

3 Answering Kripke's Skeptic Dispositions without 'Dispositionalism'

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1 Introduction

In his *Wittgenstein on Rules and Private Language*, Saul Kripke famously presented us with a novel type of skeptic who suggested that, given what we meant by “plus” in the past, the correct answer to “ $68 + 57$ ” was not 125, but 5. Kripke asks us to accept for the sake of argument that we’ve never added a number over 56 before (and notes that there must be *some* number for which this assumption is true), so his skeptic can point out that all of our past applications of “plus” are compatible with our meaning *quus* by “plus,” where *quus* functions just like *plus* for numbers under 57, but for every number 57 and over, gives the result of 5. The skeptic doesn’t deny that we *now* mean *plus* by “plus,” but he challenges us to find some past fact about us in virtue of which we are entitled to claim that we meant *plus* in the *past*, since, after all, all of our past applications of “plus” are as much in accordance with *quus* as they are with *plus*.

A naive, natural, and indeed obvious response to this skeptic is to note that, even if I had never responded to the question “what is $68 + 57$?” before, *if I had been asked*, I *would* have answered “125” and not “5,” and that this gives me good reason to say that I meant *plus* rather than *quus* in the past.¹ Kripke, however, is unmoved by this obvious response. This seems to be largely because he cashes out the natural appeal to my past dispositions to use the term in order to justify my claim that I meant *plus* rather than *quus* by “plus” in this case as an attempt to *identify* what I meant with how I would have answered. As he puts it:

The dispositional analysis I have heard proposed is simple. To mean addition by “+” is to be disposed, when asked for any sum ‘ $x + y$ ’ to give the sum of x and y as the answer (in particular, to say ‘125’ when queried about ‘ $68 + 57$ ’); to mean *quus* is to be disposed when queried about any arguments, to respond with their

¹ I initially thought of this as *the* naive response, but see the contributions to this volume from Shaw and Sultanesco for two other candidates for that title.

quum (in particular to answer ‘5’ when queried about ‘68 + 57’) To say that in fact I meant plus in the past is to say ... that had I been queried about ‘68 + 57’, I *would* have answered ‘125’. (Kripke 1982: 22–23)

Kripke argues that the resulting view, which he labels “dispositionalism,” is inadequate for at least three reasons.

The first of these is that it seems incompatible with the fact that we can be *disposed to make mistakes*, and so ignores the fact that the question of whether I meant *plus* or *quus* in the past is related not to whether I *would have* answered “125,” but rather whether I *should have* answered “125” (Kripke 1982: 37). To satisfy the skeptic, what we need to show is not just that we would have answered “125” to the question, but that we would have been *correct* in doing so (Kripke 1982: 57), and Kripke argues that the dispositionalist is unable to do this. Kripke often bundles this with a closely related worry. An answer to the skeptic must show not just that we would have answered “125” to the question, but that we would have been *justified* in doing so. Kripke argues, once again, that the dispositionalist is unable to do this. As he puts it, “the fact that our answer to the question of which function I meant is *justificatory* of my present response is ignored in the dispositional account” (Kripke 1982: 37). The third problem that Kripke brings up is that our dispositions are *finite*. There are numbers (such as those that would take more than a lifetime just to read out) that are so large that we have no actual disposition to add them together. Even if the dispositionalist answer were enough to deal with *quus* itself, there would be *some* other function out there that swerved off in the same way when it reached some extremely large number which we had *no* dispositions relating to.

I don’t think that the first two of these are particularly compelling rejoinders to the ‘naïve’ response to the skeptic (at least once we separate it from ‘dispositionalism’), and while the objection relating to the finiteness of my dispositions touches on a real issue, it’s not clear that it is one that leads to any conclusions about meaning that would properly be called *skeptical*. Consequently, in what follows, I’ll discuss why the ‘naïve’ response is a justified reaction to Kripke’s initial skeptical challenge (as, of course, it is), even if ‘dispositionalism’ is not.

2 Dispositions, Dispositionalism, and Interpretation

While Kripke’s skeptic has been presented as someone who potentially undermines any theory that takes meaning to be determined by use, his objections tell more against some use-based theories than others. In particular, while Kripke’s focus on the ‘dispositionalist’ targets more ‘atomistic’ use-based theories (which tie the meaning of particular words to

particular dispositions), more holistic theories (such as those that try to understand meaning via some notion of radical interpretation),² don't get much attention.

In many ways, it's surprising that Kripke gives the dispositionalist the monopoly on the naive response since these more holistic metasemantic theories were hardly obscure at the time his book was published.³ Indeed, one might think that interest in Davidson's account of radical interpretation was then near its peak,⁴ and Kripke's own colleague David Lewis had famously defended a version of the radical interpretation account almost a decade earlier.⁵ Kripke claims that some version of dispositionalism was just what was, in fact, proposed by his interlocutors when they suggested the naive response (Kripke 1982: 22–23),⁶ but this doesn't seem like enough on its own to explain why a more holistic appeal to dispositions would not have occurred to Kripke at some point.⁷

A possible explanation for why Kripke ignored the more holistic appeals to dispositions associated with radical interpretation may be his understanding these questions about meaning by analogy with the 'intelligence tests' by which we must determine which number comes next in a series like: 1, 4, 7, 10, 13,⁸ There are two features that seem characteristic of such intelligence tests: first, the members of the initial

² Most notably Quine (1960), Davidson (1973), and Lewis (1974), though the general holistic approach can be seen in other theories (such as Burge 1986) that don't explicitly mention radical interpretation.

³ Kripke does say that the book grew out of thoughts from 1962 and 1963 (Kripke 1982: 1), but while the full-blown Davidsonian view might not have been developed then, the sort of holistic metasemantics coming from Quine (see Quine 1951, 1960) should have still been very familiar.

⁴ See, for instance, Davidson 1973, 1984. The massive Rutgers conference on Davidson (whose papers were collected in Lepore & McLaughlin 1985 and Lepore 1986) was just two years later.

⁵ Lewis (1974).

⁶ And, once again, this might have been a little more plausible if they were responding to him in 1962 or 1963.

⁷ It's possible that these holistic accounts struck Kripke as similar to the 'descriptive' theories of reference (or at least the 'cluster' version of them) of the sort that he criticized a decade earlier in his *Naming an Necessity* (Kripke 1972), and so perhaps he thought that such non-'dispositionalist' appeals to dispositions didn't need to be discussed. Indeed, Wilson's original formulation of charity ("We select as designatum [of a name] that individual which will make the largest possible number of [the speaker's] statements true" (Wilson 1959: 532).) can seem like a cluster version of the descriptivist view, and see McGinn (1977: 527) for an early statement of the view that Davidson's theory of radical interpretation involved such a commitment to descriptivism. However, while I'm sympathetic with Kripke's criticisms of descriptivism, they don't really tell against many holistic metasemantic theories, in the interpretational tradition. I don't have room to go over all the reasons here, though see Jackman (2003a).

⁸ And to some extent he is undoubtedly following Wittgenstein here (see Wittgenstein 1953a: par 185).

set of numbers *can't be wrong*,⁹ and second, only things that *can't* be wrong can serve as justifiers for how to go on. If past use is understood by analogy with the initial sequence of numbers, then it would seem that past use can't be mistaken as well, and Kripke seems to encourage this understanding by insisting that $68 + 57$ "is a computation that I have never performed before" (Kripke 1982: p. 8). Kripke accuses the dispositionalist of equating performance with correctness (Kripke 1982: 24), but he implicitly seems to do precisely this with past usage. If our past use is incorrigible in this way, then we might think that whatever the skeptic's interlocutor appeals to must be incorrigible in that way too (as dispositions are for the 'dispositionalist'). Dispositions manifestly do not fit this bill,¹⁰ but it should be clear that past use doesn't either, as our past applications can clearly be mistaken. Consequently, the analogy with intelligence tests isn't a good one here, and an account that allows past use to contribute to what we mean without being incorrigible will likely allow dispositions to do so as well.¹¹

If we break away from the analogy with "intelligence tests," and allow more holistic theories to be considered, how does the skeptical challenge look? Broadly speaking, radically interpretive metasemantic frameworks take meaning to supervene on use by starting with *all* of the sentences "held true" (which will reflect *both* our past applications and our dispositions) and taking the meanings to be the set of semantic values that would (in some sense to be determined) best satisfy all of the held-true sentences. What best satisfies the set is usually understood in terms of some notion of 'maximization',¹² and among the candidates for what might ultimately be maximized are the total amount of truth in the set, the overall rationality or coherence of the set, the psychological typicality

⁹ And, if we agree with Wittgenstein that if "whatever is going to seem correct to me is correct ... [then] here we can't talk about 'correct'" (Wittgenstein 1953a: par 258), it may follow that can't talk about the initial sequence in the intelligence tests as being correct either.

¹⁰ Hence Kripke's objections to dispositions on the grounds that they are "not infallible" (Kripke 1982: 57).

¹¹ Independently of 'intelligence tests', the general focus on going on "in the same way" (Kripke 1982: 18, 19, 82, 118, 135) might encourage treating past usage as 'infallible', and thus drawing a sharp distinction between past uses and dispositions, since 'going on in the same way' tracks *actual* past behavior, not dispositions. Indeed, one could argue that 'going on in the same way' should actually replicate 'mistakes', and so all past use is 'right' for at least one sense of "the same way." That is, if, in the past, I called poorly lit raccoons at a distance "cats," then 'going on in the same way' would involve continuing to do so.

¹² The notion of maximization will not, of course, be strictly numerical (if that even makes sense in this case), since some sentences will be more important to make-true than others. Some of our beliefs are central, and/or deeply held, and some are peripheral and inconsequential, and all else being equal, an interpretation is better if it preserves the central beliefs at the expense of the peripheral ones rather than vice versa.

("humanity") of the set, or some combination of these.¹³ Further, there is considerable variation in terms of just how 'reductive' one takes the project to be with Quine (1960) being at one extreme with a behavioristically respectable notion of 'assent' sitting at the bottom of the theory,¹⁴ and Davidson (1973, 1984) at the other extreme, with his 'taking true' arguably being a semantically loaded attitude.¹⁵ With all this in mind, I'll just use the term "Charity" for whatever the function is that takes us from the total set of sentences held true to a set of semantic values for the words in those sentences. I won't go into any more of the details of the various holistic metasemantic accounts here¹⁶, since while there are clearly many different candidates for just what 'Charity' could be, on all of the versions of it, not *all* of the sentences held true will actually *be* true on the resulting assignment. Furthermore, even at this level of generality, it should be clear that if meaning is determined by use along some sort of holistic line, *both* our past applications and dispositions can help determine what we mean, and because of this, such past applications and dispositions, while not infallible, will have an at least *prima-facie* claim to be correct. Consequently, on all candidate accounts, if you are, say, disposed to call something a "cat," that will make it more likely that, all else being equal, that object falls within the extension of "cat." Finally, on all these holistic accounts, meaning is, in some sense, the 'center of gravity'

¹³ For a discussion of some of these competing approaches about what should be maximized, see Jackman 2003a.

¹⁴ Lewis (1974) might fall within this more reductive camp, though without the commitment to behaviorism.

¹⁵ And it is probably something like this that would better capture the naive response. Further, while having a 'semantic' attitude at base may make such accounts non-reductive in some sense, they would certainly be a far cry from the view that semantic facts are *primitive* and incapable of analysis (a position that Kripke, with some justification, calls "desperate" (Kripke 1982: 51)). The view would be non-reductive not in the sense of treating meaning states as being primitive states, but in the sense of not taking meaning and content as being elucidated in terms of things that don't presuppose meaning and content. (For a related discussion, see Sultanescu's chapter [Chapter 9] in this volume.)

¹⁶ Though see Jackman 2003a for an argument in favor of maximizing truth and measuring whether a belief is central or peripheral in terms of the agent's *own* dispositions to revise these beliefs if they were aware of all of the conflicts. This would leave us with something like the following principle, which I'll call "Peircian Charity" (or "PC"), to take us from sentences held true to semantic values.

PC: The semantic values of the words in a speaker's language are the values that would make true the set of sentences held true that would survive a process of (idealized) belief revision on the speaker's part.

Still, nothing in what follows rests on cashing out Charity in this particular way. Furthermore, the skeptic can't require that we have a completely worked out metasemantic theory in order to answer them; instead they need to show that the factors appealed to in the naive reply to them *can't* be filled out in a workable way (which, arguably, they succeed in doing with 'dispositionalism').

of our use, and if our past applications really are balanced between *plus* and *quus*, then our dispositions will be able to tip the scales one way or the other.

Now, from the perspective of a more holistic metasemantic theory, let's look again at Kripke's objections to the naive response.

3 The Arguments from Error and Justification

Of Kripke's objections to dispositionalism, his appeal to the fact that we can be disposed to make mistakes has garnered the most attention (largely relating to its purported connection to the 'normativity of meaning'). However, if one presupposes a more holistic metasemantics rather than dispositionalism, merely pointing out that we can be disposed to make mistakes doesn't have that much bite against the naive response. It certainly is true that we can be disposed to make mistakes, but that hardly shows that appeals to dispositions can't justify my claim that I meant *plus* by "plus" in the past. In particular, on the holistic view, an appeal to dispositions doesn't commit one to any particular set of dispositions being *identified* with what we mean.

As noted above, on the holistic model, *all* of our dispositions contribute, holistically to what we mean, and while it's always possible for some *particular* aspect of our usage to be out of line with what we mean, showing that that particular piece of usage is mistaken requires showing it to be out of line with *other* aspects of our (dispositions to) use. So, for instance, my disposition to call a poorly lit raccoon in the distance a "cat" may count as a mistake because it conflicts with my more firmly entrenched disposition to call it a "racoon" when the light is better and I'm a little closer (and my disposition to affirm things like that "cats don't turn into raccoons when you come near them or shine a light on them"). In much the same way, it's certainly *possible* that my former disposition to answer "125" when asked "What is 68 plus 57?" was a *mistaken* disposition, but for that to be so, there must be some other (more deeply entrenched) aspect(s) of my past (dispositions to), use "plus" that it conflicts with. Since the debate with the skeptic is supposed to be taking place under conditions of cognitive idealization,¹⁷ I can assume that both the skeptic and I know *all* the facts about my past dispositions and usage, so if I can bring up a *plus*-favoring disposition, the burden of proof is on the skeptic to show that there are other more entrenched facts about my use that are incompatible with my disposition to answer "125." As a matter of fact, I don't think that there are

¹⁷ Kripke (1982: 14, 21, 39).

any such entrenched facts about my past dispositions or use, and even if the skeptic were to find enough such facts, that would only show that (surprisingly) I did mean *quus* by “plus” in the past, not that there was no fact about which of the two I meant.

Kripke seems to ignore this sort of possibility by saddling the naive response with dispositionalism and its commitment to simply *identifying* meaning with specific dispositions. The dispositionalist's response to the problem of error seems limited to trying to specify a privileged set of ‘meaning determining’ dispositions, and understanding mistakes as use that is out of line with the privileged set. There are, undoubtedly, dispositionalist theories that try something like this,¹⁸ and I'm inclined to accept Kripke's arguments (or arguments he has inspired) against such views.¹⁹ But, once again, this gives us reason to reject understandings of the naive response that commits one to dispositionalism, not to reject appeals to our dispositions *tout court*.

After all, and as mentioned above, it's not just the case that we can be *disposed* to make mistakes, it's also the case that we often *actually do* make mistakes. However, the fact that we have occasionally misapplied our words in the past doesn't lead us to think that our past usage isn't relevant to what we meant at the time. If the mere possibility of error were enough to rule out the relevance of past dispositions, then the possibility of past errors would rule out the relevance of past use as well, and Kripke's skeptic could argue that by “plus” in the past we meant *fuss*, a function for which the answer was *zero* for *whatever* two numbers were ‘fadded’ together. (In the same way, such a skeptic could argue that in the past, by “table,” we meant not *tabair* (a table not found under the Eifel Tower and a chair found there) but rather just *chair*, insisting that we've just *always* misapplied the term.) If one thought that meaning was somehow *so* independent of use that neither one's past applications nor one's dispositions contributed to what one meant, then appeals to such things obviously wouldn't answer the skeptic, but if one does think that meaning is a function of use, then it seems natural to think that appeals to one's use (and dispositions to use) are fair game in determining what one means, and thinking that the justifiers need not be infallible seems to be the price we must pay, and unless one is really in the grip of the “intelligence test” model, it isn't that high a price.

This brings us to Kripke's related suggestion that the dispositionalist response to the skeptic fails to capture the intuition that we should be

¹⁸ The candidates include dispositions we would have under certain ideal conditions, the dispositions that the other dispositions are “asymmetrically dependent upon” etc. See, for instance, Dretske (1981) and Fodor (1990a).

¹⁹ For a discussion of these, see Boghossian (1989).

able to *justify* our answer of “125” rather than “5.”²⁰ However, Kripke often cashes out this demand for justification in terms of a need to show that a response follows from ‘instructions’ that determine it, along with all other correct answers, but such a restrictive account of justification seems unmotivated.²¹ Showing that “125” is not “a mere jack-in-the-box unjustified and arbitrary response” or “no better than a stab in the dark” (Kripke 1982: 23) is not a matter of finding the “instructions” (Kripke 1982: 23) or “directions” (Kripke 1982: 11) which “*tell* me what I ought to do in each new instance” (Kripke 1982: 24). Rather, it is a matter of showing how it fits best with the rest of one’s use. If one works with the more holistic metasemantic picture outlined above, *all* of one’s past-applications and dispositions to use are at least *prima facie* justified, and since the way that they lose that justification is by being shown to be inconsistent with enough of one’s other applications or use, one can show that one’s use is *justified* (all things considered) by showing how it coheres with the rest of one’s use. One’s dispositions aren’t justified in terms of their flowing from something else, but one isn’t left with a position where “whatever is going to seem correct to me is correct”²² because any particular disposition (or instance of past use) can still be shown to be wrong by such appeals to the rest of one’s (dispositions to) use.²³ As Kripke puts it, “The fundamental problem ... is ... whether my actual dispositions are ‘right’ or not, is there anything that mandates what they *ought* to be?” (Kripke 1982: 57), and for the holist, we can evaluate whether each individual disposition is “right” or not, depending on how it coheres with the rest of one’s dispositions (including dispositions coming from the gathering of new information). The collective whole mandates what dispositions you ought to have in particular cases, and showing that it coheres with the whole justifies any particular disposition within that whole.

4 The Argument from Finitude

Once one’s dispositions are allowed in, one’s use of “plus” will rule out most ‘bent’ responses mentioned in the literature, in particular, it will clearly rule out “5” in the case of “68 + 57.” However, it isn’t clear that

²⁰ See, for instance, Kripke (1982: 11, 23, 24).

²¹ Though Kripke may, to some extent, be following Wittgenstein here. (See Shaw [this volume] on Wittgenstein’s particular notion of justification as involving a ‘thing’ that you interact with which results in your application of a word.) In any case, the analogy with ‘intelligence tests’ might be part of the problem here as well, since in most of those cases, the ‘following instructions’ model seems plausible.

²² Wittgenstein (1953a: par 258).

²³ As I put it elsewhere (Jackman 2003b), justification has a coherentist rather than foundationalist structure.

it will rule out *every* response to *every* set of possible numbers that could be plugged into the addition function. Indeed, this brings us to the most serious problem that Kripke brings up for *any* dispositional responses to his skeptic (not just “the dispositionalist”), namely that our dispositions are *finite*.

As he puts it, the problem is not just that my actual dispositions are “not infallible” but also that they do not “cover all of the infinitely many cases of the addition table” (Kripke 1982: 57). Even if we were entitled to trust our dispositions, there will always be numbers so large that we seemingly wouldn't have any dispositions related to calculating with them. Specifically, there are numbers so large that not only could we not complete calculations with them, we also couldn't read them from end-to-end even if we spent our entire lifetime trying to do so. (Let's call these, following Boghossian,²⁴ “inaccessible numbers.”) We have a sense that *plus* is a function that gives a determinate answer even with arbitrarily large inputs, including pairs of inaccessible numbers, and it may seem as if our dispositions aren't able to underwrite that. As Kripke puts it:

The dispositional theory attempts to avoid the problem of the finiteness of my actual past performances by appealing to a disposition. But in doing so, it ignores an obvious fact; not only my actual performance, but also the totality of my dispositions, is finite. It is not true, for example, that if queried about the sum of any two numbers, no matter how large, I will reply with their actual sum, for some pairs of numbers are simply too large for my mind – or my brain, to grasp. When given such sums, I may shrug my shoulders for lack of comprehension; I may even, if the numbers involved are large enough, die of old age before the questioner completes his question. Let ‘quaddition’ be redefined so as to be a function which agrees with addition for all pairs of numbers small enough for me to have any dispositions to add them, and let it diverge from addition thereafter (say, it is 5). Then, just as the sceptic previously proposed the hypothesis that I meant quaddition in the old sense, now he proposes the hypothesis that I meant quaddition in the new sense. A dispositional account will be impotent to refute him. As before, there are infinitely many candidates the sceptic can propose for the role of quaddition. (Kripke 1982: 27)

A mathematical function like addition is supposed to be *determinate* in that it has a value for *any* two numerical inputs (the proverbial ‘rails to infinity’),²⁵ and it might seem like our dispositions can't fund this level of determinacy, given that there are manifestly pairs of numbers we have no disposition to add.²⁶

²⁴ Boghossian (2015: 335).

²⁵ Wittgenstein (1953a: par 218).

²⁶ Indeed, the numbers themselves need not actually be large, since if one had two small numbers (say, between 1 and 2) whose decimals went on long enough, their sum would still be uncomputable by us.

Attempts could be made to show that we have dispositions to add even such large numbers in some ‘idealized’ sense (say, if my brain were somehow altered to increase its computing capacity, and my life were somehow extended indefinitely), but as Kripke argues, there seems to be no noncircular way to do this, since there may be ways of expanding my brain capacity and lifespan that might also result in me computing in a nonstandard fashion, and just allowing increases to my capacity that kept me giving answers in accordance with the rule for *plus* would seem question begging.²⁷ (And further, even if such a drastically altered successor of mine did mean *plus*, what would that really have to do with what *I* meant by the term *now*?)²⁸

While the issue of ‘finiteness’ is most salient with mathematical terms, our use seems unable to produce completely determinate meanings for our nonmathematical terms as well. For instance, our use of, say, “red” or “table” doesn’t seem up to the task of, respectively, producing a *completely* sharp line between items which are red and which or not, or determining *precisely* which number of atoms can be removed from any particular table and still have it count as a table. When we think about language in general, we often assume that our terms have determinate extensions (each term partitions the world into two: that what falls under it and what does not). Our logic seems to suggest that this must be so,²⁹ but when we actually think about what such determinacy would require in particular cases, our use doesn’t seem up to the task.³⁰

However, there is an important way in which these nonmathematical cases are different from the mathematical ones. It’s not *obviously* a bad thing that our use doesn’t seem able to produce completely determinate meanings for terms like “red.” There certainly are philosophical arguments in favor of thinking that all of our terms must have determinate meanings, but most people (even most philosophers) are comfortable with the idea that most of our terms fail to have completely precise extensions. Indeed, if anything, it’s the view that terms like “red” have *completely* determinate meanings that is viewed as “paradoxical” by most people working in the area. Unlike, say, the mathematical case, where we do have a sense that if our mental capacity were somehow expanded ‘properly’, we would continue on the *plus* track for the calculation

²⁷ See Kripke (1982: 27–28) and the discussion in Boghossian (2015: 334–345).

²⁸ See, once again, Boghossian (2015: 345–346).

²⁹ See the arguments for ‘epistemic’ conceptions of vagueness (e.g. Williamson 1996, Sorensen 2001).

³⁰ See some of the literature against epistemic accounts of vagueness (e.g., Keefe 2007, Boghossian 2015), or those defenders of epistemic accounts who argue that we should conclude that this simply shows that meaning *isn’t* determined by use (Sorensen 2001, Ebbs 2000).

problems that are currently beyond our reach, we don't have the same intuition with terms like "red" or "table." We don't assume that, if my capacities for discrimination were improved indefinitely, there would be just *one* 'determinate red' waiting for me to extend my current term "red" to, or one particular cutoff point where I would inevitably decide that the removal of a single atom stopped a particular table from being a table.

This still leaves us, of course, with the mathematical cases, but even these don't seem *quite* as worrying as the original skeptical puzzle.³¹ It is no coincidence that the finiteness objection to dispositionalism hasn't generated as much excitement as the ones based on justification and error. The idea that there was no fact of the matter as to whether I meant *plus* or *quus* (in its original sense where it veers off from *plus* while we are still dealing with 'accessible' numbers) by "plus" is shocking precisely because it's 'obvious' to most of us that we don't mean *quus*. We have a clear idea what the *quus*-function is and a clear sense that we *never* meant that function by "plus." On the other hand, the 'skeptical scenario' that leans on the finiteness objection can't be formulated in such a stark way. We might be left with a vague sense that things are underdetermined far in the distance, but we can't give any concrete examples. As far as any two numbers *we can comprehend* go, there is no difference between *plus* and its supposed skeptical alternative, and so a lack of determinacy at this level is less obviously 'paradoxical'. Nevertheless, while it may be *less* paradoxical, the idea that our mathematical terms are indeterminate remains at least *somewhat* paradoxical. We are fine with our regular terms not being completely determinate, but our mathematical ones do seem to have that determinacy behind them, so where does that leave us?

Fortunately, even with inaccessible numbers, more work can be done with our dispositions in this area than Kripke allows. After all, the only dispositions that Kripke lets 'the dispositionalist' work with are the dispositions to perform complete computations when faced with pairs of numbers. As Kripke puts it, for the dispositionalist, "To mean addition by "+" is to be disposed, when asked for any sum 'x + y' to give the sum of x and y as the answer" (Kripke 1982: 22), and these dispositions do seem to simply run out when we are faced with inaccessible numbers. However, there are other dispositions that the more holistic theories might also allow. Certainly, we have dispositions that would tell against the revised version of "quaddition" that Kripke suggested in the paragraph quoted above. Even if I don't have the disposition to

³¹ After all, there are people who seriously endorse finitism in mathematics, while no one seriously endorses the possibility that we might have meant *quus* by "plus" in the past.

perform a complete calculation that involves two inaccessible numbers, it remains the case if I see two such numbers stacked on top of each other and the number 5 as the sum, I'll be concluding that the calculation is in error, and just *that* disposition is enough to rule out the new version of the quaddition function that Kripke introduces.³² Of course, there will always be other potential functions that aren't ruled out as easily as that,³³ but this case points to the fact that there are dispositions that can be treated as contributing to how our arithmetical terms are best interpreted that don't involve the sorts of complete calculations that the 'dispositionalist' is strictly limited to.

For "plus," we have, by definition, no disposition to come up with an answer when presented with a calculation involving one or more 'inaccessible' numbers, but we have a number of other dispositions that would give the interpreter reason to treat us as meaning *plus* rather than an alternative even for this range. So, for instance, if I am to add 1 to a number that ends with "7," I'll get that very number but with the final "7" replaced by an "8." I haven't performed many such 'calculations', but they point to a sense in which I *can* provide a solution to some calculation problems that include inaccessible numbers without performing a 'full' calculation. So if I'm asked to add 1 to an inaccessible number that ends with "7," I can erase the "7" at the end of the initial number, replace it with an "8," and call it a day. In some sense, I don't know what this new number is, but I'm still convinced that it's the right answer to the question. I am convinced of this because I'm also convinced that I *don't need* to actually see all the numbers that come before the "7," since if I'm just adding 1, then they aren't going to change. This lack of concern with what comes ahead of the "7," no matter how large the number is, tells in favor of "plus" over its traditional quus-like rivals. Note that this response to the skeptic above is not just *saying* things like "it doesn't matter what is to the left of the '7,'" which could be reinterpreted to cover just the smaller range. Rather, it relies on the fact that I'm actually disposed to ignore the numerals coming before the "7," even when those numbers are larger than the skeptic's proposed turning-point. We have these open-ended dispositions, and in this sense, they seem to apply to arbitrarily large numbers.

The same could be said for how one might interpret our commitment to the successor function. Kripke (1982: 16) considers responses

³² See also Boghossian (2015: 335) for the same suggestion that our use couldn't rule out a function that had two inaccessible numbers as inputs and "5" as an output.

³³ Such as ones where you have two inaccessible numbers which are added together and the 'bent' conclusion is just one digit off the correct result.

to the skeptic that appeal to our commitments to *plus* being understood in terms of the successor function (“S”) through “recursion equations” for +, such as the following:

$$\begin{aligned} & (x)(x + 0 = x) \\ & \text{and} \\ & (x)(y)(x + Sy = S(x + y)) \end{aligned}$$

However, his response to such appeals seems to focus only on explicit *statements* of such general equations, statements which can, in turn, be interpreted in a quus-like way. So, for instance, the quantifiers in the formulas above could be reinterpreted by the skeptic so that “(x)” just means “for all x below 57” etc. (Kripke 1982: 17). However, just as with the general disposition to add 1 discussed in the paragraph above, our commitment to the recursion equations isn't just a matter of our *saying* the formulas, it includes our willingness to endorse them for any values we are given for “x” and “y,” even when those numbers are ‘inaccessible’. For instance, if I'm shown that $x = 78 \dots$ and $y = 25 \dots$ (were the “...” stands for a set of numerals long enough to make the numbers involved inaccessible), I'll still agree that $x + Sy = S(x + y =)$ even if I can't read to the end of the two numerals listed. The fact that I see no need to check how large x and y are before endorsing the formula is reason for the holist *not* to interpret me as taking (x) to be “for all below 57” (or any other number) in the recursion equations above.

So, for instance, when Boghossian³⁴ argues that, given that *plus* and the ‘new’ (inaccessible) sense of *quus* were in agreement for all of the *accessible* numbers, our dispositions couldn't determine that we meant *plus* without making it metaphysically impossible for us to ever mean *quus*, his argument seems to presuppose that if our meaning something different between the two were to supervene on our dispositions, then those dispositions would have to relate exclusively to the completion of an actual calculation (which, by definition, is supposed to be the same for all of the accessible numbers). However, the difference between the two could lie elsewhere; in particular, it could lie in the presence (or, in our case, absence) of a need to check into more detail just how big a number is before agreeing that it could be plugged in for x in a formula like $x + Sy = S(x + y =)$. Boghossian remarks:

Surely, it needs explaining why it is metaphysically impossible for a human being to refer to this other function rather than to plus. What makes plus so special? Why, given that everything about my dispositions is compatible both with plus

³⁴ Boghossian (2015: 352–353).

and all of these other functions, do my thoughts nevertheless gravitate inexorably to the plus function, ignoring every one of these other functions? (Boghossian 2015: 353)

But the impossibility of our referring to the new version of *quus* that veers off at an inaccessible number while we can refer to plus is precisely because it is *not the case* that “everything about my dispositions is compatible both with plus and all of these other functions.” Our dispositions to perform complete calculations may be in line, but once we break from ‘dispositionalism’, those are not the only dispositions we have access to.

This is, admittedly, only a start,³⁵ but while I think that a lack of determinacy would be more problematic in the mathematical case than, say, the perceptual one, I’m inclined to think that dispositions when embedded in the more holistic framework have, at least, more *potential* to produce a determinate content for a term like “plus” than they do for a term like “red.” By contrast, it’s fairly clear that they would have *no* chance of doing so on the dispositionalist’s model. It is his casual slide from the appeal to our disposition to answer “125” when queried to “dispositionalism” that proves to be the proverbial “decisive move” in Kripke’s skeptical conjuring trick,³⁶ and once we resist this move, the skeptical challenge seems considerably less threatening.

³⁵ And one should never underestimate the ways for philosophers to find some kind of underdetermination if they really want to (see, for instance, Putnam 1981).

³⁶ Wittgenstein (1953a: par 308).