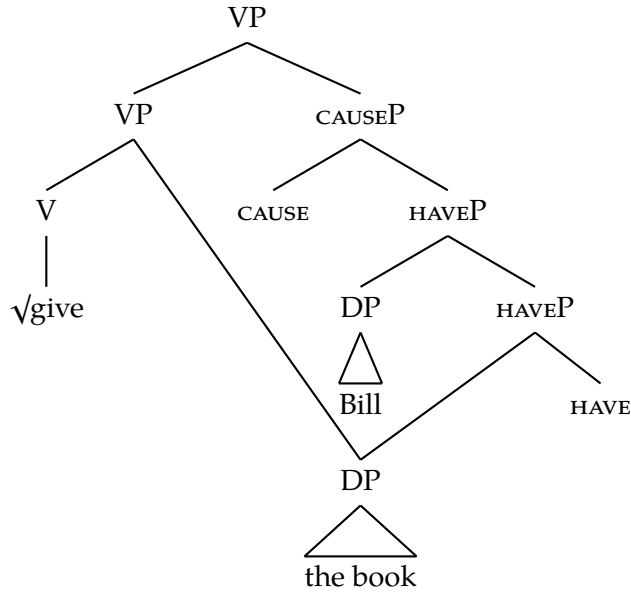
(13) \*

$$\begin{aligned} \llbracket \text{VP} \rrbracket = & \\ & \lambda e.\text{spray}(e) \wedge \text{GOAL}(e, \text{on}(\text{the wall}) \wedge \\ & \exists e'[\text{onto}(e', \text{the paint}, \text{the wall}) \wedge \text{CAUSE}(e, e')] = 1 \end{aligned}$$



This structure, unlike the previous one, would not violate the binding theory. No errors in semantic composition result. As such, it is difficult to see what would rule out this structure. However, it is clear that this structure is not possible. If it were, we would expect to be able to get a reading of post-object *again* that would target V and *the wall* to the exclusion of *the paint* (assuming that *the paint* moves to a higher position for structural Case), which is clearly not available. Something that makes this issue more pressing is that Johnson (2018) proposes a structure that is very much similar to (13) for double-object dative structures.

(14)



(based on Johnson 2018, (44))

Of course, one could imagine reasons to rule out the structure in (13). Note that along the left branch, the multidominated DP *the wall* is structurally higher than the DP in Spec,PP. This might lead to it getting targeted for structural accusative Case assignment. However, this could result in two problems: one might be that the preposition's need to assign Case would go unmet as a result, and/or that *the paint* would no longer be able to get Case. However, these ways of ruling out (13) would also rule out the structure in (14). While *HAVE* is shown as not being a preposition, it is posited to assign Case to the second object of a double-object construction, while structural Case is assigned to the first object (this accounts for the behavior of double-object passives, for instance). As such, any explanation that would rule out (13) based on Case theory would also almost certainly rule out (14) as well. One could take this as evidence against Johnson (2018)'s proposal, but I do not believe it would be very strong evidence. Instead, whatever rules out (13) would probably have to be related to some other syntactic difference between *HAVE* and overt locative prepositions, or else to the existence of  $P_{\text{Loc}\emptyset}$  / *THEME* in one structure but not necessarily the other. I have no suggestions about how this might work, and will leave it as a mystery.

One could of course come up with many other examples that a grammar with parallel uses of Merge would generate but which are unattested.<sup>11</sup> This is just a sampling of a

<sup>11</sup>Some of these additional examples might be easily ruled out given appropriately new ways of formulat-

larger theoretical problem that arises when Merge is allowed to apply in ways that produce structures with multidominance. However, I would suggest that this is not really a short-coming of systems that make use of multidominance. Allowing Merge to apply in all ways consistent with its definition as the simplest possible syntactic operation achieves greater explanatory adequacy with regards to the question of the evolution of the faculty of language. Rather than being tasked with determining what rules out cases like (12) and (13), we would be forced to come up with ways of stipulating restrictions on the application of Merge that would serve no purpose beyond preventing the derivation of such structures. It is my view that the better approach is to allow Merge to apply freely in all ways consistent with its simplest possible definition. Instead of constraining Merge, we should seek explanations of why some structures it produces turn out to be ill-formed. We close the door on limiting the flexibility of Merge, but open the window of a research program investigating the constraints required in a system that allows multidominance.

### 6.3.2.3 *The Architecture of the System and the Limits of Flexibility*

Having provided this (admittedly incomplete) response to the question of why *spray/load* verbs cannot have a syntax other than the one they do according to my analysis, we can turn by way of conclusion to the broader question of what places limits on possible alternations. An adequate answer to this requires a definition of what an alternation is in my system. This definition implicitly places limits on what is possible.

To approach an answer to this question, a good first thing to note is that argument structure is quite flexible. Most verbs can occur in many different argument structures, a fact of central importance.

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ing familiar constraints. For instance, structures that would involve non-cyclic long-distance multidominated nodes would be ruled out by whatever the proper account of island constraints is according to a system with multidominance. This would be because such cases would correspond exactly to sentences that are to be ruled out by constraints on movement, once we reconceptualize movement as Rmerge. The need for an explanation of island constraints in systems that use the copy theory of movement is well-understood; systems that posit Rmerge may simply need to apply an additional set of constraints on representations, or else it may be the case that the constraints that would rule out the structures discussed in this section would be identical to island constraints under the proper formulation.



- (15)
- a. John sneezed.
  - b. John sneezed a loud sneeze.
  - c. John sneezed his handkerchief soggy.
  - d. John sneezed the receipt across the room.
  - e. John sneezed Bill a tissue.
  - f. John sneezed his way to fame.
  - g. \* John sneezed his handkerchief / the receipt / Bill / his way.

More examples could surely be constructed, including examples showing similar flexibility for a variety of different verbs. What is relevant in the case of the particular examples in (15) is that many would analyze the basic verb *sneeze* as a simple, intransitive verb. Yet it occurs in transitive structures (with a cognate object) and several different kinds of resultatives (including standard adjectival resultatives, directed motion resultatives, the double-object structure, and the *his way* construction). This flexibility speaks quite strongly against locating the argument structure properties of a verb entirely in the verb, and towards positing a generative process that allows a verb to enter into several different argument structures (à la Borer 2005b). Following the dictates of parsimony leads us to posit that this generative process is none other than the generative process our theory already requires to explain the infinitude of syntax.

Of course, there must be some restrictions on flexibility: not every verb can occur with every argument structure. *Sneeze* can only be transitive with a cognate object; the sentences in (15g) are impossible. Cases where more complex argument structures are impossible also exist; famously, Latinate verbs can occur in prepositional dative, but not double-object structures, and so on. Our approach must therefore balance flexibility and restriction—and therein lies the game.

All reasonable theories of argument structure have some way of accounting for these sorts of facts. My approach follows one particular way of thinking inspired by Borer (2005b) and Harley (2011). This view is that argument structure is at its core quite flexible, and syntactically constructed. A semantic proposal that goes quite nicely with this view is that verbs are only ever predicates of eventualities, and do not take any semantic argument other than

an eventuality argument.<sup>12</sup> Thus, all entity arguments must be introduced by functional heads that invoke thematic relations (that is, relations between entities and eventualities). Nevertheless, verbs may come with certain syntactic or semantic requirements, which lead to some argument structures that conflict with these requirements being ruled out.<sup>13</sup> For instance, one thought about what would rule out (15g) is that *sneeze* might not be able to merge directly with  $v_{\text{THEME}}$  or any other thematic head.<sup>14</sup> Cognate objects might arise in some other way (either via a different functional head, or along the lines proposed by Hale & Keyser (2002)).

What I propose is that the limits of the flexibility of argument structure thus arise from both the lexical properties of particular heads, and the general principles of syntax and semantics. The particular heads in question presently are verbs and functional heads, which in the domain of verbal argument structure all have a semantic type of the form  $\langle, st \rangle$ —a relation between something of an arbitrary semantic type  $\alpha$  and a predicate of eventualities. Within this limit, the lexical properties of particular verbs are by definition idiosyncratic, and so when we consider the limits of the system we may safely place them aside. What defines the limits of argument structure in general, then, are what defines the limits of syntax and semantics. In my system, the syntax consists of Merge. Merge can be applied to create parallel structures that involve multidominance relations, though such uses follow from the definition of Merge with no further stipulation as I showed in chapter 2. The semantics consists of four standard rules of composition: Function Application, Predicate Modification (plus Event Identification as an extension), and Function Composition. The structures the syntax creates must produce an LF that the semantics can interpret using these operations.

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<sup>12</sup>Though see Kratzer (2003) for an argument against one pervasive implementation of this idea that would equate the thematic roles of nearly all internal arguments by dubbing them themes. The reader will recall that my use of  $\text{THEME}$  is intentionally restricted to entities that undergo motion. It is not intended to be the thematic relation that holds of objects of other verbs that are sometimes called themes, like in *dig a hole*, *plant a tree*, *cook a meal*, *hit the fence*, etc. In my view, those objects might enter into very different thematic relations, which might be introduced by other functional heads.

<sup>13</sup>This idea differs from Borer (2005b)'s approach. She proposes that what rules out cases like those in (15g) is not syntactic or semantic, since in her approach (further developed in Borer (2013)), lexical heads have no syntactic or semantic properties. Thus, syntactic and semantic properties associated with individual lexical items, such as obligatory intransitivity, are ineffable. Instead, world knowledge means that sentences like those in (15g) receive anomalous interpretations, which leads to them being perceived as ungrammatical. But they are not ungrammatical as such in Borer (2005b)'s proposal.

<sup>14</sup>Recall that I am using a more restricted definition of the semantic relation  $\text{THEME}$  than is typical; my use only makes reference to event participants that undergo motion as part of the event.

Under this view, argument structure alternations are nothing very special. They consist, no less than anything else in syntax and semantics, of the interaction of idiosyncratic lexical properties with the general principles and operations of the grammar. A particular verbal argument structure consists of an arrangement of lexical and functional heads that (i) satisfies the idiosyncratic requirements of those heads, (ii) can be generated by Merge, and (iii) can be interpreted by the semantics. An argument structure alternation is thus possible whenever a verb's requirements can be satisfied in more than one structure that obeys the laws of syntax and semantics.

## BIBLIOGRAPHY

- Ackerman, F. (1992). Complex predicates and morpholexical relatedness: Locative alternation in Hungarian. In I. Sag, & A. Szabolsci (Eds.) *Lexical Matters*, (pp. 55–83). Stanford: Center for the Study of Language and Information.
- Ades, A., & Steedman, M. (1982). On the order of words. *Linguistics and Philosophy*, 4, 517–558.
- Alexiadou, A., Anagnostopoulou, E., & Schäfer, F. (2015). *External Arguments in Transitivity Alternations: A Layering Approach*. Oxford, United Kingdom: Oxford University Press.
- Alexiadou, A., & Anagnostopoulou, E. (2013). Manner vs. result complementarity in verbal alternations: A view from the clear-alternation. In S. Keine, & S. Sloggett (Eds.) *Proceedings of the Forty-Second Annual Meeting of the North East Linguistic Society*, (pp. 39–52). Amherst: Graduate Linguistic Student Association.
- Alexiadou, A., & Doron, E. (2012). The syntactic construction of two non-active Voices: Passive and middle. *Journal of Linguistics*, 48, 1–34.
- Anderson, S. R. (1971). On the role of deep structure in semantic interpretation. *Foundations of Language*, 7(3), 387–396.
- Aoun, J., & Li, Y.-h. A. (1989). Scope and constituency. *Linguistic Inquiry*, 20(2), 141–172.
- Bach, E. (1981). On time, tense, and aspect: An essay in English metaphysics. In P. Cole (Ed.) *Radical Pragmatics*, (pp. 63–81). New York: Academic Press.
- Baker, M. (1988a). *Incorporation: A Theory of Grammatical Function Changing*. Chicago, IL: The University of Chicago Press.

- (1988b). Theta theory and the syntax of applicatives in Chichewa. *Natural Language & Linguistic Theory*, 6(3), 353–389.
- Baker, M., Johnson, K., & Roberts, I. (1989). Passive arguments raised. *Linguistic Inquiry*, 20(2), 219–251.
- Bale, A. (2005). Quantifiers, *again* and the complexity of verb phrases. In E. Georgala, & J. Howell (Eds.) *Proceedings of the 15<sup>th</sup> Semantics and Linguistic Theory Conference*, (pp. 1–18). Cornell University, Ithaca, NY: CLC Publications.
- (2007). Quantifiers and verb phrases: An exploration of propositional complexity. *Natural Language & Linguistic Theory*, 25, 447–483.
- Barss, A., & Lasnik, H. (1986). A note on anaphora and double objects. *Linguistic Inquiry*, 17, 347–354.
- Beavers, J. (2006). *Argument/Oblique Alternations and the Structure of Lexical Meaning*. Ph.D. thesis, Stanford University.
- (2017). The *spray/load* alternation. In M. Everaert, & H. van Riemsdijk (Eds.) *The Wiley Blackwell Companion to Syntax*. John Wiley & Sons, 2<sup>nd</sup> ed.
- Beavers, J., & Koontz-Garboden, A. (2020). *The Roots of Verbal Meaning*, vol. 74 of *Oxford Studies in Theoretical Linguistics*. Oxford: Oxford University Press.
- Beavers, J., Levin, B., & Wei Tham, S. (2010). The typology of motion expressions revisited. *Journal of Linguistics*, 46, 331–377.
- Beck, S. (2005). There and back again: A semantic analysis. *Journal of Semantics*, (pp. 3–51).
- Beck, S., & Gergel, R. (2015). The diachronic semantics of English *again*. *Natural Language Semantics*, 23(3), 157–203.
- Beck, S., & Johnson, K. (2004). Double objects again. *Linguistic Inquiry*, 35(1), 97–124.
- Beck, S., & Snyder, W. (2001). The resultative parameter and restitutive *again*. In C. Fery, & W. Sternefeld (Eds.) *Audiatur Vox Sapientiae: A Festschrift for Arnim von Stechow*, (pp. 48–69). Berlin: Akademie-Verlag.

- Belletti, A., & Rizzi, L. (1988). Psych-verbs and  $\theta$ -theory. *Natural Language & Linguistic Theory*, 6(3), 291–352.
- Bierwisch, M. (1988). On the grammar of local prepositions. In M. Bierwisch, W. Motsch, & I. Zimmermann (Eds.) *Syntax, Semantik und Lexikon*, vol. 29 of *Studia Grammatica*, (pp. 1–65). Berlin: Akademie Verlag.
- Boas, H. (2003). Towards a lexical-constructional account of the locative alternation. In L. Carmichael, H. Chia-Hui, & S. Vida (Eds.) *Proceedings of the 2001 Western Conference on Linguistics*, vol. 13, (pp. 27–42). Fresno: Department of Linguistics, California State University, Fresno.
- Boeckx, C. (2001). Scope reconstruction and A-movement. *Natural Language & Linguistic Theory*, 19, 503–548.
- Borer, H. (2005a). *In Name Only*, vol. 1 of *Structuring Sense*. Oxford: Oxford University Press.
- (2005b). *The Normal Course of Events*, vol. 2 of *Structuring Sense*. Oxford: Oxford University Press.
- (2013). *Taking Form*, vol. 3 of *Structuring Sense*. Oxford: Oxford University Press.
- Bowerman, M. (1982). Reorganizational patterns in lexical and syntactic development. In E. Wanner, & L. Gleitman (Eds.) *Language Acquisition: The State of the Art*, (pp. 319–346). New York: Cambridge University Press.
- Brinkmann, U. (1995). *The Locative Alternation: Its Structure and Acquisition*. Ph.D. thesis, Katholieke Universiteit Nijmegen.
- Bruening, B. (2001). QR obeys Superiority: Frozen scope and ACD. *Linguistic Inquiry*, 32(2), 233–273.
- (2011). Pseudopassives, expletive passives, and locative inversion. Ms., University of Delaware.
- (2013). By-phrases in passives and nominals. *Syntax*, 16(1), 1–41.

- (2014). Word formation is syntactic: Adjectival passives in English. *Natural Language & Linguistic Theory*, (pp. 363–422).
- Burzio, L. (1986). *Italian Syntax: A Government-Binding Approach*, vol. 1 of *Studies in Natural Language and Linguistic Theory*. Dordrecht: D. Reidel Publishing Company.
- Campos, H. (1991). Preposition stranding in Spanish? *Linguistic Inquiry*, 22(4), 741–750.
- Carrier, J., & Randall, J. (1992). The argument structure and syntactic structure of resultatives. *Linguistic Inquiry*, 23(2), 173–234.
- Cheung, C. C.-H., & Larson, R. (2015). Psych verbs in English and Mandarin. *Natural Language & Linguistic Theory*, 33, 127–189.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax*, vol. 11 of *Special Technical Reports of the Research Laboratory of Electronics of the Massachusetts Institute of Technology*. Cambridge: MIT Press.
- (1981). *Lectures on Government and Binding: The Pisa Lectures*. Dordrecht, The Netherlands: Foris Publications Holland.
- (1993). A minimalist program for linguistic theory. In Hale & Keyser (1993b), (pp. 1–52).
- (1995). *The Minimalist Program*. Cambridge, MA: The MIT Press.
- (2004). Beyond explanatory adequacy. In A. Belletti (Ed.) *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3*, vol. 17 of *Oxford Studies in Comparative Syntax*, chap. 3, (pp. 104–131). New York: Oxford University Press.
- Chung, S., & Ladusaw, W. A. (2004). *Restriction and Saturation*, vol. 42 of *Linguistic Inquiry Monographs*. Cambridge, MA: The MIT Press.
- Cinque, G., & Rizzi, L. (Eds.) (2010). *Mapping Spatial PPs*, vol. 6 of *The Cartography of Syntactic Structures of Oxford Studies in Comparative Syntax*. New York: Oxford University Press.

- Citko, B. (2005). On the nature of merge: External merge, internal merge, and parallel merge. *Linguistic Inquiry*, 36(4), 475–496.
- Clements, J. C. (2006). Null direct objects in Spanish. In J. C. Clements, & J. Yoon (Eds.) *Functional Approaches to Spanish Syntax: Lexical Semantics, Discourse and Transitivity*, (pp. 134–150). Houndmills, Basingstoke, Hampshire, England: Palgrave Macmillan.
- Collins, C. (2005). A smuggling approach to the passive in English. *Syntax*, 8(2), 81–120.
- Damonte, F. (2005). Classifier incorporation and the locative alternation. In N. Munaro, G. Turano, & W. Schweikert (Eds.) *Proceedings of the XXX Incontro di Grammatica Generativa*, (pp. 83–103). Venezia: Cafoscarina.
- Davidson, D. (1967). The logical form of action sentences. In N. Resher (Ed.) *The Logic of Decision and Action*, (pp. 81–95). Pittsburgh: University of Pittsburgh Press.
- (1969). The individuation of events. In N. Resher (Ed.) *Essays in Honor of Carl G. Hempel*, (pp. 236–234). Dordrecht: Reidel.
- Deal, A. R. (2020). *A Theory of Indexical Shift: Meaning, Grammar, and Crosslinguistic Variation*, vol. 82 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- D’Elia, S. C. (2016). *The Spray/Load and Dative Alternations: Aligning VP Structure and Contextual Effects*. Ph.D. thesis, University of Kent.
- Dewell, R. (2004). The semantics of *be*-verb constructions and the German locative alternation. *Leuvense Bijdragen*, 93, 15–59.
- Di Sciullo, A. M., & Williams, E. (1987). *On the Definition of Word*, vol. 14 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- Diesing, M. (1992). *Indefinites*, vol. 22 of *Linguistic Inquiry Monographs*. Cambridge, MA: MIT Press.
- Dowty, D. (1991). Thematic proto-roles and argument selection. *Language*, 67(3), 547–619.



- (2001). The semantic asymmetry of “argument alternations” (and why it matters). In G. van der Meer, & A. G. B. ter Meulen (Eds.) *Making Sense: From Lexeme to Discourse*, vol. 44 of *Groninger Arbeiten zur germanistischen Linguistik*, (pp. 171–186). Groningen: Centre for Language and Cognition.
- Dowty, D. R. (1979). *Word Meaning and Montague Grammar*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Egg, M. (1999). Deriving and resolving ambiguities in *wieder*-sentences. In P. J. E. Dekker (Ed.) *Proceedings of the 12th Amsterdam Colloquium*, (pp. 109–114). Amsterdam: Institute for Logic, Language and Computation/Department of Philosophy.
- Embick, D. (2004). On the structure of resultative participles in English. *Linguistic Inquiry*, 35(3), 355–392.
- Engdahl, E. (1980). *The Syntax and Semantics of Questions in Swedish*. Ph.D. thesis, University of Massachusetts Amherst.
- Epstein, S., Groat, E. M., Kawashima, R., & Kitahara, H. (1998). *A Derivational Approach to Syntactic Relations*. New York: Oxford University Press.
- Fábregas, A. (2007). An exhaustive lexicalization account of directional complements. In M. Bašić, M. Pantcheva, M. Son, & P. Svenonius (Eds.) *Nordlyd: Tromsø Working Papers on Language & Linguistics*, vol. 34, (pp. 165–199). Tromsø: CASTL. Special issue on Space, Motion, and Result.
- Fagan, S. M. B. (1988). The English middle. *Linguistic Inquiry*, 19(2), 181–203.
- Folli, R., & Harley, H. (2005). Flavours of v: Consuming results in Italian and English. In P. Kempchinsky, & R. Slabakova (Eds.) *Aspectual Enquiries*, (pp. 95–120). Dordrecht, The Netherlands: Springer.
- (2007). Causation, obligation, and argument structure: On the nature of little v. *Linguistic Inquiry*, 38(2), 197–238.

- (2020). A head movement approach to Talmy's typology. *Linguistic Inquiry*, 51(3), 425–470.
- Fraser, B. (1971). A note on the *spray paint* cases. *Linguistic Inquiry*, 2(4), 604–607.
- Gärtner, H.-M. (1997). *Generalized Transformations and Beyond*. Ph.D. thesis, University of Frankfurt/Main.
- (1999). Phrase-linking meets Minimalist syntax. In S. Bird, A. Carnie, J. D. Haugen, & P. Norquest (Eds.) *Proceedings of the 18th Annual West Coast Conference on Formal Linguistics*, (pp. 159–169). Cambridge, MA: Cascadilla Press.
- Gärtner, H.-M. (2011). Function composition and the linear local modeling of extended neg-scope. In A. Alexiadou, T. Kiss, & G. Müller (Eds.) *Local Modelling of Non-Local Dependencies in Syntax*, vol. 547 of *Linguistische Arbeiten*, (pp. 337–352). Berlin: de Gruyter.
- van Geenhoven, V. (1998). *Semantic Incorporation and Indefinite Descriptions: Semantic and Syntactic Aspects of Noun Incorporation in West Greenlandic*, vol. 15 of *Dissertations in Linguistics*. Stanford: Center for the Study of Language and Information.
- Gehrke, B. (2008). *Ps in Motion: On the Semantics and Syntax of P Elements and Motion Events*. Ph.D. thesis, Universiteit Utrecht.
- Gleitman, L. (1990). The structural sources of verb meaning. *Language Acquisition*, 1(1), 3–55.
- Goldberg, A. E. (1995). *Constructions: A Construction Grammar Approach to Argument Structure*, vol. 1 of *Cognitive Theory of Language and Culture*. Chicago, IL: The University of Chicago Press.
- (2002). Surface generalizations: An alternative to constructions. *Cognitive Linguistics*, 13(4), 327–356.
- (2006). *Constructions at Work: The Nature of Generalization in Language*. Oxford: Oxford University Press.

- Gronemeyer, C. (1995). Swedish applied verbs derived by the prefix *be-*. In *Working Papers*, vol. 44, (pp. 21–40). Lund: Department of Linguistics, Lund University.
- Gropen, J. (1989). *Learning Locative Verbs: How Universal Linking Rules Constraint Productivity*. Ph.D. thesis, MIT.
- Gropen, J., Pinker, S., Hollander, M., & Goldberg, R. (1991a). Affectedness and direct objects: The role of lexical semantics in the acquisition of verb argument structure. *Cognition*, 41, 153–195.
- (1991b). Syntax and semantics in the acquisition of locative verbs. *Journal of Child Language*, 18(1), 115–151.
- Gropen, J., Pinker, S., Hollander, M., Goldberg, R., & Wilson, R. (1989). The learnability and acquisition of the dative alternation in English. *Language*, 65, 203–257.
- Hale, K. (1986). Notes on world view and semantic categories: Some Warlpiri examples. In P. Muysken, & H. van Riemsdijk (Eds.) *Features and Projections*, (pp. 233–254). Dordrecht: Foris.
- Hale, K., & Keyser, S. J. (1993a). On argument structure and the lexical expression of syntactic relations. In Hale & Keyser (1993b), (pp. 53–110).
- Hale, K., & Keyser, S. J. (Eds.) (1993b). *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, vol. 24 of *Current Studies in Linguistics*. Cambridge: MIT Press.
- Hale, K., & Keyser, S. J. (2002). *Prolegomenon to a Theory of Argument Structure*, vol. 39 of *Linguistic Inquiry Monographs*. Cambridge, MA: MIT Press.
- (2005). Aspect and the syntax of argument structure. In N. Erteschik-Shir, & T. Rapoport (Eds.) *The Syntax of Aspect: Deriving Thematic and Aspectual Interpretation*, (pp. 11–41). Oxford: Oxford University Press.
- Hall, B. (1965). *Subject and Object in Modern English*. Ph.D. thesis, MIT.

- Harley, H. (2002). Possession and the double object construction. In P. Pica, & J. Rooryck (Eds.) *Linguistic Variation Yearbook 2002*, vol. 2, (pp. 31–70). Amsterdam: John Benjamins.
- (2005). How do verbs get their names? denominal verbs, manner incorporation, and the ontology of verb roots in English. In N. Erteschik-Shir, & T. Rapoport (Eds.) *The Syntax of Aspect: Deriving Thematic and Aspectual Interpretation*, vol. 10 of *Oxford Studies in Theoretical Linguistics*. Oxford: Oxford University Press.
- (2008). On the causative construction. In S. Miyagawa (Ed.) *The Oxford Handbook of Japanese Linguistics*, (pp. 20–53). Oxford: Oxford University Press.
- (2011). A minimalist approach to argument structure. In *The Oxford Handbook of Linguistic Minimalism*. Oxford University Press.
- (2013). External arguments and the mirror principle: On the distinctness of voice and v. *Lingua*, 125, 34–57.
- Haugen, J. D. (2009). Hyponymous objects and late insertion. *Lingua*, 119(2), 242–262.
- Heim, I. (1982). *The Semantics of Definite and Indefinite Noun Phrases*. Ph.D. thesis, University of Massachusetts Amherst.
- Higginbotham, J. (1985). On semantics. *Linguistic Inquiry*, 16(4), 547–594.
- (2000). On events in linguistic semantics. In Higginbotham et al. (2000), (pp. 49–79).
- (2009). *Tense, Aspect, and Indexicality*, vol. 26 of *Oxford Studies in Theoretical Linguistics*. New York: Oxford University Press.
- Higginbotham, J., Pianesi, F., & Varsi, A. (Eds.) (2000). *Speaking of Events*. New York: Oxford University Press.
- Hiraiwa, K., & Bodomo, A. (2008). Object-sharing as symmetric sharing: Predicate clefting and serial verbs in Dàgáárè. *Natural Language & Linguistic Theory*, 26, 795–832.

- Hoeksema, J. (2009). The swarm alternation revisited. In E. W. Hinrichs, & J. Nerbonne (Eds.) *Theory and Evidence in Semantics*, (pp. 53–80). Stanford: Center for the Study of Language and Information.
- Hornstein, N., & Weinberg, A. (1981). Case theory and preposition stranding. *Linguistic Inquiry*, 12(1), 55–91.
- Huang, H.-L. (2018). *The Head-Quarters of Mandarin Arguments*. Ph.D. thesis, University of Massachusetts Amherst.
- Husband, E. M. (2011). Rescuing manner/result complementarity from certain death. In M. Abrego-Collier, A. Kang, M. Martinović, & C. Nguyen (Eds.) *Proceedings from the 47th Annual Meeting of the Chicago Linguistic Society*, vol. 1, (pp. 111–124). Chicago: Chicago Linguistic Society.
- Iwata, S. (2008). *Locative Alternation: A Lexical-Constructional Approach*, vol. 6 of *Constructional Approaches to Language*. Amsterdam/Philadelphia: John Benjamins.
- Jackendoff, R. (1990). On Larson’s analysis of the double object construction. *Linguistic Inquiry*, 21(3), 427–456.
- Jacobson, P. (1990). Raising as function composition. *Linguistics and Philosophy*, 13, 423–475.
- (1992). Raising without movement. In R. Larson, S. Iatridou, U. Lahiri, & J. Higginbotham (Eds.) *Control and Grammar*, vol. 48 of *Studies in Linguistics and Philosophy*, (pp. 149–194). Dordrecht: Kluwer.
- Jäger, G., & Blutner, R. (2003). Competition and interpretation: The German adverb *wieder* (‘again’). In E. Lang, C. Maienborn, & C. Fabricius-Hansen (Eds.) *Modifying Adjuncts*, (pp. 393–416). Berlin: Mouton de Gruyter.
- Janke, V., & Neeleman, A. (2012). Ascending and descending VPs in English. *Linguistic Inquiry*, 43(1), 151–190.
- Jeffries, L., & Willis, P. (1984). A return to the spray paint issue. *Journal of Pragmatics*, 8(5–6), 715–729.

- Jerro, K. (2017). The causative-instrumental syncretism. *Journal of Linguistics*, 53, 751–788.
- Johnson, K. (1991). Object positions. *Natural Language & Linguistic Theory*, 9(4), 577–636.
- (2012). Towards deriving differences in how *wh* movement and QR are pronounced. *Lingua*, 122(6), 529–553.
- (2018). To give someone their innocence again. In R. Ivan (Ed.) *The Leader of the Pack: A Festschrift in Honor of Peggy Speas*, vol. 40 of *University of Massachusetts Occasional Papers in Linguistics*, (pp. 211–244). Amherst, MA: GLSA.
- Kayne, R. (1984). *Connectedness and Binary Branching*, vol. 16 of *Studies in Generative Grammar*. Dordrecht: Foris.
- (1994). *The Antisymmetry of Syntax*, vol. 25 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- Keine, S., & Bhatt, R. (2016). Interpreting verb clusters. *Natural Language & Linguistic Theory*, 34, 1445–1492.
- Keyser, S. J., & Roeper, T. (1984). On the middle and ergative constructions in English. *Linguistic Inquiry*, 15(3), 381–416.
- (1992). Re: The abstract clitic hypothesis. *Linguistic Inquiry*, 23(1), 89–125.
- Kim, M. (1999). *A Cross-Linguistic Perspective on the Acquisition of Locative Verbs*. Ph.D. thesis, University of Delaware.
- Kiparsky, P. (1998). Partitive case and aspect. In W. Greuder, & M. Butt (Eds.) *The Projection of Arguments: Lexical and Compositional Factors*, vol. 83 of *CSLI Lecture Notes*, (pp. 265–307). Stanford: Center for the Study of Language and Information.
- Koenig, J.-P., Mauner, G., & Bienvenue, B. (2003). Arguments for adjuncts. *Cognition*, 89, 67–103.
- Koenig, J.-P., Mauner, G., Bienvenue, B., & Conklin, K. (2007). What with? The anatomy of a (proto)-role. *Journal of Semantics*, 25, 175–220.

- Kracht, M. (2002). On the semantics of locatives. *Linguistics and Philosophy*, 25(2), 152–232.
- Kratzer, A. (1996). Severing the external argument from its verb. In J. Rooryck, & L. Zaring (Eds.) *Phrase Structure and the Lexicon*, (pp. 109–137). Dordrecht: Kluwer Academic Publishers.
- (2000). Building statives. In L. J. Conathan, J. Good, D. Kavitskaya, A. B. Wulf, & A. C. L. Lu (Eds.) *Proceedings of the Twenty-Sixth Annual Meeting of the Berkeley Linguistics Society: General Session and Parasession on Aspect*, (pp. 385–399).
- (2003). The event argument and the semantics of verbs. Ms., University of Massachusetts Amherst.
- (2005). Building resultatives. In C. Maienborn, & A. Wöllstein (Eds.) *Event Arguments: Foundations and Applications*, (pp. 177–212). Tübingen, Germany: Max Niemeyer Verlag.
- Kratzer:1994 (1994). On external arguments. In E. Benedicto, & J. Runner (Eds.) *University of Massachusetts Occasional Papers in Linguistics 17: Functional Projections*, vol. 20 of *University of Massachusetts Occasional Papers in Linguistics*, (pp. 104–130). Amherst: Graduate Linguistic Student Association.
- Krifka, M. (1998). The origins of telicity. In S. Rothstein (Ed.) *Events and Grammar*, (pp. 197–235). Dordrecht: Kluwer.
- (1999). Manner in dative alternation. In S. Bird, A. Carnie, J. D. Haugen, & P. Norquist (Eds.) *Proceedings of the 18th West Coast Conference on Formal Linguistics*, (pp. 260–271). Cambridge, Massachusetts: Cascadilla Press.
- Landau, I. (2009). *The Locative Syntax of Experiencers*, vol. 51 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- Larson, R. (1988). On the double object construction. *Linguistic Inquiry*, 19(3), 335–391.
- (1990). Double objects revisited: Reply to Jackendoff. *Linguistic Inquiry*, 21(4), 589–632.

- (2014). *On Shell Structure*, vol. 19 of *Routledge Leading Linguists*. New York: Routledge.
- Legate, J. (2017). On passives. Talk presented 3 March 2017 at Harvard University. Abstract available at [linguistics.fas.harvard.edu/files/linguistics/files/legate\\_abstract1.pdf](http://linguistics.fas.harvard.edu/files/linguistics/files/legate_abstract1.pdf).
- Legate, J. A. (2014). *Voice and v: Lessons from Acehnese*, vol. 69 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- (2021). Noncanonical passives: A typology of voices in an impoverished universal grammar. *Annual Review of Linguistics*, 7, 157–76.
- Legate, J. A., Akkuş, F., Šereikaitė, M., & Ringe, D. (2020). On passives of passives. *Language*, 96(4), 771–818.
- Levin, B. (1993). *English Verb Classes and Alternations: A Preliminary Investigation*. Chicago, Illinois: University of Chicago Press.
- Levin, B., & Rapoport, T. (1988). Lexical subordination. In L. MacLeod, G. Larson, & D. Brentari (Eds.) *Proceedings of the 24th Annual Meeting of the Chicago Linguistic Society, Volume 1*, (pp. 275–289). Chicago: Chicago Linguistic Society.
- Levin, B., & Rappaport, M. (1988). Nonevent *-er* nominals: A probe into argument structure. *Linguistics*, 26(6), 1067–1083.
- Levin, B., & Rappaport Hovav, M. (1991). Wiping the slate clean: A lexical semantic exploration. *Cognition*, 41(1–3), 123–151.
- (1995). *Unaccusativity: At the Syntax-Lexical Semantics Interface*. Cambridge, Massachusetts: MIT Press.
- (1998). Morphology and lexical semantics. In A. Spencer, & A. M. Zwicky (Eds.) *Handbook of Morphology*, (pp. 248–271). Oxford: Blackwell.
- (2006). Constraints on the complexity of verb meaning and VP structure. In H.-M. Gärtner, S. Beck, R. Eckardt, R. Musan, & B. Stiebels (Eds.) *Between 40 and 60 Puzzles for*



- Krifka: A Web Festschrift for Manfred Krifka*. Zentrum für Allgemeine Sprachwissenschaft, Typologie und Universalienforschung.
- (2013). Lexicalized meaning and manner/result complementarity. In B. Arsenijević, B. Gehrke, & R. Marín (Eds.) *Studies in the Composition and Decomposition of Event Predicates*, vol. 93 of *Studies in Linguistics and Philosophy*, (pp. 49–70). Dordrecht: Springer.
- Lewandowski, W. (2014). The locative alternation in verb-framed vs. satellite-framed languages: A corpus study of Spanish and Polish. *Studies in Language*, 38(4), 864–895.
- Maienborn, C. (2008). On Davidsonian and Kimian states. In I. Comorovski, & K. von Heusinger (Eds.) *Existence: Semantics and Syntax*, vol. 84 of *Studies in Linguistics and Philosophy*, (pp. 107–130). Dordrecht: Springer.
- (2011). Event semantics. In C. Maienborn, K. von Heusinger, & P. Portner (Eds.) *Semantics: An International Handbook of Natural Language Meaning, Volume 1*, vol. 33.1 of *Handbooks of Linguistics and Communication Science*, chap. 34. Berlin: De Gruyter Mouton.
- Marantz, A. (1984). *On the Nature of Grammatical Relations*, vol. 10 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- Mateu, J. (2000). Lexicalization patterns and the locative alternation. Unpublished ms., Universitat Autònoma de Barcelona.
- (2012). Conflation and incorporation processes in resultative constructions. In V. Demonte, & L. McNally (Eds.) *Telicity, Change, and State: A Cross-Categorial View of Event Structure*, vol. 39 of *Oxford Studies in Theoretical Linguistics*, (pp. 252–278). Oxford: Oxford University Press.
- (2017). Two types of locative alternation. In A. Álvarez González, & I. Navarro (Eds.) *Verb Valency Changes: Theoretical and Typological Perspectives*, vol. 120 of *Typological Studies in Language*, (pp. 52–77). Amsterdam: John Benjamins.
- Mateu, J., & Acedo-Martellán, V. (2012). The manner/result complementarity revisited: A syntactic approach. In M. Cristina Cuervo, & Y. Roberge (Eds.) *The End of Argument*

- Structure?*, vol. 38 of *Syntax and Semantics*, (pp. 209–228). London: Emerald Group Publishing.
- May, R. (1988). Ambiguities of quantification and *Wh*: A reply to Williams. *Linguistic Inquiry*, 19(1), 118–135.
- Moravcsik, E. (1978). On the case marking of objects. In J. H. Greenberg (Ed.) *Universals of Human Language, Vol. 4: Syntax*, (pp. 249–290). Stanford: Stanford University Press.
- Morzycki, M. (2005). *Mediated Modification: Functional Structure and the Interpretation of Modifier Position*. Ph.D. thesis, University of Massachusetts Amherst.
- Mulder, R. (1992). *The Aspectual Nature of Syntactic Complementation*. Ph.D. thesis, University of Leiden.
- Myers, S. (1984). Zero-derivation and inflection. In *MIT Working Papers in Linguistics: Papers from the January 1984 MIT Workshop in Morphology*, vol. 7. Cambridge, MA: Department of Linguistics and Philosophy, MIT.
- Newman, E. (2020a). Appendices to facilitator effects in middles and more. *Glossa*, 5(1), 1–8. Available at <https://doi.org/10.5334/gjgl.990.s1>
- (2020b). Facilitator effects in middles and more. *Glossa*, 5(1), 1–40.
- Nie, Y. (2019). *Re- frozen scope in spray-load constructions*. Poster presented at the 93<sup>rd</sup> Annual Meeting of the Linguistic Society of America, Sheraton New York Times Square.
- Nunes, J. (2001). Sideward movement. *Linguistic Inquiry*, 32(2), 303–344.
- Oehrle, R. (1976). *The Grammatical Status of the English Dative Alternation*. Ph.D. thesis, MIT.
- Pao, Y.-Y. (1996). Delimitedness and the locative alternation in Chinese. In F. Ingemann (Ed.) *1994 Mid-America Linguistics Conference Papers, Volume 1*, (pp. 202–213). Lawrence: University of Kansas.
- Parsons, T. (1990). *Events in the Semantics of English: A Study in Subatomic Semantics*, vol. 19 of *Current Studies in Linguistics*. Cambridge: MIT Press.

- (2000). Underlying states and time travel. In Higginbotham et al. (2000), (pp. 81–93).
- Patel-Grosz, P., & Beck, S. (2019). Different again. *Semantics and Pragmatics*, 12(3), 1–52. Early access version available at <https://doi.org/10.3765/sp.12.3>.
- Peirce, C. S. (1897). The logic of relatives. *The Monist*, 7(2), 161–217.
- Perlmutter, D. (1978). Impersonal passives and the unaccusative hypothesis. In J. Jaeger, A. Woodbury, F. Ackerman, C. Chiarello, O. Gensler, J. Kingston, E. Sweetser, H. Thompson, & K. Whistler (Eds.) *Proceedings of the Fourth Annual Meeting of the Berkeley Linguistics Society*, (pp. 157–189). Berkeley, CA: Berkeley Linguistic Society, University of California Press.
- Perlmutter, D., & Postal, P. (1984). The 1-advancement exclusiveness law. In D. Perlmutter, & C. Rosen (Eds.) *Studies in Relational Grammar 2*, (pp. 81–125). Chicago: University of Chicago Press.
- Pesetsky, D. (1995). *Zero Syntax: Experiencers and Cascades*. Current Studies in Linguistics. Cambridge, MA: MIT Press.
- Pinker, S. (1989). *Learnability and Cognition: The Acquisition of Argument Structure*, vol. 27 of *Learning, Development, and Conceptual Change*. Cambridge, MA: MIT Press, 2013 new ed.
- (1994). *The Language Instinct: How the Mind Creates Language*. New York: William Morrow and Company.
- Postal, P. (1974). *On Raising: One Rule of English Grammar and Its Theoretical Implications*, vol. 5 of *Current Studies in Linguistics*. Cambridge: MIT Press.
- Pylkkänen, L. (2002). *Introducing Arguments*. Ph.D. thesis, MIT.
- (2008). *Introducing Arguments*, vol. 49 of *Linguistic Inquiry Monographs*. Cambridge, MA: MIT Press.
- Radkevich, N. V. (2010). *On Location: The Structure of Case and Adpositions*. Ph.D. thesis, University of Connecticut.

- Ramchand, G. C. (2008). *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.
- (2018). *Situations and Syntactic Structures: Rethinking Auxiliaries and Order in English*, vol. 77 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- Rapoport, T. (1999). The English middle and agentivity. *Linguistic Inquiry*, 30(1), 147–155.
- (2014). Central coincidence: The preposition *with*. *Faits de Langues*, 44(1), 159–173.
- Rappaport, M., & Levin, B. (1985). A case study in lexical analysis: The locative alternation. Unpublished manuscript, MIT Center for Cognitive Science.
- (1988). What to do with  $\theta$ -roles. In W. Wilkins (Ed.) *Thematic Relations*, vol. 21 of *Syntax and Semantics*, (pp. 7–36). San Diego, CA: Academic Press.
- Rappaport, M., Levin, B., & Laughren, M. (1993). Levels of lexical representation. In J. Pustejovsky (Ed.) *Semantics and the Lexicon*, vol. 49 of *Studies in Linguistics and Philosophy*, (pp. 37–54). Dordrecht: Springer.
- Rappaport Hovav, M., & Levin, B. (2007). The English dative alternation: The case for verb sensitivity. *Journal of Linguistics*, 44, 129–167.
- (2010). Reflections on manner/result complementarity. In E. Doron, M. Rappaport Hovav, & I. Sichel (Eds.) *Lexical Semantics, Syntax, and Event Structure*, vol. 27 of *Oxford Studies in Theoretical Linguistics*, (pp. 21–38). Oxford: Oxford University Press.
- Reinhart, T. (1996). Syntactic effects of lexical operations: Reflexives and unaccusatives. In *Utrecht Institute of Linguistics Onderzoeksinstituut voor Taal en Spraak Working Papers of Theoretical Linguistics*, vol. 97(2)/TL of *Utrecht Institute of Linguistics Onderzoeksinstituut voor Taal en Spraak Working Papers of Linguistics*. Utrecht: Utrecht Institute of Linguistics Onderzoeksinstituut voor Taal en Spraak.
- (2000). The theta system: Syntactic realizations of verbal concepts. In *Utrecht Institute of Linguistics Onderzoeksinstituut voor Taal en Spraak Working Papers of Theoretical Linguistics*, vol. 00(1)/TL of *Utrecht Institute of Linguistics Onderzoeksinstituut voor Taal*

- en Spraak Working Papers of Linguistics*. Utrecht: Utrecht Institute of Linguistics Onderzoeksinstituut voor Taal en Spraak.
- (2002). The theta system – an overview. *Theoretical Linguistics*, 28, 229–290.
- (2016). The theta system: Syntactic realizations of verbal concepts. In M. Everaert, M. Marelj, & E. Reuland (Eds.) *Concepts, Syntax, and Their Interface: The Theta System*, vol. 72 of *Linguistic Inquiry Monographs*. Cambridge: MIT Press.
- Reinhart, T., & Reuland, E. (1993). Reflexivity. *Linguistic Inquiry*, 24(4), 657–720.
- Rissman, L. (2010). Instrumental *with*, locatum *with*, and the argument/adjunct distinction. In *Linguistic Society of America Annual Meeting Extended Abstracts, Volume 1*, (pp. 23:1–5). Linguistic Society of America.
- (2011). Instrumental *with* and *use*: Modality and implicature. In N. Ashton, A. Chereches, & D. Lutz (Eds.) *Proceedings of the 21st Semantics and Linguistic Theory Conference*. Linguistic Society of America.
- Rizzi, L. (1990). *Relativized Minimality*, vol. 16 of *Linguistic Inquiry Monographs*. Cambridge, MA: MIT Press.
- Roeper, T. (1987). Implicit arguments and the head-complement relation. *Linguistic Inquiry*, 18(2), 267–310.
- Roeper, T., & Siegel, M. E. A. (1978). A lexical transformation for verbal compounds. *Linguistic Inquiry*, 9(2), 199–260.
- Rosen, S. T. (1996). Events and verb classification. *Linguistics*, 34, 191–223.
- Rothstein, S. (2004). *Structuring Events: A Study in the Semantics of Lexical Aspect*, vol. 2 of *Explorations in Semantics*. Malden, MA and Oxford: Blackwell.
- Roy, I., & Svenonius, P. (2009). Complex prepositions. In J. François, E. Gilbert, C. Guimier, & M. Krause (Eds.) *Autour de la préposition: Actes du Colloque International de Caen (20–22 septembre 2007)*, (pp. 105–116). Caen: Presses Universitaires de Caen.

- Selkirk, E. (2011). The syntax-phonology interface. In J. A. Goldsmith, J. Riggle, & A. Yu (Eds.) *The Handbook of Phonological Theory*, Blackwell Handbooks in Linguistics, (pp. 435–483). Oxford: Blackwell, 2 ed.
- Sigurðsson, H. Á. (1991). Icelandic case-marked PRO and the licensing of lexical arguments. *Natural Language & Linguistic Theory*, 9(2), 327–363.
- Speas, M. (1990). *Phrase Structure in Natural Language*, vol. 21 of *Studies in Natural Language and Linguistic Theory*. Dordrecht: Kluwer.
- Starke, M. (2001). *Move Dissolves into Merge: A Theory of Locality*. Ph.D. thesis, Université de Genève.
- von Stechow, A. (1992). Kompositionsprinzipien und grammatische Struktur. In P. Suchsland (Ed.) *Biologische und soziale Grundlagen der Sprache: Interdisziplinäres Symposium des Wissenschaftsbereiches Germanistik der Friedrich-Schiller-Universität Jena, 17. – 19. Oktober 1989*, vol. 280 of *Linguistische Arbeiten*, (pp. 175–248). Tübingen: Niemeyer.
- (1995). Lexical decomposition in syntax. In U. Egli, P. E. Pause, C. Schwarze, A. von Stechow, & G. Wienold (Eds.) *The Lexicon in the Organization of Language*, (pp. 81–118). Amsterdam: John Benjamins.
- (1996). The different readings of *wieder* ‘again’: A structural account. *Journal of Semantics*, 13(2), 87–138.
- Steedman, M. (1985). Dependency and coordination in the grammar of Dutch and English. *Language*, 61(3), 523–568.
- Svenonius, P. (2007). Projections of P. Ms., CASTL, University of Tromsø.
- (2010). Spatial P in English. In Cinque & Rizzi (2010), (pp. 127–160).
- Talmy, L. (1991). Path to realization: A typology of event conflation. In L. A. Sutton, C. Johnson, & R. Shields (Eds.) *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society: General Session and Parasession on the Grammar of Event Structure*, (pp. 480–519). Berkeley: Berkeley Linguistics Society.

- (2000). *Toward a Cognitive Semantics, Volume II: Typology and Process in Concept Structuring*, vol. 26 of *Language, Speech, and Communication*. Cambridge: MIT Press.
- Tenny, C. (1992). The aspectual interface hypothesis. In I. Sag, & A. Szabolcsi (Eds.) *Lexical Matters*, vol. 24 of *CSLI Lecture Notes*, (pp. 1–27). Stanford: Center for the Study of Language and Information.
- (1994). *Aspectual Roles and the Syntax-Semantics Interface*. Dordrecht: Kluwer.
- Van Valin, R. D., Jr., & LaPolla, R. (1997). *Syntax: Structure, Meaning and Function*. Cambridge: Cambridge University Press.
- Williams, A. (2015). *Arguments in Syntax and Semantics*, vol. 3 of *Key Topics in Syntax*. Cambridge, UK: Cambridge University Press.
- Wilson, M. (2020). The reversible core of object experiencer, location, and *govern*-type verbs. In M. Baird, & J. Pesetsky (Eds.) *Proceedings of the 49<sup>th</sup> Annual Meeting of the North East Linguistic Society*, vol. 3, (pp. 285–294). Amherst: GLSA.
- Woolford, E. (1999). More on the anaphor agreement effect. *Linguistic Inquiry*, 30(2), 257–287.
- Wunderlich, D. (1987). An investigation of lexical composition: The case of German *be*-verbs. *Linguistics*, 25, 283–331.
- (1991). How do prepositional phrases fit into compositional syntax and semantics? *Linguistics*, 29, 591–621.
- (1997). Cause and the structure of verbs. *Linguistic Inquiry*, 28(1), 27–68.