Is (Determinate) Meaning a Naturalistic Phenomenon?

15.1 Introduction

When philosophers worry about the relation between the mental and the physical, they typically have in mind the problem of *consciousness*: how could phenomenal states emerge from the comings and goings of purely naturalistic—that is, purely physical/functional—things and states? How could there be something that it's like to be a certain kind of physical thing, no matter how complex?

With some notable exceptions, philosophers haven't worried as much about how we might account for the *intentional* on such a naturalistic basis. Or, if they have worried about it, they have usually been quite optimistic that the intentional can be shown to be a purely naturalistic phenomenon (see Fodor (1987), Dretske (1981), and Stalnaker (1984) for example). Chalmers (1996: 24) nicely sums up philosophers' attitudes when he says: 'These problems [posed by intentional states] are all serious, but they have the character of puzzles rather than mysteries'.

Well, perhaps nothing is quite as much of a mystery as consciousness. However, I am inclined to think that we have tended to underestimate just how mysterious intentionality is, especially when it is viewed from a naturalistic standpoint.

In this chapter, I revisit the question whether facts about intentional content can be understood in purely naturalistic terms, a question that I first discussed in detail in Boghossian (1989). In that paper, I argued that Saul Kripke's Wittgenstein-inspired discussion of following a rule was, *pace* Kripke's intention, best understood as showing that facts about intentional content resist naturalistic reduction.[1] (p.332)

The message of this chapter is the same, although there are several respects in which it differs from, and, I hope, improves upon, the earlier paper.

First, it argues for a somewhat weaker conclusion—not that facts about intentional content cannot be naturalistically reduced, but, rather, that *either* they cannot be reduced *or* that they are indeterminate. Second, it uses bits of Kripke's discussion that neither he nor I emphasized previously and that, in any case, have been widely rejected as ineffective. And, finally, it takes into account important distinctions that were missing both from Kripke's original discussion and from mine.

15.2 Comparison with Kripke's Argument

For ease of exposition, I will pretend that we think in a language of thought, so that when we think that snow is white we are thinking a sentence S whose meaning is that snow is white. In fact, for greater simplicity, I will assume that we think in English.

Like Kripke, I will focus on the case of addition, leaving until later the question how, if at all, the argument might extend to non-mathematical cases. It will prove useful, before proceeding any further, to compare the argument I will be pursuing to Kripke's.

Kripke's argument has been nicely summarized by Soames. He represents it as follows (1997: 232):

1. P1 If in the past there was a fact about what I meant by '+', in particular, if there was a fact that I meant addition by '+', then, either
    1. (i) this fact was determined by nonintentional facts of such and such kinds—facts about my past calculations using '+', the rules or algorithms I followed in doing calculations involving '+', my past dispositions to respond to questions 'What is n+m?', the totality of my past dispositions to verbal behavior involving '+', etc.

or

2. (ii) the fact that I meant addition by '+' was a primitive fact, not determined by non-intentional facts.

2. P2 Nonintentional facts of type (i) did not determine that I meant addition (or anything else) by '+'.
3. P3 What I meant by '+' was not a primitive fact.
4. C1 Thus, in the past there was no fact that I meant addition (or anything else) by '+'.
5. C2 By parity of reasoning, there never was a fact about what I, or anyone else, meant by any word; ditto for the present.

Soames goes on to expresses puzzlement as to how Kripke's argument could hope to succeed. Kripke's conclusion—that there is no fact that anyone has ever meant (p.333) *anything* by his or her words—looks to be more than hugely implausible. It looks to be self-refuting. So we have plenty of reason to think that there must be something wrong with the argument that seems to lead up to it.

And, indeed, according to Soames, it is quite clear where Kripke's argument goes wrong: it suffers from equivocating between a priori and a posteriori notions of determination.

Soames thinks that if we construe 'determination' as a priori determination, we can concede the truth of P2: Kripke does provide us with good grounds for denying that the naturalistic facts a priori determine the meaning facts. For example, he does provide us with good grounds for denying that meaning facts can be *analyzed* in terms of naturalistic facts.

But on that construal of determination, Soames maintains, there is no reason to believe P3. For Kripke has provided us with no reason to think that, if meaning facts exist, they could not be conceptually primitive, non-analyzable facts.

On the other hand, if we work with the notion of mere necessary determination, which does not entail apriority, or analyzability, then while P3 may look plausible, P2 doesn't: Kripke has provided us with no reason to deny that naturalistic facts determine the meaning facts in some a posteriori way.

Hence, Soames concludes, Kripke's argument suffers from equivocation and its abhorrent conclusion is blocked.[2]

Now, I agree with Soames that Kripke's argument, as he actually pursues it, fails to make enough distinctions—not only between a priori and a posteriori forms of determination, but also, and not unrelatedly, between concepts (modes of presentation) and properties, and between reductive claims and supervenience claims.

Having said that, I think that Kripke's discussion lays the foundation for a good argument, one that can accommodate all the relevant distinctions, for a somewhat weaker conclusion than the one Kripke pursues—namely:

> (Naturalistic Indeterminacy, NI) If what we mean is determined exclusively by naturalistic facts, then what we mean is indeterminate.

Let me lay out the form of argument that I will use in support of (NI):

> A. If Naturalism is true, then the only facts relevant to fixing the meanings of our words are non-intentional facts x, y, and z.
>
> B. x, y, and z do not fix determinate meanings for our words.

Therefore,

> C. If Naturalism is true, our terms do not have determinate meanings.

(p.334)

At first, I will operate with the following reading of premise A:

> A’: If Naturalism is true, then the only facts relevant to fixing the meanings of our terms are our *dispositions* to use those terms in certain ways.

Later, I will argue that broadening our conception of which naturalistic facts are relevant will not help.

The argument will be illustrated by example. We need to work with a term whose meaning is *indefinable* in terms of other words, so we can’t just read its meaning off its definition. Following Kripke, we will assume that word to be ‘+’. If you don’t like using this term for this purpose we can use another simpler concept, for example the concept *successor.* Anything I say about this case should work for the case of every other word that is not explicitly definable in terms of other meaningful words.

Of course, if the primitives of the language have indeterminate meanings, then any word defined in terms of them will also have an indeterminate meaning.

I will also assume for the moment that the meaning of a word *is* its referent—i.e. I will assume a Millian picture. An alternative view, of course, is that, in addition to its reference, every word expresses a meaning or sense that, in turn, determines a reference for it. It makes no difference to the effectiveness of the argument I have in mind which of these pictures we work with, but it might be easier to appreciate this once we have looked at the argument with the Millian picture in place.

We take our use of ‘+’ to refer to the *addition function*, a two-place function that assigns a unique natural number as value to each of infinitely many pairs of natural numbers taken as its arguments.

Even while we take ourselves to determinately refer to this function with an infinite domain, we have to acknowledge that there is an upper bound to the numbers whose ‘sum’ we have actually computed. Of all the numbers that we have actually employed in computing sums, there is one that is the largest.

Indeed, it looks as though there is also an upper bound to those numbers whose ‘sum’ we are *able* to compute, at least as we are currently constituted, without idealizing our present capacities. In particular, some numbers are such that we would die before we could process which numbers they are. (We will look at idealizations of our capacities in due course.)

This is a bit tricky because how long it takes to write out a particular number is, of course, a function of the numeral system being used. But we will ignore this complication and just assume that the privileged system for representing numbers is the common Arabic numeral system.

Another complication is that we can use abbreviations to give very short representations of very large numbers, as in exponentiation. But even with exponentiation, there will still be a largest number that we are able to compute. And the crucial point for our purposes is that exponentiation would be a procedure that we would have to introduce by *definition*, using terms whose meaning had already been pinned down. (p.335)

So it looks plausible to say that there are numbers that we cannot take in or process. I will call such numbers *inaccessible* numbers.

I will call a function quus-like if it is exactly like the addition function up to some inaccessible number, but diverges from it thereafter (this is somewhat different from the definition that Kripke works with).

Such a quus-like function may assign the number '5' as the value of 'm quus n =?' for any m or n that is inaccessible. There are an infinite number of such functions and they are all perfectly good mathematical functions.

My contention will be that no naturalistic fact can serve to pin down that what we mean by our symbol '+' is addition rather than one of these infinitely many quus-like functions.[3]

15.3 Various Dispositional Accounts

We are assuming, for the moment, that if Naturalism is true then the only natural facts relevant to fixing meaning are dispositional facts. We will revisit this assumption later. But let us start by focusing on those dispositional facts. How might they be relevant to fixing the meaning facts?

I will work with the following menu of four options. To begin with, a dispositionalist might think that facts about meaning can be *analyzed* dispositionally: i.e., he might think that

> (Analysis): 'S means plus by "+" ' is synonymous with: 'S is disposed to use "+" in way X'.

Or, he might hold merely that, even if we reject a synonymy claim, we can still say a priori that the property of meaning plus by '+' is identical to some dispositional property:

> (A Priori): The property of S's meaning plus by '+' is a priori identical to S's being disposed to use '+' in way X.

More weakly still, he might think that, although this identity holds, it holds only *a posteriori*:

> (A Posteriori): The property of S's meaning plus by '+' is a posteriori identical to S's being disposed to use '+' in way X.

(p.336)

Finally, he might hold that meaning facts *merely* supervene on the dispositional facts without being identical to any of them. To say that meaning supervenes on the dispositional is to say that there can be no difference in the meaning facts without some difference in the dispositional facts. Equivalently, it is to say that fixing the dispositional facts fixes the meaning facts, but without there being any commitment either to our being able to explain a priori *how* the one set of facts determines the other, or to our being able to replicate the explanatory work that is done by the meaning facts in terms of the facts about dispositions:

> (Supervenience Dispositionalism): There can be no difference in the meaning facts without some difference in the dispositional facts.

As I previously indicated, one of the issues with Kripke's discussion is that he did not sufficiently distinguish between supervenience and reduction, nor between various ways of understanding what it would be to give a naturalistic 'reduction' of meaning. For the most part, he seems to have assumed that the only sort of naturalism about meaning worth discussing was a priori conceptual reduction.

This gave many philosophers an opening with which to reject his arguments, as is well illustrated by the article by Soames discussed earlier. Kripke may be right that meaning cannot be *analyzed* in naturalistic terms, they say. But that leaves it open that meaning properties are identical with naturalistic properties, or that they supervene upon them. And these latter theses are naturalism enough.

My task in this chapter is to argue that there is a way of developing some of Kripke's arguments in a way that undermines even the weakest non-reductive form of naturalism about meaning—Supervenience—just outlined.

It will prove useful to begin with the identity claims and then turn to Supervenience only later.

15.4 The Argument from Normativity

Let's start with the question: how might we go about identifying a meaning property with a dispositional property? Kripke works with a basic version of the dispositional theory, which he formulates as follows:

> (Basic Dispositional Theory): Necessarily: 'S means plus by "+" ' is true iff: For any two numerals 'm' and 'n' *denoting* particular numbers m and n, S is disposed, if *queried* about 'm + n', to *reply* 'p' where 'p' is a numeral *denoting* plus (m, n).

Against this basic theory, Kripke formulates three distinct arguments, which I will call respectively, the Argument from Normativity, the Argument from Error, and the Argument from Finitude.

The Argument from Normativity states that the notion of meaning is an essentially normative notion: if I mean addition by '+', then I *ought* to answer '125' to the question (p.337) '68 + 57 = ?' (Kripke sometimes puts the point by saying that my meaning addition by '+' *justifies* my saying '125'.) However, Kripke maintains, the relation of a disposition to its exercise is *descriptive,* not normative; hence, meaning facts can't be identified with dispositional facts.

I think this argument is problematic in several ways. I mention it here largely to set it aside, although, as I will explain in a moment, I believe it contains an important kernel of truth.

The first problem with it is that it isn't clear that meaning really is a normative notion, in the strict sense of the term.[4]

Second, even if the concept of meaning were normative, the most that would show is that the concept of meaning is not the concept of a disposition; it wouldn't necessarily show that a meaning fact is not identical to a dispositional fact. A utilitarian might hold that the property that constitutes an act's goodness is its conducing to the greatest happiness, even as he denies that the concept of goodness is identical to the concept of conducing to the greatest happiness. The conceptual claim might court an 'open question' objection, but not so the property claim.

Similarly, someone might hold that the concept of meaning is not identical with the concept of a disposition, even though the property that underlies a true meaning claim is a dispositional property.

There is, though, an important kernel of truth that the normativist claim contains which can be brought out as follows. Although my meaning, say, DOG by 'dog', doesn't, all by itself, ground an ought claim about my use of the word, it can *explain* why I use that word one way, rather than another. It is in part because of what I mean by 'dog' that I apply it to this salient beagle and not to this cat or tree. The meaning doesn't explain the use all by itself, of course, but only in conjunction with other facts, such as facts about my perceptions, and so forth. But it does enter into the explanation.

So far, this doesn't look to pose much of a problem for the dispositionalist. Although it used to be said that a disposition to dissolve in water couldn't explain why this particular sugar cube dissolves in water, I think that's now generally regarded as unjustifiably restrictive. Someone's being risk-averse can explain why he chose not to make a particular investment; and, in general, we should allow that an object's disposition to phi can explain why on a given occasion it phi's.

The trouble is that if we look at the matter intuitively we can see that my meaning something by a word does not merely explain my use of that word; it also explains my *disposition* to use that word in a certain way. Thus, my meaning plus by '+' not only explains why, on a given occasion, I *say* that '68 + 57 = 125', but also why, on that occasion, I am *disposed* to say it. (p.338)

Suppose I am queried about this particular arithmetical problem. I look at it, find myself disposed to say '125', but, for whatever reason, don't come out and say it. The fact that I was so disposed would itself be explained in part by the fact that I mean plus by '+'.

However, it looks as though the dispositionalist *cannot* make sense of this for the simple, but incontestable, reason that something cannot explain itself.

Notice that this consideration applies not only to a priori versions of identity dispositionalism, but also to its a posteriori versions.

If water is H_2O then whatever we can explain by appeal to something's being water we should also be able to explain by appeal to its being H_2O. Of course, we might be able to explain more through H_2O than we can with water: science gives us deeper and more comprehensive explanations than we can give in ordinary life. But we should at least be able to replicate some of the genuine ordinary explanations that we are able to give.

And this, I have claimed, we won't be able to do in the case of a dispositional view of meaning.

Let us call this the Argument from Explanation, in contrast with Kripke's Argument from Normativity.

15.5 The Argument from Error

A more important argument of Kripke's is his Argument from Error. It begins with the observation that most any person's dispositions may contain dispositions to make mistakes.[5] For example, someone might systematically forget to 'carry' in certain circumstances. If we tried to read off the function that's meant from the totality of a person's dispositions, we will undoubtedly end up assigning the wrong meaning, intuitively speaking.

To get around this, it seems, we have to specify, in non-intentional, non-semantic terms, a set of ideal conditions, C, under which one's dispositions will be in perfect conformity with the meaning of one's term, thus:

> (Refined Dispositional Theory): Necessarily, 'S means plus by "+" ' is true iff: For any two numerals 'm' and 'n' *denoting* particular numbers m and n, S is disposed, if conditions are C, and if *queried* about 'm + n', to *reply* 'p' where 'p' is a numeral denoting plus (m,n).

Kripke's way with this proposal is brief. He says:

> A little experimentation will reveal the futility of such an effort. Recall that the subject has a *systematic* disposition to forget to carry in certain circumstances: he tends to give a uniformly erroneous answer when well rested, in a pleasant environment free of clutter, etc. (1982: 32)

(p.339)

I think that Kripke is ultimately right that there are no such non-intentionally, non-semantically specifiable conditions under which it would be impossible for us to make a mistake in the application of '+'. But I think he doesn't give us as much of an argument for this claim as we would like. What more can we say on its behalf?

Well, it is certainly hard to see that there are *a priori* specifiable conditions, C, under which it would be impossible for us to make mistakes in the applications of our terms. It's certainly not built into our concept of addition that there are such conditions C. Nor do I know of any other a priori source of insight into the nature of computation that indicates the existence of such conditions.

But what's to say that there aren't such conditions that could be discoverable *a posteriori*? Indeed, how could Kripke claim to know that there aren't such conditions? Has he done the relevant science?

As a matter of fact, I think we can make a pretty strong case that such conditions can't be discoverable a posteriori either.

Recall, we are looking for a dispositional property that we can *identify* with the property of meaning addition. That means we are looking for conditions under which it would be, as a matter of *metaphysical necessity*, impossible for S to make mistakes in his use of '+'.

Surely, though, the conditions under which S's dispositions would be guaranteed to coincide with what he refers to by '+', assuming that there are such conditions, would have to be *contingent* on the sort of creature S is, on what his actual cognitive apparatus is like. With creatures like us, being well rested, in a quiet environment, free of clutter, and so forth seems ideal for minimizing errors in arithmetic. But there are no doubt possible creatures out there (Jabba the Hutt, perhaps) who can grasp addition, but for whom a noisy environment, harsh lighting, and lack of sleep are better for doing arithmetic.

But if we identified meaning addition with having such and so disposition under conditions-ideal-for-us, we would have to say that Jabba the Hutt couldn't mean addition. And that is implausible. Surely, all kinds of creatures with all sorts of cognitive profiles could instantiate the property of meaning addition.

The upshot is that it is hard to believe that there are conditions C under which it would be metaphysically impossible for an adder to make a mistake in adding, whether these conditions are thought of as a priori or only a posteriori discoverable.[6]

15.6 The Argument from Finitude

I believe that, between them, the Argument from Explanation and the Argument from Error provide a strong case against the *reduction* of meaning to dispositions, whether this reduction is thought to be of the a priori or the a posteriori type. (p.340)

But I don't think these arguments extend as far as threatening the Supervenience claim. Mere supervenience of meaning on the dispositional does not require us to be able to replicate the explanatory work of meaning in terms of dispositions. Nor does it require that meaning properties always be realized by the same sorts of dispositional fact. All it requires is that fixing the dispositional facts fixes the meaning facts, but not necessarily the other way around.

This explains why I attach great importance to the last of the arguments that Kripke presents, the Argument from Finitude: I think that this argument does have the potential to undermine not only Reduction but Supervenience as well.

Kripke states the argument thus:

> … 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 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. (1982: 27)

If my use of '+' determinately refers to the plus function, then it *correctly applies* to a particular infinite set of triples (the one that corresponds to the plus function) and not to any of these other ones, the ones that correspond to the quus-like functions. Kripke poses a challenge to the dispositionalist: How could such a fact be captured dispositionally when we cannot be said to have dispositions to answer with particular numbers with respect to addition problems involving inaccessibly large numbers?

It's important to see that this isn't a problem that arises merely from the 'infinitary' character of the dispositions in question, as some early commentators were inclined to think.

Blackburn (1984), for example, thought that there had to be something fishy about Kripke's argument. In what sense are our dispositions finite, he asked? And how does it follow from our finitude that our dispositions are finite? Take a humble ordinary object such as this glass. It can have infinitary dispositions. It can be disposed to break when struck here, or when struck there, when struck at this angle or at that one, when struck at this location, or at that one. And so on, *ad infinitum*. Isn't this the possession of an infinitary disposition? And if a mere glass can have infinitary dispositions, why couldn't a human being?

This reply is correct as far as it goes: it doesn't follow from a thing's being finite (whatever exactly that means) that it has only finite dispositions (whatever exactly those are).

But just as it doesn't follow from a thing's being finite that it *can't* have some particular infinitary disposition, it also doesn't follow that it *can* have that disposition. Each attribution must be examined on its merits.

The problem Kripke is pressing for the dispositional account depends on there being a difference between a human adder and the glass. The glass *is* disposed to break under a potential infinity of circumstances, but the human adder *isn't* disposed to respond (p.341) with an answer to addition problems involving certain very large numbers. How does Kripke show this?[7]

Kripke's argument seems to proceed as follows. First, he assumes a Counterfactual Conditional Analysis of Disposition talk:

> (CCAD) 'S is disposed to do A if C' is true iff if C, S would do A.

And then he assumes a Possible Worlds Analysis of Counterfactual Conditionals:

> (PWACC) 'If C, S would do A' is true iff in the nearby worlds in which C, S does A.

Neither of these assumptions is explicitly spelled out in Kripke's argument; but they capture well the way in which his argument unfolds. With these assumptions in place, we can now articulate his argument as follows: in the case of the glass, it seems correct to say that its disposition to break when struck is infinitary because it's clear that there is an infinite set of nearby worlds in each of which the glass is struck with a slightly stronger force than in the preceding world, and in each of which it breaks.

But it looks to be not similarly plausible to say that a human being has a disposition, when asked about the sum of an arbitrary pair of numbers, no matter how large, to respond with their sum. Consider an arithmetical question involving a number that is bigger than I can properly take in, perhaps even bigger than I can take in within my lifetime. What happens in the nearest world in which I am asked this question (obviously by a being whose life span is longer than mine and who has nothing better to do with his time)? In the nearest such world, I would die before I could grasp which numbers are at issue.

In the case of the glass, the existence of the infinite number of inputs or manifestation conditions—the different levels of force, angles, locations, and so forth—just follows from the nature of the glass qua physical object. No idealization is required.

But to be able to respond to an arbitrary arithmetical problem I have to be able to *grasp* the numbers in question. And a capacity to grasp arbitrarily big numbers—the inputs in the arithmetical case—does *not* follow from our nature as thinking beings, and certainly not from our nature as physical beings. Indeed, at least at first blush, it seems that what *does* follow from our nature as finite biological beings that live for a finite period of time, is that we do *not* have that capacity: there are limits to the size of the numbers that we are able to grasp or process.

Now, the functions plus and quus differ with respect to numbers that are, by assumption, inaccessible to a thinker. If a thinker, S, determinately refers to plus by his symbol '+', then, with respect to a question Q involving an inaccessible number, it would be (p.342) correct for him to respond with a given number, say, p, and if he determinately refers to quus, then it would be correct for him to respond with a different number, say, p*.

The dispositionalist's idea is that whether it would be correct for S to respond to Q with p or p* is determined—a posteriori, admittedly, but nonetheless determined—by S's dispositions.

But, as we have just argued, S's dispositions do not extend as far as the relevant correctness facts. He has no dispositions with respect to the inaccessible number that distinguishes between the p answer and the p* answer. How, then, *could* his dispositions determine that p is the correct answer as opposed to p*?

15.7 Dispositions and Conditionals

This, then, is an articulated version of the argument that we may find in Kripke. The question is whether it works.

One line of resistance to it has targeted its reliance on the conditional analysis of dispositions.

It is widely agreed among philosophers that (CCAD) was decisively refuted by Martin (1994). Martin presented counterexamples to both directions of the analysis, though I shall concentrate on the left to right direction.

Our glass may be fragile; but it is not inconceivable, to use an example of David Lewis's, that a sorcerer should lurk in the wings, watching and waiting, so that if ever the glass is dropped, then, practically instantaneously, he casts a spell that renders it unbreakable. Under this scenario, the glass's fragility is 'finked': even though the glass has the disposition to break, a factor ensures that if ever it were to try to manifest itself the causal basis for the disposition would disappear.

Johnston (1992) has also called attention to the way in which a disposition can be 'masked'. Our glass is fragile, but it may not break if it is given the right sort of internal packing to fortify it against hard knocks. Our glass retains the disposition to break, but some factor in its environment blocks its manifestation, even as it retains that disposition.

Given these problems for the conditional analysis, it looks possible to respond to Kripke's argument in the way that Martin and Heil (1998) did: they concede that there are no nearby worlds in which, if I am queried about the sum of 'm + n' for arbitrary m, n, I will respond with their sum, but deny that it follows from this concession that I am not disposed to give an answer. That inference requires (CCAD), which has been rejected.

Martin and Heil thus conclude:

> The infinity discoverable in P (or in any other disposition, mental or physical) will seem

> mysterious only so long as one fails to distinguish P as a disposition from its manifestations. (1998: 303)

However, as Handfield and Bird (2008) have pointed out (in an excellent discussion of Martin and Heil), this conclusion seems hasty. For the connection between (p.343) dispositions and conditionals has been shown to be broken only in the cases of finks and masks. And the paradigm cases of finks and masks involve factors that are *extrinsic* to the object that has the relevant disposition (the sorcerer and the packaging are both extrinsic to the glass).

However, the factors in virtue of which an agent is unable to compute the sums of inaccessible numbers look to be highly *intrinsic* to him. They are *intrinsic* to his cognitive powers. Hence, it's hard to see that reliance on the existence of finks and masks can provide a good defense against the Argument from Finitude.

15.8 Idealized Dispositions

For all that finks and masks show us, then, it looks as though we could continue to assume that our having dispositions vis-à-vis inaccessible numbers does amount to the truth of certain counterfactual conditionals. And, therefore, that we may continue to take the falsity of those conditionals to imply that we do not have the relevant dispositions.

Although in what follows I will occasionally fall in with this way of talking, it is not essential to anything I will want to be claiming. Even if we assumed that disposition talk cannot be analyzed at all, let alone in terms of conditionals, I believe that the arguments presented below would still go through.[8]

We cannot defend dispositionalism against the Argument from Finitude simply by rejecting his implicit appeal to (CCAD).

It might be thought, however, that there is a better way for the dispositionalist to go, one that would appeal to the notion of an 'ideal disposition'. The thought is that although it isn't true that

> For any two numerals 'm' and 'n' *denoting* particular numbers m and n, S is disposed, if *queried* about 'm + n', to *reply* 'p' where 'p' is a numeral denoting plus (m, n)

it might be true to say that

> For any two numerals 'm' and 'n' *denoting* particular numbers m and n, S is disposed, if conditions are *ideal*, and if *queried* about 'm + n', to *reply* 'p' where 'p' is a numeral denoting plus (m, n).

We originally introduced the idea of an 'ideal disposition' in order to deal with the fact that we all have dispositions to make mistakes. Even with respect to the accessible numbers, we are disposed, at least if conditions are unfavorable, to give answers that deviate from the answers that it would be correct for us to give. If dispositionalism is to (p.344) avoid assigning the wrong meaning, it has to assume that there is a set of non-trivially specifiable ideal conditions, under which we would be disposed to give answers that are in perfect conformity with the function we mean, at least with respect to the accessible numbers.

In connection with the problem of Error, this notion of idealization attempts to idealize away from sources of error in *our processing of numbers that we can grasp*, rather than idealize away from our *inability to grasp or process numbers that are above a certain size*.

Even with respect to this much more modest task, we have seen that it is very far from clear that there are such conditions. However, let us set those objections aside for the moment. Suppose that there are conditions, C, under which a subject is guaranteed to give the correct answer with respect to the accessible numbers. Might a notion of ideal conditions help not only with the error, but with the finitude problem as well? (Plausibly, such a solution would involve a different, or expanded, set of ideal conditions.)

Kripke considers such a defense of dispositionalism:

> I have heard it suggested that the trouble arises solely from too crude a notion of disposition: *ceteris paribus*, I surely will respond with the sum of any two numbers when queried. And *ceteris paribus* notions of dispositions, not crude and literal notions, are the ones standardly used in philosophy and in science. Perhaps, but how should we flesh out the *ceteris paribus* clause? Perhaps as something like: if my brain had been stuffed with sufficient extra matter to grasp large enough numbers, and if it were given enough capacity to perform such a large addition, and if my life (in a healthy state) were prolonged enough, then given an addition problem involving two large numbers *m* and *n*, I would respond with their sum, and not with the result according to some quus-like rule. (1982: 27)

Kripke's response is dismissive:

> But how can we have any confidence in this? How in the world can I tell what would happen to me if my brain were stuffed with extra brain matter, or if my life were prolonged by some magic elixir? Surely such speculation should be left to science writers and futurologists. We have no idea what the results of such experiments would be. They might lead me to go insane, even to behave according to a quus-like rule … But of course what the ceteris paribus clause really means is something like this: If I somehow were to be given the means to carry out my intentions with respect to numbers that are presently too long for me to add (or to grasp), and if I were to carry out those intentions, then if queried about 'm+n' for some big *m* and *n*, I would respond with their sum (and not their quum). (1982: 27)

Now, Kripke is surely right to say that we currently have no idea what the truth-value of the following counterfactual is:

> (Enhanced): If my brain were enhanced in certain specified ways, and my life were prolonged, I would answer with the sum to the question 'm + n = ?' for any two m and n, no matter how large.

(p.345)

We certainly do not know the truth of such a counterfactual a priori. Nor do we currently have any empirical evidence to support belief in (Enhanced) (pretending for the moment that it is determinate enough to be empirically tested).

So, if the truth of a dispositional reduction of meaning turns on the truth of (Enhanced), we are certainly not now in a position to *assert* that such a dispositional reduction is true.

However, and obviously, it doesn't follow from this concession that dispositionalism is not *true*. All that follows is that it is not currently *assertible*. For all we currently know, there *might be* empirically discoverable conditions, C, specifiable non-intentionally and non-semantically, which are such that, if they obtain, then I will respond to arbitrarily large addition problems with their sum. And if there are such conditions, then it will be true to say that I am disposed to respond with the sum to addition problems involving inaccessible numbers.

Given only Kripke's arguments, then, we can say only that dispositionalism is not now assertible; we cannot say, what he seems to want to say, that it has been shown to be false. Once again, attention to the distinction between a priori and a posteriori forms of reduction seems to expose a gap in Kripke's argument.

Are there are any considerations that show that not only is dispositionalism not currently assertible, but that it is not true? I think there are.

First of all, we can repeat the point made earlier, that conditions that are ideal for creatures like us may well not be ideal for other possible creatures who may also be able to grasp addition.

However, I think there is a more fundamental worry with this particular deployment of ideal dispositions to deal with the problem of finitude. We can get at it by noting that there is something fishy about the dispositionalist helping herself to the dispositions she would have if her brain or cognitive powers were enhanced in various ways.

After all, what she is trying to explain is how *I, with my current cognitive powers and brain capacity*, mean addition by '+'. If this is to be identical to *my* having a certain disposition, it should be identical to a disposition that I have more or less as I *actually am*, not to the dispositions that I *would have* if I were much more powerful than I actually am.

In Boghossian (1989: 31), I put the point as follows (relying explicitly on (CCAD), but the underlying lesson is independent of it):

> … not every true counterfactual form of the form
>
> If conditions were ideal, then, if C, S would do A
>
> can be used to attribute to S the disposition to do A in C. For example, one can hardly credit a tortoise with the ability to overtake a hare by pointing out that if conditions were ideal for the tortoise—if, for example, it were much bigger and faster—then it would overtake it. Obviously, only certain idealizations are permissible …

To vary the example somewhat, it seems right to say that a humble Volkswagen Golf is unable, and so not disposed, to overtake the twelve-cylinder Bentley, when (p.346) they are both going at full tilt. But if, in judging this question, we were allowed to look at the capacities the Volkswagen would have if it were much faster and more powerful than it actually is, say as fast and powerful as the Ferrari 458, then we would be able to say that it *is* now able and disposed to overtake the Bentley. As a way of gauging the Volkswagen's current dispositions, that would clearly be absurd.[9]

Similarly, it looks absurd to determine what dispositions I have in respect of '+' by looking at the dispositions that I would have if I were much more cognitively powerful than I actually am. The dispositions relevant to a dispositional account of meaning are the dispositions I have, pretty much as I actually am, and not the dispositions that I would have if I were much more cognitively powerful than I actually am.

Of course, among the dispositions I actually have are dispositions to respond in certain ways, when conditions are ideal—for example, when I am sober, well rested, in a quiet environment, and so forth. But that is different from the dispositions that I *would* have, if I were much more cognitively powerful than I actually am. In figuring out the first sort of disposition, we keep my cognitive powers more or less fixed, and simply vary the circumstances under which they are exercised. In figuring out the latter sort of disposition, we are allowed to look at situations under which my cognitive powers are far greater than they actually are.

We could put the point this way. Let's stipulate that there is a being, say God, that has dispositions to respond with the sum for arbitrarily large numbers m and n, and so is able to mean addition by '+' on a dispositional view. How can that fact help *me* have the disposition so to respond, and so to mean addition on a dispositional view?

I suppose that we could cook up an externalist view according to which I could get to mean addition by *deferring* to God. This would have the peculiar consequence that only those practicing the correct religion could mean addition rather than quaddition! And it would not help any of us finite beings at all, if there were no God.

Seriously, though, if a dispositional view is to explain how it is that I mean addition by '+', it had better be that it can do so in terms of my actual dispositions, rather than the dispositions that would be had by some superhuman version of me. These dispositions can be ones that I have in (certain kinds of) idealized circumstances, but they must be dispositions that I actually have, with my cognitive powers kept fixed.[10] (p.347)

15.9 Dispositions and Rules

A number of writers sympathetic to dispositionalism are prepared to concede that we do need to work with the dispositions that we actually have, as opposed to those that we would have under enhanced conditions. But they maintain that, in the relevant sense, we *do* have the requisite dispositions. Martin and Heil describe this idea, somewhat abstractly, as follows:

> [Suppose] that an agent S possesses a disposition P, constituting S's mastery of R, the plus rule … Now, imagine that at t1, S has P. At t2, S may acquire the capacity to form a range, L, of very large numbers. Call this capacity C. Note that the addition of C does not require the further addition of P; P is present already. Even at t1, P is 'ready to go' for adding numbers in L, numbers that, at t1, S lacks the capacity to consider or manipulate. It is the being-there-ready, without need of supplementation or alteration for *any* such numbers—whether S gains the capacity to manipulate them or not—that constitutes P's infinity. S's finitude with respect to addition results from limits on numbers S can consider or manipulate at any given time. This is a limitation not on P but on P's manifestations owing to limitations in C, one of P's reciprocal disposition partners. This is a limit not on magnitudes of numbers S (in virtue of possession of P) is prepared to add; the dispositional readiness encompassed by P is for any magnitude, and is in that sense infinite. (1998: 302)

Here is a way of thinking about what Martin and Heil are suggesting here.

Let's concede that I *don't* have a disposition to respond with the sum with respect to arbitrarily large numbers m and n. However, we can still make it plausible that I am now disposed *to process any two numbers in the same way*, according to the same rule, if only I could grasp those numbers. That is consistent with conceding that there are many numbers I can't grasp. But it is also enough to credit me with computing addition rather than quaddition.

We can motivate how Martin and Heil are thinking here—and they are certainly not alone in finding this an appealing line of thought—by thinking about the architecture of a Turing machine. Such a 'machine' has three distinct components. There is the 'read/write head', the tape, divided into cells, and the table of transition rules that specify on the basis of what it 'sees' in the current cell, what action it is to perform, and what state it is to transition to. For any Turing machine, it is the table of transition rules that determines the function that it computes, not any of the other components.

Now, suppose that when we look at our own mental architecture, we see that we can isolate distinct components that are responsible for our capacity to add, in parallel to the way in which we can isolate such components in a Turing machine. There is, on the one hand, a component that corresponds to our capacity to retain in memory (p.348) the summands (the tape), a component that serves as the memory bus (the read/write head), and, finally, a component that embodies the algorithm or rule that we follow when we try to add numbers.

Perhaps these components could be thought of as housed in distinct parts of a subject's brain, in such a way that it can seem obvious that, no matter what numbers we are given to add, we would always subject them to the same procedure, no matter how large or small those numbers may be. That could just be a feature of the architecture. Then, it looks as though we could think of our meaning addition by '+' as consisting just in the fact that we would subject any two summands to a particular procedure (adding them), even as we concede that there is a real limit to the size of the summands that we can grasp or consider. The thought is that we can isolate the fact that we are following a certain rule, from the fact that we are unable to grasp all the inputs over which that rule is defined.[11]

This idea is an appealing one in the case of addition and various other mathematical notions. It is not clear whether it could be made to apply across the entire range of concepts. What would correspond to the two factors in the case of the concept *water* or the concept *ought*?

Let us stick to the case of plus, though, as we have been doing, and let's see whether this factorization idea can help out a dispositional view, at least in this importantly representative case.

Now, Wittgenstein's great insight, of course, was that there is just as much of a problem saying what rule or algorithm a particular concrete mechanism is following as there is saying what concept it is deploying. So the appeal to rules or algorithms, housed in an isolable component of our mental architecture, can't help all by itself. We still need to see how we are going to give a dispositional account of following a particular rule or algorithm, even if we are allowed to factorize meaning addition into a component that houses the rule, so to say, and others that house the inputs and outputs to that rule.

And now, it would seem, we are right back where we started. We still face the problem that our brains will last for only a finite amount of time and have limited processing capacity. After a while, that bit of the brain that is said to house the rule is disposed to sputter rather than give an answer. And nothing we have been provided so far helps us get around this problem.

15.10 Computation and Physical Devices

But can't it be entirely determinate what rule or set of instructions a bit of our brain is employing? (p.349)

After all, we each have in our offices a machine that is, in part, an adder. If there are such determinate facts about something as basic as a desktop computer, how could there fail to be such determinate facts about us and our brains?[12]

Stabler (1987) has provided an illuminating discussion of this question. His strategy relies on looking at an *extremely* simply device, much simpler than an adder, but similar to it in that it realizes an infinite function on the natural numbers. His example concerns an electrical circuit that computes the identity function on the natural numbers under an interpretation that maps a sequence of i voltage pulses at a specified input point into the number i, and similarly maps any sequence of i pulses at the output point into the number i. The circuit for the device may be represented by the following simple circuit diagram:

input ———— output

And it looks as though all that would be needed in order to physically realize such a device is a simple wire connecting the input to the output.

Now, of course, any real wire will transmit pulses for a while and then break down. Suppose it ceases to transmit after the fifty-seventh pulse. Why should we say that this wire is the realization of the infinite identity function? Why shouldn't we say that it is a realization of the function that maps numbers less than fifty-eight into themselves and thereafter maps every number on to five? Stabler says:

> There is a natural response to this problem. It is just to point out that *if the system had continued to satisfy conditions of normal operation for long enough, it would have composed arbitrary values of the identity function.* In the case of the wire, the identity function is distinguished from other functions which agree only on actually performed computations; the physics of simple circuits tells us this. For example, we do not want to say that the wire realized a function F' such that F'(58)=5, because we know from the simple physics of the device that if it had continued to satisfy the background conditions (of being a simple conductor), it would *not* have computed this value. So this is the requirement on the realization of any function: the system must be such that it would compute arbitrary values of the function if it lasted long enough. (1987: 9–10)

The important point to note is that the claim that some particular physical system computes some particular function clearly rests on a particular choice of background or normal conditions, and that these conditions are not given just by looking at the device itself.

Of course, describing our device as a *conductor* analytically implies certain conditions of normal operation. But we can imagine alternatives. We could suppose that our condition of normal operation did not involve the presence of a conductor but rather the presence of a conductor for fifty-seven pulses and the absence of any electrical connection thereafter. Then we should regard the wire as having realized not the identity function, but rather the function (p.350)

Bent(x) = x if x < 58

= 0 otherwise.

If the device were to continue to conduct voltage pulses past the fifty-seven mark, we would have to regard the device as malfunctioning. It would still be a device for computing the function Bent(x), although it would be giving incorrect answers. As Stabler remarks:

> … fixing the conditions of normal operation is crucial for making determinate claims about what function a system is computing. … However, as in the case of the wire, usually there is no problem seeing what the natural background condition is intended to be, even if it is not stated explicitly. (1987: 10)

So: determinate facts about what function a system is computing rests on a choice of normal conditions for the operation of that system. And, such conditions are determined, at least in part, by the designer's intentions.

Interestingly, although Stabler's piece is written as a criticism of Kripke's finitude argument (at least in a version published before the book), he ends up in a position that is in perfect agreement with what Kripke has to say about the matter:

> Actual machines can malfunction: through melting wires or slipping gears they may give the wrong answer. How is it determined when a malfunction occurs? By reference to the

> program of the machine as intended by its designer, not simply by reference to the machine itself. Depending on the intent of the designer, any particular phenomenon may or may not count as a machine 'malfunction'. A programmer with suitable intentions might even have intended to make use of the fact that wires melt or gears slip, so that a machine that is 'malfunctioning' for me is behaving perfectly for him. Whether a machine ever malfunctions and, if so, when, is not a property of the machine itself but is well defined only in terms of its program, as stipulated by the designer. (1987: 34–5)

Now, if all of this is right, we can see why talk of machines determinately computing particular functions won't help us with our problem.

A machine may be said to determinately compute addition relative to the intentions of its designer and that designer's selection of particular conditions of normal operation.

But that would be a case of *derived* intentionality, not the sort of original intentionality that we are after in our own case. How is it determined in our own case, in the case of our own brains and cognitive systems, what the conditions of normal operation are? Not by further intentions, on pain of vicious regress; and not merely by our dispositions to respond in certain ways to certain stimuli.

It is at this point that it is tempting to think that *biology* will help us with our problem (this is the idea behind 'teleosemantics'). Couldn't we make a case for saying that the biologically determined conditions for the normal operation of our cognitive mechanisms determine plus rather than quus as the function that we mean? (p.351)

There are any number of problems with this line of thought, the most important of which, for present purposes, is that it's hard to see that evolution would care about what we are disposed to do in respect of numbers that are nomologically inaccessible to creatures like ourselves. So, at least in the particular case we are looking at in detail, it's hard to see how facts about natural selection are going to remove the indeterminacy that dispositionalism about meaning seems to entrain.[13]

15.11 Reduction versus Supervenience

If the Argument from Finitude is correct, it doesn't merely make trouble for dispositional *analyses* of meaning, or the identification of meaning properties with dispositional properties; it seems to make trouble even for such a weak thesis as that of the supervenience of determinate meaning facts on the dispositional facts. For the argument takes the form of showing that there is not *enough* in the supervenience base to sufficiently constrain determinate facts about meaning. The base seems too impoverished to do the job. If it is precisely plus rather than quus that we refer to, it looks as though there has to be a *further fact* doing the determining.

Now, I can imagine someone trying to resist this conclusion by deploying the following line of thought:[14]

> Look, what you are doing is covertly sneaking in an explanatory requirement: not only must the dispositional facts determine the reference facts; it must somehow be explainable how they do so. Then, since no explanation looks forthcoming you are concluding that they couldn't determine it. But this is to impose an illegitimate explanatory requirement. Explanations come to an end somewhere. What makes you think they don't come to an end precisely here, where one set of dispositional facts determines one determinate meaning fact as opposed to another?

I agree that explanations come to an end somewhere and that it is not out of the question that they come to an end precisely in principles connecting dispositional facts with determinate meaning facts. But that concession by itself does not absolve us from evaluating any particular determination claim for plausibility. Sometimes it can just be clear that a particular determination claim is wrong. Let me give what I take to be an especially compelling example that arises in a distinct although highly related context.

It is provided by Stephen Schiffer's objection to Timothy Williamson's epistemicist view of vagueness.[15] According to Williamson, a vague predicate, such as 'bald', has a perfectly determinate extension: some determinate number of hairs is required in (p.352) order for someone to count as not bald, it's just that we don't know what that number is. Furthermore, Williamson accepts the view that such determinate reference is not metaphysically primitive: it supervenes, broadly speaking, on the thinker's psychology, including his referential intentions, and perhaps on his relations to his environment.

Schiffer objects to this view by asking how there could be anything in our psychologies, or in their relations to their surroundings, or in any other remotely relevant location, that could determine such an exquisitely precise boundary.

Consider the application of Williamson's view to the command that I might give to someone in the course of photographing him: 'Stand over there!' On Williamson's view, in saying 'Stand over there!' I must have referred to some very specific boundary within which the person being photographed must stand if he is to count as complying with my request, even if I don't know precisely which boundary this is.

It's a legitimate criticism of this view to say that there doesn't seem to be enough in any available fact about my psychology to attribute to me determinate reference to one exquisitely determinate boundary as opposed to another. It's not just that I don't know what it is. It is implausible to claim that there was such an exquisitely precise boundary that I must have been referring to.

A similar worry arises in the arithmetical case. If we insist that if there is to be determinate reference at all, then it must be determined by one's use-dispositions, then it seems to me that we must conclude that there couldn't be determinate reference to plus as opposed to quus. If meaning supervenes on the dispositional facts, then meaning is not determinate.

15.12 Why Plus and Not Quus?

There is another way of bringing out the implausibility of saying that meaning is both determinate and supervenes on the dispositional. It would follow from the combination of claims in question that, if I do determinately mean plus rather than quus, then that would not only be true, but would have to be true by metaphysical necessity: it would be *metaphysically impossible* for a thinker to mean quus by a *primitive* symbol of theirs.

Here is the argument for this claim:

> (1) Let's suppose that my dispositions over the accessible numbers are perfectly in conformity with Addition. Then, by definition, they are also perfectly in conformity with Quaddition as well. And suppose that, nevertheless, we insist that I determinately refer to Addition and *not* to Quaddition.
>
> (2) Any human being would be subject to the same finitude limitation as I am—he couldn't have more dispositions than I have: for both of us there will be some inaccessible numbers.

(3) Since anyone who is perfectly in conformity with Addition is said to refer to Addition, someone who referred to Quaddition would have to not be in conformity (p.353) with Addition. But the only respects in which his dispositions could be different from mine would be in respect of the *accessible* numbers.

(4) But that means that in order to refer to Quaddition someone would have to have dispositions that are not in conformity with Quaddition with respect to the *accessible* numbers.

(5) But it is absurd to claim that what it *takes* to refer to Quaddition is to deviate from what Quaddition requires with respect to the accessible numbers.

(6) So it is not, after all, possible for a human being to refer to quus by a primitive (undefined) symbol of theirs.

But isn't this a peculiar conclusion? 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 and all of these other functions, do my thoughts nevertheless gravitate inexorably to the plus function, ignoring every one of these other functions?

15.13 Further Naturalistic Facts

Where have we got to so far? If the preceding anti-dispositional arguments are correct, and if we are to continue to believe both that meaning is determinate and that it is not primitive, then we must think that there are further facts that help determine meaning, over and above one's dispositions to answer to certain arithmetical questions with certain answers.

Soames, with whom we started, would not disagree. He is open to the idea that his dispositions alone don't determine that he means plus. It's just that he can't see how anything could persuade him either of the claim that he doesn't mean plus after all, or that his meaning plus is not determined by the various possible non-intentional facts about him.

Let us turn, then, to these further naturalistic facts to see how they might help us restore determinacy.

As Soames notes, four classes of fact spring to mind: (i) in addition to the disposition to answer in particular ways to particular arithmetical questions, there are further dispositional facts—for example, dispositions to 'check and revise' my work, dispositions to insist on one and only one 'answer' for any given question, dispositions to strive for agreement between my own answers and those of others, and so on; (ii) facts about the internal physical states of my brain; (iii) facts about my causal and historical relationships to things in my environment; (iv) facts about my relationship to my linguistic community and their dispositions to verbal behavior.

Keeping our eye fixed on the finitude problem, let us go through each one of these further suggestions and ask how it might help make it determinate that I mean plus rather than quus. (p.354)

Clearly, the further dispositional facts cannot help us. If we were primarily worried about the problem of *error*—weeding out the dispositions that are erroneous—then, perhaps it would be important to take into account such second-order dispositions. But it is hard to see how they could help with the problem of finitude. If there aren't *enough* first-order dispositions, that problem will carry over to the second-order dispositions: just as we don't have first-order dispositions with respect to the inaccessible numbers, so we don't have second-order dispositions with respect to those numbers.

Furthermore, I don't see how facts about the internal physical states of my brain are going to help, in addition to whatever role they may play in implementing my use-dispositions, a suggestion that we have examined in Section 15.9.

My historical and causal relationships to my environment have, of course, been thought by some theorists to be highly relevant to the question of what I mean. But it is very hard to see how they could be relevant in *this* particular case, where we are dealing with an arithmetical notion like plus. Indeed, it hard to see how they could be relevant to any notion that purports to refer to an abstract object.

Finally, what about relations that I may have to my linguistic community and to their verbal dispositions? Once again, of course, such relations have been thought to be crucial to determining what I mean (see Burge (1979), for example). But the way in which they have been thought relevant cannot help us with the problem of finitude. For the kinds of cases with which their relevance is established concern only the parasitic case in which an ordinary person is said to mean what the experts mean because he defers to them. The problem of finitude, though, is a problem with determinacy that applies even to the experts.

Recently, it has become popular, following a suggestion of Lewis (1983), to claim that play with the notion of 'naturalness' can help us with this problem. The idea is that it is an important part of the theory of the meaning relation that we should attribute to our words natural properties, functions, or entities, other things being equal (once all other appropriate constraints, like charity, have been satisfied). To put the matter metaphorically, natural properties and functions serve as 'reference magnets', drawing our thoughts to them by default, without our having to do anything of a positive nature to ensure that that is what we end up referring to. Since, it is further alleged, plus is more natural than quus, it is determinately true that we refer to plus rather than quus.

There are two ways to apply Lewis's idea to the plus/quus problem. The first is to take the notion of 'natural' to be implicitly defined as 'whatever it is that resolves the plus/quus problem (and all similar problems) in favor of plus'. The other is to take it to be implicitly defined by the solution it provides to some *other* philosophical problem (or small range of problems)—for example, that of objectively true similarity judgments, or lawlikeness, and then to show that whatever it is that is implicitly defined by that stipulation extends smoothly to the plus/quus problem and resolves it clearly in favor of plus.

I think the first approach is unsatisfactory. (p.355)

Consider, by way of analogy, the Gettier problem. No one would be satisfied by a solution to the Gettier problem that says there is something that makes for the difference between knowledge and justified true belief, and we are henceforth to call it 'q'. Why would that be unsatisfactory? It's hard to say precisely. But we have the sense that whatever it is that accounts for the difference between knowledge and justified true belief, it is not something primitive, something that can't be explained in terms of something more fundamental.

Something similar is true in the plus/quus case. If this problem has a solution along such Lewisian lines, it should be on the basis of something more fundamental. It's not as antecedently intuitive, for example, that there are 'natural' *functions*, as it is that there are natural properties. As a result, it's not as antecedently clear that an implicit definition of 'natural' as 'whatever it is that resolves the plus/quus problem (and all similar problems) in favor of plus' would pick out anything real.

If there is to be a solution to the plus/quus problem along Lewisian lines, it will have to be because we have managed to introduce the notion of naturalness in connection with some *other* philosophical problem, and are then able to show that it extends in a satisfactory way to the plus/quus case and delivers a determinate verdict in favor of plus.

But I don't see much prospect of that. I see no obvious notion of naturalness that will cover both the notion of a natural property, as it might figure in an account of similarity or lawlikeness, and that of a natural function.

This is obviously a large topic, and it deserves a more extended treatment than I am able to give it here. These brief remarks will have to suffice for now.

15.14 Is the Millian Assumption the Problem?

If these considerations are correct, then the problem of finitude looks to remain with us, even if we take into account all the naturalistic facts that have been thought remotely relevant to the fixation of meaning.

It is time now to wonder whether our problem would be alleviated if we substituted a Fregean picture for the essentially Millian one with which we have been working.

Suppose that instead of claiming that I refer to addition directly, we claim that what happens is that I first grasp some sense PLUS, and that this determines Addition as the function that I refer to by '+'.

What do we mean by the sense PLUS? A pair of conditions characterizes this sense. First, it is that sense that determines the plus function as its referent. Second, the sense PLUS is different from the sense PLUS*, if it is possible for a thinker rationally to believe that x PLUS y = m but disbelieve that x PLUS* y does not = m.

On this standard Fregean way of doing things, the function plus is part of what individuates the sense PLUS. If there is a problem getting naturalistic facts to determine the plus function directly, there is going to be as much of a problem getting them to (p.356) determine PLUS rather than QUUS, where PLUS and QUUS are the same sorts of primitive senses, except that one determines addition as its referent and the other determines quaddition as its referent.

Notice, what I have said is that, it is *stipulatively true* of the sense PLUS that it is whatever sense picks out the plus function, as well as the stuff about its role in rational belief. That is a stipulation about the sense PLUS.

> (Sense Individuation): If x means PLUS, then x is true of this (the plus) infinite set of triples and not any other set.

By itself, though, this seems to do nothing to help us with our problem. For, as Kripke points out, we now appear to be able to restate the problem in terms of grasp of senses: how can it be a determinate fact that I grasp the primitive sense PLUS rather than the primitive sense QUUS, which differs from PLUS only in that one refers to Addition and the other to Quaddition?

It's not as though there is some *other* intrinsic feature by which one can tell them apart—some special quale that attaches to having the PLUS concept rather than the QUUS concept. Rather, the only basis for distinguishing between them is just that they are presumed to fix different extensions and to behave differently in rational belief.

So it looks as though the route through Fregean senses is powerless to help us as well.[16]

15.16 Conclusion

This concludes my argument for the claim that if it is only naturalistic facts that determine what we mean by our arithmetical concepts, then it is indeterminate what we mean.

The question arises whether similar considerations apply in the case of non-mathematical, empirical concepts, like 'dog' or 'green'. This is a very large question that I cannot take on in this chapter, having already exceeded the space allotted to me.

There are two things that I would like to emphasize.

First, even if it turned out that the problem of naturalistic indeterminacy does not arise for empirical general terms, it would still be very significant that it arises for formal notions, notions that one might intuitively have thought would be least likely to be afflicted with a problem of indeterminacy.

The second point is that the question of finitude does not disappear as we look at non-mathematical concepts.

Someone might very well think otherwise, maintaining that the extensions of ‘dog’ or ‘green’ are not, or anyway need not be, infinitary: unlike the infinite set of triples to which ‘+’ might be said to apply, there is only a finite number of dogs or green things. (p.357)

But I think this would be a mistake. What naturalism needs to explain are expressions’ extension properties; and in the relevant sense, *every* term, including ‘dog’ and ‘green’, has an infinitary extension property. Even if the actual world contains only a finite number of dogs, the semantical property of the word ‘dog’ that needs explaining is not merely the fact that it applies to all the dogs in the actual world, but also that it applies to all the dogs in all possible worlds; and to nothing else. And that is an infinitary fact about it.

Indeed, in the relevant sense, even a definite description like ‘my actual headache at time t’, which might intuitively be thought to refer uniquely only to one mental particular or state, has an infinitary extension property: for what’s true of it is that it applies uniquely to this unique mental item and *not to any of these other infinite number of things* (other headaches, all the non-headaches). Both the positive and the negative fact about its extension need to be reconstructed naturalistically, if naturalism is to be vindicated.

At any rate, I hope to have shown that, at least for the class of cases made famous by Kripke, the basic elements of his argument can be used to show that there is a serious worry how determinate meaning could arise on a purely naturalistic basis.[17]

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Notes:

(1) Naturally, I am not suggesting that Kripke would deny the anti-reductionist claim, but only that he claimed that his argument showed something stronger—not just an anti-reductionism about meaning facts, but an eliminativism about them.

(2) A similar criticism of Kripke’s argument has been developed by Horwich (1995).

(3) As Kripke is well aware, there might seem to be a difficulty setting up this problem. Since it has to be set up in language, we must assume, as we are setting it up, that our current language has determinate meanings and, indeed, that we know what those meanings are. To enable the problem to get off the ground, Kripke starts by construing it as an issue about the *past* meanings of my terms, rather than about their current meanings. However, once the conclusion is established about one’s past meanings, it can be brought forward to cover the present as well since, in the relevant sense, no new facts will have emerged since then. If meaning was not determinate in the past, it couldn’t be determinate in the present, either. I will ignore this nicety in what follows.

(4) I discuss this issue in detail in Boghossian (2005). David Velleman was very helpful in getting me clear on this. Although Boghossian (1989) is often cited as defending a normativist view, it in fact expresses substantial skepticism about it. I explain all this in the 2005 article.

(5) If we acknowledge that people can make 'mistakes' aren't we conceding that meaning is a normative notion after all? No. The point is that, in the relevant sense, using a word 'incorrectly' (making a mistake) need not be understood as a genuinely normative notion, but simply as corresponding to using a word in application to something not in its extension.

(6) Elsewhere, I have also developed at length an argument to the effect that belief holism gives us a different ground for doubting the existence of such optimality conditions. See Boghossian (1989).

(7) Since quus was defined as the function that diverges from plus over numbers greater than what a typical human adder is able to compute, one might think that it follows analytically from the existence of quus-like functions that there are inaccessible numbers. And indeed it does. The question before us therefore is: what reason does Kripke give for thinking that there are quus-like functions?

(8) It might be thought that without the conditional analysis it will be hard to determine whether a possible situation is one in which a particular disposition is present or absent. But that would be a mistake. We had better be able to have fairly reliable intuitions *directly* about the presence or absence of dispositions, if we are to be able to check on the correctness of putative analyses of disposition talk in terms of conditionals.

(9) In developing this point in a recent paper, Guardo (2012: 203) has formulated it like this:

> On the one hand, there are the dispositions *I would have had* if I had been in ideal conditions. On the other, there are, among the dispositions *I actually had*, my past dispositions to give, if conditions had been ideal, certain responses to certain stimuli.

I'm not sure that this is exactly the way to put it, but something in the general vicinity seems right.

(10) It is worth noting that a problem would remain even if we allowed the dispositionalist to appeal to these hyper-idealized dispositions. For it would still be true, intuitively speaking, that I am disposed to die before answering questions involving inaccessible numbers. So now we have two conflicting dispositional ascriptions, both of which are said to be true (something that David Lewis was prepared to allow). As Handfield and Bird (2008) point out, though, we now would have to say which of the two conflicting dispositions we should take to be meaning constituting.

(11) See Handfield and Bird (2008) for a somewhat different way of presenting this idea.

(12) As Kripke mentions, Dummett (1959) raised this issue.

(13) See Millikan (1990). For a trenchant critique of teleosemantic approaches to meaning see Fodor (1992).

(14) Horwich (2005: chapter 4) argues along these lines.

(15) See Schiffer (1999). Horwich (2005) also links the critique of epistemicism with the question of the adequacy of a dispositional account, but in a different way. His focus is not, as mine is here, on the problem of finitude.

(16) Of course, these points echo ones that Kripke makes.

(17) For helpful comments on the material in this paper, I am grateful to Ralf Bader, David Barnett, Ned Block, David Chalmers, Sinan Dogramaci, Hartry Field, Yu Guo, Paul Horwich, Jonathan Simon, Ted Sider, and to members of the seminar on Rule-Following at NYU, given with Paul Horwich, in 2006, and members of the Mind and Language Seminar at NYU in 2010; and to audience participants at the MidSouth Conference Keynote Address in Memphis in 2008.