

Is the Pain in Jane Felt Mainly In Her Brain?

By Paul Skokowski

... we are forced to conclude that the imaginative faculty of the soul undergoes an experience which was not really a sensation, but can persuade people that it was one, just as, for example, when we are asleep we believe that we see and hear, although in reality we do neither.

- Plutarch, *Coriolanus*

I've got a feeling
I think that everybody knows.
Oh yeah.

- Lennon and McCartney

Kripke's Contingency

IN NAMING AND NECESSITY, KRIPKE GIVES A FAMOUS ARGUMENT AGAINST THE IDENTITY theory. In the identity theory, mental states, or mental state types, are identified with brain states, or types of brain states. Mental states are, therefore, entirely internal; that is, mental states are entirely contained in the head. The identity theory enjoyed popularity in philosophy in the 50s and 60s (and continues to have philosophical adherents), and I think it is fair to say that the identity theory is the prevalent view in the neuroscience community today. Kripke's argument is generally accepted to be a powerful argument against materialism about mind. However, in what follows I intend to point out that another form of materialism—externalism—evades his arguments, and indeed, can be seen as benefiting from a Kripkean analysis.

Before giving his arguments against the identity theory, Kripke works to show that identities are necessary. That is, if x is identical to y , then necessarily x is identical to y . Kripke then argues that we can come to know some identities *a posteriori*. For example, although we must discover empirically that water is

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H₂O, it is still the case that 'Water is H₂O' is a necessary truth. Hence it is an *a posteriori* necessary truth. Of course, here we are talking of identities between water and H₂O, and not yet the sorts of things that materialists, particularly identity theorists, are most interested in: identities between mental states and brain states. However, discussions about water and H₂O have relevance to the identity theory because the claim of mind-brain identity, if it is a strict identity, is also taken by Kripke to be an *a posteriori* identity claim. What then does Kripke say about these identities?

Consider the identity 'pain = C-fiber firing,' which we can ascribe to the identity theorist. Presumably this is a scientific identity, and hence discovered *a posteriori*. It should therefore be something like other scientifically discovered identities, such as 'Water = H₂O,' and 'heat = average kinetic energy (KE) of molecules' which, though *a posteriori*, are still necessary. Nevertheless, we appear to be able to imagine pain without C-fiber firings, and vice-versa. If we can really imagine this, doesn't this make 'pain = C-fiber firing' contingent?

Again, Kripke holds that all identities are *necessary*, even *a posteriori* ones. This incurs an obligation on those who propose an *a posteriori* identity: the obligation of explaining away the appearance of contingency. This can be done, Kripke says, for the two other scientific identities mentioned above: 'Water=H₂O,' and 'heat = average KE of molecules.' The first example, 'Water=H₂O,' does not deal with sensation, and so is perhaps of less interest to an identity theorist, but the second, 'heat=average KE of molecules' does have an element of sensation, which makes this example have more impact on the goals of the identity theorist. Let us look at these in turn.

Consider the *a posteriori* necessary claim that 'Water is H₂O.' How do we explain away the illusion of contingency? This statement appears contingent, Kripke suggests, because we seem to be able to imagine water that is not H₂O. However, if the identity is necessary, then this cannot be what we are imagining. Rather we are really imagining something else, another clear tasteless fluid that quenches thirst, is refreshing to swim in, and so on, but is not H₂O. We are therefore imagining an epistemic counterpart of water. Perhaps there even is such a counterpart substance. But this epistemic counterpart is not water. For water *is* H₂O.

Similarly, Kripke says that since the identity of 'heat = average KE of molecules' is discovered *a posteriori*, it too will appear contingent. So we must be able to explain away the illusion of contingency. How can we do this? Kripke says:

When someone says, inaccurately, that heat might have turned out not to be molecular motion, what is true in what he says is that someone could have sensed a phenomenon in the same way we sense heat, that is, feels it by means of its *production of the sensation we call 'the sensation of heat' (call it 'S')*, even though that phenomenon was not molecular motion. He means, additionally, that the planet might have been inhabited by creatures who did not get S when they were in the presence of molecular motion, though perhaps getting it in the presence of something else. Such creatures would be, in some *qualitative* sense, in the same epistemic situation as we are, they could use a rigid designator for the phenomenon that causes sensation S in them (the rigid designator could even be 'Heat'), yet it would not be molecular motion (and therefore not heat!), which was causing the sensation. (Kripke 1980, pp. 150–151; my italics)

Here, as elsewhere, Kripke is explicitly adopting an internalist picture of

sensation. According to this picture, when we refer to the *sensation of heat*—*S*—we are referring to an *internal quality*—something which is *felt* inside the subject. When we talk of this sensation *S*, we are *not* referring to the external molecular motion or heat, for, as Kripke says above, *S* is “not molecular motion.” So *S* cannot be heat, since heat *is* molecular motion.¹ Further, the sensation *S* is not, it appears, to be identified with a particularly human type of neural structure, or a particularly human type of neural firing, because there could be other creatures with different neural structures from humans who “... were sensitive to that something else, say light, in such a way that they *felt the same thing that we feel* when we feel heat” (Kripke 132; my italics). Again, the ‘thing’ that is felt here cannot be ‘heat = average KE of molecules,’ for if it were, then both these creatures *and* we humans would be feeling the same ‘thing’ that we feel when we feel heat (namely, ‘heat = average KE of molecules’). But this cannot be right, since by assumption these other creatures are responding to light, not heat. So this ‘thing’ that is *felt*, by both humans and these other creatures, can only be the sensation *S*—an internal quality *felt* by us both, despite our being different creatures. Indeed, this is a “*qualitatively identical epistemic situation*” (Kripke 152).²

Kripke uses this qualitative approach to sensation to expose the illusion of the contingency of the identity ‘heat = average KE of molecules.’ For when these other creatures refer to whatever produces their internal sensations of heat, they are not in fact referring to ‘heat = average KE of molecules,’ but to something else, such as light. But we (humans) have already fixed the reference of ‘heat’; it is a rigid designator. Therefore, since ‘average KE of molecules’ is also a rigid designator and we have discovered that heat = average KE of molecules, this identity is necessary. It is therefore just an illusion that those other creatures might be referring to heat when they have sensations of heat *S*; they are referring to something else entirely. The appearance of contingency has been explained away.

I wish to note the importance of what Kripke has just done in the case of heat and temperature, since we will be revisiting this example a little later, in regards to other sensory modalities. The point is that Kripke has used heat—an external property that is not only felt by humans, but that he argues can be rigidly designated by means of an internal indicator state—to establish the illusion of contingency of an empirically discovered, *a posteriori* identity. We will find that this sort of argument is a very important one for explaining away the illusion of contingency in other sensory modalities. But first, we should examine Kripke’s reply to the identity theorist.

Now let us revisit the identity theorist’s claim that ‘pain = C-fiber firing.’ Kripke says that if this is an *a posteriori* necessary identity, then we must be able to explain away the illusion of contingency. But Kripke says that this move is not possible for the case of ‘pain = C-fiber firing.’ According to Kripke, pain is not picked out in the way that heat is, that is, by (the rigidly designated external property) causing us ‘feeling the sensation of heat’ (Kripke 152). Rather, pain “... is picked out by the property of being pain itself, by its immediate phenomenological quality” (Kripke 152). Thus, any proposed epistemic counterpart of pain, anything that feels like pain, *is* pain. So epistemic counterparts of pain without C-fibers firing will still be pain.

As indicated earlier, the two examples of identities of most interest to the

materialist are those which have an experiential (sensational, or felt) component: 'heat = average KE of molecules' and 'pain = C-fiber firing.' And we have for Kripke that in the first example, the identity holds, because what is rigidly designated when we feel the sensation of heat is an external property, heat, which has been discovered to be identical to the average KE of molecules. Proposed epistemic counterparts will not refer to heat. We also have for Kripke that in the second example the identity does not hold, because what is rigidly designated when we feel the sensation of pain is an internal sensational quality, pain. Any epistemic counterparts will not be designating something other than pain, but will still be designating the quality 'pain.' Proposed epistemic counterparts therefore simply refer to pain.

Sensations, Obligations, and Designations

HAS MATERIALISM BEEN DEFEATED BY KRIPKE'S ARGUMENTS? THE ANSWER IS NO. KRIPKE'S arguments do damage, I believe, to forms of materialism where experiences are taken to be qualities or properties of internal states (in the form in which he sets up the problem), but these arguments entirely miss the mark against, and just do not apply to, externalist formulations of experience.

Let us look first at Kripke's analysis of heat, and the sensing of heat. The property of heat that is picked out when we sense heat, and which is rigidly designated by 'heat' is, Kripke says, outside the head. For the externalist, that is as it should be.

Suppose Jane is by a stream on a sunny spring day. She happens to rest her hand on a dark boulder that has been heated by the sun to 110°. What does she experience in this instance? According to the externalist, she experiences the property of 110°. This is hot, but not uncomfortably so on a spring day. Later, Jane takes off her shoes and wades in the stream. What does she experience in this instance? According to the externalist, she experiences a brisk 45° when she dips her feet in the stream. This is cold, and even makes Jane shiver, despite her being in the sunshine.

Notice that, for the externalist, what is being experienced are physical properties— in this case, the physical temperatures of 110° and 45°—which are external to the head. The contents of our temperature experiences are external to us. But Kripke reminds us that heat is identical with average KE of molecules, which, as statistical mechanics teaches us, is material temperature (Tolman 1956). When, therefore, Jane experiences the physical temperatures of 110° and 45°, she is experiencing heat. The thoroughly materialist externalist accepts this mandate.

The externalist's formulation of the experience is, however, purely materialistic. What is the experience, for the externalist? It is a relation. The experience is made up of an internal state in the brain, an external property, and the causal relation connecting the two. The internal state has the biological function to indicate (non-conceptually) the external property, under normal conditions where the causal relation holds (Dretske 1995, Tye 1995, Tye 2000, Skokowski 2002). So in the temperature case we have just considered, what is *experienced*, what is *felt*, or what is *sensed*, when Jane experiences the temperature 110°, is the external property of 110°. This property, 110°, is the content of the experience.

Call this property T_{110} . Call the internal state E . E is caused by T_{110} and T_{110} is E 's content. We are often tempted to call an internal state by itself an experience, but this is too hasty. The internal state E is an experiential state, but its content is external. The experience of temperature includes its content, which is the temperature. I will write the experience of T_{110} as $E(T_{110})$. The experiential state E , considered by itself, is an internal physical state. It occurs, as neuroscientists tell us, in somatosensory cortex (Purves 2002, Gazzaniga et al. 2002).

Of course, as we have seen above, this temperature Jane experiences is heat; she feels the temperature as hotter where the molecules are moving faster, and feels it as cooler where the molecules are moving slower (Kripke 129).

The externalist, then, appears to agree with Kripke's analysis of heat. For we have an external property, such as T_{110} , which causes an internal state E . But this is not quite right. For Kripke's formulation actually is more complex: he includes the additional internal *quality* of sensation, S . What is *felt* when Jane touches the rock at T_{110} , according to Kripke, is the sensation S . The quality that Jane experiences, the quality that she feels, when she touches the rock, is not T_{110} ; it is the internal quality S .

It might be argued at this point that the internal quality S just is the physical, internal state which I denoted E , above. But this is not what Kripke can be intending, for several reasons.

First, sensations and feelings are mental states. Which means that sensations of heat and sensations of pain are mental states. And the whole point of Kripke's argument against the identity 'pain = C-fiber firings' is that mental states may not be physical states. So sensations and feelings, qua mental states, cannot simply be taken to be the internal *physical* states E of the externalist picture.³

Second, as already noted above, Kripke claims that physically distinct creatures in physically distinct external environments can be in "qualitatively identical epistemic situations" (Kripke, 152). These two types of creatures differ in their internal neural structures, and one type is sensitive to an external phenomenon—light—in the same way the other type (presumably human) is sensitive to heat (Kripke, p. 131, 132). But these are not *physically* identical situations in any manner of speaking; the physical internal neural states *and* the physical external states *and* the causal relationships between the internal and the external states all differ in type here from one creature/environment to the other creature/environment. What remains the same across the two different physical situations are the *qualities*, or *sensations*, or *feelings*, of the creatures. These qualities/sensations/feelings remain the same despite the underlying physical differences. Indeed, Kripke says explicitly that "the sensation of heat ... is an intermediary between the external phenomenon (heat) and the observer" (Kripke 144).⁴ This leads to the picture that the observer is the thing with the internal neural state, and the sensation S is the intermediary quality through which the external property heat is felt, and rigidly designated, by the observer.

Let us compare the externalist's picture for heat with that of Kripke. The externalist says that what I experience when I experience heat is the external property T . I am not experiencing some internal property or quality or sensation. Rather, the property I experience is *external* to me. It is a content.⁵ For the externalist, the experience of heat of a particular temperature, say T_{110} , involves an

external temperature, T_{110} , causing an internal state E . Earlier, I used the notation $E(T_{110})$ to show this relation.

Note that for the externalist, the claim that the phenomenal property (or character) of an experience is the content of the experience is an empirical, *a posteriori*, claim. But other claims, such as 'water = H_2O ,' and 'heat = average kinetic energy of molecules' have also been discovered *a posteriori*. If these claims are true, then they are true in all possible worlds. Hence they are *a posteriori* necessary identities. And like these claims, if we discover that the phenomenal property (character) of the experience is the content of the experience, then this will be true in all possible worlds: again, we will have established an *a posteriori* identity (See also Tye 1995, pp. 180–195). It is not being assumed that externalism has already been established when considering Kripke's argument. Rather, it is enough to show that externalism is a form of materialism which escapes his argument against materialism. And indeed, as we shall see, externalism escapes Kripke's argument by following and accepting the very prescription that Kripke himself gives for dealing with experiences—and by not only following and accepting this prescription, but also applying it consistently. But first, let us look a little more closely at Kripke's analysis of temperature and heat.

Kripke agrees with the externalist that when we experience temperature T_{110} there is an external property T_{110} . However, as we have seen, he places the sensation of heat, S , as an intermediary between the external phenomenon and the observer with her type of neural structure. We have, then, something intermediary—the sensation S —to the observer's neural structure, call it E , and the external property T . Let us denote Kripke's interpretation of this situation as: $ES(T)$. That is, he has inserted an extra, qualitative, property into the relation.

Kripke seems to believe that there are three things going on with respect to the phenomenological aspects of sensing heat: a neural state, a sensation of heat, and heat. For an externalist this is just a confusion. There are only two physical states involved: the external phenomenon of heat, and the internal sensory state whose biological function it is to indicate heat. The external state causes the internal state under the right conditions. Since it is the internal state's biological function to indicate this external condition, then we have the required causal connection for the state E to rigidly designate heat. The externalist does not need an intermediary feeling between the experiential neural state E and heat. For a particular external token of heat, T , causing the internal state E just is the experience of T .

Is the externalist being disingenuous? Could it be that for Kripke, sensations of heat S are really just neural structures? This would not work for Kripke, for, recall that the other creatures we have imagined (falsely) as sensing heat have different neural structures from humans, while having the same sensations as humans.⁶ But if sensations were just neural structures, then these creatures *would* have the same neural structures as humans, contrary to what was assumed. This is enough to show that sensations of heat are not neural structures for Kripke. But there are further problems if this assumption were to be pressed. If sensations were neural structures, then, because these other creatures have the same sensations = neural structures, it would mean that these creatures *would* be able to pick out heat in their environment. Why? Because humans use their

sensations = neural structures to pick out heat in their environment. So, by sharing the same sensations of heat as humans—sensations which actually pick out heat in the environment—they also share the same neural structures as humans: neural structures which pick out heat in the environment. But the problem is that when these creatures have a ‘sensation of heat’ they are really supposed to be picking out light in the environment. But human sensations = neural structures of heat are not sensations of light: the two are distinct sensory modalities with distinct causal relations with external properties. For humans, the neural structures that pick out light (neurons in visual cortex) are different from the neural structures that pick out heat (in somatosensory cortex) (Purves 2003; Zeki 1993; Gazzaniga 2002). There is no overlap. So if the other creatures have the same sensations as humans, as is required for the argument, and these sensations are neural structures, then the creatures will sense heat and light in the same way humans do, and they will not, after all, differ from humans by ‘sensing’ heat when they in fact are causally ‘picking out’ light in the environment. Their sensations = neural structures for heat will pick out heat, not light. So the other creatures, who were assumed to differ from humans internally, would not differ. Since this is not the scenario Kripke has drawn for us, sensations cannot be neural structures.

But if sensations are not neural structures, then the externalist sees Kripke as multiplying entities unnecessarily, for internal neural state types (such as are found in the somatosensory cortex) which have the biological function of indicating ranges of heat in the environment are what give humans the ability to pick out heat (of various magnitudes) in the world in the first place. These types of states were selected because they could reliably pick out certain physical properties crucial to survival in the environment. Thus it is biological function which provides the sensory foundation for picking out properties in the environment, and hence for rigid designation of these properties. The externalist can therefore apply Occam’s razor and get rid of the dangler—the *intermediary* sensation/feeling/quality—for the sensation is seen to just be the heat causing the internal state, and nothing more (Skokowski 2002, 2003). What is the quality of the heat being experienced? It is the heat, the temperature *T*, in the environment: this is the content of the experience. The heat being felt is the actual heat. There is no need for an extra quality of the *feeling* of heat to be added in to the formula.

Heat is therefore picked out by its actual physical properties. Thus the externalist’s formulation of materialism denies Kripke’s assumption that there can be creatures that, for example, sense (experience) light in the same way humans sense (experience) heat. The reason is that the contents of the sensations comprise the qualities of the sensations. And the contents of the sensations, for externalists, are exhausted by the physical property or properties of the phenomenon sensed (experienced, felt). Therefore a creature that senses light (via the visual cortex), is experiencing light; this creature is not experiencing heat. There are no properties of heat (considered as material temperature, a kinetic phenomenon) that are shared with light (an electromagnetic phenomenon). Similarly, a creature that senses heat (via the somatosensory cortex) is not experiencing light. And since the contents differ in physical properties, there is no way in which the two creatures’ experiences are the same.

Thus the analysis of sensing heat that Kripke has given benefits the externalist. For humans do indeed pick out the external property of heat, and

the causal interaction which picks heat out is what underlies rigid designation of the property heat. But the externalist holds that heat is picked out by states in the somatosensory cortex (that is the function of these states), not by extra 'feelings' inserted between the internal state and the external property. And so the externalist has a purely materialist formulation of rigid designation of this external property, with exactly the physical machinery on offer.

How does the externalist deal with the obligation of explaining away the illusion of contingency of 'pain=C-fiber firings'? There is a short answer: the externalist does not have an obligation to explain it at all, because the externalist denies the identity. Pain is not to be identified with the firing properties of C-fibers, because pain is not a property of Jane's brain. Instead, pain experiences (or pain sensations, or pain feelings) have bodily disturbances (cuts, burns, bruises, and so forth) as their contents, together with types of internal states (perhaps C-fiber firings) that have the biological function (conferred by natural selection) to indicate these contents under optimal conditions, and causal relations that connect the two types of states. The externalist holds that these bodily disturbances are (with the exceptions of headaches, and so forth) external to the brain. The properties of these disturbances are taken to be contents for the experience of pain analogously to how various magnitudes for heat are contents for the experience of heat. Let me refer to the properties of these bodily disturbances as 'painful properties'. These properties—for example, 'stabbing pain in Jane's right foot,' 'burning pain in Jane's left thumb,' 'throbbing pain in Jane's right ankle,' and so on—are physical properties of Jane's bodily disturbances: disturbances—such as the puncture of stepping on a nail with her right foot, the burned flesh of touching her left thumb to the pan on the stove, or the cartilage tears and swelling of having a twisted right ankle—which the externalist holds are the contents of Jane's pain experiences.⁷ And these painful properties are (generally) external to Jane's head.

But now the reply will surely be that 'painful properties = bodily disturbances' appears contingent. So the externalist now has the obligation to explain away this appearance of contingency. And how can the externalist do that? As was mentioned earlier, Kripke has already provided us a prescription for doing this: We can explain the illusion of contingency in the same way that the illusion of contingency of 'heat = average KE of molecules' was dealt with earlier. For an externalist formulation of materialism, painful properties are external to the head in the same way that heat is external to the head; nevertheless, both are experienced as contents. Thus under this formulation of materialism, both contents can be treated in the same way. And Kripke has given us a way to deal with the apparent contingency of experiences of heat. Recall that Kripke said that in such cases we seemed to be imagining creatures and environments different from us that experienced/sensed/felt the same thing as humans did. Analogously, it appears that we can imagine creatures that differ from humans in their physical structure, evolutionary history, and environment, which experience painful properties. We are imagining, then, that such creatures have internal states which indicate external conditions in their environment, perhaps even in their 'bodies,' and could even say 'I am experiencing pain' when these states occur. But when these other creatures refer to whatever external properties cause their internal states, they are not in fact referring to physical properties of the type that

constitute painful properties. Note that it makes no difference whether or not these creatures' internal states might be referring to a disturbance inside their bodies. For by hypothesis, the internal and external physical *properties* must be different in physical type for this creature and its environment when it experiences pain from the human's internal and external physical properties, and so therefore, must be the causal law connecting the two, and the selection history of this type of internal state must also completely different from the human case. Indeed, by hypothesis, the 'bodily disturbances' of the creature are of a completely different physical type from a human's bodily disturbances in an analogous way to how properties of light are of a completely different physical type from properties of heat. But, just as Kripke pointed out for 'heat,' we (humans) have already fixed the reference of 'painful properties'; it is a rigid designator of the kinds of bodily disturbances that happen to humans (and possibly other animals) on our planet. So when these other creatures refer to whatever produces their internal states, they are not in fact referring to what we have rigidly designated to be painful properties, but to something else entirely. So what we have really managed to imagine is something different from our experience of pain.⁸ It is therefore just an illusion that those other creatures might be referring to painful properties; they are referring to other physical properties entirely. The appearance of contingency has been explained away.

But surely, it will be replied, pain is a special case. Pain is different from heat. For Kripke says that heat is picked out by virtue of the fact that heat produces the sensation of heat within us. However, Kripke says that pain is not picked out by producing a painful sensation in us, but rather by its immediate phenomenological property. Anything that feels like a pain is a pain. And Kripke has argued, through considering non-human creatures, that not everything that feels like heat is heat.

But the externalist has a reply: pain sensations/experiences/feelings *are* like heat sensations/experiences/feelings. For all sensations— pain included— involve internal states which have the function of indicating external properties— properties appropriate for that sense modality. Pain, therefore, is not a special case for the externalist formulation of materialism in the way Kripke wants it to be. Indeed, we need only to look at how another external physical quality— that of heat— can be sensed according to his model, in order to proceed in a consistent fashion to a general externalist model of sensation.

The externalist can even agree with Kripke on a further point: that not everything that feels like heat is heat. But that is because the senses, being representational in nature, have the ability to *mis*-represent their surroundings: they have the ability, that is, to be wrong. Misrepresentation is always possible for biological systems. I can touch the ice and 'feel' it as hot. This is a misrepresentation. I can 'see' the yellowy-orange afterimage even though nothing in my vicinity is yellowy-orange. This is a misrepresentation. I can 'hear' a ringing in my ears after a severe ear infection even though there is no ringing. This is a misrepresentation. Why should pain be any different? I can recall 'feeling' pain when I dreamed I twisted my ankle. But there was no pain. This was a misrepresentation. Amputees can feel 'phantom' pains. These are misrepresentations of (non-existent) bodily

disturbances. That is why we refer to them as 'phantom' pains, and not actual pains.

It is not an objection to the externalist to point out that sensory systems misrepresent; indeed, it is a strength of the externalist formulation of mind that it can explain misrepresentation in naturalistic terms (see Dretske 1988, Dretske 1995, Tye 1995, Tye 2000, Skokowski 2004.) The biological function of our internal sensory detectors (for example, detection of heat by the somatosensory cortex and detection of visual properties by the visual cortex) is derived from our evolutionary history. These detectors have been given a job to do by natural selection. When they go awry, which can happen for biological systems, then they can misrepresent. Kripke has, after all, used these same faulty systems to provide the very mechanisms relied upon to rigidly designate certain properties in the environment—properties that are sometimes *mis*represented by the very same faculties. So occasional misrepresentation does not incriminate sensory modalities, or keep them from picking out their appropriate physical properties when optimal conditions obtain; rather, sensory misrepresentation should be explained naturalistically, something that the externalist actually does. But Kripke offers no explanation of misrepresentation.

So for the externalist, not everything that feels like heat is heat. And similarly, not everything that feels like a painful property is a painful property. Misrepresentation is not only possible, but it occurs in every sensory modality at various times.

A possible reply to this could be:

In order to explain the apparent contingency, Kripke says it would help if one could point to the real possibility of someone to whom something other than pain appears just as pain appears to me, because that would give a real sense in which all my evidence prior to doing neuroscience was compatible with it turning out that with 'pain' I was referring to something other than what actually *is* pain. That's the model that he takes to work fine with 'Heat = average KE of molecules.' There, a pre-scientific me is matched by a really possible individual who has the same evidence in every internally noticeable sense and yet who refers with 'heat' to something other than heat.⁹

But here, says the externalist, is precisely the problem. As is pointed out above, what is important for Kripke is 'evidence in every internally noticeable sense.' But this is an assumption on Kripke's part: namely, that all the evidence available is internal evidence. Yet Kripke nowhere gives an argument to support this assumption. Instead, he wants us to simply accept the intuition that sensations—the qualities of experience—are purely internal. And if sensations are internal, then giving individuals the same type of sensations seems to allow that they are both sensing heat regardless of the external environment.¹⁰ But the externalist does not accept this intuition. Instead, he offers a different intuition: the evidence is actually external, because the qualities of experience are external. And if the evidence is external, this places the evidence in the world. If we put the evidence in the world, then it will be the external content of the experience which will determine legitimate cases of really possible individuals who are experiencing heat (or painful properties, or ...). And what is all the evidence prior to neuroscience? Consider the fact that there are other pre-scientific, pre-theoretical individuals: children. Ask a child where the yellow is when she looks at a daffodil. She will reply 'on the daffodil.' Ask a child where it hurts after she falls on the

pavement. She will say 'my knee.' Ask the child what is hot after she touches the stove. She will say 'the stove'. These are equally applicable, and equally plausible, pre-theoretic, pre-scientific intuitions. And these are intuitions which differ from Kripke's. These intuitions place the felt quality of experience external to the head, and in the world. And is it just children who hold such intuitions? Surely there are also many adults who hold identical pre-theoretic, pre-scientific intuitions.¹¹ So the externalist denies the intuition that what is sensed is 'internally noticeable.' Instead, the externalist says it is at least an equally plausible intuition that the property experienced is external. So Kripke's model of inserting a sensation internally, or as an intermediary between the agent and the property felt (heat) is rejected. Kripke does not have the right to simply impose his intuitions across the board. His assumption needs to be supported by a further argument that shows that his intuition is the only acceptable one.

The externalist will therefore reject Kripke's explanation of contingency for heat. For Kripke's explanation depends on the assumption that an internal sensation—the quality of experience—is being caused by an external property (heat). The sensation is an internal quality that is intermediary between the observer and the external property. The externalist says that this model is flawed and so another explanation must be given. The externalist proposes an alternative causal explanation of the experience of heat: that an internal state (in the somatosensory cortex, for example) is what is caused by the external property (heat). Further, the external property is the quality of the sensation: this quality is the content of sensation—a property that is in the world, not in the head. The Kripkean move of inserting a 'sensation' *S* in addition to the external property and the observer creates, as Jackson (1982) has put it in a related context, an excrescence: the 'sensations' *S* are epiphenomena that seem to be inserted precisely to satisfy the internalist intuition that sensations are somehow internal.

But despite rejecting Kripke's version of the explanation of the contingency, the externalist can still successfully explain the mechanism that underlies rigid designation: the picking out of the external property by an internal state. For the externalist this internal state is a neural state (type) which has the biological function of picking out that property in the environment. And nature has provided precisely such mechanisms for picking out these very properties: mechanisms in the visual cortex that pick out visual contents, mechanisms in the somatosensory cortex that pick out heat contents, and so forth. No extra internal sensory qualities are required for these mechanisms. The externalist claims that his explanation of 'picking out' properties in the world is ontologically simpler than Kripke's, using only extant physical properties and causal relations, and is ultimately more satisfying given the success of materialistic scientific accounts.

So the externalist rejects Kripke's intuition that sensations/feelings/experiences are entirely internal. And this leads him to reject Kripke's explanation of contingency.

There is another problem with Kripke's claim that pain is not picked out by producing a painful sensation, but rather by its immediate phenomenological property that I will mention briefly here before concluding. The problem is that Kripke never actually proves that pain is not picked out by producing a painful

sensation but rather by its immediate phenomenological property. Instead, the externalist sees this claim as an assumption on Kripke's part, an assumption that he is not entitled to. The externalist has given a separate (non-identity theory) formulation of materialism that Kripke's attack on the identity theory does not—and, as has been argued above, can not—eliminate. Kripke has not considered the case that pain experiences include a physical content of the experience; something we have called here a 'painful property', which is external to the head. Indeed, for the externalist, pain experiences *do* require occurrent 'painful properties,' but these external painful properties go on to *cause* internal states—states which are not themselves exemplifying these painful properties. It is not the internal states which exhibit these painful properties; these properties are external to the head. So for the externalist, painful properties *are* picked out by producing an internal state, but the internal state is not the pain, and the pain is not a property of this internal state. The externalist's version of events is just as immediate (in a temporal, as opposed to a spatial, sense), however, and has all the painful properties required of pain, but pain just is not an internal property, and it certainly is not a non-physical property.

To Kripke's question, "Do you find it at all plausible that that very sensation could have existed without being a sensation, the way a certain inventor (Franklin) could have existed without being an inventor?" (146), the answer is 'Yes and no.' *Yes*, those very neurons could have existed (in that firing state) without their firing in response to painful properties, and *Yes*, that bodily disturbance could have occurred without being the painful property (anaesthesia, damaged nerves, different wiring, and so forth). But for the experience writ large, that is, the internal experiential state (whose function has been determined by its evolutionary history) which indicates an external content (under optimal conditions), the answer is: *No*, it could not have existed without being that experience.

Conclusion

KRIPKE'S ARGUMENT AGAINST THE IDENTITY THEORY IS A POWERFUL ARGUMENT AGAINST one form of materialism, the identity theory. But by failing to consider that the contents of our experiences can be external to our heads, Kripke's argument misses another form of materialism entirely: externalism. Indeed, the externalist analysis of rigid designation offers an improved formulation of the causal basis of how sensory systems pick out their properties in the environment: a formulation that avoids inserting extra 'feelings' between internal neural states and the external properties these states have the function of indicating.¹² ◻

Notes

¹ This point is also explicitly made by Kripke: "...it produces in us a sensation of heat" (Kripke, p. 131). In other places he explicitly says "sensations *in us*" and "sensations *in people*" (Kripke, p. 132, and *passim*).

² Perhaps it is also worth noting that that Kripke does not say *physically* identical situation here.

³ Note that both pain and heat are *felt* (Kripke, p. 151), and that both pain and heat are

sensations (Kripke, p. 146 and p. 150).

⁴ It should also be noted that Kripke used dualistic language earlier, page 145, when he distinguishes between a 'person' (Descartes) and his 'body' B. The latter is physical.

⁵ Tye (1995) calls this content a PANIC – a Poised Abstract Nonconceptual Intentional Content.

⁶ It strikes me, when reading Kripke, that the alternative 'creature' he describes has different types of internal physical states from humans. But if there is a way of reading Kripke differently – that the creature can have the same type of internal state that I do when I experience Heat, and still be experiencing, say, Light – the externalist has a reply. We can imagine an individual with a set of identical neurons (in type, not token, of course) in somatosensory cortex to mine. Indeed, when these neurons fire within this creature in exactly the same way as mine fire when I feel Hot = T_{110} degrees, this creature is picking out Light, not Heat. (We could even think of this as an inversion, say, of two parts of cortex: somatosensory cortex is picking out light for this creature, and 'visual' cortex is picking out Heat.) Perhaps (for historical/linguistic reasons) this creature even says "I'm feeling something Hot right now" when he goes into this state. But, for the externalist, the problem here is that the phenomenological properties of an experience are just the properties of the external phenomenon being experienced. So, if I experience Heat, what is being *experienced* is the property of the external phenomenon which is Heat, and *that* property is average KE of molecules (a kinetic phenomenon). But when the creature says he is experiencing Heat, what is being *experienced* is the property of the external phenomenon which is Light, and *that* property is a wave packet (an electromagnetic phenomenon). So, for the externalist, it is not possible for one to experience (sense, feel) Heat when one is, instead, picking out Light in the environment. So, if this is the case Kripke is imagining here, then the externalist says he's wrong about what the creature's quality of experience is: the quality of experience is Light, not Heat.

⁷ Note that in Tye's (1995) formulation, painful properties would be PANICs.

⁸ Note that Putnamian arguments about Martians will not work against the externalist. The reason is that our pain experiential states have a biological function: that function is to indicate physical disturbances in bodies of a certain type (presumably bodies in this world are carbon-based). The history we have in our world has selected these kinds of states to do this job. Martians have a different biological history and hence will have a different function: theirs will indicate (presumably) silicon disturbances. Since history determines function, that is, function is conferred by natural selection, then different histories will yield different functions. Putnam's arguments do not consider histories to be relevant in this way. For the externalist, such histories are crucial. See Dretske 1988, 1995, Tye 1995, Skokowski 2004.

⁹ I owe this way of putting the objection to Mark Crimmins.

¹⁰ Dretske (1995) calls this assumption that sensations are entirely internal the 'internalist intuition'.

¹¹ Perhaps, in some cases, our thinking becomes infected with the internalist intuition only after studying certain philosophers; for example, Berkeley or Hume!

¹² Many thanks to Brian McLaughlin for the inspiration, and to Fred Dretske, Mark Crimmins, Jesús Navarro, John Perry, Tim Crane, John Campbell and Dawn Phillips for very helpful discussions and comments. Thanks also to audiences at Stanford University, the Mind-Aristotelian Joint Conference, and Oxford University.

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