

## Responses to comments on *Conjoining Meanings*

First, my thanks to the reviewers and editors for devoting resources to a book that isn't theirs. I won't try to summarize *Conjoining Meanings* (*CM*) here; see Pietroski (forthcoming). But some introductory remarks may help frame my responses to the remarkably thoughtful comments.

### 1.

Humans regularly acquire languages, spoken or signed, that are often used in communication and cognition. These languages—call them Slangs—connect pronunciations with meanings of some kind. Davidson (1967a) conjectured that a theory of meaning for such a language, *L*, can take the form of a Tarski-style specification of the boundlessly many true sentences of *L*, at least if we supplement Tarski's (1944) semantic toolkit with suitable ways of (i) handling non-declarative sentences and (ii) relativizing the language-relative notions of truth to speakers, times, things demonstrated, and other dimensions of variation across the contexts in which sentences can be used. Developing this idea led to many insights. But often, good ideas are wrong in ways that suggest different proposals. In *CM*, I argue that Slang sentences don't have truth conditions, and that Slang meanings are composable instructions for how to assemble concepts of a special sort.

In many quarters, Davidson's conjecture has become a framework assumption, with disagreements limited to details regarding how the relevant notions of true-in-*L* should be specified. This leaves room for intramural debates about particular examples, like (1) and (2),

(1) I heard you sing.

(2) I heard you sang.

and whether the semantic properties ascribed to linguistic expressions should be relativized to possible worlds, audiences, evaluators, domain restrictions, etc. But truth-theoretic conceptions of linguistic meaning face serious difficulties. And despite recitations of biconditionals like (3),

(3) 'Snow is white' is true (in English, at time *t*) if and only if snow is white (at *t*).

it's not a datum that Slang sentences have truth conditions. It's a substantive hypothesis.

While (3) may initially sound plausible, try to formulate corresponding biconditionals for (1), (2), (4), and my favorite sentence, (5).

(4) Most of the snow is white, and so are most of the snowballs.

(5) My favorite sentence isn't true.

Then try to provide plausible axioms from which (formalized analogs of) the biconditionals can be *derived* given a reasonable logic. Then try to justify the claim that your theory specifies what the English expressions *mean*, as opposed to specifying "values" that might be assigned to the expressions—and assigned equally well via any extensionally equivalent axioms—as a proposed *regimentation* of English. After many years of teaching semantics, I don't want this homework.

I discuss some of these difficulties in *CM*, partly to shake confidence that some version of Davidson's conjecture must be right, perhaps in a form urged by Lewis (1970, 1975) or Montague (1974). But the more important goal is to provide a good alternative, in enough detail to reconstruct a standard first course in semantics that can be fruitfully applied to constructions that occupy professionals. And in my view, a *good* alternative should distinguish homophony from the important phenomenon of polysemy.

Homophones connect distinct meanings with the same pronunciation. In 'bear malice towards a bear with bare arms', three different words have the pronunciation /ber/. (These words are as different as the French homophones 'seau', 'sceau', and 'saut'—often translated as 'bucket', 'stamp', and 'jump'.) By contrast, 'bear weight', 'bear pain', and 'bear responsibility' seem like phrases with the same verb, used to express various ways in which something is

supported, endured or carried. People can also bear gifts, names, scars, resemblances. Perhaps no one verb covers all these cases. But we don't acquire *many* homophonous analogs of 'support', 'endure', etc. We can gather different senses of carrying, or carrying on with, under a single polysemous verb 'bear'. And there are sundry ways for a lexical item to have multiple senses.

We can use 'book' to talk about spatially located things that carry certain contents, or the contents that can be carried (or encoded) in many ways. A single noun lets us express related concepts with which we can think about contents and their vehicles. Likewise, 'triangle' lets us express a concept of abstracta described by geometric theorems, or a concept that applies to perceptible figures whose lines have widths. We can use 'window' to describe an opening in a wall, a pane of glass that fills such an opening, a display space behind glass at the front of a store, an opening in an otherwise opaque envelope, or a gap in a counter at a bank.

Distinguishing polysemy from homophony (and the kind of ontological diversity associated with a word like 'jade') can be hard. But ordinary usage suggests that a lexical item typically points to a *family* of concepts that are not extensionally equivalent. And ignoring polysemy, via the pretense that each lexical item has an extension, can blind us to other ways in which lexical items are conceptually equivocal. Consider 'fish'.

The singular noun is plausibly described as the result of combining a count morpheme with a *lexical root* that can be used to talk about the stuff in a can of tuna, while the plural noun is the complex expression  $[[\sqrt{\text{fish}}+\text{CT}]+\text{PL}]$ . I think it strains credulity to say that lexical roots— $\sqrt{\text{fish}}$ ,  $\sqrt{\text{water}}$ ,  $\sqrt{\text{tofu}}$ ,  $\sqrt{\text{pebble}}$ ,  $\sqrt{\text{hair}}$ , etc.—have extensions that the functional morphemes map to extensions for the corresponding singular and plural nouns. And we shouldn't ignore an obvious alternative: a lexical root may pair its pronunciation with a family of *concepts* that exhibit a mass/count distinction that crosscuts morphological complexity.

Suppose that  $\text{FISH}_{\text{ONE}}$  is an atomic count-concept and  $\text{WATER}_{\text{SM}}$  is an atomic mass-concept, while  $[\text{WATER}_{\text{SM}} \text{UNIT}_{\text{SM}/\text{ONE}}]_{\text{ONE}}$  and  $[\text{FISH}_{\text{ONE}} \text{STUFF}_{\text{ONE}/\text{SM}}]_{\text{SM}}$  are complex concepts of these types. The slashed subscripts indicate type-converting concepts. A child might initially link  $\sqrt{\text{water}}$  to  $\text{WATER}_{\text{SM}}$ , and only later form  $[\text{WATER}_{\text{SM}} \text{UNIT}_{\text{SM}/\text{ONE}}]_{\text{ONE}}$  to accommodate  $[\sqrt{\text{water}}+\text{CT}]$ . The same child might link  $[\sqrt{\text{fish}}+\text{CT}]$  to  $\text{FISH}_{\text{ONE}}$ , and not use  $\sqrt{\text{fish}}$  by itself until experience prompts formation of  $[\text{FISH}_{\text{ONE}} \text{STUFF}_{\text{ONE}/\text{SM}}]_{\text{SM}}$ . But another child might link  $\sqrt{\text{fish}}$  to  $\text{FISH}_{\text{SM}}$ , not realizing where fish sticks come from, and misguidedly link  $\sqrt{\text{tofu}}$  to  $\text{TOFU}_{\text{CT}}$ .

Neither  $\sqrt{\text{fish}}$  nor  $\sqrt{\text{tofu}}$  is inherently count-ish or massy. We can all have the thought that fish grows like grass but tofu comes from tofus that used to graze. So we can acquire  $\text{FISH}_{\text{SM}}$  and  $\text{TOFU}_{\text{ONE}}$ , and express these concepts with  $\sqrt{\text{fish}}$  and  $[\sqrt{\text{tofu}}+\text{CT}]$ , even if we already have  $[\text{FISH}_{\text{ONE}} \text{STUFF}_{\text{ONE}/\text{SM}}]_{\text{SM}}$  and  $[\text{TOFU}_{\text{SM}} \text{UNIT}_{\text{SM}/\text{ONE}}]_{\text{ONE}}$ . We can use  $\sqrt{\text{water}}$  to express a kind concept that applies only to samples of  $\text{H}_2\text{O}$ , or to express a concept that applies to stuff (e.g., the water from my well) that has less  $\text{H}_2\text{O}$  per liter than Diet Coke; cp. Chomsky (1995). I think we can also use  $\sqrt{\text{water}}$  to express a concept that would apply to samples of Putnam's (1975) imagined substance XYZ. Meanings are indifferent to many conceptual distinctions.

## 2.

Still, meanings compose. In my view, the meaning of 'see water near windows' is a composite *instruction* that is executed by combining (in certain rule-governed ways) concepts that are accessed via the component lexical items. If each of these items is polysemously linked to a family of concepts, then the phrasal meaning doesn't determine a concept or an extension. In *CM*, I try to develop this idea in enough to detail to eliminate "only game in town" arguments for Davidson's conjecture. The reviewers seem to think that in this respect, the book succeeds.

Gillian Ramchand stresses the ways in which *CM* provides an alternative to views that have become standard in linguistics. Her first section also summarizes the main themes in a way that captures the intended spirit. (Ramchand rightly suspects that the tone of *CM* is intentionally subdued. In conversation, I'm often less measured when discussing the idea that humans naturally generate expressions that somehow have extensions.) I'm enormously grateful for Ramchand's supporting voice, lucid exposition, and her especially interesting section two.

I read Ramchand (2018) only after *CM* went to press. So here, let me recommend her excellent book and endorse her diagnoses of how various insights—concerning modal auxiliaries, tense and 'not', progressive and aspectual markers—have been distorted by forcing them into a standard mold. I also share Ramchand's view that Chomsky (1957) remains a valuable point of departure for investigations of how human grammars generate expressions in which verb phrases that correspond to predicates of events are modified by functional elements that correspond to concepts of possibility, temporal indexing, and negation.

Chapter seven of *CM* includes some suggestions about how "old school" rewrite rules like "VP → AUX V" and "AUX → T (M) (have-en) (be-ing)," along with "S → NP VP," can correspond to instructions for how to build predicative concepts that are closable in various ways that yield sentential thoughts. Though when it comes to details, I focus on existential closure and relatively simple examples like (6), as opposed to (7-9); cp. Davidson (1967b).

- (6) He ate toast at midnight.
- (7) He may not eat toast.
- (8) He may be eating toast.
- (9) It might have been raining.

Ramchand offers more systematic proposals that are well motivated, empirically and theoretically. By appealing to a causal relation that can be exhibited by parts of processes, as indicated in her example (14), she shows how modifying the syntax that I assumed in chapter seven—partly for simplicity, see my response to Collins—makes room for an attractive proposal that preserves the main agenda of *CM*. I welcome such discussions about *which* dyadic relations are invoked, in which ways, by verbs and associated aspects of syntax; cp. Pietroski (2005) and the chapter seven sketch of three strategies for encoding appeal to dyadic concepts in describing the effect of combining a verb with an internal argument. (More generally, my hope is that *CM* will prompt exploration of other relatively spare conceptions of semantic typology. For example, one might specify operations that permit triadic lexical items and/or dyadic phrases in limited ways.)

Returning to the importance of Ramchand's emphasis on auxiliaries, if verbs combine with arguments to form predicates of events—and the subject of my (6) is displaced from a structure like [<sub>T</sub> *past* [<sub>V</sub> [<sub>V</sub> *he*<sub>N</sub> [<sub>V</sub> *eat*<sub>V</sub> *toast*<sub>N</sub>]] [<sub>P</sub> *at*<sub>P</sub> *midnight*<sub>N</sub>]]—then supra-verbal functional elements are not marginal expressions that advocates of Davidson's conjecture can safely ignore. Given the project of describing lexical items in terms of how they contribute to alleged truth conditions of sentences, deep issues arise before we get down to verb phrases.

Given current theories that don't employ rewrites of the start-rule "S → NP VP," it isn't obvious which expressions are supposed to be the truth-evaluable ones. And despite the hopes of many semanticists, 'not' seems unlike a sentential operator. As illustrated with (10),

- (10) Aristotle wasn't dumb.

'not' affiliates with tense, as if it is part of an intra-sentential copula (see Horn 1989, Laka 1994). Grammatical subjects can also be pleonastic as in (9), which otherwise consists of the verb 'rain' and various "AUX-elements." One can insist that (9) has a *truth* condition concerning the

*evidence available* to contextually relevant parties. But this desperate move makes it hard to see how extensions for lexical items are to be specified by abstraction from expressions of type  $\langle t \rangle$ , as in standard accounts.

John Collins provides a beautiful reconstruction of a less lucid argument, in chapter three of *CM*, for not describing the meanings of Slang expressions via such abstraction and a now familiar hierarchy of types. Frege wanted to represent proofs by arithmetic induction as valid, and such proofs can employ abstraction in an open-ended way; so his invented *Begriffsschrift* permitted expressions of endlessly many types:  $\langle t \rangle$ ,  $\langle e \rangle$ , and the non-basic types  $\langle \alpha \rangle$ ,  $\langle \beta \rangle$  such that  $\langle \alpha \rangle$  and  $\langle \beta \rangle$  are types. But if it's not plausible that Slang expressions exhibit this typology, one can't assume this typology in defending Davidsonian claims about Slangs. (In chapter two of *CM*, I argue against Lewisian insistence that Slangs belong to a broader class of languages that are all correctly described in the Fregean terms.)

Collins agrees that while a typical child acquires a grammar that generates unboundedly many expressions, it's no part of the acquired linguistic competence that the generable expressions exhibit all (or even many) of those Fregean types. But as he notes, positing semantic types of the form  $\langle \alpha \rangle$ ,  $\langle \beta \rangle$  offered the promise of a partial explanation for many grammatical asymmetries that are often described in terms of "headedness." For example, 'brown cows' is a noun phrase in which 'brown' is a modifier, and 'chase cows' is a verb phrase in which the plural noun is an argument of 'chase'. And while type-theoretic descriptions of the asymmetries founder on type-shifting rocks, the point is that my proposed typology doesn't itself explain why 'brown cows' *is not* an instruction for how to build a concept of cowish shades of brown, or why 'chase cows' *is not* an instruction for how to build a concept of cows that underwent a chase.

It would violate the general ethos of *CM* to wheel in another layer of semantic structure. And in any case, I doubt that verbs share some distinctive semantic property that nouns lack; cp. my remarks about count nouns. The relevant distinctions seem to be formal, as Chomsky (1957) suggested, even if the details remain unclear. Though as Collins says, these questions run deep. They also connect with Ramchand's points: why are the "AUX elements" ordered as they are?

In lieu of answers, let me offer speculations. There may be a principled explanation for why phrases are headed *in some way*, as opposed to being unlabeled unions. Suppose that the syntactic types are relatively few and exhibited by lexical items, and that every generable expression is an instance of a syntactic type—perhaps because for purposes of combination, phrases are like lexical items. Then perhaps as Chomsky (1995a) suggests, combining an expression of type  $\alpha$  with an expression of type  $\beta$  must yield a phrase of type  $\alpha$  or type  $\beta$ . (This isn't how standard semantic theories operate; but such theories make the autonomy of syntax puzzling.) With regard to *which heads dominate which*, many factors may be relevant. If children are led to treat at least some instances of  $\alpha \wedge \beta$  as cases of D-junction, these cases may harden a bias towards treating the lexical item of type  $\langle D \rangle$  as the phrasal head, especially given thematic clues and the concepts available to children. And if Baker (2003) is right that verbs take specifiers, while nouns are associated with indices, this contrast may push children towards treating instances of  $V \wedge N$  as verb phrases. If similar considerations apply to prepositional and determiner phrases, one might look to Ramchand for help with auxiliary heads, and then try to explain why adjuncts (e.g., adjectives/adverbs) are essentially subordinate to nouns and verbs.

Collins notes that in my chapter seven discussion of compositional details, I adopt a very spare conception of syntax. But the point was not that a "super-minimal" conception of syntax and semantics is descriptively adequate with regard to issues regarding headedness. It was to show that a standard first course in semantics can be reconstructed without assuming *either* the

usual Fregean typology *or* a tendentiously rich conception of syntax. For purposes of accommodating textbook constructions and more with only the two semantic types that Collins nicely describes, I tried to minimize my assumptions about syntactic combination. (Facts about headedness were simply described/stipulated in terms of a labeling algorithm.)

Collins is right that Chomsky posited Merge as a basic asymmetric operation, not reducible to some symmetric operation and a symmetry-breaker like labeling. But in part because this still leaves headedness unexplained, I do think it's worth exploring various ways of trying to redescribe Merge as a complex operation that reflects (i) a symmetric combinatorial operation that may be available in pre-grammatical animal cognition, *and* (ii) a distinctively Slangy addition that accounts for headedness. Collins' suggestion on my behalf, in his section four, is interesting. I agree that it doesn't work. But it begins to make sense of why "switch-headedness" is a possible phenomenon, as opposed to a paradox for any proposal; and *CM*'s brief discussion of 'big ant' may be relevant, even if explaining headedness requires more than one explanans.

### 2.3

David Pereplyotchik's engaging discussion highlights good questions about concepts, and about which answers can be plausibly combined with my proposal about meanings.

I argue that phrasal meanings are instructions for how to assemble monadic concepts via operations that take only monadic or dyadic concepts as inputs. On this view, a lexical item connects its pronunciation with one or more concepts that are monadic or dyadic. But acquiring a lexical item can involve a lot of cognitive resources, including concepts of various types. A child might use a polyadic concept of giving—with unsaturated slots for givers, recipients, and things given—to *introduce* a monadic concept of corresponding events of giving. Or FISH<sub>ONE</sub> and STUFF<sub>ONE/SM</sub> might be used to introduce FISH<sub>SM</sub>.

This leaves room for many hypotheses about the lexically "fetchable" concepts that can be combined via the posited operations and any other concepts used to introduce them. But drawing on Fodor, I take concepts to be composable mental symbols with which we can think about things. I think many animals have Fodorian concepts, and I indicate how such concepts might be used to introduce others, given a language faculty of the sort described in *CM*. I don't know how to tell a comparably naturalistic story about where fetchable concepts come from, given an account of concepts that "highlights inferential relations." Perhaps others can do so.

Fodor stressed that you can't change the expressive power of a mentalese by pronouncing (or reasoning with) some of its expressions. But in my view, acquiring a lexicon is nonetheless a process of conceptual expansion: children don't merely connect concepts with pronunciations; they also acquire formally new atomic concepts that are systematically combinable in cognitively productive ways. (A child might never form a monadic concept of givings, even if it *could* do so, unless prompted by linguistic input.) In this sense, I think our distinctively human linguistic capacities are partly responsible for our distinctive cognitive capacities, though not because *meanings*—or communication, or social conventions—lift us out of mere animal cognition.

The polysemous words 'meaning' and 'concept' can be used in other ways. But the meanings I'm talking about are those that child-acquirable grammars connect with pronunciations. As noted above, several English words connect their distinct meanings with the pronunciation /bɛr/. Similarly, the pronunciation of (11)

(11) The duck is ready to eat.

can be heard as having either of two meanings that are analogous to those of (12) and (13).

(12) The duck is eager to eat.

(13) The duck is easy to eat.

Such examples provide paradigms that can ground talk of expression meanings: (11) has *two*; (12) and (13) each have *one*. One can speculate that *given* expressions that are meaningful in this sense, humans can introduce further meanings and/or concepts, perhaps of a kind characterized in terms of inferential roles. But one can't insist that *Slangs* connect the posited "second meanings" with pronunciations. Slangs are what they are, independent of the projects that philosophers and semanticists pursue.

As Pereplyotchik notes, my diagnosis of polysemy raises questions about "how hearers access the *relevant* concept(s) in a given context (p. xx)." But these are questions about how meanings are used—and more specifically, how these recipes get executed given particular ingredients and demands; cp. questions about which acoustic signals are produced when speakers utter (13). Polysemy *resolution*, like homophony resolution, depends on many non-linguistic factors. Relatedly, I say very little about "real-time psychological processes" in *CM*. My view is that *grammars* connect meanings with pronunciations. The proposal may invite ideas about how a semantic parser could pair pronunciations directly with *Begriffsplans*, without labeled phrase markers as syntactic mediators. But as Collins notes, in his discussion of types, grammars are not parsers. (Sidepoint: if an animal has concepts that are combinable in recursive ways, it's not obvious that the animal's biology doesn't realize a *procedure* that connects mental symbols with their contents. Second sidepoint: I do think that recognizing meanings and associated instances of conjunction reduction are computational processes; but like Fodor, I don't think that all cognition is computation, or that all good inferences are valid.)

In at least one of his voices, Pereplyotchik suggests that since I suspect that at least many concepts are like ordinary words in not having extensions, I shouldn't grant that some concepts have extensions. But humans can invent scientific concepts, sometimes as precisifications of "kind concepts" available to children. So while I deny that the set of H<sub>2</sub>O samples is the extension of 'water', I see no reason to insist that 'water' cannot be used to express a concept that has this extension. (Regarding Pereplyotchik's final question: I don't think psychosemantics has to *traffic in* extensions; but it shouldn't refuse to *countenance* them.) I'm unembarrassed about not knowing in virtue of what concepts have their intentional and/or extensional properties. I'm trying to locate linguistic meanings in nature. As Philonous recognizes, that's hard enough.

Pereplyotchik takes a tougher line than I do with regard to what counts as thinking. I've never felt pulled by the idea that a concept can be used to think about things only if it is deployed in a complete/sentential/endorsable thought. Thinking about things may require a capacity to entertain complete thoughts. Yet it seems to me that I've often thought about rabbits—unicorns, meanings, etc.—without entertaining any complete thought. If a theorist assures me otherwise, I suspect that he is using 'think about' in a restrictive way. (But I don't use that phrase to denote events of classification; and I don't think that activating a denoting concept is enough to think about the thing denoted.)

I agree with Pereplyotchik, and Fodor, that classifying something as a rabbit is a kind of judging that requires a concept that isn't a classificatory ability. But we can still describe predicative concepts, as opposed to singular or relational concepts, as classificatory. I don't think that all of natural thought is subject-predicate. As stressed in chapter six, we have relational concepts and often lexicalize them. But in my view, Slangs are tools for building mental predicates. So the polarized concepts that I posit, inspired by Tarskian formulae that are satisfied by all sequences or none, are indeed as predicative as 'thing in the world'. Slangs don't generate expressions of type <t>, but they do generate instructions for how to build polarized concepts.

Pereplyotchik also wants to know how natural logic is related to truth. That would be a long story, with chapters about how natural logic is related to logic, and how logic is related to truth. I'm working on it, with help from friends.

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