

*PENULTIMATE DRAFT**Type-identity conditions for phenomenal properties**In Gozzano S. Hill C. (Eds) NEW PERSPECTIVES ON TYPE IDENTITY**Cambridge University Press 2012*

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The debate on the type-identity theory of the mind has been profoundly influenced by an argument of Saul Kripke's in his well-known essay *Naming and Necessity*. In that work, a strong and, according to many, fatal attack on the type-identity theory of mind and brain was launched in the form of the following – quite abridged - argument: if mental states of the same type, say pains, are identical to physical states of the same type, say C-fibre firings, then this identity, if true, is necessarily true; it is conceivable that two individuals could exemplify the same type of mental state while exemplifying different types of physical state; since what is conceivable is possible,¹ it follows that it is possible for two mental-type-identical individuals to be different as to their physical states; therefore, mental-state types, or mental properties, cannot be identical to physical-state types, or physical properties, and the type-identity theory of the mind is false.² In this essay I shall argue that the crucial assumptions of Kripke's argument, i.e. the collapse of the appearance/reality distinction in the case of phenomenal states and the idea of a qualitatively identical epistemic situation, imply an objective principle of identity for mental-state types. This principle, I shall argue, rather than being at odds with physicalism, is actually compatible with both the type-identity theory of the mind and Kripke's semantics and metaphysics. Finally, I shall sketch a version of the type-identity theory.

Kripke's semantics

According to Kripke (1980), the reference of a term is originally fixed by means of something like an act of baptism, and is preserved over time through a sort of causal chain which assures that the present usage of the word is firmly linked to the referent of the original baptism. These causal considerations entail a deeper metaphysical commitment, according to which the reference of a term is secured by some real essence of the referent – some necessary property – without which the entity in question would not be the entity it is. However, in baptising and referring we may be in

¹ On this entailment as applied to Kripke's argument on mental properties see Wright (2002). On the vagaries of imagination see Hill (1997), and on its role in the whole debate see Hill (2009).

² In what follows I shall be using *states* and *properties* more or less interchangeably. The idea is that a mental state is the tokening or the realization of a mental property. The same applies to physical states and properties.

touch not with the real essence of an entity, but instead with some nominal essence of it, that is, with some inessential – not necessary, though strongly correlated – superficial property of the entity in question. For instance, the real essence of water is H₂O, while its nominal essence is the set of causal properties connected with it, such as being colourless, tasteless and thirst-quenching. So the referent of “water” is H₂O, but we can track water down by checking for the presence of its nominal essence, that is, its superficial – contingent – properties. However, when it comes to bodily sensations, the difference between real and nominal essences quite disappears. According to Kripke, there is nothing in, for instance, pain which is *not* in apparently feeling pain. So, in the case of pain and other bodily sensations, nominal and real essences coincide, in that all the properties that make pain the sensation we know, are necessary to it.

This argument has had a strong impact on the identity theory of the mind, both of the type and of the token versions. For one thing, it has shown that there cannot be contingent statements of theoretical identity, as was held in the Fifties. For another thing, Kripke (1971) has argued that pain cannot be type-identical to any physical state because having pain without any specific type of physical state being invariably tokened is perfectly conceivable – or, conversely, it is possible to imagine a subject being in a physical state with which pain is identified and yet not feeling pain. What we cannot imagine, though, is a symptomatic counterpart of pain (cf. Wright 2002) which is not pain, given the coincidence of nominal and real essences. We shall set out by considering what arguments Kripke marshals to support the notion of the independence of mental states from physical states and properties.

The phenomenological argument

Most of the discussion on the viability of the identity theory, which states that types of mental states are identical to types of physical states, has focused on bodily sensations, such as pain and other states characterized by their phenomenal properties. It is generally argued that the main difference between phenomenal and physical properties is the following: while the former are conveyed by what it is like to have them, as Thomas Nagel (1974) famously put it, this is not the case with the latter. Phenomenological features are considered exhaustively individuating phenomenal properties, or at least many have so argued. David Chalmers is one of them: “[I] use the term [qualia] ..., to refer to those properties of mental states that type those states by what it is like to have them” (1996: 359, n. 2). Consequently, two phenomenal properties are type-identical if and only if they are “what it is like”-identical.

Phenomenal properties, Kripke argues, type some mental states necessarily: “Pain is not picked out by one of its accidental properties; rather it is picked out by the property of being pain itself, by its immediate phenomenological quality” (1980: 152). So, in Kripke's eyes, when it comes to pain

and other sensations, what you feel is what you get: pain is simply feeling pain. Therefore, if pain is essentially picked out by its immediate phenomenological quality, “pain” directly refers to this quality and not to a cluster of dispositions that carve this property out of our causal life, such as being caused by wounds and causing wincing and groans. And “pain” refers to this quality in every possible world, thus qualifying as a rigid designator. The gist of Kripke's argument has often been expressed as the idea that, when it comes to pain and other bodily sensations, appearance (what you feel) and reality (what you have) coincide.

To this picture, the identity theorist could reply: if by “reality” we refer to the physical realizer of pain, say C-fibres firing (henceforth C-ff), while still maintaining the standard interpretation of “appearance” as what is phenomenally present to the mind, then appearance and reality do coincide, indeed they are identical to each other – identity being the strongest form of coincidence. The fact is, the identity theorist might continue, that once we have assigned “pain” to this sensation of ours, we are *ipso facto* referring to C-ff, which is identical with this phenomenal sensation. Thus it may be true that pain is essentially picked out by its phenomenological properties, but this does not exclude the possibility that these phenomenological properties are identical to some physical properties, like the firing of C-fibres. What the anti-identitist needs is an argument that altogether excludes these physical properties from being necessary properties of pain.

To this end, Kripke argues as follows. If pain were identical to C-ff and “pain” and “C-ff” are rigid designators, then their identity would be necessary, because theoretical identities if true are necessarily true, even a posteriori. But it seems that we can clearly imagine a case in which a person is in pain and still does not have her or his C-fibres firing. Moreover, we can also imagine a case in which a person has her or his C-fibres firing and is not in pain, because the activity of these fibres should not necessarily be felt as pain.³

Kripke contrasts the case of pain with that of heat. Imagine identifying heat with a sensation. Now, can we imagine that someone is having the same sensation we have when we feel heat and yet what the person is perceiving is not heat? We can, Kripke argues, because the feeling of heat is not a necessary property of heat. In fact, there can be worlds in which heat exists but there are no sentient beings. When we imagine someone who has the same sensation we have when we feel heat, what we are imagining is an epistemic situation which is qualitatively identical to the one in which we feel heat. But what the imaginary subject is feeling is not so much heat as the phenomenal properties usually associated with heat. When it comes to pain, Kripke argues, the analogy breaks down because, while the sensation that we have when we perceive heat is not a necessary property of heat, the sensation we have when we are in pain is pain. So, an epistemic situation qualitatively identical to one in which we are in pain, is one of pain. In Kripke's own words: “To be in the same

³ This is a condition that not only those who favour Kripke's view consider central (Hirsch 2010), but one that is taken as crucial in evaluating representational theories of phenomenal content as well (Aydede 2009).

epistemic situation that would obtain if one had a pain *is* to have a pain” (Kripke 1980: 152). Consequently pain, as it is a sensation, is picked out by its phenomenological qualities, by what it feels like to someone to be in pain, while C-fib is picked out by the causal and physical structure of the brain. As Christopher Hughes has said, pain has a phenomenological essence while C-fib has a physical-structural essence, and these “must be distinguished (twice over)” (Hughes 2004: 202). Is this argument watertight?

Objecting to Kripke's argument

Suppose Smith is in pain and his C-fibres are firing. Kripke says that we can imagine an epistemic situation qualitatively identical to the one just outlined in which another person, Jones, is in pain but his C-fibres are not firing. Perhaps some other fibres are firing, or perhaps nothing is firing at all. Let's say that one situation is qualitatively identical to another if and only if “we have exactly the same evidence, qualitatively speaking” (Kripke 1980: 104). For instance, the Twin Earth, as imagined by Putnam (1975), is an epistemic situation qualitatively identical to Earth with respect to water, only insofar as we consider the superficial properties of the two liquids. When we consider the chemical constitution of the two substances, we find them to be different, so the qualitative identity breaks down.

Now, my objection to Kripke's argument is that we can't really conceive that Smith and Jones are experiencing a type-identical pain while differing in their physical states unless we assume an objective principle of mental-type identity. For if it is true that, in the case of pain and other bodily sensations, appearance and reality coincide, then the identity conditions for pain and sensations in general are determined by the awareness of the subjects who feel them, because there is nothing else that can determine the reality of these sensations. If the instantiation of a mental state or property is essentially dependent on the subjects' awareness of their own states, then these states are intrinsically subjective, that is, they depend on how the subject feels them to be. However, if we conceive two subjects as having the same type of mental state, then these states, since they are type-identical regardless of who is instantiating them, are no longer intrinsically subjective, even if they are accessible only through the subjects' awareness. Since we cannot have access to other people's pain, and such states are not intrinsically subjective, it follows that in conceiving two subjects as having the same (type-identical) sensation, we are conceiving a neutral or objective fact. This hypothetical fact, though, would determine whether two sensations are type-identical *only* given an *objective* identity principle for sensations. It would be in virtue of this principle that the fact of these people's having the same pain obtains. Now, if there is an objective identity principle, it cannot be based on the subjects' way of experiencing their own sensations. The only remaining alternative is the possibility that the type-identity of a sensation depends on the associated brain state. So, after

all, for Kripke's argument to hold, it needs either to accept that pain is identical with some physical state, whose identity with the phenomenal state grounds the identity of pain across multiple subjects while preserving the coincidence of appearance and reality, or to reject the coincidence of appearance and reality in the case of pain and sensations in general.

Kripke, however, launches a second challenge to the identity theory: suppose Smith is feeling pain and his C-fibres are firing. Now, can we imagine Smith feeling pain while having D-fibres, instead of C-fibres, firing? In other words, can we imagine the *same* person in an epistemic situation which is qualitatively identical from the point of view of his awareness of pain and yet different as regards the physical properties instantiated? Basically, Kripke is now presenting his argument in intrapersonal terms, whereas the previous example was expressed interpersonally.

I think, however, that it is possible to respond to this new version of the argument by extending what I have already said about sensations experienced by different subjects. If there is no difference between the appearance of a sensation and the reality, then it is no less problematic to speak of sensations of the same type occurring to the same subject in different situations than it is to speak of sensations of the same type occurring to different subjects. In both cases, the identity of a sensation will depend only on how the subject experiences it to be at the time when it occurs. But how a sensation is experienced by a subject at the time when it occurs does not furnish us with a rule that determines whether a sensation is of the same type as another one that occurs at a different time. Any such rule would have to recognize that sensations have natures that are independent of the way they are experienced to be at particular times. But this means that the rule would have to recognize that sensations have objective natures, and therefore, natures that are independent of the ways they appear to subjects. I shall now proceed to buttress the objection I have outlined.

The identity of phenomenal properties

In my outline of the objection, I stated that if pain states fall within a type then there has to be something like an objective principle by which we can determine whether two subjects -- or the same subject at different times -- are instantiating the same type of phenomenal property. It is, however, crucial to understand what we mean by type-identical pain and what the nature of phenomenal experience is.

When we perceive a colour or feel a sensation, we experience properties, like redness or pain. These properties are usually characterized by their effects on our subjective awareness, by "what it is like" to have them.⁴ Expressions such as "how it feels" and "what it is like" are very frequently

⁴ For a recent critique of the "what it is like" expression see Snowdon (2010). It must be recognized, though, that Nagel (1974: 171) originally accepted the idea that "what it is like" states are perfectly objective provided that the experiencing subjects have most of their biological features in common. Some of the implications of this point will surface later.

used to characterize the nature of conscious experience; we could say that a conscious experience is one in which we experience phenomenal or qualitative properties, or *qualia* for short. Charles Siewert (2006) express this idea as follows: “there is something it is like for you to see red, to feel pain, etc., and the way it seems to you to have one of these experiences *is* what it is like for you to have it”. The fundamental nature of these experiences is characterized by their subjectivity, which we may, *prima facie*, spell out thus: two subjects confronted with the same stimulus and manifesting the same behavioural responses may nevertheless have very different phenomenal experiences.⁵ Hence, stimulus/response identity does not entail experiential identity, and there is no way to guarantee such identity other than by mentioning the experiential properties and how these are experienced.⁶ The subjectivity of experience is consistent with the idea that, in the case of bodily sensations, appearance and reality coincide. That is to say, if Smith has a feeling of pain, i.e., if it seems to him that he is in pain, since there is nothing else (as a Kripkean would argue) that Smith must instantiate in order for him to be in pain, Smith is in pain.⁷ Now, even if Kripke himself might not be committed to the existence of qualia, his argument has usually been adopted to rebut the type-identity theory and thereby uphold the reality of qualia.

In portraying the experiential situation we have isolated two elements: *qualia* and experiences. Now, there is nothing in a phenomenal property which is independent of how it feels to the subject of the experience (to use the verb “to feel” as suggested by Armstrong 1968). At the same time, our experiences are what they are by virtue of the *qualia* of which they are composed. However, since in bodily sensations appearance and reality coincide, it follows that there is no difference between a *quale* as it is experienced and the experience of a *quale*. It is not possible for Smith to revisit his experience of pain, to have another experience of the very same, occurrent phenomenal pain, because that would simply be another experience.⁸ In accepting the appearance and the reality of our bodily sensations as identical, a defender of Kripke's argument is taking *qualia* and our experiences of them as identical as well, because there is no way to access *qualia* but by experiencing them, so that the idea of correcting one another, or even ourselves, about the experiences we are having or the *qualia* we are experiencing makes no sense. The experience of a *quale* is private and incorrigible.

⁵ This is basically the zombie case, to which I shall return later.

⁶ This point has been raised by many authors and from a variety of perspectives. It is the “hard problem” of explaining why C-fibres feel *that* way (cf. Chalmers 1996) or the problem that determines an explanatory gap between neurobiological explanations of our mental life and its qualitative features (Levine 1983). Perhaps all these problems arise from the absence of natural laws that cover phenomenal properties (Davidson 1980).

⁷ Here, we are assuming that Smith is neither fast asleep, in a coma nor unconscious, i.e., that he is a conscious person (cf. Rosenthal 1986).

⁸ Kripke seems committed to the phenomenal principle (Robinson 1994: 32) according to which: “If there sensibly appears to a subject to be something which possesses a particular sensible quality then there is something of which the subject is aware which does possess that sensible quality.” Clearly, a subject may revise the *judgement* of her or his own experience, but this is quite another matter.

Now, in order for two people to have the same type of phenomenal state, the same experience, it is necessary for them to experience the same type of feeling, the same phenomenal property. Since experiences and the tokening of phenomenal properties cannot be distinguished, the two subjects will instantiate one and the same type of mental state. Hence, for two subjects to token the same type of phenomenal property, they have to have the same type of experience of a phenomenal property of the same type. But this implies that there is nothing essentially subjective in our experiencing, i.e. that pains and sensations, even if not invariably linked to stimuli and behavioural manifestations, are not idiosyncratic (hence the same sensation can be instantiated in different subjects). To appreciate this point is to appreciate what is crucial and problematic in Kripke's argument. We shall now see why in some detail.

If we admit that Smith and Jones can experience the same type of phenomenal property, the same *quale*, and thus have the same experience, we are thereby admitting that a *quale* is an entity which is not subjective in character, and that experiences do not affect the way a *quale* is experienced. Basically, we are denying that conscious experience such as pain amounts to how it feels to *one* to be in pain, i.e., what it is like for a *subject* to experience a pain. For if, in one sense, a *quale* can be instantiated in invariable form by many subjects, then its identity is independent of the subjects of experience, even though *qualia* depend on the experiencing subjects in order to be instantiated. (By way of analogy, consider colours as properties of the surfaces of objects: they depend on the presence of objects with surfaces to be instantiated, even though they are independent of the individual objects that instantiate them.) At the same time, if Smith and Jones instantiate the same type of *quale*, their experiences cannot affect the *quale* tokened, since, as I have argued, for Kripke there is no difference between the experience of a *quale* and the *quale* experienced. Hence, they token the same type of experience as well, which implies that even experiences are not intrinsically subjective. Thus interpreted, *qualia* and experiences make clear how we can conceive two subjects as instantiating the same type of phenomenal state. This result, however, has a number of consequences.

If phenomenal states can be instantiated in invariable form in two or more subjects, or in the same subject at different times, then these states are no longer essentially or ontologically subjective, for it is conceivable for two or more subjects to instantiate the same sensation (appearance) in virtue of having the same experience. Having the same feeling, i.e. the same sensation, though, cannot in turn *be* a sensation. But if sensations are subjective and each subject is isolated from every other one, then, since these experiences are private, every subject may determine different type-identities for phenomenal states, demolishing the prospect for robust identities. So, we need a more secure basis for these identities. At the same time, if we postulate that two subjects may instantiate the same type of phenomenal state, then these states are not

ontologically subjective; and if they are not, then they are either ontologically intersubjective or objective. To be thus classified, though, there has to be an objective principle by virtue of which we can assert that two subjects are in fact instantiating a type-identical mental state. For we cannot have recourse to the accessibility of these states, since that is a private matter. So the conceivability of their identity depends on some principle, which has to be independent of the subjects' access to their own states. The identity theorist, then, is justified in arguing that, since this phenomenal invariance cannot be supported by principles of identity based on the subjective aspect of conscious experience, it should instead be based on intersubjective or objective principles. Since in this metaphysical framework all that we have, apart from the mental realm, is the physical one, the principles that determine phenomenal invariance must be based on the invariance of the physical realizers. It follows that the only way to guarantee the stability of the referent of the term "pain" is by assuming that in baptising this type of state we were *ipso facto* also referring to the type of physical state by virtue of which the phenomenal state remains unchanged in its various instantiations.

A possible retort by Kripke could be the following: what is needed to conceive two subjects instantiating a type-identical phenomenal state is just these two subjects having the same experience. The principle I mention could be needed, at most, if we want to *verify* whether such a situation obtains, and not if we just want to conceive it.

Imagine that we deny that this principle is required to conceive two subjects being in the same phenomenal state. Suppose, for the sake of argument, that Smith and Jones are both in pain and can, at the same time, access each other's pain. Now, as it happens, Smith *feels* that he and Jones have the same type of mental state, and so does Jones. In virtue of the appearance/reality coincidence, they are in the same phenomenal state.

But now consider this other case: Smith feels that he and Jones have the same type of pain while Jones feels that they have different types of pain, i.e., he *feels* the two states as different. Are they in the same type of mental state or not? Given that there is nothing to the reality of pain other than the way it is felt, then Smith and Jones literally have and do not have the same type of pain. This is a conclusion which no one could accept. Here the problem is: since we can conceive Smith and Jones diverging (i.e. feeling differently) about their qualitative states, it follows that if we renounce an objective principle of phenomenal state identity we run into a contradiction. Moreover, it won't do to reply that their divergence relates to judgements, because I have stipulated that they diverge in their feelings and this divergence is all there is that can determine a difference between mental state types. By way of analogy: imagine that Smith and Jones are both shown a piece of red card and then swap their visual experiences. Due to individual differences in threshold sensitivity to shades of colour, one may perceive a difference in shade between the first and the second experiences while

the other does not. If it is assumed that appearance and reality coincide, then they are literally having and not having the same experience.

The fact is that conceiving two subjects as being in the same type of phenomenal state independently of the subjects' feelings commits us to an objective principle of identity. On the other hand, if we conceive this identity as grounded in the subjects' feelings, then the contradiction described above follows logically. Hence, we need an objective principle. The conclusion of my reasoning, then, is that Kripke's anti-identity argument presupposes that phenomenal states are epistemically private but ontologically objective. And such ontological objectivity is compatible with the type-identity theory of the mind. This previous reasoning can be applied to the intrasubjective case as well. In this case, if we admit that one type of phenomenal property can be tokened at different times in the same subject, its type-identity should depend on some principle. The very same sensation, though, cannot be at once both the tokening and the principle, for it would be a private principle, whose proper application nobody but the subject could attest. Now, one can deny that privacy constitutes a problem, but the question ought to be addressed, and Kripke does not address it in this context. Since privacy, in my view, is an insurmountable problem, we should look instead for an objective principle.

Kripke's last challenge to the identity theorist is as follows: my C-fibres could have been firing *without* my having been in pain (a foreshadowing of the zombie case made famous by Chalmers).

If Kripke's argument is to be effective, we must know in what sense I could have been a zombie. Assuming that I could be a zombie entails assuming that I could be regarded as a non-sentient being. Now, I am not sure that Kripke must perforce assume that being a psychological subject is part of the essence of being human. Moreover, such an assumption does not entail assuming that this essence must necessarily be manifested (as it is *not* when one is in a coma). Nevertheless, it seems to me a clearly plausible assumption. I leave this question open.

The crucial question, though, is: on what basis can we say that the presumptive zombie is not in pain or, more specifically, that *that* particular body does not have pain? In order to conceive of the zombie, we must assume that the presence and the quality of others' experiences of pain are conceivable independently of the way in which subjects experience their own pain. But assuming that we can conceive the presence or absence of some pain experience independently of the subjects' own experience entails assuming the existence, as we have already remarked, of an objective principle of identity, which we can state only in physical terms. Since it is precisely my physical properties that remain constant, it seems that not even this zombie argument holds good.

Now, I think that a Kripkean might attempt to rebut the general objection we have raised by observing that it does not properly consider the nature of the stipulation Kripke makes in support of his case. Let us consider the problem.

Stipulation and God

Kripke stresses that possible worlds are not like distant planets but are like stipulated situations. Are there constraints on what can be stipulated? Some thinkers have noted that if stipulating is tantamount to imagining a world in which certain things are the case, it is equivalent to imagining that if that condition were true of the actual world we would be able to determine the truth of it (cf. Fiocco 2007; Yablo 1993). Is this the case when we consider pain and bodily sensations?

Let us consider Kripke's assumption again: Smith and Jones token the same type of pain state, while tokening different types of physical state. If stipulation requires our ability to determine whether a situation holds, we can clearly determine whether their physical states are different in type but we cannot determine whether their mental states are the same in type unless we accept the stipulation that the identity conditions of a phenomenal-state type are intersubjective or objective. Please note that I am not making a verificationist point, i.e., I am not saying that there must be a reliable way to keep track of the type identity of these mental states. The point is that the idea of assuming the possibility, in principle, of the multiple tokening of mental-state types conflicts with the way in which these kinds of states are often construed, on the basis of Kripke's argument, i.e., as irreducibly subjective.

A defender of Kripke's view could at this point resort to the God metaphor. Kripke himself, after all, resorts to this metaphor when he states that once God has created C-fibres, S/He must also let people *feel* the stimulation of C-fibres as pain. It seems plausible to suppose that an omniscient being could know whether two subjects are in the same type of pain state, or what type of pain state a particular subject is in.

We can tackle this issue by considering two aspects of it, one metaphysical and the other epistemological. Metaphysically speaking, if an omniscient being can determine whether two subjects are in the same type of mental state, then these states are no longer epistemically subjective, i.e. private, since God can know them. If we wanted to hold on to the assumption of epistemic subjectivity while still recognizing God's ability to know these states, we would be left with the problem of whether we and God are referring to the same type of state, it being in one case epistemically subjective and in the other case not.

The epistemological aspect of the issue is as follows: imagine that God accesses our subjective experiences directly, i.e., that S/He has access to our phenomenal experiences just as we subjectively experience them. From this privileged access S/He can evaluate whether two subjects are tokening the same type of mental state. But the ability to access *this* fact, i.e., that two subjects are having the same type of experience, shows that such experiences can be intersubjective. What is crucial about the idea of experiences being intersubjective, is that in the case of pain and other

bodily sensations, the ontology of pain does not depend on what it feels like to *someone*, but on what it feels like to have that type of experience. Since the ontology of the experience depends on what it feels like, it necessarily presupposes subjects of experience; since it does not depend on what it feels like to someone in particular, individuals are irrelevant. Consequently, pain and other bodily sensations can be thought of as *experiential objects*, ontologically independent of specific individuals, but necessarily experienced. We had already reached this conclusion when we discussed the first objection. As we then noted, this conclusion is far from incompatible with the type-identity theory: on the contrary its compatibility is evident. Since they are independent of the subjects of experience, these experiential objects would be the referents of rigid designators applying to bodily sensations, such as “pain” (cf. Hill 2005). However, since there is no way of conceiving this intersubjectivity from the point of view of the experiencing subjects, we would do better to turn to physical properties in order to secure the intersubjective nature of these objects. And C-fibres are the best candidate available. Hence even the God hypothesis, far from supporting Kripke, lends support to the identity theory.

Steps toward type identity.

So far I have made no positive proposal about type identity; at the same time, I have promised to show that this theory is compatible with Kripke's semantics and metaphysics and that his arguments to the contrary are unsuccessful. It is time to fulfil this promise. So let us consider the identity of heat with molecular motion.

In asserting this a posteriori identity, it is inessential to specify what molecules are at stake. It is in the nature of heat to be the motion of some molecules or other, independently of what type of molecules are in motion. In a way, “heat = molecular motion” is a *schema* of identification, rather than an identity statement; and, furthermore, restrictions should be placed on its validity.⁹ Its not being, strictly speaking, an identity statement can be evidenced by pointing out that “molecule” is neither a proper name nor a natural kind term. Instead, it refers, one might say, to a general kind. If we want to assert an identity statement we should assert something like “heat in water = motion of H₂O molecules”. In this case, since on either side of the identity sign there are two coreferential rigid designators, the identity is secured. Obviously, heat as such is independent of the kind of molecule in which it is realized, as long as there are such molecules. In general, no one would deny the identity of heat with molecular motion just because heat can be realized in different types of molecules. In other words, no one would argue as follows:

⁹ On the restrictions see Wilson (1985); on multiple realizability of such an identity see Bickle (2008) and Kim (1972; 1992). See also Gillett (2007) and Polger and Shapiro (2008). In Gozzano (2009) I advance the present line of thought.

- i) heat = molecular motion;
 - ii) this occurrence of heat = O₂ motion;
 - iii) that occurrence of heat = H₂O motion;
 - iv) O₂ ≠ H₂O;
- therefore*
- v) heat ≠ molecular motion.

Now, the same kind of reasoning can be applied to pain without thereby denying its phenomenal character. Each type of phenomenally specific pain can be identified with a different type of physical state, provided that each time the same type of phenomenal pain is instantiated, the same type of physical state is instantiated as well. What type of physical state is tokened depends on how fine we wish to make our distinctions between phenomenal types. As a consequence, if we ascribe mental states to non-human animals, or to aliens with brains made of jelly, and they have type-different physical states from ours, we must assume that they have type-different phenomenal states as well. If, on the other hand, we recognize similar physical states and structures, then we can assume that these subjects have similar phenomenal states. Hence the schematic identity that parallels “heat = molecular motion” is “pain = pain-fibre firing” which makes it impossible for pain to exist in disembodied subjects, but leaves open how we should make the schema more specific about the various instances, which is a matter for empirical research (cf. Marras 2005). So “human pain = C-ff” and, say, “dolphin pain = D-ff”. If it happens that “X pain = C-ff” for an X which is not human, then that subject or species would have a kind of pain whose qualitative properties are identical with ours.

I believe that in the foregoing I have shown not only that the type-identity theory is fully compatible with Kripke's semantics and metaphysics, but also that the theory is, *pace* Kripke, both plausible and as substantive as its original proponents intended it to be.

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