6 Who Is Afraid of Truth Gaps? Wittgenstein and Kripke on the Standard Meter

Jakub Mácha

Both Wittgenstein and Kripke employ the Standard Meter case to illustrate certain insights. For Wittgenstein, the Standard Meter case is analogous to the claim that "being cannot be attributed to an element" (PI, §50). Kripke, meanwhile, invokes the Standard Meter to illustrate his key distinction between fixing reference and giving meaning.

Wittgenstein writes in §50 of *Philosophical Investigations*:

> One would like to say, however, that being cannot be attributed to an element, for if it did not *exist*, one could not even name it, and so one could state nothing at all about it.—But let us consider an analogous case. There is *one* thing of which one can state neither that it is 1 metre long, nor that it is not 1 metre long, and that is the standard metre in Paris.—But this is, of course, not to ascribe any remarkable property to it, but only to mark its peculiar role in the game of measuring with a metre-rule.

These two cases—attributing being to an element and attributing a length to the Standard Meter—are analogous. Both attributions propose a truth-value gap, that is, the absence of truth-value for a certain proposition. If being or existence "consists in the obtaining and non-obtaining of connections between elements" (ibid.), then an element can be said neither to exist nor to not exist. The Standard Meter can be said neither to be one meter long nor not to be one meter long. Such truth gaps may appear puzzling.[1] An element is a regular object. Why then can it not be said that it exists and even necessarily so? The Standard Meter is a regular stick. Why then can it not be said that it is one meter long? Kripke finds this truth-value gap puzzling. But this is not because he would find any truth-value gap misguided. He proposes a gappy solution to the liar paradox, for instance: the liar sentence lacks a truth-value (Kripke 1975). What Kripke finds puzzling is the particular truth gap involved in the Standard Meter case.

In this chapter, I attempt to reconstruct Kripke's account of reference in a way that does not imply any such gap. I then reconstruct the account of reference that is implicit in Wittgenstein's *Philosophical Investigations*. Seen in this light, Wittgenstein and Kripke advance different accounts of reference. I will argue that both accounts are admissible: each has its advantages and disadvantages, and I am not claiming that Wittgenstein is right and Kripke wrong or *vice versa*. This approach allows us to discern significant differences in what must be presupposed in their respective accounts of reference. My main aim is to uncover these presuppositions (rather than to consider their plausibility).

I focus primarily on the Standard Meter case. In *Naming and Necessity*, Kripke invokes the Standard Meter primarily in the context of his discussion of proper names in the first lecture. I would like to transpose the discussion into the context of natural kind terms, which feature in the third lecture. "Meter" and "being one meter long" are not proper names. Rather, "being one meter long" is a description of certain things, akin to Kripke's other examples of natural kind terms, such as "water," "gold," and "heat."

6.1 The Underlying Reality

A tacit assumption in *Naming and Necessity* is the distinction between phenomenal appearance and underlying reality. Appearances include our shared world as well as a person's private sensations and the objects in their visual field, which are open to their view. Meanwhile, the underlying reality behind the phenomenal world can be discovered and described by science (it is not the unknowable Kantian thing-in-itself). The underlying reality is described by physical theories. A physical theory accounting for the underlying reality may turn out to be wrong. The underlying reality is not a flat collection of elements or basic particulars, but is structured into what are called "natural kinds." A physical theory also accounts for basic ontological categories such as substance and length. It would perhaps be more appropriate to call such a theory ontological.

As we shall see in the final section of this chapter, Kripke maintains that the identity of particulars across possible worlds can be accounted for in terms of more "basic" particulars. Then, however, the basic (or most basic) particulars must be the same in every possible world. Hence, the same basic reality is presupposed in every possible world. The aim of physical theories is to give an account of the basic particulars that reality consists of.

6.2 Fixing Reference

One of the key elements of Kripke's account of naming is the act of fixing reference, sometimes also called the initial baptism. As I read Kripke's

numerous descriptions of this act, it goes as follows: an object from the world of appearance is used to fix the object of reference in the underlying reality.

Water is the *substance* instantiated by the items over there at time t_0. The items over there, which make up the *paradigmatic sample* of water, belong to the world of appearance.[2] Substance is a general category of the underlying reality—an ontological category. It can be shown that this particular substance is in fact H_2O. The "items over there" do not need to be regular objects. They can be a subjective sensation, as when fixing the reference of "heat": heat is that which is sensed by sensation S at time t_0. Here, the reference is fixed by the *cause* of the sensation, which is, as we know, a motion of molecules.

If this sort of reference-fixing is supposed to be at all determinate, a physical theory must be *presupposed*. This presupposition can be integrated into the definition:

> Given molecular theory, water is the substance instantiated by the items over there at time t_0.

> Given the theory of basic elements and atomic numbers, gold is the element instantiated by the items over there at time t_0.

Physical theory provides a general account of the target domain to which the reference-fixing points.[3] The definition can make this more explicit:

> Water is the specific molecule or combination of atomic elements that is instantiated by the items over there at time t_0.

> Heat is the best explanation of sensation S within molecular theory at time t_0.

If one assumes another physical theory, the fixing of the reference would be completely different:

> Heat is the element among the four basic elements that causes sensation S at time t_0.

Within this Aristotelian theory, the reference of "heat" would be fixed to fire. In his discussion of ostensive definition, Wittgenstein argues that its "place in language, in grammar" must be given or presupposed prior to the definition (PI, §29). What these places in language are supposed to be is clear from Wittgenstein's examples: number, color, length. These examples of grammatical places are, in fact, general categories that are accounted for by physical theories (except of course that number is a different category, but that need not concern us here).

Kripke claims that specifications of a reference linking a term to a physical theory (such as "water is H_2O") are necessary and a posteriori. The reference-fixer does not know in advance what the reference is called within the physical theory. However, if the physical theory is presupposed, the necessity in question is *de dicto*. It is necessary that water is H_2O within molecular theory. Note, however, that molecular theory can turn out to be wrong (as a whole or in this specific case). The theory is not necessarily true. Within this theory, the items over there (at time t_0) must necessarily be explained as H_2O. In other words, H_2O must necessarily appear as the items over there (at time t_0). This leaves open the possibility that the items over there might in fact have been appearances of a different substance, for example, H_2O_2. What looks like water could in fact be hydrogen peroxide. This is, I think, the point of Kripke's considerations about fool's gold (i.e., something that looks like gold, but is not actually gold). What is decisive in the initial baptism is the outward appearance. Gold and fool's gold have the same appearance.

The act of fixing reference, that is, the initial baptism, works as follows: there is an appearance that fixes an object in the underlying reality. The name of this object within the underlying reality may be initially unknown, or the full account of it may be incomplete at the moment of baptism. But the object must be *de dicto* determined in the act of baptism (e.g., the substance instantiated by the items over there).

How then can the object be fixed? What does fix the reference, that is, uniquely determine the object of reference? It is the initial sample (the items over there) as it appears together with the physical or ontological theory. The only empirical evidence that is needed is that of the original sample or, to be more precise, of the appearance of the original sample. No additional empirical evidence is needed to determine that the sample is in fact H_2O. The sample together with molecular theory must be enough. This reasoning calls into question Kripke's claim about the a posteriori character of "water is H_2O." Clearly, the baptizer[4] may not know this in advance. However, this knowledge can be elicited by theoretical work within the physical theory. This is, of course, an empirical theory, but one that is presupposed in the act of baptism. We can say that the baptizer must already have an implicit knowledge of what the reference is called within the physical theory. Only with these reservations can claims such as "water is H_2O" be taken as a posteriori.

But how is the reference maintained over time? The answer is that the physical theory must do the job. It must be deduced within the theory that this specific appearance (of the paradigmatic sample) must necessarily be caused by this or that molecular structure. I think this can be done within physical theories such as molecular or atomic theory. We can define water,

gold, or heat in the way Kripke proposes. I shall argue in the next section that the Standard Meter case is less straightforward.

6.3 The Standard Meter

So far, we have focused on fixing the reference of water, gold, and heat. What is the relevant physical or ontological theory in the meter case? The meter is the length of S at t_0. Kripke is not explicit about what theory is presupposed. The reference is "an abstract thing . . . a unit of length" (NN, p. 55). The theory of the underlying reality must postulate such things and maintain that they are unchanging. A theory that postulates unchanging length must be something like the theory of absolute space as proposed by Aristotle or Newton.[5]

Absolute space is, in fact, not a physical theory. It is a philosophical way of conceptualizing space. In contrast to molecular theory, the (theory of) absolute space does not provide any link between the underlying reality and its appearance. It is only an account of the underlying reality. If we followed Kripke's stipulation that the meter is the length of S at time t_0, we would not have anything concrete in our hands (or anything that can play a role of paradigmatic sample in our practices of measurement). Kripke's proposal amounts to pointing at a certain length, which is an abstract entity. However, there is no fixing, because the theory of absolute space provides no link between this abstract length and its appearance. This space is called absolute precisely because it is independent of its appearances.[6] The theory of underlying reality must include a connection between its elements and their appearances (or, alternatively, there must be an additional theory accounting for this connection between appearance and reality). The problem of Kripke's account of the meter is that he does not provide any such account of what the corresponding appearance of this abstract length is after the act of baptizing, say at time t_1.[7] In other words, Kripke does not provide any account of how to maintain the reference to the abstract length over time (in contrast to his accounts of water, gold, or heat).

Let us transpose Wittgenstein's account of the meter into Kripke's framework. If we want to retain the idea of reference—which may be questionable within Wittgenstein's later philosophy[8]—then Wittgenstein must assume that "meter" rigidly refers to the paradigmatic sample S (the Standard Meter). The object of the reference belongs to the appearance; it is not an object from the underlying reality (be it an abstract object or a concrete one). In fact, assuming or postulating the underlying reality is not necessary. "Meter" is not a proper name, but rather a unit of length. The definition must assume that the notion of length is clear enough. The definition is: one meter is the *length* of S at any time, in any counterfactual situation.[9] Kripke's way of

defining the meter has the general category determined by the theory of the underlying reality. In Wittgenstein's case, no such theory is presupposed, and hence the general category must be determined in some other way.

Length is a general category that must be assumed. Wittgenstein points out a similar assumption in his discussion of ostensive definition. I would like to argue that he does not provide any convincing solution to this problem. At the end of the day he invokes "what may be called 'characteristic experiences' of pointing, say, to the shape" (PI, §35). In our case it would be pointing at the length. My point is that it is disputable that there is any characteristic experience of (pointing at) length. And even if there were such an experience this reasoning would nevertheless be unsatisfactory because nothing guarantees that there are distinctive experiences of this kind for *any* general or grammatical category. However, in the second part of the *Investigations* Wittgenstein provides another way of tackling this problem. Measuring with a meter ruler does not require any philosophical or scientific account of the category of length. Wittgenstein expresses this idea in the following remark:

> What "determining the length" means is not learned by learning what *length* and *determining* are; rather, the meaning of the word "length" is learnt by learning, among other things, what it is to determine length.
>
> (PI II, §338)

I read this remark as saying that a method of measurement of length (i.e., "determining the length") does not need to presuppose any prior account of what length is in general. Measuring with the meter stick is an instance of determining length. All we need here is some method of finding out whether an object is the same length as the Standard Meter. Then we can say that what "length" means is learned by discovering, among other things, what it is to compare the lengths of two objects. This method may be quite simple: place the meter stick next to the measured object and see whether they are aligned, that is, one blocks the view to the other and *vice versa*. This is a primitive social practice that can be refined. The point is that such a practice determines what length is—rather than one's account of length determining the practice.[10] Hence, the definition of meter as the length of S is rooted in such practice.

To recap: as I reconstruct their views, Kripke proposes that "meter" rigidly refers to the length of S at t_0—that is, to the length that S accidentally has at t_0. This length is an abstract object postulated by the theory of absolute space. Wittgenstein, in contrast, seems to presuppose that "meter" rigidly refers to S (i.e., to the Standard Meter).[11,12] The advantage of Kripke's account is that the general category, that is, length, is determined by the theory that postulates the existence of the object of reference, which is

the theory of absolute space. The problem with Kripke's account is that the theory of absolute space does not provide any explanation for how its objects are connected to its appearances (in contrast to Kripke's other examples of fixing reference). The advantage of Wittgenstein's account is that no (theory of) underlying reality must be presupposed. It seems that the chief problem with Wittgenstein's way of approaching the issue in question is that it leaves us with the obviously counterintuitive truth-value gap we alluded to earlier. In the next section, we will consider how serious this problem is.

6.4 Truth-Value Gap

How can Wittgenstein claim of the Standard Meter that one can say neither that it is one meter long nor that it is not one meter long? What Wittgenstein proposes is a truth-value gap, an instance of paracomplete reasoning.[13] Within the preparatory language-game of fixing reference, only the Standard Meter is the meter. In other words, "meter" is the name of the paradigmatic rod. Wittgenstein's paradoxical claim, however, pertains to the "game of measurement," as he makes clear in §50. To say that the Standard Meter is one meter long (or that it is not) is not the result of any measurement. If this claim were taken as an empirical result, it would be breaking the general rule of grammar that empirical statements must not be confused with conceptual ones. This claim would be ungrammatical nonsense. And any negation of ungrammatical nonsense is ungrammatical too.[14]

According to Wittgenstein, the Standard Meter rod has no definite length in terms of measuring it in meters (i.e., within the game of measurement with this very rod). I think one could advance a stronger claim: within this specific game of measurement, the Standard Meter is always the same length, by definition, that is, by virtue of being the standard. This is, in fact, only a restatement of the claim that "meter" is a rigid designator referring to the Standard Meter. This is not a metaphysical peculiarity of the Standard Meter rod. The Standard Meter is always the same length within the game of measurement, because we decided that all attributions of length will be considered against the Standard Meter. All attributions of length in meters are based on the measured object's ratio to the Standard Meter. All change of this ratio will be *interpreted* as an extension or reduction of the measured object (and not the Standard Meter). This does not exclude the possibility that within another game of measurement, say with the Standard Foot, the Standard Meter rod could have a definite length (in feet) and that this length could vary (relative to the Standard Foot).

Kripke finds this truth-value gap puzzling. His argument goes as follows. First, Stick S can be measured by the Standard Foot. The outcome

of this measurement can be that it is 3.44 feet long. Second, the length of one meter is equal to the length of 3.44 feet. From these two claims, it follows that stick S is one meter long. The first claim is an a posteriori result of measurement. The second claim is an a priori ratio between these two lengths within absolute space. Thus reconstructed, Kripke's argument is valid. We can say of stick S that it is one meter long. And because the first premise is contingent, so is this conclusion.

Kripke, however, presupposes his own way of fixing reference. His argument concerns the stick that was used for fixing the reference of "meter." When, at a later point in time t_1, this stick is measured using the Standard Foot, it is not the standard. (After quoting Wittgenstein's remark about the Standard Meter, Kripke, in formulating his argument, refers to it as "the stick" or "stick S.") This alone is enough to dismiss his critique of the truth-value gap proposed by Wittgenstein. However, we can find more reflections in Wittgenstein about what is going on when two standards are involved. First, Kripke attributes to Wittgenstein the claim that we cannot attribute length to the Standard Meter. However, Wittgenstein does not claim this. In fact, one standard or paradigm can be used to measure another one, as Kripke maintains. Then, however, the standard that is measured (e.g., the Standard Meter measured by the Standard Foot) ceases to be a standard. Wittgenstein writes in the *Philosophical Grammar*: "One sentence can never describe the paradigm in another, unless it ceases to be a paradigm" (1974, p. 346). If the Standard Meter is measured by the Standard Foot, the object of this measurement is the bare rod S as if it were a quite ordinary object, disregarding its role as the standard.

What is problematic within Wittgenstein's framework is the second premise of Kripke's argument. Can we unproblematically assume that 1 meter = 3.44 feet? Well, if these two standards are really independent, their ratio cannot be an a priori truth. The Standard Meter can be measured by the Standard Foot and *vice versa*. The second premise is not a priori but an a posteriori result of a measurement. For Kripke, in contrast, this ratio involves two abstract lengths and two numbers, and thus it is a priori.

We can imagine two units of length that are not mutually independent. Their dependence can be simply stipulated. One unit can be stipulated as a portion of another one, for example, 1 centimeter = 1/100 of a meter.[15] Or two units can share the same paradigmatic rod: that is to say, their references were fixed using the same initial sample at the same time. One can use the Standard Meter rod to fix the length of one meter and, at the same time, to fix the length of one centimeter as 100th of the length of this same rod. Then, the claim that 1 m = 100 cm would be a priori. But this is not the case of 1 meter = 3.44 feet. These two units were defined using different paradigmatic rods (and at different times). However, if the references of "meter" and "foot" are fixed in Kripke's way, that is, referring to abstract lengths in

absolute space, then they can be related to each other after all. Their objects of reference, that is, these abstract lengths, partly overlap. Then, the claim 1 m = 3.44 feet is a priori, and thus his argument can succeed.[16]

Hence, Kripke's argument against Wittgenstein's truth-value gap fails, because Kripke assumes that Wittgenstein is fixing reference in his (Kripke's) way. This does not imply that reference cannot be fixed in either way. As we already know, both ways have their pros and cons. Another question is whether Kripke's way of rendering the Standard Meter case supports the key distinction he draws between fixing reference and giving meaning. The answer is that it could do so if one makes clear what the domain of reference (the underlying reality) is, that is, if one provides an account of absolute space. And this would not be enough. We would also need to provide an explanation of how this absolute space *appears* to us. This is something that we can imagine, on a charitable reading, could be provided for Kripke's other examples (gold, water, and heat).[17] If we fix reference in Wittgenstein's way (i.e., as a rigid designator referring to the rod S any time), the difference between fixing reference and giving meaning collapses. "Meter" *refers* rigidly to S and it *means* "the length of S." This approach does not illustrate the distinction, though this does not imply that the distinction is wrong or inconceivable.

6.5 Primary Elements

Before concluding, let us focus in more depth on the difference between appearance and reality. The underlying reality consists of basic elements that everything, including any appearance, is made up of. Any acceptable account of appearance must explain how it is composed of basic elements. This can be done in the cases of gold, water, or heat. But the theory of absolute space does not provide any such basic elements. The length of an object is not composed of abstract lengths. There is no basic or smallest length in absolute space.[18]

In this connection, it is worth recalling what Kripke says about the problem of "transworld identification." A few pages before his critique of Wittgenstein's account of the Standard Meter, he makes the following remark: "We seek criteria of identity across possible worlds for certain particulars in terms of those for other, more 'basic', particulars" (NN, p. 50). And furthermore, in a similar vein: "The question of transworld identification makes *some* sense, in terms of asking about the identity of an object via questions about its component parts" (NN, p. 53).[19] These basic particulars or component parts are postulated by the physical theory and so belong to the underlying reality. Modal and existential claims are made about appearances. The item over there, as it *appears* to us, is H_2O or has the atomic number 78. The substance over there is H_2O, but it might

be another substance or a mixture of substances. These attributions are about the item over there as it appears, and what is attributed is framed in terms of the underlying reality. Then, however, existential and modal claims about the basic elements must be without truth-value or ungrammatical. Consider the claim that H_2O exists. It can only mean that there is an appearance whose underlying structure is H_2O. But again, this is a claim about appearance. If one insisted that H_2O does not exist within molecular theory, it could only mean that the expression H_2O does not have any meaning within this theory, that is, it is ungrammatical.

The upshot is that Kripke's basic particulars are akin to the primary elements that Wittgenstein speaks about in §§46–50 of his *Philosophical Investigations*. These basic particulars are postulated by the ontological theory that must be presupposed in the act of fixing reference. (And since these particulars are postulated by a theory, they are closer to the color squares discussed in §48 than to metaphysical simples invoked in Socrates's dream in the *Theaetetus*.) This discussion culminates in §50 where Wittgenstein asks: "What does it mean to say that we can attribute neither being nor non-being to the elements?" The answer is that "it makes no sense to speak of the being (non-being) of an element." Wittgenstein argues that existential claims about primary elements are nonsensical. On that account, existential claims about Kripke's basic particulars must be nonsensical too.[20] The same holds true for modal claims, which are derived from existential ones.

Primary elements/basic particulars are presupposed in any existential and modal talk. This means in Kripke's framework that the underlying reality that provides an account of such basic particulars must be presupposed and is the same in every possible world. This remarkable feature of primary elements is, according to Wittgenstein, analogous to the Standard Meter case. Existential claims about primary elements are without truth-value and so are claims attributing a specific length in meters to the Standard Meter. Hence, the Standard Meter must be, in some sense, a primary element. However, the Standard Meter has no prominent metaphysical feature (it is not among the basic building blocks of reality). As Wittgenstein makes clear, the Standard Meter has a "peculiar role in the game of measuring with a metre-rule" (§50). It is an instrument of the language by means of which we make statements about lengths of other objects. The Standard Meter is something presupposed in such statements. This is its peculiar property that it shares with primary elements.

6.6 Conclusion

Many commentators have assumed their sides in this virtual debate between Wittgenstein and Kripke on what can be said about the Standard Meter. The narrative has been that either Wittgenstein or Kripke or

both must be wrong.[21] Both advance claims that to an extent violate our common-sense way of speaking. Outside the philosophical context, nearly everybody would say that the Standard Meter is one meter long and that this is necessarily so. Kripke seems to be saying that Wittgenstein's proposed truth-value gap is more puzzling (i.e., less intuitive) than saying that the Standard Meter is only accidentally one meter long. But intuition is not a decisive judge in philosophical debates.

My aim has been to argue that their different accounts of the Standard Meter boil down to different ways of fixing reference. Wittgenstein and Kripke analyze the Standard Meter case utilizing different ways of fixing reference. In this particular case, they clearly differ. However, both are open to both ways of fixing reference. As I hope to have shown, both ways have their advantages and disadvantages, practical as well as philosophical. What drives Kripke's way of fixing the reference of "meter" is a quite ordinary temptation to postulate absolute space behind the changing world of appearances. On his approach, lengths of objects are independent of the units in which they can be expressed. Wittgenstein's account of the Standard Meter can be taken as a kind of resistance to this postulation of absolute space comprising abstract lengths. The ultimate consequence of this approach is the truth-value gap: we can say of the Standard Meter neither that it is one meter long nor that it is not.

In the final section of this chapter, my goal was to show that even Kripke cannot avoid the truth-value gap. In his account of reference (and of modality in general), the theory of underlying reality (e.g., the theory of absolute space) must postulate basic particulars that are the same in every possible world. One can say of such basic particulars neither that they exist nor that they do not exist. The truth-value gap reappears. In broader outline, truth-value gaps are instances of paracomplete reasoning one ought not be afraid of.[22]

Notes

1 Not every truth-value gap is puzzling. Assertions involving a category mistake (e.g., "Caesar is a prime number") can be taken to have no truth-value without this being cause for puzzlement. However, the cases discussed here (the Standard Meter, primary elements) are not instances of category mistakes.

2 This may not be quite clear from Kripke's original formulation in *Naming and Necessity*. He put the point more clearly in subsequent writings. Consider the following report by Nathan Salmon:

> Kripke has *suggested* (in the Stanford lecture, and more recently in conversation) that his metre example can be bolstered through the use of a suitable description, perhaps "the length of the stick presented to me in the normal way by this visual perception", used with introspective ostension to a particular veridical visual perception of *S*.
>
> (Salmon 1988, p. 203)

Kripke's meter example is bolstered if we note that what matters is the *appearance* of the stick under normal circumstances.

3 It may seem strange to maintain that one cannot fix the reference of "water" as H_2O before the invention of molecular theory. Of course, one can isolate and refer to a substance, without being aware that it is an element as defined by molecular theory—as Priestley did with oxygen before Lavoisier identified it within the framework of molecular theory.

4 I use the terms "baptizer" and "reference-fixer" interchangeably. They do not necessarily refer to a single person.

5 "Absolute space, in its own nature, without regard to anything external, remains always similar and immovable" (Newton, *Principia* I, p. 6).

6 Loomis expresses this independence in slightly different terms: " 'One meter' designates a property that is identifiable independently of the particular thing that we select as the standard (it doesn't matter here what kind of thing such a property is)" (1999, p. 298).

7 Kuusela, in this volume, argues that after the initial baptism, at time t_1, we are not in the position to measure the length of stick S as it was at time t_0.

8 My general approach in this essay is to extract from Wittgenstein's writings an alternative account of reference that is comparable (and in some respects preferable) to that of Kripke. A different approach—advanced in Gustafsson's chapter in this volume—would be to argue that Wittgenstein is rejecting the very idea that "meter" must refer to something. I maintain that Wittgenstein rejects the idea of reference to *abstract objects* such as lengths, numbers, or times, which leaves the idea of reference to regular objects (sticks, tables, persons, etc.) intact.

9 The addendum "any time, in any counterfactual situation" is only a way of saying that this designator is rigid, that is, holds in any possible world. The Standard Meter can, of course, be broken or dissolved in acid. We can probably exclude the worlds in which S does not exist and maintain that "meter" is a *weakly* rigid designator.

10 This point is addressed in Gustafsson's chapter in this volume.

11 I think that Kripke would allow that the reference can be fixed in Wittgenstein's way. That is to say, Kripke would allow that some properties can be defined by referring rigidly to a paradigmatic sample as it appears to us (and not to any underlying physical state or process). Kripke defines yellowness as follows: "Yellowness is picked out and rigidly designated as that external physical property of the object which we sense by means of the *visual impression of yellowness*" (NN, p. 128). Put this way, the definition is circular. But this need not trouble us here. What is important is that the object of reference is a manifest property of another object. This other object is the Standard Yellow. Given Kripke's discussion of gold or water, the reference of "yellow" can be fixed by picking an object from some physical theory: e.g., yellow is light in the wavelength range of 570–580 nanometers. I think both ways of defining yellowness are admissible. My point is that Kripke defines color terms by reference to paradigmatic samples in the same way as Wittgenstein does (cf. his discussion of the Standard Sepia in PI, §50).

12 Loomis (1999, p. 304) formulates the same difference in terms of different standards:

> Here it is worth noting an interesting difference between Wittgenstein and Kripke concerning *what* exactly is functioning as the standard for "one meter". For Kripke, it is the *length* of the bar. For Wittgenstein, it is the bar itself, not its length.

The expression "bar itself, not its length" may suggest that the length of the bar is not part of the standard. But Loomis means the bar, including its length, as an object of comparison: "Something is one meter long for Wittgenstein if it matches the endpoints of the bar, not if it matches the length of the bar" (ibid.).

13 See my book *The Philosophy of Exemplarity* (Mácha 2023) for a full paracomplete account of paradigms inspired by Wittgenstein's remarks about the Standard Meter.

14 On this insight, see Jacquette (2010, p. 54).

15 Concerning the relationship between two units, Jacquette (2010, p. 61) distinguishes between a merely stipulative equivalence and an approximation (if the units are truly independent).

16 Curiously enough, in the *Remarks on the Foundations of Mathematics*, Wittgenstein would allow that an expression of ratio, e.g., 12 inches = 1 foot, is not an empirical proposition, but rather an expression of a rule: "No one will ordinarily see this last proposition [12 inches = 1 foot] as an empirical proposition. It is said to express a convention. But measuring would entirely lose *its ordinary character* if, for example, putting 12 bits each one inch long end to end didn't ordinarily yield a length which can in its turn be preserved in a special way. . . . The proposition has the typical (but that doesn't mean *simple*) role of a rule" (1978, VII, §§1–2). In an ordinary situation, the ratio between two units of measurement can be taken as a rule. Such a rule, however, does not entirely lose its empirical character, because "it can be used to make certain predictions" (ibid.). But what is the ordinary character of measuring? In ordinary situations (i.e., outside philosophical contexts) one can safely assume that units of length refer to abstract lengths. Then, however, Wittgenstein must allow that the references of unit terms ("meter," "inch," and "foot") can be fixed in Kripke's way.

17 Kripke's distinction between the epistemological and the metaphysical domain (and between epistemic and metaphysical modality) can be seen as a variant of the traditional distinction between primary and secondary qualities. Primary qualities pertain to ontological reality and secondary qualities to the world of appearance. Examples of primary qualities are having the atomic number 78 or having the chemical structure H_2O. The corresponding secondary qualities are having a yellowish color and being a transparent, colorless liquid. We could imagine other straightforward examples beyond those provided by Kripke. However, the Standard Meter example does not fit into this picture. Length (that is, extension) is a typical primary quality. As I read him, Kripke is committed to the distinction between apparent length (a secondary quality) and absolute length (primary quality)—and their accidental correspondence in the act of fixing the refence. This is where the analogy with primary and secondary qualities breaks down. If there is only one length, then the reference must be fixed in Wittgenstein's way.

18 Wittgenstein expresses this idea in §47 of his *Philosophical Investigations*: "Is this length of 2 cm simple, or does it consist of two parts, each 1 cm long? But why not of one bit 3 cm long, and one bit 1 cm long measured in the opposite direction?"

19 Even if we grant that Kripke does not believe in transworld identification (personal communication), his account of basic particulars retains its validity.

20 What I want to say is that existential claims about Kripke's basic particulars are without truth-value. Why, then, could we not ask whether, for example, phlogiston exists? Scientists can raise the question of whether phlogiston theory explains certain phenomena (e.g., combustion) better than molecular theory.

But once one of these theories is accepted, claims about the existence of the basic particulars postulated by the theory are without truth-value.

21 Cf. Salmon (1988, p. 195): "My answer is that Kripke and Wittgenstein are probably both wrong to some extent."

22 I develop this idea of paracomplete reasoning in my recent book (Mácha 2023). A logic is paracomplete if it gives up the law of excluded middle. Put informally, its domain is incomplete due to truth-value gaps that break with the law of excluded middle. My general idea is that paracomplete reasoning can be an alternative to paraconsistent reasoning, which must give up the law of noncontradiction.

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