Chapter Three: Event Variables, Framing, and Logical Form

The invented languages described in chapter two were designed with logic and arithmetic in mind. And while human languages can be used to make claims about numbers—e.g., that zero precedes one—they are more often used to report on the passing show. Moreover, such reports can contain boundlessly many adverbial modifiers that initially seem to have no analogs in the Tarskian language PL or its Church-style extension. So at a minimum, one wants to see how (D)

(D) for each human language **H**, there is a Tarski-style theory of truth that can serve as core of an adequate theory of meaning for **H**

can accommodate sentences like (1) and (2).

(1) Al chased Theo.

(2) Al chased Theo gleefully.

According to Davidson (1967a), action reports have truth conditions that can be specified with existential generalizations as in (1a) and (2a).

(1a) ∃X[CHASED(X, AL, THEO)]

(2a) ∃X[CHASED(X, AL, THEO) & GLEEFUL(X)]

At first, this proposal seems to support thesis (D). But upon reflection, examples like (1-6)

(3) Theo chased Al.

(4) Theo chased Al gleelessly.

(5) Theo chased Al gleefully.

(6) Al chased Theo gleelessly.

show that simple cases of adverbial modification still present serious difficulties for (D1).

(D1) for each human language **H**, there is a correct theory of truth for **H**

This does not establish that (D) is false. But the facts concerning adverbial modification do not merely tell against (D), they undercut much of the motivation for defending it.

1. Reporting What Happened

One might wonder how any plausible truth conditions for (1) and (2) could be specified compositionally. Davidson offered an insightful answer. But like many insights, it was packaged in a larger theory whose initial attractions fade. In this first section, I provide an overview of the basic problem, and discuss potential responses in subsequent sections.

1.1 Not Enough Events

Given a language that generates tensed expressions like (1), but no examples of adverbial modification like (2), theorists might hope to specify the meaning of (1) with (1b).

(1b) ∃X:BEFORE(X, T)[CHASES-AT(AL, THEO, X)]

An assignment $\mathcal{A}$ satisfies CHASES-AT(AL, THEO, X) iff $\mathcal{A}$(X) is a time at which $\mathcal{A}$(AL) tenselessly chases $\mathcal{A}$(THEO); AL and THEO are constants, variables whose values do not vary; T is an index for moments/intervals of time; and a pragmatically relevant assignment assigns the relevant moment/interval to T. This encodes the idea that 'chase' is true of ordered triples <α, β, γ> such that α chases β at γ. On this view, the verb in (1) combines with three arguments, the first of which is a tense morpheme that can be viewed a restricted quantifier akin to 'sometime before now'. Though for now, let's not worry about the difference between (1b) and (1b′).

(1b′) ∃X[BEFORE(X, T) & CHASES-AT(AL, THEO, X)]

A slightly different option is (1c);

(1c) ∃X:BEFORE(X, T)[AT-CHASES(X, AL, THEO)]

where $\mathcal{A}$ satisfies AT-CHASES(X, AL, THEO) iff $\mathcal{A}$(X) is a time at which $\mathcal{A}$(AL) tenselessly chases

$\mathcal{A}$(THEO). More briefly, AT-CHASES(X, AL, THEO) is true of times at which Al chases Theo. With regard to logic, this is notational variation. But order of pronunciation may not reflect order of grammatical arguments with regard to tense. And one might hope to analyze (7) as in (7a),

(7) Al chased Theo yesterday.

(7a) ∃X:BEFORE(X, T)[AT-CHASES(X, AL, THEO) & YESTERDAY(X)]

with YESTERDAY(X) imposing a second temporal restriction.[1] Still, this doesn't accommodate (2).

(2) Al chased Theo gleefully.

A committed theorist might insist that times can be gleeful, and that (2) is true iff (2b) is.

(2b) ∃X:BEFORE(X, T)[AT-CHASES(X, AL, THEO) & GLEEFUL(X)]

But the mere existence of gleeful times, whatever they are, doesn't make this analysis plausible. Suppose that a certain minute—say from 12:00 to 12:01 (EST) on Dec. 25, 1970—was the only time at which Al chased Theo, and also the only time at which Dave chased Simon. If (2) and (8) have truth conditions, then presumably, both can be true in this scenario.

(8) Dave chased Simon gleelessly.

Al may have chased Theo gleefully, while Dave chased Simon gleelessly. But the minute in question was not both gleeful and gleeless. Moreover, Al may have chased Theo athletically though not skillfully, while Dave chased Simon skillfully though not athletically; and so on.

Nonetheless, one might think that a small modification of (2b) yields major improvement. We needn't say that an assignment $\mathcal{A}$ satisfies BEFORE(X, T) only if $\mathcal{A}$(X) is a time; an *event* can *occur* before a given time. And instead of trying to specify the meaning of 'chase' in terms of *times at which* one thing chases another, one can appeal to *events in which* one thing chases another. So following Davidson, one might start with (2a) and elaborate it as in (2a′);

(2a) ∃X[CHASED(X, AL, THEO) & GLEEFUL(X)]

(2a′) ∃X:BEFORE(X, T)[CHASE(X, AL, THEO) & GLEEFUL(X)]

where $\mathcal{A}$ satisfies CHASE(X, AL, THEO) iff $\mathcal{A}$(X) is a chase by $\mathcal{A}$(AL) of $\mathcal{A}$(THEO). This raises the question of what it is for events to be gleeful. But at least with regard to a chase, one might say that it is gleeful (in the relevant sense) if it is done gleefully, and that it is gleeless if done gleelessly. We can also replace (7a) with (7b), construing YESTERDAY(X) accordingly; cp. note 1.

(7b) ∃X:BEFORE(X, T)[CHASE(X, AL, THEO) & YESTERDAY(X)]

At first, this looks like good news for thesis (D).

(D) for each human language **H**, there is a Tarski-style theory of truth
that can serve as core of an adequate theory of meaning for **H**

Davidson showed how a finitely specifiable theory could assign plausible truth conditions, in a way that captures apparent implications, to boundlessly many sentences that contain adverbial modifiers. This also illustrated a potentially more general strategy for dealing with apparent counterexamples to (D): specify meanings in terms of variables that range over things that one might not initially think of, especially if one was initially thinking about arithmetic. But the mere existence of gleeful events and gleeless events, whatever they are, isn't enough to make the Davidsonian analyses plausible. For the goal is not merely to accommodate (2) and (8).

(2) Al chased Theo gleefully.

(8) Dave chased Simon gleelessly.

---

[1] Let's grant that 'yesterday' can be used to talk about a *proper part of* the day before the day of speech. Let's also bracket the difficulties of specifying an extension for 'day'—given calendar changes, cesium clocks, and leap seconds (see King 200x)—and words like 'Monday', which can appear in 'on Monday' or 'on a Monday'.

These sentences have different parts. We want a compositional theory of meaning that plausibly accommodates (2) and (5), (4) and (6), etc.

(5) Theo chased Al gleefully.
(4) Theo chased Al gleelessly.
(6) Al chased Theo gleelessly.

No one of these sentences, taken on its own, may seem especially problematic. And even taken together, it is easy to focus on relatively unproblematic scenarios in which Theo chased Al on some occasion that *differs* from the occasion on which Al chased Theo. But suppose that Theo chased Al exactly once, in the very same minute that Al chased Theo. Put another way, suppose that Al and Theo chased each other. Neither chipmunk caught up on the other before they both gave up. Al chased Theo gleefully and athletically, but not skillfully; Theo chased Al gleelessly and unathletically, but skillfully. Given this scenario, we can correctly report some of what happened with (2) and (4), though not with (5) or (6). Likewise, we can correctly report some of what happened with (9) and (10), though not with (11) or (12).

(9) Al chased Theo gleefully and athletically but not skillfully.
(10) Theo chased Al gleelessly and unathletically but skillfully.
(11) Al chased Theo gleelessly or unathletically or skillfully.
(12) Theo chased Al gleefully or athletically or not skillfully.

Davidsonian analysis thus seems to require that the envisioned scenario include at least *two* chases: a chase by Al of Theo that was gleeful, athletic, and not skillful; and a chase by Theo of Al that was gleeless, unathletic, and skillful. But prima facie, there were not two *chases* with the same participants in the same region of spacetime. The event of Al moving, during that minute, can be described as both an event of him (intentionally) running after Theo and an event of him (unintentionally) maintaining a constant distance from Theo; and likewise, *mutatis mutandis*, for the simultaneous but distinct event of Theo moving. So the net effect can be described as Al chasing Theo, or as Theo chasing Al. But in my view, there was only one chase, in which both chipmunks participated. No solo-chipmunk episode was an event of *chasing Theo* or *chasing Al*; in a chase, the things chase is a moving participant. We can speak of two chases along one path. Dave may have chased Simon around a table, around which a dog chased a cat. But if Al and Theo chased each other around a tree, around which nothing else was ever chased, there were not two chases around that tree. Counting chases individualistically seems wrong.

Similarly, in my view, no event in which Miss Scarlet is the sole participant is an event of her *stabbing* Colonel Mustard with a knife. In any such event, the colonel and the knife are involved. And the general point is not restricted to cases of intentional action. A red ball can collide with a green one; but the collision, which has no direction or momentum, is not the motion of either ball. I'll return to all these examples. Though in the end, it doesn't matter which events get *called* chases/stabbings/collisions for purposes of describing the world as best we can. Say if you like that there were two chases around the tree, one per chipmunk. Then the question is whether chases, so counted, are plausibly things that 'chase' is true of. I think the answer is negative: given event analyses, 'chase' is not true of anything *in which* no chasee is chased.

1.2 Potential Responses and the Bigger Point

One might say that a chase by Al of Theo—or at least an event of Al chasing Theo—need not be a chase. Even if the solo-chipmunk events are not chases, they might be events e1 and e2 such that: 'chased' is true of both <e1, Al, Theo> and <e2, Theo, Al>; e1 is done by Al, gleeful, and so on; e2 is done by Theo, gleeless, and so on. Perhaps e1, Al, and Theo are (so-ordered) related chase-wise in part because e1 co-occurred with a suitable event of Theo moving. But even if this

maneuver works for some cases, it doesn't help with Miss Scarlet's knife. If some event, Scarlet, and Mustard are (so-ordered) related stab-wise, that is presumably because of the knife she used in that event. I also think that stressing relationality makes a mystery of some simple implications. For example, (1) apparently implies that Theo *was chased*,

(1) Al chased Theo.

as if a chase by Al of Theo is an event in which Theo gets chased. Moreover, we do talk of chases, and not as if they are ordered triples in which chasees "participate" abstractly. Indeed, we use the monadic notion when explicating CHASE(X, X′, X″) as CHASE(X) & BY(X, X′) & OF(X, X″); cp. Castañeda (1967). But when we talk of chases, we describe "what happened" as if the transpiring events have multiple participants.

That said, human languages also associate grammatical positions with thematic relations, as if events themselves exhibited subject-object *asymmetries*. We speak as though Al was *the* agent in his chase of Theo, who was *the* agent in his chase of Al. Yet we also speak of the chase as an episode, or perhaps some episodes, in which each chipmunk ran. And in the right contexts, we can use 'chase' to *talk about* Al's attempt to catch Theo.[2] But this doesn't show that 'chase' is true of any such events. On the contrary, event analyses suggest that *if* 'chase' is true of any events, then these events have chasers (agents) and chasees (patients) as participants. I don't deny that event analyses also suggest that *if* 'chase' is true of any events, then these events do not have their patients as participants. Though in my view, the right conclusion is that 'chase' does not have a satisfaction condition. It has a meaning without being true of anything.

In this respect, I think talk of chases is like talk of sunrises, skies, and other "things" we talk about without using words that are true of them. As noted in chapter zero, (D1) seems especially implausible with regard to words like 'sky',

(D1) for each human language **H**, there is a correct theory of truth for **H**

making thesis (D) is correspondingly implausible.

(D) for each human language **H**, there is a Tarski-style theory of truth
that can serve as core of an adequate theory of meaning for **H**

Even if some cleverly constructed truth theory can accommodate 'sky' and 'night', such a theory is unlikely to capture the meaning of 'night sky'. It can be tempting to set aside such words aside, along with 'sunrise' and 'Venice', as special cases that introduce special complications. But I don't think the objections to (D) can be quarantined. In this chapter, I try to make the point by arguing that while event analyses are motivated beyond reasonable doubt, such analyses lead to the conclusion that verbs like 'chase' ('stab', 'collide', 'strike', 'pull', 'play', 'see', 'hear') do not have satisfaction conditions. The *verbs* in 'saw Bellerophon chase Pegasus' tell against (D). In chapter four, I argue that quite apart from considerations regarding events, (D) leads to paradox in ways that make it independently implausible to suppose that sentences like (1-12) have truth conditions. I don't, however, pretend to offer *proofs* that (D) is false.

Since (D) is a hypothesis, regarding the I-languages that human children naturally acquire, we shouldn't expect proofs. My aim is to argue that (D) is less plausible than the claim that meanings are instructions for how to build concepts. But precisely because (D) is a *hypothesis*, we must guard against conflating "regimentations" of human languages—proposals about how we *ought* to speak, at least when theorizing, given the available values for Tarski-style variables—with claims about the actual meanings of human linguistic expressions.

---

[2] I suspect that theorists can use 'action of chasing Theo' to talk about a mental event of trying that can be a cause of certain bodily motions. See Pietroski (1998), drawing on Hornsby (1980) and Thomson (1977) among others.

In particular, it is recurrently tempting to say that some event of Al moving was a chase of Theo (or at least an event e1 such that 'chase' is true of <e1, Al Theo>) by virtue of being suitably *related* to some event of Theo moving, which was itself a chase of Al by virtue of being suitably related to the event of Al moving. One can imagine talking this way, so that there were two chases in the one minute; though at each moment *m*, each of these solo-chipmunk events has a chipmunk in a different place. But this hardly shows that the lexical item 'chase', which human children acquire with ease, is true of these one-participant events. Likewise, I don't deny that we can speak of the chase in which Al and Theo both participated, or at least the events that together constituted them chasing each other. I just deny that 'chase' is true of these multi-participant events. Though to repeat, the real issue is not about what gets to be called a chase.

One can stipulate that CHASE(X, AL, THEO) and CHASE(X, THEO, AL) have different satisfiers, and one can insist that the relevant values of the invented variable are two-participant events, exactly one of which is gleeful. But this option turns out to be *especially* unpalatable if the goal is to defend thesis (D). Since the requisite "events" seem to be individuated about as finely as their linguistic descriptions, one challenge is to make it plausible that each of them can be described in boundlessly many ways—e.g., as a chase of Theo by Al, a gleeful thing, and so on—as required by Davidsonian analyses. Advocates of (D) need to individuate values of posited variables in a way that is plausible given a *truth*-theoretic conception of meaning.

In particular, it is bad news for (D) if defending it with regard to sentences like (2)

(2) Al chased Theo gleefully.

already requires appeal to domain entities that seem to individuated in terms of meanings. Put another way, it's not enough to show that (D1) is defensible

(D1) for each human language **H**, there is a correct theory of truth for **H**.

given some suitably generous metaphysics. The interesting proposal was that we should embrace (D), despite apparent objections, because (D1) turns out to be more plausible than expected; see §3 of chapter zero. Sentences like (2) were supposed to be parade cases that *motivated* (D1), not apparent counterexamples that might be handled given sufficient ingenuity. Davidson and others thus tried to defend a conception of events as relatively "coarse grained" entities that are independent of how we think and talk about them. (The events were supposed to *be there*, along with the chipmunks, as things speakers can quantify over and describe in many ways. And we can agree to bracket questions about how to individuate chipmunks, at least until someone posits two of them in the same place at the same time. Proliferating chases spoils the project.)

In reply to *some* examples, relativizing to descriptions may be legitimate. In particular, both (13) and (14) might be used to describe "something Simon did" on a certain occasion.

(13) Simon swam the channel quickly.

(14) Simon crossed the channel slowly.

This is compatible with a version of (D1) that posits just one event of Simon getting from one side of the channel to the other: the one event can be quick for a swimming of that distance, yet slow by usual standards for a channel-crossing. But as we'll see in section four, this strategy of "relativization" does not plausibly extend to examples like (1-12).

Spelling this out requires pages, given the possibility of clever Davidsonian replies and responses to objections to those replies. But in the end, I think the moral is simple: analyzing (2) as (2a), elaborated as (2a′), was a good idea;

(2a) ∃X[CHASED(X, AL, THEO) & GLEEFUL(X)]

(2a′) ∃X:BEFORE(X, T)[CHASE(X, AL, THEO) & GLEEFUL(X)]

but quantifying over events, as opposed to times, merely delays the objections to (D1). Events are individuated more finely than times, but not finely enough.[3]

This moral is largely independent of my concerns about specifying human linguistic meanings with Tarskian ampersands, quantifiers, and invented sentences like CHASED(X, X′, X″) and GAVE(X, X′, X″) that have more than two variables.[4] So in this chapter, I won't object to such apparatus. I do, however, think that the virtues of specifying adverbial meanings conjunctively are best preserved by recasting Davidson's proposal as an illustration of how phrasal meanings can be fruitfully viewed as instructions for how to build conjunctive monadic concepts.

1.3 Form vs. Ontology

Let me stress my desire to *maintain* the standard practice of using intuitions about the impeccability of certain inferences as data for theories of meaning. Competent speakers find certain inferences compelling. Sometimes, this is due in part to background beliefs that can be represented as logically contingent premises. But I assume that many inferences are compelling because they exhibit patterns that speakers recognize as having a special formal character. Indeed, I want to protect this assumption from the idea that compellingness is to be diagnosed in terms of *truth preservation* as opposed to *natural forms* of the sort described in chapter one.

One can argue about cases and details. But to repeat a standard example, instances of 'δ is a brown Φ, so δ is a Φ'—or at least the thoughts expressed via such instances—seem impeccable. If what you would say with (15) is true, then what you would say with (16) is true.

(15) Simon is a brown chipmunk.

(16) Simon is a chipmunk.

Put another way, speakers of English know that (16) can be used to tell the truth in any context where (15) can be used to tell the truth. However we formulate the generalization, the phenomenon seems to be that speakers understand simple adjectival modification as in 'brown chipmunk' as a sign of predicate *conjunction*, and they recognize conjunct *reduction* as a form of impeccable inference in "default" settings like (15); cp. 'not a brown chipmunk'.

Davidson rightly noted that the inference from (2) to (1) is equally compelling,

(2) Al chased Theo gleefully.

(1) Al chased Theo.

and that this suggests his proposed logical forms.

(2a) ∃X[CHASED(X, AL, THEO) & GLEEFUL(X)]

(1a) ∃X[CHASED(X, AL, THEO)]

But we can detach this good idea from the implausible claim that (2) has a truth condition that is specified by (2a). We can instead view (2a) as a Tarskian analog of a human thought that can be assembled by executing instruction (2); where the human thought may be more like an existential closure of the monadic concept indicated below.

∃[AGENT(_, _)^AL(_)]^CHASE(_)^PAST(_)^∃[PATIENT(_, _)^THEO(_)]^GLEEFUL(_)

If our use of such concepts is governed by a natural logic that permits conjunct-reduction in this setting, then the data point that (2) implies (1) can be captured without supposing that sentences of a human I-language have truth conditions.

---

[3] Analogously, the sets of possible worlds may vastly outnumber the truth values. Hence, many objections to identifying sentence meanings with truth values are not objections to identifying these meanings with sets of worlds. Yet boundlessly many examples suggest that sentence meanings are individuated more finely than sets of worlds.

[4] And as we'll see, replacing CHASE(X, AL, THEO) with AGENT(X, AL) & CHASE(X, THEO) & PATIENT(X, THEO)—thereby avoiding appeal to expressions with more than two variables—only sharpens the objections to (D).

Instead of treating "logical forms" like (2a) as specifications of truth conditions that sentence like (2) have, we can view the invented sentences as models of thoughts that might be constructed by a mind that executes certain concept-assembly instructions. From this perspective, the forms are what matter, not the stipulated truth conditions. I'll say more about utterances and truth in chapter four. But even if sentences like (1) and (2) do not have truth conditions, many *utterances of* such sentences can be true.

Speakers often use expressions to correctly describe (some of) what happened. One might tell the truth by saying that Al and Theo chased each other, or that two chipmunks ran around a tree. Witnesses often report what happened in different correct ways. But this doesn't show that some assignment $\mathcal{A}$ satisfies both CHASE(X, AL, THEO) and CHASE(X, THEO, AL). Expressions may be used to assemble concepts that can be used in contextualized *acts* of judgment/assertion that are often verified by what happened. If sentences of a human language do not have truth conditions, they do not have truth conditions that are specified by other sentences. In which case, (2) does not bequeath truth conditions to utterances of it. But that's OK: truth-evaluable *episodes* don't need to have truth *conditions*, much less inherit them from sentences.

A particular act of judgment/assertion might be so perspicuous that for each way the world could be, the act determines whether it would be true or false if the world were that way. For some purposes, we at least aspire to such perspicuity. But often, we settle for less. An act of judgment/assertion may be clear enough to be true or false, given how the world is, in part because the relevant context presents an easy call regarding the question at hand; see §3.1 of chapter zero, §5.1 of chapter four, and the history of contract law. Moreover even if there is a function from contexts of using a sentence S assertively to truth values, it hardly follows that S "has" the function in the sense that S has a meaning. So we shouldn't assume that thesis (L) is true, just because sentential utterances are often true.

(L) if *S* is a sentence of a human language, and *S** is the logical form of *S*,
then *S* has the truth condition that *S** specifies

We can identify logical forms with invented sentences that are designed to have truth conditions, and then use the inventions to model human language sentences for certain purposes. But (L) remains a conjecture, not a truism. The sentences we naturally use have meanings that determine logical forms.[5] But these sentences may have meanings without having truth conditions.

That said, if sentences like (2) don't have truth conditions,

(2) Al chased Theo gleefully.

one wants to know how humans (or at least philosophers) get tempted into making incompatible claims/judgments about what happened. One wants some way of thinking about the *puzzles* in this vicinity—often described in terms of events and how they are individuated—that does not demand a resolution in the form of a truth-theoretic semantics for English (or any other human language) and a substantive proposal regarding values of the alleged variables. So before getting back to linguistic details in section three, let me offer a reminder that thinkers are often susceptible to "framing effects," some of which run deep. My suspicion is that we can easily slide into inconsistency if we think about an activity that involves more than one agent by using a concept that was constructed by executing an instruction like (2), whose grammatical "subject" is singular. But especially in light of Kahneman and Tversky's work, we shouldn't be surprised if using certain linguistic forms in certain contexts leads us logically astray.

[5] At least relative to a choice of a suitably expressive metalanguage **M**. Though given indeterminacy, "the" logical form of *S* relative to **M** may be a *class* of **M**-sentences; see Quine (1960), Davidson (1984).

I think that linguistic framing is a regular feature of normal cognition for speakers of a human language. We automatically think about things (in the intentional sense of 'think about') by using concepts that we have assembled by using linguistic expressions, which have their own formal character; and often, the resulting concepts are not true of representation-independent things. Once in a while, we even notice this. In my view, the right response to this aspect of the human condition is to deny that (2) has a truth condition, instead of insisting that the world is the way it needs to be for sentences like (2) to have truth conditions.

2. Getting Framed

Kahneman (2011) helpfully reviews the literature on various kinds of framing effects, including those that he and Tversky made famous; see Kahneman & Tversky (1979, 2000), Tversky & Kahneman (1981), Kahneman et.al. (1982). Some of the examples reveal that in many respects, we humans are lazy thinkers who are apt to answer questions in ways that initially sound good, even if a moment's reflection would show the answer to be wrong. In §2.2, I discuss a more troubling example (due to Thomas Schelling) as a potential analogy to "event framing."

2.1 Warm Up Effects

Consider the famous question in (17).

(17) A bat and a ball cost $1.10. The bat costs a dollar more than the ball.
How much does the ball cost?

Even among undergraduates at elite institutions, more than half answer that the ball costs ten cents. But then the bat would cost a dollar. And a dollar is not a dollar more than ten cents.

Finding the right answer is not conceptually difficult. Though it does require a little concentration: $x + y = 1.1$, and $x = 1 + y$; so $1 + 2y = 1.1$; so $y = .05$, and the ball costs a nickel. Given this, one might have expected some correct answers, some calculation errors, and various indirect responses like 'I don't know', 'Less than a dime', 'Who cares', or something less polite. But the majority answer is not just wrong. It is obviously wrong if you think about it at all. Now in some sense, it isn't news that people often answer questions without thinking about their answers. We all know that often, we don't ask ourselves whether what initially sounds good is at all plausible. Though the implications of this point are especially depressing, given further evidence about the factors that can make one answer initially sound better than another.

In the bat and ball case, it seems that we are tempted to answer a simpler question—how much is left if you take a dollar away from a dollar and a dime?—instead of the question posed. In other cases, we are apparently influenced by differences in the affective responses associated with provably equivalent *descriptions* of a situation or choice. Even for surgeons, a ninety-five percent survival rate sounds better than a five percent fatality rate. Such cases provide classic examples of *framing*, since one can show the effect of (re)presenting a situation/choice in one way rather than another. But the sources of framing need not be affective, at least not primarily.

Consider another example from Kahneman and Tversky. Adam and Beth drive equal distances each year, and each just bought a new car. Adam was getting twelve miles per gallon, but now he gets fourteen. Beth was getting thirty miles per gallon, but now she gets forty. Who will save more gas? There is a powerful inclination to say that Beth will save more. Yet we know how to determine the answer: pick a distance D; calculate D/12, D/14, and subtract to determine how many gallons of gas Adam will save; calculate D/30, D/40, and subtract to determine how many gallons of gas Beth will save. Most of us also know that we are not good at dividing by fourteen in our heads. Yet the human inclination is not to say, "I do not know; so if the question is worth answering at all, I shall get a pencil and work it out."

Rather, we find ourselves inclined to blurt out "Beth will save more"—evidently because the difference between forty and thirty is bigger, both absolutely and as a ratio, than the difference between fourteen and twelve. This is, however, not a good reason for concluding that Beth will save more gas than Adam. If they both drive 10,000 miles in a year, Adam will save about 119 gallons, while Beth saves about 83. (Interestingly, if the question is framed in terms of *gallons per mile*, we are less likely to think that we know the answer.)

These effects are fascinating, in part because we can easily see that our initial inclinations are not only wrong, they are *objectively inferior* to other responses that are *available* and *justifiable* via reasoning that we are fully capable of conducting. Correlatively, discovery of framing effects can have policy implications. But in some cases, framing effects run deeper, making them intellectually interesting in another way—akin to paradoxes—with policy implications that are less clear, apart from suggesting epistemic modesty. Kahneman (2011) reports that his favorite example of this sort is one that (Nobel Prize winner) Thomas Schelling used in the classroom. This beautiful illustration concerns tax law. But I think it also provides a useful analogy to the puzzles posed by sentences like (9) and (10).

(9) Al chased Theo gleefully and athletically but not skillfully.

(10) Theo chased Al gleelessly and unathletically but skillfully.

2.2 Deep Framing

Schelling asked his students to think about the policy of reducing taxes for those who have (dependent) children. Suppose your income tax depends entirely on your (household) income and how many children you have. For each income i and number k of children, there is a tax t: $\text{Tax}(i, k) = t$. The "child deduction" might be flat, say a thousand dollars per child. That is, each income can be paired with a "base" tax, from which some multiple of 1000 is subtracted: $\text{Tax}(i, k) = \text{Base}(i) - k[1000]$. Alternatively, one might adopt a system in which the deduction for each child depends on household income: $\text{Tax}(i, k) = \text{Base}(i) - k[\text{Deduction}(i)]$. Given these options, there are many policy questions. But consider (8), which seems relatively easy.

(18) Should the child deduction be *larger* for the rich than for the poor?

At least for many of us, it seems unfair to adopt a graduated deduction policy, and then make the deduction per child *larger* for those who already have larger incomes. Hold that thought.

By thinking in terms of deductions, we effectively take the "standard household" to be childless. The base tax is what a childless household pays. But we could instead assume two children per household, start with a lower base tax for all incomes, and impose a surcharge on households with fewer than two children (e.g., \$1000 for each child less than two): $\text{Tax}(i, k) = \text{Base}^*(i) + (2 - k)[1000]$; where for each income i, $\text{Base}^*(i) = \text{Base}(i) - 2000$. We could also let the surcharge depend on income: $\text{Tax}(i, k) = \text{Base}^*(i) + (2 - k)[\text{Surcharge}(i)]$; where $\text{Base}^*(i) = \text{Base}(i) - 2[\text{Deduction}(i)]$.[6] Again, this presents various questions. But consider (19).

(19) Should the childless poor pay as large a *surcharge* as the childless rich?

Given a system that penalizes childlessness, with higher taxes for each income, at least many of us would find it unfair to make the poor pay as large a penalty as the rich. A childless poor household would sacrifice a greater percentage of income, for being childless, than a childless rich household. So one wants to say that any such surcharge should be graduated, with the childless poor paying a smaller surcharge than the childless rich. But if you answered both (18) and (19) negatively, then you endorsed a contradiction.

[6] For simplicity, assume that no household has more than two children. But it doesn't matter if there is also a tax *deduction* for each child beyond the second, or if we take the standard household to have ten kids (reduce the base tax, and impose surcharges accordingly). Though in principle, the last policy might promote population growth.

As Kahneman puts the point, for any given income, the *difference* between the tax owed by a two-child family and by a childless family can be described as a reduction or as an increase. And if poor households are to receive at least the same *benefit* as the rich for having children, then poor households must pay at least the same *penalty* as the rich for being childless. In the abstract, this seems obvious. Still, it can be remarkably hard to shake the sense that both (18) and (19) deserve negative answers. I had to stare, for a long time, at a proof that (20) is not possible.

(20) $\sim$[Deduction(i_{high}) > Deduction(i_{low})] & [Surcharge(i_{low}) < Surcharge(i_{high})]

For each income, high or low, the deduction has to be the same as the surcharge. One family's deduction is another family's surcharge. So (21) and (22) are obviously true.[7]

(21) Deduction(i_{high}) = Surcharge(i_{high})

(22) Deduction(i_{low}) = Surcharge(i_{low})

Given (21), the second conjunct of (20) implies (23), which might seem fine by itself.

(23) Surcharge(i_{low}) < Deduction(i_{high})

But (23) and (22) imply (24), which is incompatible with the first conjunct of (22).

(24) Deduction(i_{low}) < Deduction(i_{high})

The inferences are uncomplicated: if $\alpha = \beta$, and $\gamma < \beta$, then $\gamma < \alpha$; if $\alpha < \beta$, and $\gamma = \alpha$, then $\gamma < \beta$. And yet, our—or least my—gut responses to (18) and (19) remain. Quite humbling, and worth remembering when one uses the Fregean toolkit for logic to characterize linguistic meanings.

One might conclude that since (18) clearly deserves a negative answer, we must answer (19) affirmatively. But even if one answers (25) affirmatively, after thinking about (19-24),

(25) Should the child deduction be flat?

it still seems that (26) should be answered negatively.

(26) Should there be a flat tax on childlessness?

We could eliminate the child deduction. But given a flat deduction, poor households with kids get more tax relief as a percentage of income than rich households. That raises question (27).

(27) Should we eliminate a tax break for poor families with children?

Kahneman (2011) draws a dramatic and disturbing conclusion.

> The message about the nature of framing is stark: framing should not be viewed as an intervention that masks or distorts an underlying preference. At least in this instance...there is no underlying preference that is masked or distorted by the frame. Our preferences are about framed problems, and our *moral intuitions are about descriptions, not substance* (pp. 412-413?)

I take no stand on whether, or how often, things are *this* bad with regard to the moral/political. I find it hard enough to think about "what happened" in a situation where two chipmunks chased each other. (Though if our natural ways of describing action can quickly lead to puzzles when we talk about a situation in which each of two animals acts in a way that targets the other, then we may need to develop some *other* ways of talking about morally complex situations.)

In any case, when considering (9) and (10), we need to be realistic about human minds.

(9) Alvin chased Theodore gleefully and athletically but not skillfully.

(10) Theodore chased Alvin gleelessly and unathletically but skillfully.

To represent is to represent in a format; and formats can have "side-effects" that are not neglible. Some of our "intuitions" may reflect multiple factors that include deep framing effects, as in Schelling's case, and not "mere" laziness effects (as in the bat and ball example). There is no

---

[7] For any income i: Base(i) – k[Deduction(i)] = Base*(i) + (2 – k)[Surcharge(i)]; and Base*(i) = Base(i) – 2[Deduction(i)]; hence, – k[Deduction(i)] = – 2[Deduction(i)] + (2 – k)[Surcharge(i)]; so (2 – k)[Deduction(i)] = (2 – k)[Surcharge(i)]; so Deduction(i) = Surcharge(i).

guarantee that such intuitions can be coherently described as having stable propositional contents; cp. Kripke (1979). This matters for purposes of evaluating the *hypothesis* that sentences like (9) and (10) have truth conditions and logical forms along the lines of (9a) and (10a).

(9a) ∃X[CHASED(X, AL, THEO) & GLEEFUL(X) & ATHLETIC(X) & ~SKILLFUL(X)]

(10a) ∃X[CHASED(X, THEO, AL) & GLEELESS(X) & UNATHLETIC(X) & SKILLFUL(X)]

The intuitions that motivate appeals to these eventish logical forms may reflect details of linguistic description, as opposed to description-neutral (truth-conditional) content.

By uttering (9) or (10), a speaker can correctly report some of what happened when one chipmunk chased another. But no one event can satisfy all eight of the conjuncts in (9a) and (10a). So one might conclude that *if* (9) and (10) have the indicated logical forms, *then* the things that happened included two chases involving Alvin and Theodore. This sets us up for a familiar kind of debate that nobody wins. We can, however, reject the conditional.

Instead of viewing (9a) and (10a) as specifications truth conditions that (9) and (10) allegedly have, we can view the invented sentences as initial *models* of thoughts that might be assembled—given the right ingredients—by *executing* the instructions that (9) and (10) provide. Thoughts actually constructed via (9) and (10), on particular occasions, may or may not rise to the level of being true or false. Such thoughts may also be less sophisticated than (9a) and (10a), which employ Tarskian variables and conjoiners. We may use (9) and (10) to form thoughts, perhaps isomorphic to (9a) and (10a), that are not "made true" by any event that we are thinking about in two (perhaps slightly distorted) ways. We may represent and report what happened in existential form, though in framed ways that preclude language-independent events from being values of the relevant variables. Defending this positive proposal requires the details in chapters five and six. But in any case, one can adopt "eventish" specifications of what (3) and (4) *mean* without the adopting the hypothesis that (3) and (4) have the *truth* conditions specified by the formal sentences used to specify the linguistic meanings.

3. The Uncomfortable Event Position

One might prefer to jettison event analyses. But we still need to explain why the inference from (2) to (1) is compelling. Davidson's original argument can also be extended.

(2) Al chased Theo gleefully.

(1) Al chased Theo.

3.1 Compositionally Indispensible

Shifting examples, suppose that Miss Scarlet stabbed Colonel Mustard *twice*. One stab was done with a grey dagger; it was a bit clumsy, resulting in a superficial wound on Mustard's left side. The other one, done with a red dagger, was a proficient and fatal stab on his right side. Given this context, Davidsonian analysis yields a network of correct predictions concerning (28-35).

(28) Scarlet stabbed Mustard clumsily with a grey dagger.

(29) Scarlet stabbed Mustard proficiently with a red dagger.

(30) Scarlet stabbed Mustard clumsily.

(31) Scarlet stabbed Mustard with a grey dagger.

(32) Scarlet stabbed Mustard proficiently.

(33) Scarlet stabbed Mustard with a red dagger.

(34) Scarlet stabbed Mustard clumsily with a red dagger.

(35) Scarlet stabbed Mustard proficiently with a grey dagger.

The conjunction of (28) and (29) implies each of (30-33), but not (34) or (35).

Let S(X) abbreviate STABBED(X, SCARLET, MUSTARD). Let C(X)/P(X)/G(X)/R(X) abbreviate CLUMSILY(X)/PROFICIENTLY(X)/WITH-A-GREY-DAGGER(X)/ WITH-A-RED-DAGGER(X).

Call the two stabbings *Gauche* and *Droite*, each of which (is the value assigned to the variable by an assignment that) satisfies S(X). *Gauche* satisfies C(X) and G(X), but not P(X) or R(X); *Droite* satisfies P(X) and R(X), but not C(X) or G(X). So (28a) and (29a) are true.

(28a) ∃X[S(X) & C(X) & G(X)]

(29a) ∃X[S(X) & P(X) & R(X)]

Hence, ∃X[S(X) & C(X)]; ∃X[S(X) & G(X)]; ∃X[S(X) & P(X)]; and ∃X[S(X) & R(X)]. But the logical forms (34a) and (35a) are false.

(34a) ∃X[S(X) & C(X) & R(X)]

(35a) ∃X[S(X) & P(X) & G(X)]

In short, (28-35) exhibit a pattern of implications *and nonimplications* that is expected, given the conjunction reduction analysis illustrated with (2a) and (1a).[8]

(2a) ∃X[CHASED(X, AL, THEO) & GLEEFUL(X)]

(1a) ∃X[CHASED(X, AL, THEO)]

I don't know of any other explanation for this pattern. We can introduce more dyadic notions: STABBED-CLUMSILY(X, X′); STABBED-CLUMSILY-WITH-A-GREY-DAGGER(X, X′); STABBED-CLUMSILY-WITH-A-RED-DAGGER (X, X′); STABBED-WITH-A-GREY-DAGGER(X, X′); etc. But analyzing (28-35) in terms of such notions doesn't explain why every satisfier of STABBED-CLUMSILY-WITH-A-GREY-DAGGER(X, X′) satisfies both STABBED-CLUMSILY(X, X′) and STABBED-WITH-A-GREY-DAGGER(X, X′)—though not conversely. It seems that the meaning of 'stab' somehow indicates a conceptual slot corresponding to stabs, as indicated in (28a) and (29a), whose conjunction implies neither (34a) nor (35a).

Note, however, that satisfiers of S(X) have to be individuated more finely than ordered triples of the form <*t*, Scarlet, Mustard>; where *t* is some moment (or interval) of time. The two stabs of Mustard by Scarlet may have been simultaneous, each occurring at dawn.[9] By itself, this isn't yet a problem. One can plausibly posit simultaneous events that have the same participants. Famously, a sphere might be heating up as it spins; see Kim (1976), Davidson (1969). And while Scarlet participated in both *Gauche* and *Droite*, it might be that she moved her left hand in the former event as she moved her right hand in the latter. Similarly, while Mustard participated in both events, his right side may have been affected in *Gauche* as his left side was affected in *Droite*; the daggers did not simultaneously make a single wound. So this isn't yet an objection t Davidonian analysis. On the contrary, if all the examples were like this, I would be more favorably disposed towards truth-conditional semantics. But it's not enough to individuate events more finely than n-tuples of times and participants.

Imagine two rocks colliding, exactly once, with (36) and (37) being correct reports.

(36) The grey rock struck the red rock.

(37) The red rock struck the grey rock.

Call the rocks *Grey* and *Red*. It is tempting to say that a single event—the collision of *Grey* and *Red*, a.k.a. the collision of *Red* and *Grey*—satisfies both STRUCK(X, *GREY*, *RED*) and the distinct open sentence STRUCK(X, *RED*, *GREY*). But consider (38) and (39).

---

[8] Taylor (1985) discusses such examples, citing Christopher Arnold who cited Gareth Evans. When we're not worried about whether sentences can be true, we might say that (28-33) can be true while (34-35) are false. When we are worried, we can say that there are contexts in which speakers can tell truth with (28-33) but not (34-35). Of course, the conjunction-reduction explanation does not require the existence of *Gauche* and *Droite*. But in this case, Tarskian analogs of (18-23) may well be true. *Gauche* and *Droite* are, plausibly, distinct events.

[9] But we cannot identify both stabs with <dawn, Scarlet, Mustard>. As Evans stressed, events need to happen at times and have participants, but without *being* n-tuples of times and participants.

(38) The grey rock struck the red rock forcefully from the west.

(39) The red rock struck the grey rock forcefully from the east.

Prima facie, the collision does not satisfy FROM(X, THEWEST) or FROM(X, THEEAST). In response, one might say that STRUCK(X, X′, X″) abbreviates STRUCK(X) & ∃E[X = <E, X′, X″>]. On this view, one can say *both* that STRUCK(X, X′, X″) is satisfied by assignment $\mathcal{A}$ iff $\mathcal{A}$(E) was an event of $\mathcal{A}$(X) striking $\mathcal{A}$(X′)—or more briefly, that the open sentence is true of <ε, α, β> iff ε was an event of α striking β—*and* that an event of α striking β can be one of β striking α. If the logical forms of (36) and (37) are (36a) and (37a),

(36a) ∃X{STRUCK(X) & ∃E[X = <E, *GREY*, *RED*>]}

(37a) ∃X{STRUCK(X) & ∃E[X = <E, *RED*, *GREY*>]}

then the collision can be the one relevant value of E for both sentences. But there are two relevant values of X: <the collision, *Grey*, *Red*> and <the collision, *Red*, *Grey*>. In this sense, (36a) and (37a) have distinct "truth makers;" the one satisfier of STRUCK(X) & ∃E[X = <E, *GREY*, *RED*>] differs from the one satisfier of STRUCK(X) & ∃E[X = <E, *RED, GREY*>]

One can go on to say that adverbial modifiers are like verbs in being true of ordered n-tuples that include participants. Perhaps FORCEFULLY(X) is satisfied by both triples, while FROM(X, THEWEST) is only satisifed by the first, and FROM(X, THEEAST) is only satisfied by the second. This accommodates (38-39). But the proliferation of truth makers suggests that linguistic descriptions do matter, after all, with regard to what the conjuncts of logical forms are true of. Moreover, the issues illustrated with (38-39) are not confined to overtly perspectival predicates.

Davidson took the values of his event variables to be *both* things that can be described in many conjunctive ways, at least in an ideal language, *and* things that many human language predicates are true of. The question is whether our naturally acquired words conform to this conception of them. This invites attention to episodes that can be described in grammatically distinct but symmetric ways, as in (36-37), or in a correspondingly neutral way as in (40-41).[10]

(40) A rock struck a rock forcefully.

(41) There was a collision.

One wants to say that a certain language-independent event, the collision of the rocks, can be the one thing that ∃X′∃X″[STRUCK(X, X′, X″) & ROCK(X′) & ROCK(X″) & FORCEFULLY(X)] is true of. But was the striking of *Red* (by *Grey*) exactly as forceful(ly) as the collision? More generally, is every English predicate true of the collision if and only if it is true of either striking of rock by rock? Answering affirmatively invites a parade of apparent counterexamples. Answering negatively undermines the attractions of Davidsonian analyses *if* we presuppose thesis (L).

(L) if *S* is a sentence of a Human Language, and *S** is the logical form of *S*,
then *S* has the truth condition that *S** specifies

So perhaps we should reject (L) and view (36-41) as illustrations of framing, as opposed to existential closures of various event predicates that are true of a single event.

3.2 Ontologically Valueless

Examples like (42) raise similar issues, though with further complications.

(42) Mister Green married Miss Scarlet enthusiastically, but
Miss Scarlet married Mister Green unenthusiastically.

[10] See, e.g., Taylor (1985), Lasersohn (1990), Schein (2002, forthcoming). Plural event descriptions, as in 'The rocks collided and rained down on the huts', are beyond the scope of this paper; see Boolos (1998), Lasersohn (1995), Schein (1993), Landman (1996), Pietroski (2005).

One might say that MARRIED(X, GREEN, SCARLET) and MARRIED(X, SCARLET, GREEN) are true of *different* events, done by Green and Scarlet respectively. But if one of these events ended before the other—say because each event of marrying is identified with a certain speech act, and Green spoke first—there is an obvious difficulty. For even if (43) is correct, (44) is not.

(43) Green spoke before Scarlet did.

(44) Green married Scarlet before she married him.

I think that (43a) and (44a) are plausible Davidsonian logical forms.

(43a) ∃X[SPOKE(X, GREEN) & ∃X′[BEFORE(X, X′) & SPOKE(X′, SCARLET)]]

(44a) ∃X[MARRIED(X, GREEN, SCARLET) &
∃X′[BEFORE(X, X′) & MARRIED(X′, SCARLET, GREEN)]]

But if (44a) is false, then (42) presents the same kind of difficulty as (3) and (4).

(9) Al chased Theo gleefully and athletically but not skillfully.

(10) Theo chased Al gleelessly and unathletically but skillfully.

Either MARRIED(X, GREEN, SCARLET) and MARRIED(X′, SCARLET, GREEN) are satisfied by the *same* event, making it hard to see how (42) could be true, or Green and Scarlet participated in two simultaneous events of marrying.

Note that Scarlet and Green become married only if they both participated actively in the ceremony. Likewise, both chipmunks had to be active in any event of one chasing the other; you can't chase a chipmunk that stays still. But (1) represents Al as more agentive than Theo,

(1) Al chased Theo.

while (3) represents Theodore as more agentive.

(3) Theo chased Al.

So CHASED(X, AL, THEO) might be elaborated as in (45), and likewise for CHASED(X, THEO, AL).

(45) AGENT(X, AL) & PAST(X) & CHASE(X) & PATIENT(X, THEO)]

Then even without adverbs, it seems that no one event can be both Al's chase of Theo and Theo's chase of Al. Al is the agent of the former, and Theo is the Patient of the latter. Similarly, it seems that no event of Scarlet chasing Green could be an event of Green fleeing Scarlet.

In response, one might claim that an event can have more than one agent, and that ε satisfies AGENT(X, AL) if Al is one of the one or more agents of ε. But then it seems that (46)

(46) Alvin lifted the piano, and then he played the trio.

would be true if Al was one of three musicians who together lifted the piano and played the trio.[11] That's wrong. So plausibly, ε satisfies AGENT(X, AL) only if Al is *the* agent of ε. So it's hard to see how Al's chase of Theo could be Theo's chase of Al. Reports of perceptions, as in (47-49), raise a similar issue while providing further evidence for eventish logical *forms*.

(47) Peacock heard Mustard yell.

(48) Peacock heard a yell.

(49) Mustard yelled, and Peacock heard him.

Such reports remind us that a verb like 'heard' can combine with an untensed clausal complement, like 'Mustard yell', to form a phrase.[12] It is hard to accommodate this point if the logical form of 'heard' is simply HEARD(X, Y). But if the logical form of (49) is (49a),

[11] See Schein (2002). Perhaps Alvin did some piano-lifting. But (46) implies that some event was a *lifting of the piano* by Alvin. Moreover, 'the piano' can be replaced with 'five pianos at once'.

[12] The phrase 'heard that Mustard yelled' is different again. If (47) is true, and Mustard was the tallest officer, then Peacocke heard the tallest officer yell. But if she heard that Mustard yelled—say, because Plum passed on the rumor—she need not have heard that the tallest officer yelled.

(49a) ∃x[YELLED(x, MUSTARD)] & ∃x[HEARD(x, PEACOCK, HIM)]

then (48a) is plausibly the logical form of (48); cp. (43-44).

(48a) ∃x∃x′[HEARD(x, PEACOCK, x′) & YELL(x′)]

And like (48), (47) implies that there was a hearing of a yell. So (47a) is plausibly the logical form of (47); see Higginbotham (1983), Vlach (1983).

(47a) ∃x∃x′[HEARD(x, PEACOCK, x′) & YELL(x′, MUSTARD)]

This hypothesis is further confirmed by the ambiguity of (50).

(50) Peacock heard Mustard yell in the hall.

Peacock may have been in the hall when she perceived the yell, or Mustard may have been in the hall when he yelled. These readings are captured with (49a) and (49b).

(50a) ∃x∃x′[HEARD(x, PEACOCK, x′) & YELL(x′, MUSTARD) & IN(x, THEHALL)]

(50b) ∃x∃x′[HEARD(x, PEACOCK, x′) & YELL(x′, MUSTARD) & IN(x′, THEHALL)]

This raises the question of whether (47-49) have the same truth maker(s). Positing multiple events of perception seems gratuitous. So suppose that Peacock's perception ε can be (the event of) her hearing Mustard, her hearing his yell, or her hearing Mustard yell. And suppose that HEARD(x, PEACOCK, x′) is true of <ε, Peacock, ε′>; where ε′ is the yell. To accommodate (49) and (51), HEARD(x, PEACOCK, x′) must also true of <ε, Peacock, Mustard>.

(51) Peacock heard Mustard.

By itself, that might seem acceptable. While Mustard is distinct from his yell, one might hear him by hearing his yell. But it seems *ad hoc* to say that a single event can be a hearing of two things, even though a single event cannot have two Agents.

On the other hand, if Simon plays a song by playing a tuba, one might say that the single performance can be described in terms of either "thing played." Though if the song-playing *is* the tuba-playing, then PLAYED(x, SIMON, THESONG) and PLAYED(x, SIMON, HISTUBA) are both satisfied by the performance, which can be reported with (52) or (53).

(52) Simon played the song on his tuba.

(52a) ∃x[PLAYED(x, SIMON, THESONG) & ON(x, HISTUBA)]

(53) Simon played his tuba.

(53a) ∃x[PLAYED(x, SIMON, HISTUBA)]

In which case, ON(x, HIS TUBA) is satisfied by the performance, and so (54a) is true.

(54) Simon played his tuba on his tuba.

(54a) ∃x[PLAYED(x, SIMON, HISTUBA) & ON(x, HISTUBA)]

Yet an utterance of (54) would be false. The muddle spreads, as with the tax deduction example. Though as I have tried to stress in this section, the relevant implications strongly suggest that the conjunct-reduction model is correct. My way of preserving this model, despite the puzzles, is to reject the truth-theoretic gloss. But there have been other proposals.

4. Trying to Restore Comfort

I grant that *some* apparent puzzles for event analyses can be dealt with via two strategies: posit distinct but related events (§4.1); or posit some relativization to description (§4.2). But in my view, neither strategy plausibly extends to the hard cases.

4.1 Distinguish but Relate

Suppose that Scarlet shot Green exactly once, shortly after marrying him. In doing so, Scarlet will have acted in a way that can be reported in many ways, say, with (55) and (56).

(55) Scarlet shot Green with her revolver.

(56) Scarlet pulled the trigger with her ring finger.

But let's suppose that (57) and (58) are *not* correct ways of reporting what happened.

(57) Scarlet shot Green with her ring finger.

(58) Scarlet pulled the trigger with her revolver.

If (55a) and (56a) are true, but (57a) and (58a) are not,

(55a) ∃X[SHOT(X, SCARLET, GREEN) & WITH(X, HERREVOLVER)]

(56a) ∃X[PULLED(X, SCARLET, THETRIGGER) & WITH(X, HERRINGFINGER)]

(57a) ∃X[SHOT(X, SCARLET, GREEN) & WITH(X, HERRINGFINGER)]

(58a) ∃X[PULLED(X, SCARLET, THETRIGGER) & WITH(X, HERREVOLVER)]

then SHOT(X, SCARLET, GREEN) and PULLED(X, SCARLET, THETRIGGER) are satisfied by distinct events; see, e.g., Pietroski (1998). That's not surprising. The event sortals differ. Green differs from the trigger. And the trigger was affected *first*, with the *subsequent* result that Green was affected; cp. Feinberg (1965) on the "accordion effect." So one might say that the event of Scarlet pulling the trigger was *part* of the event (or process) of her shooting Green, which may have been part of her killing Green; see Thalberg (1972), Thomson (1971, 1977). The trigger-pulling may itself have included a certain motion of Scarlet's ring finger, and perhaps a mental cause of that bodily motion. But here, it's enough to note that Green wasn't shot until the bullet entered him. The trigger was pulled a moment before. So plausibly, SHOT(X, SCARLET, GREEN) and PULLED(X, SCARLET, THETRIGGER) are true of *distinct but related* events.

I think it's less plausible that *one* of Scarlet's actions is the truth maker for both (55a) and (56a).[13] Davidson (1967a) tried this "identificationist" strategy, according to which the apparent falsity of (57a) and (58a) must be explained away, in response to examples like (59) and (60).

(59) Scarlet shot Green at dawn, and he died (later that day) at noon.

(60) Scarlet killed Green at dawn, and he died (later that day) at noon.

Intuitively, (59) can be a correct report of what happened, while (50) is not. But Davidson held that if (59a) is true, so is (60a): (60) just *sounds* wrong because Green wasn't dead at dawn.

(59a) ∃X[SHOT(X, SCARLET, GREEN) & AT(X, DAWN) &
∃X′[DIED(X′, HE) & AT(X′, NOON)]]

(60a) ∃X[KILLED(X, SCARLET, GREEN) & AT(X, DAWN) &
∃X′[DIED(X′, HE) & AT(X′, NOON)]]

The idea was that while STABBED(X, SCARLET, GREEN) and KILLED(X, SCARLET, GREEN) are both satisfied by Scarlet's action at dawn, her action is not correctly described *as* a killing until Green dies, much as an award-winning performance is not correctly described as such before the award is given. According to Davidson, an action occurs wholly where the actor is. If the action was a killing, it follows that someone died; though it doesn't follow the death was part of the action. I agree. But one can grant this point, taking actions to be causal contributions of agents, and conclude that KILLED(X, SCARLET, MUSTARD) is not satisfied by any action. For one might think that utterances of (50) are false, and not merely odd, given that (61) sounds fine.

(61) Scarlet shot Green fatally at dawn, and he died at noon.

A stabbing, like an illness, can be described as fatal before the relevant death. So it seems that the killing differs from the fatal stabbing after all: the killing, unlike Scarlet's action, is not

[13] See Wilson (1989), Ginet (1990), Pietroski (2000). Perhaps (59) and (60) can be used to talk about the same "root action," whatever it turns out to be. But speakers can use expressions to talk about things that the expressions are not true of; see, e.g., Donnellan (1966). One can posit forms like ∃A∃X[R(A, X) & SHOT(X, SCARLET, GREEN)]; where R(A, X) is true of <α, β> if and only if α is the action "at the root of" β. But even if this formal claim is true if and only if Scarlet shot Green, this may reflect the metaphysics of shooting, not the meaning of 'shoot'.

over until Green dies. So positing *distinct but related* events is plausible for some cases, especially where it is independently plausible that the relevant event predicates are satisfied by processes that exhibit part-whole relations. But this strategy seems especially unsuited to examples like (9) and (10).

(9) Alvin chased Theodore gleefully and athletically but not skillfully.

(10) Theodore chased Alvin gleelessly and unathletically but skillfully.

If there are *two* chasings, they occupy the same region of spacetime and have the same participants. Such events, satisfying the same sortal term, would be *very* intimately related.

Perhaps one can distinguish a statue from the lump of material that constitutes it, even if their careers (as existents) start and finish together. For perhaps statues and lumps of material are just things of different sorts, and this underpins certain modal differences. But it begs the questions at hand to insist that Alvin's chase of Theodore differs modally from Theodore's chase of Alvin. One can try to argue that chases of Theodore and chases of Alvin are events of different sorts. But then one needs some account of event sorts. Gleeful chases of Theodore and athletic chases of Theodore had better not be events of different sorts, in any way that precludes (token) identity claims, on pain of spoiling Davidsonian accounts of implications and nonimplications. One can say that "direct objects matter" for these purposes. But then it's hard to see the difference between positing *two* chases, and positing *one* chase along with the claim that a certain difference in *linguistic description* is semantically relevant.

In this respect, examples like (52) and (53) are again instructive.

(52) Simon played the song on his tuba.

(52a) $\exists$X[PLAYED(X, SIMON, THESONG) & ON(X, HISTUBA)]

(53) Simon played his tuba.

(53a) $\exists$X[PLAYED(X, SIMON, HISTUBA)]

Suppose that Simon played the song in question exactly once. Let π be the event of him playing that song, so that π is the truth maker for (52a) and plausibly a truth maker for (53a). Even if (52a) does not logically imply (53a), the latter is true if the former is true. Of course, (53a) would be true if Simon only played part of the song on his tuba. But let π' be the event of tuba playing that has the same spatiotemporal properties as π. Then π' is one among many truth makers for (53a). And intuitively, π' is the same event as π. If π was a performance of "My Way" that started at noon and ended three minutes later, then π' can also be described this way. Moreover, π seems to have all the same causes and effects as π': if some vibration of air was caused by π, then it was caused by π'; if π was caused by a desire to impress the audience, then so was π'.

It might be noted that Simon played the song *by* playing his tuba, not vice versa. But this asymmetry, which may well reflect order of *intentions*, does not show that π and π' are distinct events; cp. Anscombe (1957), Thomson (1977), Hornsby (1980). So I wouldn't want to rely on 'by', which presents complications for everyone, in arguments against Davidsonians.

It does, however, beg the questions at hand to insist that the song-playing π differs modally from the tuba-playing π'. And insisting that "direct objects matter" will lead to grief. For suppose that Simon flipped a certain switch and thereby played: *a record, a song, a Beatles tune, a cover of a Beatles Tune, his favorite track, a recording of a song*, *a hit record, a top ten hit*. (If Simon is a deejay, he may have played all those things on the radio.) It seems perverse to say that Simon is the agent of so many *distinct but related* events, occupying the same region of spacetime, instead of saying that these are many *ways of reporting* some of what happened when he flipped the switch. Reporters can choose from boundlessly many different descriptions of certain effects of making a certain grooved piece of vinyl spin.

I can't prove that the strategy of positing distinct but related events is wrong for these cases. But this strategy does not merely suffer from metaphysical profligacy. It threatens the very idea that variables have values that can satisfy boundlessly many predicates, many of which are logically independent. And if this idea is abandoned, it's hard to see point of saying that human language predicates are often satisfied by events. This is not to deny the attractions of positing distinct but related events. Many reports of "what happened" in a given region of spacetime may have the logical form $\exists x[\Phi(x)]$, for some complex predicate 'Φ'. But it may not be possible to identify any event as both the relevant "thing that happened" and the common truth maker for (the logical forms of) all the reports. This can make it temping to posit many events—at the limit, one per report—until one thinks about the implications.

If we could be sure that our judgments in these cases coherently reflect the things that happened, however many there were, then our judgments concerning the truth of sentential utterances might favor the strategy of positing surprisingly many events. But in using human languages to report and think about what happened, we may report and think only in frame-dependent ways. And there is no guarantee that our various ways of framing what happened can be coherently viewed as representations of description-neutral events. Indeed, we have independent evidence of framing effects that run deep in human cognition, but no independent evidence for co-located playings/chasings/etc. So absent good reasons for thinking that our judgments in these cases reflect the existence of distinct but intimately related events, positing such events seems *less* motivated than revising the relevant assumptions about how meaning, truth, and logical form are related. But there remains the question of whether such revision is better motivated than less metaphysically profligate ways of responding to the puzzle cases.

4.2 Identify but Relativize

Consider again the event π of Simon playing the song on his tuba, and the corresponding event π' of Simon playing his tuba. As noted above, simply identifying π with π' won't do.

Suppose that π satisfies PLAYED(X, SIMON, HISTUBA) and PLAYED(X, SIMON, THESONG) and ON(X, HISTUBA). Then π is a truth maker for (54a). In which case, (54) is true

(54) Simon played his tuba on his tuba.

(54a) $\exists$X[PLAYED(X, SIMON, HISTUBA) & ON(X, HISTUBA)]

if this human language sentence has the truth condition specified by (54a). But consider (62-63).

(62) Simon played the song in three minutes.

(62a) $\exists$X[PLAYED(X, SIMON, THESONG) & IN-THREE-MINUTES(X)]

(63) Simon played his tuba for three minutes.

(63a) $\exists$X[PLAYED(X, SIMON, HISTUBA) & FOR-THREE-MINUTES(X)]

If (62a) and (63a) are true, then π satisfies IN-THREE-MINUTES(X) and FOR-THREE-MINUTES(X). In which case, there is presumably some three-minute interval such that: π occurred within that interval; and π lasted for that interval. But then (64a) is equally true. Yet the deviant (64) is not.

(64) *Simon played his tuba in three minutes.

(64a) $\exists$X[PLAYED(X, SIMON, HISTUBA) & IN(X, THREE MINUTES)]

This raises the question of why (64) cannot be understood as a way of expressing (64a). By way of comparison, recall that while (65) is defective, it has the meaning of (65a).

(65) *The child seems sleeping.

(65a) The child seems to be sleeping.

(65b) #The child seems sleepy.

So why isn't (64) understood as a (perhaps odd) way of saying what one says with (63)?[14]

One can describe the unacceptability of (64) in terms of a formal property exhibited by 'in' but not 'for'. Indeed, the basic facts are well known. Roughly speaking, a "telic" modifier like 'in three minutes' is licenced only if the modified phrase specifies an "endpoint" condition that determines when an event of the relevant sort has terminated.[15] Compare (66) with (67).

(66) Simon ran to/through/past the park in three minutes.

(67) *Simon ran towards/in/near the park in three minutes.

An event of running *to* the park ends when the runner reaches the park, while 'towards the park' has no corresponding implication, even though every run ends somewhere. Note that 'ran around the park *in* an hour' implies a loop, but 'ran around the park *for* an hour' does not. Likewise, an event of playing the song ends (modulo vagueness) when the final notes are sounded. But 'played his tuba' has no corresponding implication, even though no tuba playing goes on forever.

That, however, is no defense of the idea that 'played his tuba' and 'in three minutes' are satisfied by language-independent events. On the contrary, it suggests that meanings have to do with how events are *represented*. The triviality of (68) suggests that in some sense,

(68) If Simon played the song on his tuba in three minutes,
then Simon played his tuba for three minutes.

speakers recognize that any event of playing a song on a tuba in three minutes is an event of playing that tuba for three minutes. Yet replacing 'for' with 'in'—the very preposition used in the antecedent of (68)—makes a mess of the consequent.

(69) If Simon played the song on his tuba in three minutes,
then Simon played his tuba in* three minutes.

This can be explained if 'in three minutes' is *unlike* IN(X, THREE MINUTES), in that the human language phrase is a grammatically coded instruction for how to build a certain kind of telic concept, while 'played his tuba' is a grammatically coded instruction for how to build a certain kind of atelic concept. But if 'in three minutes' is *like* IN(X, THREE MINUTES) in being satisfied by π if and only if π took place in three minutes, then why can't (68) and (69) be so understood?

The point here is not limited to 'in' and 'for'. Suppose that Simon used all the available polish to clean some tarnished brass, getting the job done in an hour. One might describe Simon's contribution in any of the four ways indicated with (70-71).

(70) Simon put *the polish* on brass for/in an hour.

(71) Simon polished *the brass* for/in an hour.

We have the usual motivations for identifying the event of putting the polish on brass with the event polishing the brass. But if the direct object is a bare noun, 'in an hour' is no longer a viable way of extending the predicate.

(72) Simon put *polish* on (the) brass for/*in an hour.

(73) Simon polished *brass* for/*in an hour.

---

[14] One has the feeling that an event of playing a tuba is somehow divisible into shorter episodes of that same kind, in a way that no event of playing a song is—at least until one thinks about the possibility of playing a one-note song. But even if the distinction is hard to specify, and more mental than metaphysical, one might think that it bears on why Simon's tuba playing is not *said* to be in two minutes: perhaps the tuba-playing satisfies IN(X, TWO MINUTES); but it is pragmatically odd to say so, since 'in two minutes' suggests events that are *not* represented as indefinitely divisible. The relevant implicature would be uncancellable and unaffected by conditionalization. But even if this explains why it is weird to *use* (64), the question is why (64) cannot be *understood* as having the meaning of (63).

[15] See especially Tenny (1994) and further references there.

While every brass-polishing eventually ends, thinking about an event ε *as* one of putting *polish* on the brass is not to think about ε as an event that includes a culminating point at which the brass is polished; and likewise for thoughts of polishing *brass*. But once *the polish* is on brass, or *the brass* is polished, the job is done. Sentence (70) has us thinking about the "job" as using up the polish, even if Simon had no such intention, while (71) has us thinking about clean brass as the telos. If this distinction correlates with the form of the direct object—bare noun or determiner phrase, even when the same event/performance/work/contribution is variously described—one begins to suspect that Davidsonian "event variables" are best viewed as part of a theory of how linguistic expressions are related to human concepts, without regard to the events that might be thought about and/or stipulated to be values of variables in some invented ideal language.[16]

Given these considerations, one might supplement an identification strategy with some appeal to description-relative predicates. In particular, one might draw attention to an example that Davidson (1967a) discussed. Suppose that Jones swam across the English Channel. Presumably, an event can be quick for a channel-swimming yet slow for a channel-crossing, much as an insect can be large for an ant yet small for an animal. So it would be rash to conclude that the swimming was an event distinct from the crossing, just because both (74) and (75)

(74) Jones swam the channel quickly.

(75) Jones crossed the channel slowly.

can be used to report what Jones did. Formalism like (74a) and (75a) can be viewed as shorthand for more articulated logical forms of the sort indicated in (74b) and (75b).

(74a) ∃X[SWAM(X, JONES, THECHANNEL) & QUICK(X)]

(74b) ∃X[AGENT(X, JONES) & SWAM$_i$(X, THECHANNEL) & QUICK-FOR(X, $__i$)]

(75a) ∃X[CROSSED(X, JONES, THECHANNEL) & SLOW(X)]

(75b) ∃X[AGENT(X, JONES) & CROSSED$_i$(X, THECHANNEL) & SLOW-FOR(X, $__i$)]

The (b)-forms encode the idea that 'quickly' and 'slowly' are relativized to 'crossed the channel' and 'swam the channel', allowing for comparisons to other events of the same sort, perhaps done by other agents. And I have no objection to separating out 'AGENT(X, JONES)'.

This suggests an obvious extension to examples like (76) and (77); see §2.4 of chapter five.

(76) Simon played his tuba well.

(77) Simon played the song well.

---

[16] One can introduce a predicate of *concepts*, CULMINATER(_), that applies to PLAY-A-SONG and PUT-THE-POLISH-ON-BRASS but not PLAY-A-TUBA or PUT-POLISH-ON-THE-BRASS. But such a predicate will not apply to Simon's performance. One can introduce a "secondary quality" predicate, SQ-CULMINATER(_), that applies to events that can be thought about with a concept to which CULMINATER(_) applies. But then SQ-CULMINATER(_) applies to the event of Simon playing his tuba, since that event can be thought of as the playing of a song. Note that (70-73) also tell against the idea that in 'played his tuba' and 'played the song on his tuba', 'his tuba' is semantically related to the *same* thematic concept (while 'the song' is semantically related to *another* thematic concept.) On such a view, either 'play' lets the thematic concept associated with its direct object vary, or 'his tuba' is not the direct object in 'played his tuba'. But the first option would violate a well confirmed "uniformity" constraint, discussed in chapter five, on how thematic concepts are grammatically expressed; see Baker (199x) and references there. The second option seems wrong for many reasons, including the fact that 'played *the tubas* in an hour' is much better than 'played (on the) tubas in an hour', as if 'the tubas' is the direct object and telos-specifier in the former but not the latter. (Pluralizing helps only if the direct object is a determiner phrase.) If IN-AN-HOUR can(_) only extend concepts that represent processes as telic and extended, the deviance of 'played/pounded *the tuba* in an hour' is expected, even with a determiner phrase as direct object. But 'pounded/played *the tubas* in an hour' is presumably better because pluralizing provides a way of thinking about the process as extended.

Taking 'well' to be the adverbial version of 'good', one might say that an event can be good *for a tuba-playing* without being good *for a song-playing*. But if only because 'big', 'slow', and 'good' can appear in constructions like (78),

(78) Of those two ants, Adam is the big/slow/good one,
but other ants are even bigger/slower/better.

it isn't clear how to plausibly extend the "identify but relativize" strategy to other modifiers. Put another way, it's not implausible that 'big', 'slow', and 'good' are understood in terms of the relational concepts that we often express with comparative morphemes. To a first, though only first approximation: to be a big/slow/good Φ is to be a Φ that is bigger/slower/better than most.[17] And if x is big/slow/good, then for some Φ, x is a big/slow/good Φ; cp. Thomson (2008). But prima facie, this pattern does not extend to all modifiers, lexical or phrasal. Consider (79).

(79) Simon played the song in the style of Sinatra.

I don't think that 'in the style of Sinatra' is understood, on its own, in terms of what it is to be in the style of Sinatra *for a Φ*. But one can hypothesize that the relativization is introduced compositionally, as a reflex of modifying a phrase with a grammatical adjunct. Perhaps all phrases of the form [[VERB OBJECT] MODIFIER] have the logical form indicated in (80),

(80) $\text{VERB}_i(\text{X}, \text{OBJECT})$ & $\text{MODIFIER-FOR}(\text{X}, __i)$

whose instances include 'Played_i(e, the song) & In-The-Style-of-Sinatra-For(e, Δ_i)'. But note that this changes—and arguably trivializes—the Davidsonian account of predicate modification: it's not that modifiers apply to the very events that unmodified verb phrases apply to; rather, modifiers express relations that can be exhibited by verb phrases and whatever they apply to. Moreover, for many modifiers as in (81), any relativization has to be truth-conditionally inert.

(81) Yesterday, Simon played his tuba while Phosphorus was still visible.

Recall the similar point concerning 'struck forcefully' vs. 'struck from the east'.

It's also hard to know what the "identify but relativize" strategy predicts, once we get beyond examples like (74-77). If a theory predicts that (79) is true only if some event of Simon playing the song satisfies a certain metalanguage predicate P, then one wants to know if Simon's song-playing satisfies P. Now it's already a little unclear what it is for an event to be in the style of Sinatra. But as a competent speaker of English who knows what a personal style is, I could—perhaps after reviewing some of Sinatra's performances—make judgments about whether certain performance by others were Sinatraesque. I would, however, be confused by the following instruction: don't say whether what Simon did on stage (with his tuba) was done in the style of Sinatra; rather, say whether Simon's playing of the song was Sinatraesque for an event of that sort, and whether his tuba-playing was Sinatraesque for an event of that sort. So even if the logical form of (79) is more complex than (79a), (79b) seems complex in a wrong way.

(79a) $\exists$X[PLAYED(X, SIMON, HISTUBA) & IN(X, THESTYLEOFSINATRA)]

(79b) $\exists$X[AGENT(X, SIMON) & PLAYED_i(X, THESONG) &
IN-THE-STYLE-OF-SINATRA-FOR(X, $__i$)]

Again, my point is not that relativizing to descriptions is always illegitimate. A musical performance can trigger the spontaneous judgment that the instrument was played well, while the

[17] Cp. Ross (1967), Klein (198x). See also Kennedy (199x, 200x) and Schwartzschild (200x) for proposals, in terms of scales, and further references. See Pietroski (2006b) for discussion of the formal relation to Frege's notion of an ancestral, Boolos' (1998) plural interpretation of second-order logic, and a corresponding "Conjunctivist" analysis of 'big ant'.

music was not. We know that a four-minute mile is quick in some contexts but not others. The quick/slow contrast can also be deployed to modify boundlessly many intuitively diverse predicates—e.g., 'crossed the Channel', 'proved a theorem', and 'removed an appendix'. Correlatively, we tacitly know what it is to be quick for a Channel-swimming yet slow for a Channel-crossing: it is (roughly) to be an event of swimming across the Channel in significantly less than the average time required for such a swim, though significantly more than the average time required to get across the Channel in a more standard way. So plausibly, speakers know that this is what it is for a value of an event variable to be one in which the Channel is swum quickly but crossed slowly. Many other dimensions of variation can be relativized to predicates in this way. But prima facie, boundlessly many modifiers do not fit this model.

I think we know—or at least can come to know—what it is for a vocal performance, or an acting performance, or perhaps a whole life to be Sinatraesque. And we may know what it is for a performance to be Sinatraesque for a vocal (as opposed to acting) performance. But it doesn't follow that we know what it is for a singing of "Happy Birthday" to be Sinatraesque *for a singing of that song*, as opposed to being Sinatraesque simpliciter. Given Marilyn Monroe's famous singing of that song for John Kennedy, we know how to construe (82).

(82) At the party, someone sang "Happy Birthday" in the style of Monroe.

But I don't think that (83) implies a distinctly Sinatraesque version of that particular song.

(83) At the party, someone sang "Happy Birthday" in the style of Sinatra.

Likewise, we may have a dim sense of what it would be to prove a theorem (remove an appendix, play a tuba) Sinatraesquely—perhaps it involves holding a cigarette, wearing a Fedora at just the right angle, and making the task at hand seem easy—without having any independent sense of what it would be for an action to be Sinatraesque *for a theorem-proving*. In short, I think that apart from some important special cases, the relativization component of the "identify but relativize" strategy is otiose. It does provide formalism that insulates Davidsonian event analyses from certain objections. But that is not a virtue. Let me change the example to stress this point.

Suppose that Simon played the song in the way his Uncle Jim taught him: in a certain key, with a certain lilt, and introducing a few unexpected notes during the bridge. Suppose that Simon also played his tuba in the way his Aunt Joan taught him: with a certain embouchure, back straight, and using certain alternate fingerings for improved tone. For simplicity, let's say that Simon played the song *Jimishly*, and that he played his tuba *Joanishly*. Again, let π be the alleged satisfier of both PLAYED(X, SIMON, THESONG) and PLAYED(X, SIMON, HISTUBA). Then π was Jimish and Joanish. We don't need to say that π was *Jimish for a playing of the song* and *Joanish for a playing of Simon's tuba*. Moreover, I don't think we should say this.

It's not clear what the difference is, or could be, between π being Jimish—in D-major, lilting, etc.—and being Jimish *for* a playing of the song. We can say that the logical form of (84)

(84) Simon played the song in the way his Uncle Jim taught him.

is (84a), without recasting (84a) as (84b).

(84a) ∃X[AGENT(X, SIMON) & PLAYED(X, THE SONG) & JIMISHLY(E)]

(84b) ∃X[AGENT(X, SIMON) & PLAYED$_i$(X, THE SONG) & JIMISHLY-FOR(X, $__i$)]

Likewise, we can say that the logical form of (85) is (85a), without recasting (85a) as (85b).

(85) Simon played the song in the way his Aunt Joan taught him.

(85a) ∃X[AGENT(X, SIMON) & PLAYED(X, HISTUBA) & JOANISHLY(X)]

(85b) ∃X[AGENT(X, SIMON) & PLAYED$_i$(X, HISTUBA) & JOANISHLY-FOR(X, $__i$)]

The supplementary analyses of JIMISHLY(X) and JOANISHLY(X) seem unneeded and unwanted, except as side-effects of insulating Davidsonian event analyses from certain objections.

Of course, if π satisfies PLAYED(X, SIMON, THESONG) and PLAYED(X, SIMON, HISTUBA) and JIMISH(X) and JOANISH(X), then π satisfies PLAYED(X, SIMON, THESONG) & JOANISH(X) and PLAYED(X, SIMON, HISTUBA) & JIMISH(X). In which case, (86a) and (87a) are true.

(86) Simon played the song in the way his Aunt Joan taught him.

(86a) ∃E[AGENT(X, SIMON) & PLAYED(X, THESONG) & JOANISHLY(X)]

(87) Simon played his tuba in the way his Uncle Jim taught him.

(87a) ∃E[AGENT(X, SIMON) & PLAYED(X, HISTUBA) & JIMISHLY(X)]

And that predicts, wrongly, that (utterances of) the English sentences (86) and (87) are true.

This makes a relativization strategy initially attractive. Many reports of "what happened" on a stage may have the logical form ∃X[Φ(X) & J(X)]. But it may not be possible to identify any "thing that happened" as the common truth maker for (the logical forms of) the reports. This makes it temping to posit rampant relativization, until one thinks about the implications. If we could be sure that our judgments of truth/falsity in these cases coherently reflected the degree of relativization in logical forms, then judgments concerning the truth of sentential utterances might favor a relativization strategy. But in using human languages to report and think about what happened, we may report and think only in frame-dependent ways. And while we have independent evidence for framing effects that run deep in human cognition, we have no independent evidence for the requisite rampant relativization in logical forms.

5. Schein's Resolutions

It would be nice to just stop here. Some readers may wish I had stopped sooner. But there is another perspective to consider. Schein (2002, forthcoming) offers sophisticated event analyses according to which the relevant domain—the world in which we think and talk—includes not just description-neutral events, but also "scenes" in which these events are grammatically presented or "resolved" in particular ways. His proposed logical forms include variables for *both* description-neutral events *and* grammatically individuated resolutions. As this already suggests, Schein's goal is not to defend thesis (D).

(D) for each human language **H**, there is a Tarski-style theory of truth
that can serve as core of an adequate theory of meaning for **H**

He wants an empirically defensible account of the logical forms that expressions of a human language exhibit. And he follows the logic of Davidsonian event analysis where it leads, given speakers' judgments regarding sentences of the sort discussed here; though Schein often attends to relevant details, ignored here, concerning plural and quantificational arguments. Since his proposals regarding "two-tiered" logical forms are insightful, and one can at least imagine an advocate of (D) embracing them, let me say a little about Schein's and how I think they related to the idea of meanings as concept construction instructions.

5.1 Enriching Forms

In terms of notation, Schein replaces Davidsonian conjuncts of the form Φ(X) with conjuncts of the form ∃X′[R(X, X′) & Φ(X′)]; where R(X, X′) is said to be true of <ε, ε′> if and only if ε′ is the *resolution of* ε in some scene. For example, AGENT(X, AL) is replaced with ∃X′[R(X, X′) & AGENT(X′, AL)]; where R(X, X′) is true of <ε, ε′> iff for some scene α, ε′ is the resolution in α of the Davidsonian (description-neutral) event ε, and AGENT(X′, AL) is true of <ε′, Alvin> iff Alvin is presented as the agent in ε′. In effect, this adds a variable for modes of presentation of events.

With regard to (1) and (3), renumbered here as (88) and (89),

(88) Al chased Theo.

(89) Theo chased Al.

Schein would replace (thematically elaborated) logical forms like (88a) and (89a)

(88a) $\exists x[\text{AGENT}(x, \text{AL}) \,\&\, \text{PAST}(x) \,\&\, \text{CHASE}(x) \,\&\, \text{PATIENT}(x, \text{THEO})]$

(89a) $\exists x[\text{AGENT}(x, \text{THEO}) \,\&\, \text{PAST}(x) \,\&\, \text{CHASE}(x) \,\&\, \text{PATIENT}(x, \text{AL})]$

with variants that imply (88b) and (89b), respectively.

(88b) $\exists x\{\exists x'[R(x, x') \,\&\, \text{AGENT}(x', \text{AL})] \,\&\, \exists x'[R(x, x') \,\&\, \text{PATIENT}(x', \text{THEO})]\}$

(89b) $\exists x\{\exists x'[R(x, x') \,\&\, \text{AGENT}(x', \text{THEO})] \,\&\, \exists x'[R(x, x') \,\&\, \text{PATIENT}(x', \text{AL})]\}$

The *one* chase can be the relevant value of the matrix variable x in both (88b) and (89b). But on Schein's view, this event can be resolved (or "redrawn") in many ways, including ways that correspond to seeing the chase *as* an event that has a certain agent, or a certain patient. The hypothesized resolutions of the chase are the relevant values of the indexed variables. Each chipmunk can be seen as either an agent or a patient. But (88) presents Al *as* the agent and Theo *as* the patient, while (89) presents Theo as the agent and Al as the patient. So once $\text{CHASE}(x)$ is replaced with $\exists x'[R(x, x') \,\&\, \text{CHASE}(x')]$, it is clear that the verb phrases—'chased Theodore' and 'chased Al'—can be consistently modified with, respectively, 'gleefully and athletically but not skillfully' and 'gleelessly and unathletically but skillfully'.

More generally, an instance of (90) can be replaced with a two-tiered logical form

(90) $\exists x[\text{CHASED}(x, \text{AL}, \text{THEO}) \,\&\, \Phi(x)]$

that implies the corresponding instance (91), along with (88b);

(91) $\exists x\{\exists x'[R(x, x') \,\&\, \text{CHASE}(x')] \,\&\, \exists x'[R(x, x') \,\&\, \Phi(x')]\}$

where (91) might be simplified, for many purposes, as (91a).

(91a) $\exists x \exists x'[R(x, x') \,\&\, \text{CHASE}(x') \,\&\, \Phi(x')]$

Likewise, for (92), (89b) and (93/93a).

(92) $\exists x[\text{CHASED}(x, \text{THEO}, \text{AL}) \,\&\, \sim\Phi(x)]$

(93) $\exists x\{\exists x'[R(x, x') \,\&\, \text{CHASE}(x')] \,\&\, \exists x'[R(x, x') \,\&\, \sim\Phi(x')]\}$

(93a) $\exists x \exists x'[R(x, x') \,\&\, \text{CHASE}(x') \,\&\, \sim\Phi(x')]$

The idea is that the one chase can be *simultaneously seen as* a Φ-ish chase *and* something Alvin did. The chase can also be *simultaneously seen as* a ~Φ-ish chase *and* something Theodore did. With regard to Simon's performance, the idea is that a played-the-song *resolution of* that performance differs from played-his-tuba *resolution*; where the former resolution is telic, supporting modifiers like 'in an hour', while the latter is not.

5.2 Adding Contents to Meanings

I cannot here do full justice to Schein's discussion of various puzzle cases, and the implications of taking telicity considerations seriously. But much of his discussion is devoted to arguing, quite compellingly, against other Davidsonian responses to the puzzle cases. In particular, I agree that his two-tiered approach is better than invoking rampant relativization, at least for purposes of providing logical forms that reflect the ways in which competent speakers *understand* sentences. Indeed, my own views have been deeply influenced by Schein's work. But for purposes of providing logical forms that specify alleged *truth conditions* of human sentences, I don't think Schein's two-tiered approach is significantly better than positing lots of intimately related events that share their participants and a spatiotemporal address; see section four above.

My suspicion is that Schein's proposed logical forms reflect both linguistic meanings—i.e., concept construction instructions that are generated by a human I-language and often executed via other cognitive systems—and the models of the human concepts that are assembled by executing these instructions. In my view, both tiers of his proposal are insightful, but it is still

important to distinguish linguistic blueprints from assembled concepts. That said, the difference between my view and his may be more terminological than substantive. We are both primarily concerned with the natural phenomenon of linguistic understanding; and while Schein characterizes understanding in terms of truth, the truth conditions he specifies are overtly perspectival and description-sensitive in ways at odds with Davidson's program.[18]

In any case, one wants to know what the posited scene-relative resolutions *are*. Schein starts with an animating example. The event (or state) of Carnegie Deli facing Carnegie Hall *is* the event of Carnegie Hall facing Carnegie Deli. But whichever way one heads on Seventh Avenue in Manhattan, there is a left side and right side. So one can speak of a northward scene and a distinct southward scene such that everything on the left side of the former is on the right side of the latter. Though as Schein notes, other examples will strain any simple dyadic notion of scenes as perspectives on events. For example, one can weigh a car by weighing its parts. Like Davidson, Schein does not want to posit an *event* of weighing the car that is distinct from the co-located *event* of weighing the car's parts. But here, appeal to spatiotemporal reference frames seems irrelevant. So drawing on the idea that each scene comes with a degree of resolution—think about zooming in or out with a lens—Schein suggests that every scene *s* comes with a "reticule" that resolves the event that *s* is a scene of.

The idea is that if w is the worldly event of weighing, there is a complete-car scene *c* and a car-parts scene *p* such that: Resolves(*c*, w); Resolves(*p*, w); but *c* and *p* resolve w differently. But note that even if the world includes many perspectives on each event, with perspectives individuated a Fregean way, that doesn't yet get us *resolutions* as domain entities. The posited scenes have to be suitably loaded with reticules. In this sense, Schein's appeal to scenes is not innocuous. The ontology is tendentious.

This matters, and not just for metaphysicians. On Schein's view, (88) and (89) are *false*

(88) Al chased Theo.

(89) Theo chased Al.

if the world includes the two chipmunks who chased each other, and the event of them chasing each other, but not the requisite resolutions of the chase. Put another way, his theory implies that these sentences (logically) imply that there *are* resolutions. That's a tendentious claim about sentences of a human I-language. One might instead view the formal sentences as proposed theoretical representations of both the language-independent events/participants that speakers think and talk about, and some ways in which speakers represent those spatiotemporally located particulars. For certain purposes, it may be legitimate to mix ontology and psychology in this way. Theorists may want to say *both* that speakers use sentences like (88) and (89) to assemble thoughts of a certain sort *and* that if all goes well, the assembled thoughts will be true or false depending on whether or not an event of a certain sort occurred. But absent independent grammatical evidence for scene variables, I don't think that speakers tacitly quantify over scenes and resolutions, as if they are (qua competent speakers) cognizant of how complicated word-

[18] In personal correspondence (and conversation), Schein says that he finds theses (D) and (L)—see section one—untenable, and that he does not identify meanings with truth conditions. He is, though, inclined to retain a modified version of (L): if *S* is a sentence of a human language, and *S** is the logical form of *S*, then *S* has no truth condition that deviates from the truth condition if any that *S** specifies. This is because Schein takes a logical form to represent both subjective and objective aspects of a speaker's situation—her mental state and ambient conditions, at a moment of utterance—in a way the capture certain invariance(s) across expressions, thoughts, and contexts. See Ludlow (2011) for related discussion.

mind-world relations are. My inclination is to say that Schein's resolutions are effectively the mental addresses from which concepts are called when meanings/instructions are executed.

That's not yet an argument against Schein, as opposed to an alternative diagnosis of his conclusions. And again, sorting out the differences between views may not be easy. (Though if theories that assign truth conditions to human language sentences can be recast as theories that don't, that's already significant.) Like Schein and many others, I think speakers understand sentences of a human language by virtue of relating these sentences to *representations of* events and their participants. If one also wants to say that these sentences have truth conditions, then given the puzzle cases, the difficulties that beset other responses make Schein's response relatively attractive and perhaps unavoidable: specify the truth conditions in terms of abstracta—viz., resolutions of events—that reflect the representations. But perhaps sentences are tools with which we often make truth evaluable claims, in contexts where all goes well, and not expressions that have truth conditions relative to contexts. Given this Strawsonian view developed in chapter four, perhaps we can make do with less intellectualized logical forms, while remembering that there are many ways in which things can fail to go well. In particular, the very linguistic capacities that let us generate sentences may render us subject to deep framing effects.