

## Theoretical Identity, Reference Fixing, and Boyd's Defense of Type Materialism

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**Abstract** In his “Materialism without Reductionism: What Materialism Does not Entail,” Richard Boyd answers Kripke’s challenge to materialists to come up with a way to explain away the apparent contingency of mind-brain identities (such as ‘Pain=C-fiber firings’). Boyd accuses Kripke of an imaginative myopia manifesting itself as a failure to realize that the more theoretical term in the identity (‘C-fiber firings’) is fixed by contingent descriptions – descriptions that might pick out otherworldly kinds of neural events where C-fibres are absent. If this is something we can confuse in the imagination with actual C-fibre firings, then we have an explanation of the apparent contingency of the necessary identity ‘Pain=C-fiber firings.’ However, for this to succeed it must be the case that the reference of ‘C-fiber firings’ is fixed by some contingent description, which is false. Boyd, I submit, has failed to answer Kripke’s challenge after all.

**Keywords** theoretical identity · Richard Boyd · materialism

A most ingenious argument against Kripke’s criticisms of the mind–brain identity theory is found in Richard Boyd’s “Materialism without Reductionism: What Materialism Does not Entail.” Here Boyd answers “Kripke’s Challenge.” As the reader will recall, Kripke challenges materialists to come up with an explanation of the apparent contingency of the theoretical identity ‘Pain=C-fiber firings.’ He argues that this challenge cannot be met, pointing out that the apparent contingency of this identity cannot be explained in the same way as the apparent contingency of ‘Heat=Molecular Motion,’ and Kripke claims that there is no other explanation for the apparent contingency of ‘Pain=C-fiber firings.’<sup>1</sup>

Boyd thinks that Kripke is suffering from imaginative myopia regarding which terms in the identity ‘Pain=C-fiber firings’ are likely to be mistaken with their epistemic counterparts. Boyd will argue that it is enough to show that we could confuse the phenomenon denoted by

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<sup>1</sup>Kripke, S. (1990). Identity and necessity. In N. Block (Ed.), *Readings in philosophy of psychology* vol. I (pp. 144–47). Cambridge, Massachusetts: Harvard University Press.

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the theoretical term with some other possible phenomenon which manifests itself in the way that firing C-fibers do in this world, without those manifestations being actual cases of firing C-fibers. If this can be done, then perhaps Boyd has shown that we *can* explain away the apparent contingency of ‘Pain=C-fiber firings’ and perhaps the identity theory of mind is safe from Kripke’s neo-Cartesian argument.

But with respect to the more theoretical term, what could it mean to say that its referent could be manifested to us in possible ways different from the ways that it is actually manifested to us? Referring to Kripke’s strategy of only considering the replacement of the term on the non-theoretical side of the identity with its epistemic counterpart, Boyd says:

What seems to have been overlooked is that the successful employment of this strategy does not require that it be the less “technical” or “scientific” term in the identity that is replaced by a nonrigid designator. As we have seen..., we can explain the apparent contingency of “Water=H<sub>2</sub>O” by insisting on the existence of a possible world in which the corresponding contingent sentence “The cooling, tasteless... liquid... =H<sub>2</sub>O” is false. This employment of the...strategy relies on the fact that the sensible properties by which we typically recognize water are not essential properties of water. But neither are the standard chemical tests appropriate to the term “H<sub>2</sub>O” logically definitive of water. It is certainly logically possible that there should be a world in which a liquid that is not H<sub>2</sub>O satisfies all the chemical tests that – in the actual world – are reliable indicators of H<sub>2</sub>O.<sup>2</sup>

Boyd is claiming that there are epistemic counterparts for each term in the identity ‘Water=H<sub>2</sub>O’. Water (=H<sub>2</sub>O) is picked out in this world by the ways it makes itself known to us, i.e., as a cooling, thirst-quenching liquid, etc. And on Twin Earth these qualities are presented to us not when H<sub>2</sub>O is present but when XYZ is present, which goes to show that the phenomenal qualities normally associated with water are not essential to water. But H<sub>2</sub>O is also presented to us in characteristic ways in this world – ways that might differ in other possible worlds that also contain H<sub>2</sub>O. Boyd talks of “chemical tests” for H<sub>2</sub>O. This might be a certain piece of paper turning pink when inserted in H<sub>2</sub>O or the MIT Water Detector tokening a ‘yes’ when given a sample of water-like substance. These are ways we might detect H<sub>2</sub>O in this world. But consider the situation on Alpha Centauri where H<sub>2</sub>O is present but where the laws of nature are quite a bit different. Perhaps because of the limited light spectrum certain colors, like pink, are never seen. Maybe the Alpha Centaurian chemist’s paper turns green instead. Or maybe their MIT Water Detector tokens the word ‘flapjack’, which is a good test for the presence of H<sub>2</sub>O on Alpha Centauri.

So it seems that there are contingent qualitative terms corresponding to both terms in identities like ‘Water=H<sub>2</sub>O’. Therefore, in explaining the apparent contingency of ‘water=H<sub>2</sub>O’ one can either appeal to the fact that the reference of ‘water’ is fixed by a contingent qualitative designator (‘the cooling, thirst-quenching liquid...’) *OR* (and this is what Kripke overlooked) one can appeal to the fact that the reference of ‘H<sub>2</sub>O’ is fixed by a contingent qualitative designator (“the substance that makes the MIT Water Detector token a ‘yes’...”) describing the actual world chemical tests that are reliable indicators of H<sub>2</sub>O but which might be satisfied in a world uninhabited by H<sub>2</sub>O (“the substance that makes the MIT Water Detector token a ‘yes’...”). If this is possible, then it seems that we could explain the apparent contingency of ‘Water=H<sub>2</sub>O’ by pointing to the truly contingent statement “water=the

<sup>2</sup> Boyd, R. (1990). Materialism without reduction: What materialism does not entail. In N. Block (Ed.), *Readings in philosophy of psychology* vol. I (p. 84). Cambridge, Massachusetts: Harvard University Press.

liquid that makes the MIT Water Detector token a ‘yes’ – a statement that in no way shows that it is possible that  $\text{Water} \neq \text{H}_2\text{O}$ .

Can this new strategy be employed to explain away the apparent contingency of ‘Pain=C-fiber firings’, thereby giving the identity theorist a way to preserve that statement’s necessary identity? Boyd thinks so. Quoting him at length, he says:

[The] employment of a corresponding contingent qualitative statement to explain away the apparent contingency of “Pain=C-fiber firings” does not depend on the existence of a possible world in which pain does not feel like (actual world) pain or in which some nonpain feels like an actual world pain: it does not depend on a purely phenomenal description of pain not being a rigid designator. All that is required is that *either* the expression “pain” or the description “C-fiber firings” can be replaced by an appropriate purely qualitative description that does not designate rigidly.<sup>3</sup>

And:

Of course this can be done. For any physiological or anatomical description like the imaginary “C-fiber firings” there is certainly a possible world in which something has the qualitative properties typically associated with the term in the actual world, but really is not, in this case, an instance of “C-fiber firings”. Some other sort of nerve cell might, in a different possible world, look just the way C-fibers do in the actual world, or there might be specious indications that C-fibers are firing when they are really dormant. Thus we must conclude that, contrary to Kripke’s suggestions, the... materialist rebuttal does permit one to explain the apparent contingency of mind body identity statements like “Pain=C-fiber firings”...<sup>4</sup>

Boyd seems to be accusing Kripke of thinking that in order to explain away the appearance of contingency in ‘Pain=C-fiber firings’ by appealing to this confusion of epistemic with metaphysical possibility, it must be the case that we use a contingent designator to fix the reference only of pain. But that’s not necessarily so. If we used a contingent designator to fix the reference of ‘C-fiber firings’, *that* would be sufficient to create the epistemic possibility that we could be confusing with metaphysical possibility. By fixing the reference of *at least* one term with a contingent designator – that is, by showing that even the reference of the more theoretical term in the identity is fixed *via* a contingent description like ‘the brain stuff that shows up like such-and-such on an MRI scan’ – the identity theorist has sufficient resources to explain away the apparent contingency of ‘Pain=C-fiber firings’. Kripke’s myopia manifests itself as a failure to realize that the reference of ‘C-fiber firings’ (=pain) is fixed by contingent descriptions – descriptions that might pick out otherworldly kinds of neural events where C-fibers are not even present. If this is something we can confuse in imagination with actual C-fiber firings, then we have an explanation of the apparent contingency of the necessary identity ‘Pain=C-fiber firings.’

Now this rebuttal of Boyd’s depends on the truth of the following claim: that the reference of the theoretical term ‘C-fiber firings’ is fixed by contingent descriptions. But this claim is false. Perhaps the reference of ‘C-fibers’ by itself is fixed by their creating a visual impression in us when neurophysiologists dissect the brain but ‘firing’ cannot be directly observed in that way. ‘Firing’ has much to do with electrical signals traveling down

<sup>3</sup> Ibid., 84.

<sup>4</sup> Ibid.

the cell body and releasing neurotransmitters, etc... – none of which we can actually observe.

So how is the reference of ‘C-fiber firings’ fixed if not by contingent description? Perhaps by its role in a theory. That is, no particular theoretical term is referentially linked to any particular experience but by its being linked to other theoretical terms and to observations. Clearly the only way to grasp a concept like ‘C-fiber firing’ is by putting together various notions like ‘neurotransmitter’, ‘potentiation’, and so on, that enable us to sufficiently grasp the notion in question. C-fiber stimulation is explained to us in terms of other theoretical notions, in part at least, and therefore it cannot be the case that its reference is fixed via a contingent designator.

I think that what has happened is that Boyd has perhaps confused cases where we *recognize* the presence of C-fiber stimulation with cases where the reference of C-fiber firing is fixed. For example, we may recognize the presence of firing C-fibers by pointing to the salient colors on a MRI film or by pointing to the salient hills and valleys in an EEG graph printout. But it doesn’t follow from that fact that we use a contingent description to fix the reference of ‘C-fiber firing’. Furthermore, when you consider that it seems impossible to convey the meaning of firing C-fibers without, for example, employing the highly theoretical notion of ‘neurotransmitter’ or ‘potentiation’, it becomes implausible to think that we do fix the reference of ‘C-fiber firing’ by contingent properties of the sort Boyd has in mind.<sup>5</sup>

It was said that Boyd’s rebuttal of Kripke depends on it being true that the reference of a theoretical term such as ‘C-fiber firing’ is fixed by contingent descriptions. Now it seems that it is not. Theoretical terms get their reference fixed (at least partially) from other theoretical terms. What this means is that, contrary to Boyd, the reference of ‘C-fiber firings’ is not fixed by a contingent description. But fixing the reference of ‘C-fiber firing’ by a contingent description is crucial to his explanation of how it is possible that one might imagine that the identity ‘pain=C-fiber firings’ is contingent. Boyd’s move is to explain away the contingency by showing that we could mistake a case of C-fiber firing with some other-worldly activity that presents itself the way C-fiber firing does in this world. That is, in order to explain away that appearance of possibility by saying that it is epistemic possibility we are confusing with metaphysical possibility, it must be the case that we use contingent designators to fix the reference of pain. But we do not use contingent designators to fix the reference of pain. If this is so, then Boyd’s Kripke-type psychological explanation for how we might imagine the contingency of a necessarily true identity statement must fail. And without this kind of explanation, Boyd cannot defend the identity theory against Kripke’s challenge after all.

<sup>5</sup> I am maintaining that it is necessary to grasp the meaning of ‘neurotransmitter’ in order to grasp the meaning of ‘C-fiber firing’. But we can also ask “But how does ‘neurotransmitter’ get its meaning?” And if the general principle is “We always use theoretical concepts to fix the reference of a theoretical concept,” then we are facing an infinite regress of reference fixing. So, for the purposes of this discussion, I am going to take it as an obvious datum that we have to use the concept of a neurotransmitter in fixing the reference of ‘C-fiber firing’. Of course, we also have to use other theoretical concepts to fix the reference of ‘neurotransmitter’. How it is possible to do this without winding up with an infinite regress is not altogether clear. But it is clear that we do and it is not incumbent upon me to solve that messy problem in order to avail myself of the fact that it is clear that in order to fully explain what C-fiber firing is, one would have to use other theoretical concepts.