

HEAT AND PAIN IDENTITY STATEMENTS AND THE IMAGINABILITY ARGUMENT

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ABSTRACT

Even after many years of empirical and conceptual research there are underlying controversies which lead scholars to dispute identity theory. One of the most influential examples is Kripke's modal argument leading to the rejection of the claim that pain and C-fibres firing are identical. The aim of the first part of the paper is to expose that Kripke does not rigorously distinguish the meaning of individual relata entering the identity relation, and therefore his claim about the faultiness of the analogy between propositions "heat is molecular motion", and "pain is C-fibres firing", is mistaken. Moreover, whilst much emphasis within metaphysics of mind-brain relations has been placed upon conscious phenomenal states, it might be worthwhile to also consider cases of unconscious phenomenal states. If one admits the unconscious phenomenal states, such as unconscious pain, then, Kripke's claim is further discredited by the fact that even pain can be individuated through its contingent property. Identity statements about pain could therefore be analogous to any other identity statements. The second part of the paper focuses on the relevance of the modal argument in confrontation with empirical evidence. It argues against the assumption embedded in the modal argument that an identical neurobiological pattern occurs regardless of whether conscious pain is present or completely absent.

Keywords: *identity theory; necessary and contingent statements; Kripke; unconscious phenomenality.*

1. Introduction

Despite functionalistic and other influential criticisms of identity theories (Putnam 1967; Kripke 1972/2001; Chalmers 1996; Smart 1959; Towl 2012), there are still considerable reasons to maintain identity theory as the proper view of the mind-body relation. It is a simple, austere approach with the fewest assumptions and, as I believe, the most wonderful merit of it is that it accounts for correlation and causal relations in a non-dualistic manner. For a well-rooted naturalist, these might be sufficient reasons to prefer identity theory over other approaches. The main reason to defend type-identity theory instead of a token version, then, consists in the simple fact that without having types, no generalizations or psychophysical laws can be formulated (see Davidson, 1980, arguing why psychophysical laws cannot be found). Undoubtedly, there are influential objections against type-identity theory of which the multiple realizability argument (MRA)¹ is probably the most compelling. In this paper, however, I am not at the point of rating functionalism, esp. MRA or the irreducibility of consciousness argument. I will also not try to argue in favour of the type-identity theory (for this see e.g. Polák and Marvan 2018).

Here I address Kripke's argument against the type-identity theory, which in my view suffers from difficulties that can hardly be ignored. There are two parts to my argument. The first part highlights a fundamental interpretive issue consisting in the uneven use of the terms pain and heat. I try to show how this point can be corrected and that this adjustment again reinforces the value of the type-identity theory.

Critics of the identity relation often claim that the cases of pain and heat are not analogous. While "pain is the C-fibers firing" is a statement that, if true, should hold a priori, the statement "heat is the movement of molecules" is an empirical statement whose truth is established by empirical investigation. I will first try to show that and how we need to modify the relationship between these two statements to be able to compare them appropriately. This categorical restructuring of the concepts involved in the statements will then lead to the attribution of categorically adequate properties to pain and heat. That is, if we define heat categorically in the same way as pain, it will be easier to see that their definitions are tautologies. Whereas the essential property of pain is the sensation of pain, the essential property of heat is the sensation of heat. Thus, we can say that "pain is the sensation of pain" or that "heat is the sensation of heat". But if we replace the term "pain" in this sentence with its definiens, then we get

¹ For an important attempt to reconcile the MR argument with type-identity theory, see Polger and Shapiro (2016).

the tautology “the sensation of pain is the sensation of pain”. Similarly, this will be true for heat. Pain in Kripke’s argument is picked out by its essential property. The trouble is that it does not apply to heat. Heat is picked out by some contingent property. I argue that the two cases are analogous, and that the appearance of difference is due to our inappropriate tendency to attribute categorically different properties to pain than to heat and other analogous phenomena.

In the second part, I argue that empirical evidence debunks Kripke’s a priori argument against identity. I do not, however, state that my argument provides a reason to lean toward the type-identity theory. It is merely challenging the conclusion of Kripke’s modal argument.

I address the claim of identity between pain and C-fibers firing and Kripke’s modal argument. The central role in the modal argument, in my view, is played by the transition from conceivability to possibility in at least one possible world. Kripke’s account, but also e.g. Chalmers’, does not take empirical knowledge in our world as an important guide in this transition. However, in my view, this is a crucial datum that changes our view on the scope of the validity of modal claim against identity or physicalism in general. I will try to show that it is not reasonable to hold the assumption that C-fibers will bring about an identical neurobiological pattern of activity, regardless of whether conscious pain is present or there is no pain at all.

In any case, neither of my considerations is a direct argument for identity theory. But if my criticism is correct, then defenders of type identity (such as Polger 2004, 2011; Polger & Shapiro 2016, who claim that mind-brain identity cases are necessary a posteriori) may have a better position in defending their views because they will not have to face the consequences of the modal argument. I will devote attention to issues of modality, possible-worlds semantics, and essentialism to the extent that it is necessary to avoid jeopardizing the consistency and clarity of my argument.²

2. Is There an Analogy Between “Pain is C-Fibers Firing” and “Heat is Molecular Motion?”

An important issue that needs to be addressed is Kripke’s claim that “pain is C-fibers firing” is not analogous to “heat is molecular motion”. I believe that both claims are indeed analogous. Confusing formulations and a lack

² For critical revision of these issues, see e.g., Bealer (1994) and Soames (2018).

of precise conceptual discriminations in Kripke's otherwise stunning argument contributed substantially to a false conclusion that there is not, and cannot be, identity between pain and C-fibers firing in our world. And, as a generalized consequence of the argument, it has been claimed that there is no analogy between any other statement expressing our mind-brain relations and standard empirical formulations of identity. Given that I am going to attack Kripke's claim that there is no proper analogy between empirical statements about identity such as "heat is molecular movement", or "water is H₂O", and, say, mind-brain statements like "pain is C-fibers firing", we first have to elaborate his verbalization of the problem. This will point to the ambivalent use of terms in claims of identity. First, cases will be listed stating that "heat" is defined as a subjective experience.

Now, can something be said analogously to explain away the feeling that the identity of pain and the stimulation of C-fibers, if it is a scientific discovery, could have turned out otherwise? I do not see that such an analogy is possible. In the case of the apparent possibility that molecular motion might have existed in the absence of heat, what seemed really possible is that molecular motion should have existed without being *felt as heat*, that is, it might have existed without producing the sensation S, the sensation of heat. (Kripke 1972/2001, 151)

In this passage Kripke states that the molecular motion might be present in the absence of heat. Here, the crucial question is what is meant by "heat". The interpretation that "heat" is a molecular motion may surely be ruled out. From the quotation it clearly follows that Kripke construes "heat" as a feeling of heat, or "being (consciously) felt as heat". No doubt he can then claim that molecular motion might have existed without heat (in the sense of it being felt as heat). So keep in mind, provisionally, that the meaning of "heat" here is "being felt as heat", or, say, "having the feeling of heat". Or, to put it differently, molecular motion, i.e., a physical phenomenon, cannot be referred to by the concept of "heat", unless we apply the concept of "heat" in two totally dissimilar meanings.

The view that heat is defined as someone's having a conscious feeling of heat, and not as molecular motion, can be bolstered by another quote from *Identity and Necessity*:

So, it might be thought, to imagine a situation in which heat would not have been the motion of molecules, we need only imagine a situation in which we would have had the very same sensation and it would have been produced by something other than the motion of molecules. (Kripke 1971/2011, 21)

Although Kripke subsequently adds that the case in which heat would not be the motion of molecules cannot turn out to be true, it does not weaken our intuition to read the “heat” here as a feeling of heat.

It might be objected that in Kripke’s writings there are only a few passages advancing the view that heat is defined as a feeling of heat. That is true. Cases supporting the opposite view that “heat” is defined as molecular motion (physical phenomenon) are overwhelming. For instance, in *Identity and Necessity* there are many such examples:

Let me turn to the case of heat and the motion of molecules. Here surely is a case that is contingent identity! [...] First, of course, it is argued that ‘Heat is the motion of molecules’ is an a posteriori judgement; [...] One can distil them out of the fact that we found out empirically that heat is the motion of molecules. (Kripke 1971/2011, 21)

[...] If this is correct, it can still be and will still be a necessary truth that heat is the motion of molecules and that light is a stream of photons. (Ibid., 23)

And in *Naming and Necessity*:

We identify heat with the motion of molecules; sound with a certain sort of wave disturbance in the air; and so on. Concerning such statements, the following thesis is commonly held. First, that these are obviously contingent identities: we’ve found out that light is a stream of photons, but of course it might not have been a stream of photons. Heat is in fact the motion of molecules; we found that out, but heat might not have been the motion of molecules. (Kripke 1972/2001, 98)

When I refer to heat, I refer not to an internal sensation that someone may have, but to an external phenomenon which we perceive through the sense of feeling; it produces a characteristic sensation which we call the sensation of heat. Heat is the motion of molecules. We have also discovered that increasing heat corresponds to increasing motion of molecules, or, strictly speaking, increasing average kinetic energy of molecules. So temperature is identified with mean molecular kinetic energy. (Kripke 1972/2001, 129)

It is irrelevant here that the definitions are put into different contexts such as whether the identity is necessary, or contingent. The important fact,

particularly obvious in the second quote, is that heat is identified with molecular motion and not with feeling of heat. Since prevailing examples in Kripke's papers are those supporting the view that heat is defined as molecular movement, it will be reasonable to accept this definition as default. It is at least clear that both cannot be held at the same time. But picking out the default definition, and this is a first crucial point in my argument, puts us in a position where we are committed to claim that "heat" belongs to a different category of concepts than "pain".

To support the view that "heat" is defined within a different category of terms than "pain," let me also focus on defining the concept of pain. Consider some quotations regarding the definition or meaning of "pain":

Consider a particular pain, or other sensation, that you once had. (Kripke 1972/2001, 146)

In the appropriate sentient beings is it analogously possible that a stimulation of C-fibers should have existed without being felt as pain? If this is possible, then the stimulation of C-fibers can itself exist without pain, since for it to exist without being felt as pain is for it to exist without there being any pain. Such a situation would be in flat out contradiction with the supposed necessary identity of pain and the corresponding physical state [...]. (Kripke 1972/2001, 151)

Pain, on the other hand, 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. (Kripke 1972/2001, 153)

Because although we can say that we pick out heat contingently by the contingent property that it affects us in such and such a way, we cannot similarly say that we pick out pain contingently by the fact that it affects us in such and such a way. On such a picture there would be the brain state, and we pick it out by the contingent fact that it affects us as pain. Now that might be true of the brain state, but it cannot be true of the pain. The experience itself has to be *this experience*, and I cannot say that it is a contingent property of the pain I now have that it is a pain. (Kripke 1971/2011, 24)

Independently of the explanatory contexts in which the term pain was used above, in all the cases pain is apparently defined as a feeling of pain. What is the justification for defining pain rigidly as the feeling of pain? The main

reason is that the feeling of pain is to Kripke a necessary, essential property of every pain (see Kripke 1972/2001, 153; 1971/2011, 23-25). Kripke puts great emphasis on the fact that pain is to be defined by its essential characteristics which in this case is the feeling of pain. So there seems to be no alternative and pain must be individuated solely by the feeling of pain properties. If this is to imply that, where possible, entities should have always been individuated by their essential properties, then the same rule shall be applied in the case of defining heat. In the case of heat, however, Kripke holds that the feeling of heat is not an essential individuating property of heat. To pick out heat by the feeling of heat does not entail defining heat by its essential property but by contingent one. The essential property of heat would be, if any, some other property, perhaps molecular movement but at any rate not a feeling of heat. Therefore, the case of pain and the case of heat differ substantially. To reach this conclusion, it is sufficient for Kripke to state that a feeling of heat is not an essential property of heat. Supposing that this reasoning is justified, Kripke may conclude that pain and heat are different. And that is why the claims of identity which involve these terms are different. For many he has thus provided forceful intuitive grounds for the disanalogy between pain and heat statements. There is, however, a serious issue which might be called a category mistake.

3. Why is There to Be a Categorical Difference Between “Pain” and “Heat”

An attempt to make a positive case for an analogy between pain and heat statements must begin by elaborating the categorical meaning of the terms used in the identity statements. First, there is the expression “pain”. Pain is standardly defined as referring to someone’s subjective experience. There seems to be no dispute about that. The decision to individuate pain by its mental properties is justified to the extent that, from a subjective perspective, pain actually has mental properties. But, importantly, by no means does it justify us giving preference to these properties as essential for pain. One may also individuate pain by physical properties, such as physiological changes in a painful arm, and hold that they are at least as essential to pain as mental qualities. However, for the sake of argument, suppose the definition of pain based on mental properties of subjective experience is the only correct one for all cases of pain.

The case of the word “heat” seems to be different. As we have seen above, there is the liberty to define “heat” either as a feeling of heat or as a

molecular movement.³ Kripke decided to adopt the second definition. The meaning of “heat” is fixed as a molecular movement and not as a feeling of heat. What rationale does he have for this? I am afraid that the reasons for this decision are motivated not by any metaphysical or empirical facts about what pain or heat are, but by a folk convention. This convention has standardly fixed the usage of “heat” as simply referring to a physical phenomenon,⁴ whereas “pain” as referring to a mental phenomenon. There would probably be nothing particularly controversial about this unless we started to consider whether the aforementioned identity claims are analogous. It should be stressed that any further debate about the rigidity of singular terms, or the contingency of sentences into which they enter, is fundamentally determined by a choice that is based on this convention.

In the case of pain, however, Kripke is strongly confident that there is no liberty at all because pain just is a feeling of pain. Pain cannot be defined in any other way. Kripke’s dictum is that pain is determined by its essential property, i.e., being felt as pain, but heat is defined by a contingent property, i.e., by the feeling of heat, though the essential property of heat is physical (Kripke 1971/2011, 24-25). If there is no feeling of pain, then there is no pain at all. While the absence of the feeling of heat does not prevent the heat from taking place, at least as molecular motion. So much for Kripke. It thus may be concluded that these two concepts belong to different conceptual categories. “Heat” refers to the physical state of the world and therefore belongs to the category of terms referring to physical states. “Pain” refers to a phenomenal experience and therefore falls into the category of terms referring to phenomenal, or generally mental, states. Consequently, it should follow that the identity claims applying the two terms cannot be analogous. This is what I mean by a different conceptual categorization for “pain” and “heat.”

³ Critics may argue that Kripke does not offer a choice of how to define “heat”. On the contrary, he shows by modal argument, among other things, that the only correct reading is to understand “heat” as a physical process. According to Kripke, the opposite reading, preferring “heat” as a sensation of heat, leads to the incorrect conclusion that we can then imagine molecular motion without heat. But in my view, it is a matter of stipulative decision how to understand the term “heat”. Kripke, of course, chooses a reading that supports his argument. Therefore, below I try to separate the two terms “heat” and “feeling of heat” and show that when we separate them, the relation between the identity claim about pain and the identity claim about heat looks analogous. Only then can a non-judgmental analysis of identity claims be carried out, because only then it is clear what entities enter into the identity relation.

⁴ It is, of course, possible to ask what motivated this convention. Some might say that there is a strong motivation for preferring the objective sense of “heat” because it is the way the term is used in physics. I agree that the choice was not entirely random. It was probably motivated by the fact that “heat” is something that has causal effects. Although I might not be able to feel heat for medical reasons, I can see that my plants dry out faster when it is warm, or I can see water evaporating from the pan. Thus, there are good reasons to distinguish the physical phenomenon from the sensation that the phenomenon causes in us. Thanks to Steffi Dach for reminding me of this.

Kripke's intuition of what I call here a conceptual categorical difference is built on two pillars: 1) the claim that "pain" is a rigid designator; 2) the folk convention defining pain as a subjective mental state. But neither of the points is something we should accept without further discussion. Much has been written about the argumentative force of the first pillar.⁵ David Lewis (1980), for instance, wonders whether the term "pain", or any other term (e.g., "heat", "water"), fixes rigidly its referent, or, on the contrary, could in some possible world refer to another object. Lewis makes it clear that the concept of pain is not a rigid designator since it is a contingent matter what state the concept of pain refers to in any possible world.⁶ In our world it can be pain as we know it, in another world it can be something else entirely. But the contingency of reference does not compromise the claim that pain and a certain state of the brain are identical in our world (Lewis 1980, 125-126).

The second point concerns the convention-based intuition that these terms are categorically distinct. The fact that, by default, we use the term "pain" to denote subjective experience, rather than to denote something else, such as a particular physical state of the body, or a state of the brain, does not exclude the possibility that this could not have been otherwise.⁷ Imagine a world in which the concept of "pain" refers to a certain type of damage to the body, rather than a mental state. A situation may then arise in which there is a pain, even if it is not subjectively experienced. In this case, the absence of the subjective component would not lead to a rejection of the existence of pain *per se*. Pain, as a particular physical bodily condition, would have been present. What would be absent is the subjective conscious experience of pain. I will address this issue in more detail below.

In my view, two aspects are crucial to Kripke's argument that favour the categorical difference between the concepts of pain and heat. First, it is the thesis that feeling of pain is an essential characteristic of pain. Second, it is the folk convention that apparently applies the concept of pain solely in a manner which supports the essentialism of pain properties. I take it that Kripke's essentialism concerning the definition of pain is driven by the stated folk convention. But neither of these two aspects is indisputable. It does not help that Kripke maintains that pain just is the feeling of pain, arguing that one cannot imagine pain without it being (consciously) felt. Even if this claim were true, which I do not think it is, it could have been

⁵ In the context of the mind-body relation see, for instance, Jacquette (1987), Soames (2018), Blumenfeld (1975).

⁶ Similar point is made by Feldman (1973). Moreover, Della Rocca (1993) argues that Kripke's argument has not managed to establish that pain event has only mental properties.

⁷ It is reasonable to ask why so many people think that a feeling of pain is an essential property of pain and why cases like heat and probably all others seem to be so different from the case of pain.

asserted as true only under the assumption that we conventionally define pain as the feeling of pain. In my opinion, however, there is no compelling reason to conclude that, just because of this convention, pain cannot be defined differently. Or, more precisely, that it cannot be defined analogically to the definition of heat. Even in the case of pain there seems to be a choice between considering pain as a feeling of pain or pain as a physical phenomenon, for instance, some kind of bodily process.

4. Formulating the Proper Relation Between Pain and Heat Statements

In what follows, I will argue that the concepts of “pain” and “heat” can be redefined so that there is no categorical difference between them. If this is the case, the analogy between empirical statements, such as “heat is molecular movement”, and mind-brain statements, such as “pain is C-fibers firing” can be established. As a result, both claims should have been treated in the same way, namely, as necessary a posteriori (i.e., empirical) statements. I will now introduce my view on the appropriate definition of the terms involved in these statements allowing for the analogous treatment of these identity claims.

A substantive point in Kripke’s argument is that it explicitly distinguishes two terms for cases of heat: (1) the “feeling of heat” as denoting something subjective, and (2) the “heat” as referring to physical phenomenon (molecular movement) (Kripke 1972/2001, 129). To make this set of concepts complete, a concept describing the neurophysiological state of the brain (3) should also be elaborated. To compare the two cases, let us suppose that (3) is, at least tacitly, present in his consideration and that it plays a part in his argument. As regards Kripke’s above mentioned quotes on pain, he quite surprisingly considers only the “feeling of pain” as denoting a subjective state and the “neurophysiological state of the brain” as referring to a certain brain state. Here the term “pain” exclusively denotes a subjective state. It is thus noteworthy that in the case of pain, Kripke does not proceed analogously to the case of heat. He does not consider that the term “pain” could also have a meaning that is analogous to (2). In other words, there is no triadic distinction between the subjective feeling of pain, pain as a physical phenomenon and a neurophysiological state of the brain. There is only a dyadic distinction between the subjective feeling of pain and the neurophysiological state of the brain. The concept of pain which would be analogous to the concept of heat is missing because pain for Kripke is simply a feeling of pain. In Kripke’s words: “being a

[subjectively felt, M.P.] pain is a necessary property of each pain” (Kripke 1972/2001, 146-147, 151-152).⁸

The crucial point of Kripke’s argument against the analogy of pain and heat⁹ is that although we can individuate heat by some contingent property, we cannot do the same for pain. In order for pain to be a pain, it has to be individuated exclusively by its essential property, which in this case is a “feeling of pain,” otherwise it will not be a pain at all. This implies that if pain were individuated by other than an essential property, for example by specifying the underlying brain state, then what would have been picked out is not a pain. By determining pain through neurophysiological description, we would obtain a set of neurophysiological data on how the brain works when a person is in a state of pain. In this manner, we do not really receive information about what it is like to feel a pain. And according to Kripke, “what-it-is-like-to-feel-a-pain” is an essential property of pain.

In the case of heat, however, Kripke thinks of it differently. To pick out heat through the feeling of heat it is to do so through a contingent property for individuating heat. The reason this property is contingent and not essential rests in the fact that the existence of heat is independent to the feeling of heat. A room may be hot, without the heat being felt by anyone. On the other hand, pain is said to be necessarily dependent on the feeling of pain. And that is exactly the point at which we disagree. In the argument for analogy, I claim the following: “The feeling of pain” is not an essential property of pain. Pain can be individuated by several other properties such as a brain state, or the physiological/molecular state of the body.¹⁰

⁸ Conceived from the opposite perspective, “heat” is not identified with the feeling of heat, but, surprisingly, with the movement of molecules, because according to Kripke heat is simply the movement of molecules.

⁹ The tendency to treat these two cases of identity as essentially different is strong. For example, Levine contends that “there is a real contrast between the psycho-physical case and the standard cases of reduction, like water to H₂O” (Levine 2001, 80). But Rosenthal seems to be right in stating that this idea of the difference between the two identity statements is fed by our lack of a convincing and generally shared theory of qualitative and neural states (Rosenthal 2005b, 195). The real contrast is thus epistemic, not metaphysical.

¹⁰ There is a legitimate concern that this claim about possible alternative definitions of the term “pain” does not undermine Kripke’s argument. Kripke can simply decide that he means by the term “pain” “phenomenal pain”, which indeed he does, and the fact that there is a sense of “pain” in which the phenomenal property is not essential is irrelevant to Kripke’s argument. While there are criticisms of the premise that “being a pain” is a necessary property of each pain (see Feldman 1973; Rorty 1979), let us concede this objection and abandon the view that the term “pain” is not a rigid designator. The assumption, however, that the sensation of pain is an essential property of pain does not necessarily imply that it is naturally possible to imagine the sensation of pain without C-fibers firing. As an example, we can imagine a situation in which the sensation of pain exists but is not consciously experienced. In such a case, there would have to be a neural state responsible for the sensation of pain, but the absence of consciousness of this experience would lead to the erroneous judgment that there is a possible world in which the relevant neural state is not accompanied by the sensation of pain.

Reuter and Sytsma (2020), for instance, offer a view that pains are not mental states but bodily states. They then use this empirical conclusion, obtained through questionnaire surveys, to justify the claim that there may be unfelt pains. But what exactly do lay people mean by saying that they can have unfelt pains? Does it mean to have unfelt changes in bodily states, or even unconscious pain *per se*? The authors consider that the claim of unfelt pain is motivated by bodily changes that may not always be consciously experienced. Thus, unconscious damage to the body is probably what justifies the claim of unfelt pains (Reuter and Sytsma, 1785) and is also the referent of the term “pain”. Here, then, is another meaning of the term “pain” that implies the non-rigidity of the designator.

As for the unawareness of this bodily damage, one can take the argument in an even more radical direction. Unconscious pain can be considered as a qualitative mental state (Rosenthal 2005a). In this case, the “pain” would be individuated by qualitative mental characteristics. This interpretation preserves the standard definition of pain as an unpleasant sensory and emotional experience. In this aspect, it is consistent with Kripke’s definition of pain. However, it is unusually radical in that it allows for the existence of unconscious pain. Kripke would disagree with this, however, because this brings about a separation of appearance from reality. Whether or not we find such a variant plausible, it suggests that there is another possible definition of pain that is not dependent on whether pain is felt. If this conception were valid, then the need to maintain the rigidity of the designator (i.e., of “pain”) would have to lead to the abandonment of the model that pain is defined as a consciously felt experience.

These two conceptions diverge in their definition of pain, leading to a different commitment regarding unconscious states of pain. Reuter & Sytsma conceive of qualities (qualitative aspects) of pain to be bodily states, so it is not an issue for them to claim that there are unconscious qualitative aspects of pain. But in any case, they deviate from the common definition of the word pain. The radical view, that follows a standard definition of pain as a psychological state, distinguishes between the terms “feeling of pain” and “pain”. The first refers to a psychological state, while the second denotes a bodily state. The radical view therefore does not identify a bodily state with feeling of pain. The price to be paid is that for many it is highly controversial to claim that a pain can take place unconsciously.¹¹

¹¹ Here, the assertion that there may be pain that is not consciously felt implies that the conscious feeling of pain is a contingent characteristic of pain. For some, it may be a problematic commitment. But there are both theoretical considerations (Rosenthal 2005b; 2010) and empirical examples (Neuman 2004; Berthier et al. 1988) suggesting that the concept of unconscious pain can be meaningful. For a defence of this view, see also Marvan and Polák (2017).

To conclude, if “pain” can refer via its contingent property, then pain identity statements are analogical to any other identity statements. All are necessary a posteriori statements. The feeling of pain, in my view, is a contingent property as any other. We can determine pain by other contingent properties as well. Pain can be picked out, for instance, by identifying a neurophysiological pattern which correlates with feeling of pain, or by physical states of the body directly correlating with that feeling as well. We can, similarly, pick out pain contingently by the fact that it affects us in such and such a way. If a feeling of heat is a contingent property and a feeling of pain belongs to the same category of properties, then it follows that a feeling of pain is also a contingent property. And, as I argued above, the inclusion of “pain” in a different category than “heat” is determined by folk convention, not by any metaphysical or empirical fact. This view, which I propose here, conceives of both concepts as belonging to the same category. This is a category of terms referring to some physical properties of the world/body. What puts them in this category is the property of “being a physical property”. The notion of “heat” here designates molecular motion, and the notion of “pain” here refers to physical damage to the body.

However, to get a well-balanced view, an opposing categorical classification may also be considered. A case in which both terms would also fall into the same category, but based on their essential characteristics (supposing there are any). The reasoning is as follows. In the same fashion as the feeling of pain is an essential property of pain, so is the feeling of heat an essential property of heat. In this alternative, both properties individuate pain and heat by necessary features. And in this case, just as pain would not be pain if it were not experienced as a feeling of pain, the same would apply to heat. Heat would not be heat if it were not experienced as a feeling of heat. Even in this case, the requirement that both terms belong to the same category is satisfied. But by preferring this classification, we lose the notion of “heat” in the meaning with which we usually associate it, namely, heat as the movement of molecules. That is why I am leaning towards the first, i.e., the triadic option.

I see no compelling reason to prefer that “pain” and “heat” are categorically different concepts. Pain and heat can be individuated through a variety of properties. The crucial factor involves the decision about how to define the terms “pain” and “heat” from the get-go of our considerations of identity. The asymmetry in the categories is, in my view, based on a natural but inaccurate intuition that “pain” is nothing other than the feeling of pain and that it cannot turn out to be otherwise. This definition has been motivated by folk convention exploiting the concept of “pain” solely in the

context of referring to the feeling of pain. Such handling is somewhat stipulative and it is unclear whether it meets the very nature of pain.

Kripke could respond by saying that the definition of pain I propose is itself purely stipulative, as opposed to his concept of pain, which is more based on the common usage of the word. What the term “pain” refers to might be strongly dependent on what concept of pain people employ. Some results from experimental philosophy suggest that lay people treat pain as a non-phenomenal concept referring to the property of an injured body part (Sytsma and Reuter 2017; Sytsma and Machery, 2010), as mentioned earlier. This is in opposition to the standard philosophical view applied also in Kripke’s treatment on pain. Thus, there seems to be two readings of “pain”, one phenomenal, the other conceiving of pain as a bodily state. It can be asked whether the philosophical view is more convenient than that of lay people. In the light of those experimental results, however, Kripke’s intuition concerning the proper meaning of pain seems to be subjective, unjustified preference. Thus, even if explorations of experimental philosophy may turn out not to be valid given how things really are, they certainly underpin Kripke’s intuition and support a value of the “pain” – “feeling of pain” distinction.

The table shows what the terms “heat” and “pain” can refer to. Kripke uses a categorically different expression of identity in the case of pain than in the case of heat. While he identifies heat with the movement of molecules, considering the concept of “heat” by default as a physical concept, he conceives the concept of pain primarily as a feeling of pain, i.e. as a mental concept. The claim that the two identities are distinct is therefore trivially true, since the asymmetrical categorial determination of the two concepts necessitates this triviality. I maintain that this asymmetry can be corrected by introducing categorially identical elements into the identity relation in both cases.

	“Heat”	“Pain”
Phenomenal concept	feeling of heat	feeling of pain
Physical concept	heat’s physical essence: molecular motion	pain’s physical essence: bodily state
Brain-state concept	neurophysiological state of the brain: x-fibers firing	neurophysiological state of the brain: c-fibers firing
Macroscopic causal concept¹²	heat’s macroscopic causal role	pain’s macroscopic causal role

¹² For the sake of completeness, I have included the functional notion “macroscopic causal concept”, but I do not deal with the functional concept of identity here.

In my view the appropriate approach is to correct this asymmetry by introducing a triadic distinction for pain as well. This takes the following form: *feeling of pain – pain – neurophysiological state of the brain*. Consequently, this might lead to the question of how pain differs from the feeling of pain. The answer is that they differ in the manner analogous to the way in which heat differs from the feeling of heat. While the feeling of heat is a phenomenal state of mind, heat is also an objective phenomenon called the movement of molecules. Similarly, a feeling of pain is then a phenomenal state of mind, while “pain” refers to biological/physiological/molecular processes in the damaged part of the body. The third entity in the triadic distinction suggested here is a neurophysiological state of the brain for heat and pain, correspondingly.

5. An Outline of Kripke’s Argument

Kripke insists that theoretical identifications such as “heat is molecular motion”, or “water is H₂O” are statements which, if true, the identity they claim must be necessary (Kripke 1971/2011, 9). Undoubtedly, it is empirical science that has the full legitimacy to identify the singular cases of identity which is the reason these statements are considered to be a posteriori at the same time. Fundamentally the same approach, according to Kripke, should have been applied to mind-brain statements like “pain is C-fibers firing”. If they truly expressed identity, the identity would be necessary. But if it turns out that they are not necessarily identical, they cannot be identical at all, i.e., not even in particular cases.

Leaving aside both the extensive debate concerning the rigidity/non-rigidity of the terms involved in these statements, and the impact the distribution of these modal properties has on the necessity of identity statements comprising these terms, let us suppose that Kripke is right and every necessary identity statement is constituted by rigid designators.¹³ If the designators are non-rigid, then the identity is contingent at most or, taking Kripke literally, the referents of the two terms are not identical at all. Kripke argues that both terms, i.e., “pain” and “C-fibers firing” are rigid designators, though. According to Kripke, the rigidity should indicate that by using these terms in an identity claim, the resulting identity statement should be either necessarily true or necessarily false. Kripke believes that at least for pain it is not the case that the identity statement is necessarily true. Although both “pain” and “C-fibers firing” are rigid

¹³ For arguments in favor of the non-rigidity view of designators like “water”, see Pelman (2014). For arguments about the non-rigidity of “pain”, see Lycan (1974, 681-682).

designators, they are not necessarily identical.¹⁴ The substantial reason why this is to be the case, consist in the so called imaginability (conceivability) argument. It may run as follows.

6. The Imaginability Argument

I can clearly imagine¹⁵ a situation in which I consciously experience pain, and I know it, but at the same time there are no C-fibers firing in my brain routinely responsible for my feeling of pain. If I can conceive of such a situation, it is metaphysically possible (Chalmers 2003, 106), and therefore the identity claim cannot be necessary. Kripke believes that he revealed a clear case of a contingent mind-brain identity statement. The argument is supposed to demonstrate that if a situation of pain without C-fibers firing can be imagined, then, assuming the rigidity of both terms, the identity is not only contingent but, consequently, it is not identity at all (since all identity statements, if true, must be necessarily true). Is he right as to the conclusion of the imaginability argument?

Thomas Polger (2004) claims that Kripke fundamentally underestimated the role of the epistemic situation we are currently in. “The apparent contingency of mind-brain identities is not genuine metaphysical contingency; it is an illusion that can be explained by appeal to our epistemic situation” (Polger 2004, 44). He then continues: “[...] some identity claims may appear contingent, even though they are not, because we do not know the relevant criteria of identity to apply” (Polger 2004, 49). Currently, we do not have enough information to account for how a pain is identical with a neural event, e.g., C-fibers firing.¹⁶ This, however, may change as soon as we get a more complex view on how the brain allows the mind to take place. It is reasonable to assume that this task will be incomparably more difficult than the case of water which turned out to be H₂O. It is nonetheless improbable that an a priori argument, which the imaginability argument surely is, may disprove the existence of identity between the mental and physical.

¹⁴ Because of Kripke’s argument, they are not contingently identical either. These identity statements would then be false at any rate.

¹⁵ I use the term “imaginability” loosely, encompassing both conceptual and figurative components. I also do not make a distinction between the concepts of imaginability and conceivability, and thus use them interchangeably.

¹⁶ C-fibers are afferents to brain regions and not realizing neural correlates of feelings of pain. Thus, empirically, the use of this term is highly misleading. A more correct interpretation would be to talk about the activation of the central nociceptive system (cNS). Swanson (2012, 252-253) identifies the prefrontal cortex as cNS, together with the anterior part of the insular cortex. The neural correlates of pain sensations are not yet accurately described.

Scott Soames (2018) takes a similar route against Kripke's argument. He argues against Kripke's claim that exposing the invalidity of apparent contingency can only be accomplished for heat statements. Soames's argument is based on respecting the distinction between epistemic and metaphysical possibility. Both claims (i.e., "pain is C-fibers firing" and "heat is molecular movement") must be considered from this perspective. As a result, both statements are contingent a posteriori. In his view, the identity theorist has every right to point out that it is a posteriori empirical evidence that establishes epistemic possibility in both cases. This epistemic possibility, though, "doesn't establish the existence of metaphysically possible world-states in which the identities fail" (Soames 2018, 178).

Then there is the opposite situation, that seemingly goes in favour of Kripke's modal argument. I can imagine a situation when my C-fibers are firing, but I am not having a conscious experience of pain. If such a case is possible,¹⁷ then the claim of identity cannot be necessary and consequently the identity cannot hold. We will address this situation in more detail.

The claim of identity assumes that there are not two independent entities, pain and C-fibers firing, but effectively only one; the neurophysiological state of the brain (Pelman 2015, 305). For the "pain" to be a rigid designator, it would have to refer to the same object in every imaginable situation, i.e., always at the same time as a given neurophysiological state of the brain. But Kripke argues that it is at least conceivable (and thus logically¹⁸ possible) for there to be a situation in which c-fibers' activity is present, but not a subjective state of pain. In such a situation, however, the term "pain" would not refer to the neurophysiological state of the brain, which is C-fibers firing, because this firing does not cause pain. It follows that the terms "pain" and "C-fibers firing" refer to different entities in at least one situation. Their identity is therefore not necessary. And again, in order for an identity to be type identity, it has to be valid across all instances, otherwise it is not an identity at all.

It is worth considering whether it is logically or metaphysically possible for a situation of C-fibers firing to occur without the presence of a pain experience. If such a situation could not have turned out to be true even as a logical or metaphysical possibility, then it would have been a strong argument against Kripke's modal argument. In my view, such a situation

¹⁷ For a detailed analysis of the relation between conceivability and possibility, see Chalmers (2002) and Yablo (1993).

¹⁸ For logical contingency of identity statements, see Ben-Yami (2018).

cannot in fact occur. The intuition that we can imagine¹⁹ the existence of C-fibers firing without being accompanied by a feeling of pain is fed by the view that not all neurophysiological processes in the brain have a correlate in some conscious subjective experience. Many neural processes occur unconsciously and, according to the standard interpretation, have no experiential component. These are the background mechanisms involved in creating subjective experience, but they are not the core correlates (or proper NCC) (Aru et al. 2012). This empirically probably correct view seems to reinforce the impression that, hypothetically, C-fibers²⁰ could also have been firing without creating a feeling of pain. Neurobiological studies, however, indicate that if a mental content is unconscious, the difference is apparent also at the neural level, e.g., in the weaker frequency/amplitude of neural firing (Moutoussis and Zeki 2002; Fontan et al. 2021; Stein et al. 2021). These empirical studies indicate that even hypothetical C-fibers would not give rise to the same neural pattern for cases of an unconscious mental state comparing it to a conscious one. Thus, the underlying neurobiological activity of the C-fibers responsible for pain sensation would differ for cases of conscious pain and for cases of absence of pain *per se*.²¹ But Kripke's argument assumes that C-fibers will bring about an identical neurobiological pattern of activity, regardless of whether conscious pain is present or there is no pain at all. It is in these circumstances that it can be imagined C-fibers firing taking place without being felt as pain. And only then it can be imagined that the terms "pain" and "C-fibers firing" refer, in at least one situation, to distinct entities.

In my view, however, such a situation cannot occur.²² Kripke builds his argument on the possibility that an identical neural state, C-fibers firing, may cause/underlie pain at one instance while not at the other. The problem is that in this situation, the two neural states will not be identical. The C-fibers firing when a real subjective pain sensation occurs will simply be

¹⁹ Christopher Hill (1997) distinguishes intuitions about the separability of mental states from neural states due to imagination (largely qualitative, perceptual like in its character) and intuitions about separability due to our ability to conceive of possible situations (propositional and conceptual). This distinction does not compromise our argument.

²⁰ A reminder that, for the sake of discussion, I left out this neural terminology, although NCC responsible for the experience of pain are in the insula, anterior cingulate cortex, and possibly in other areas of the central brain (see Garland 2012).

²¹ For example, there is clear evidence that an impairment in posterior insula leads to pain asymbolia (Berthier et al. 1998). Those with asymbolia still feel pain, however, they do not classify it as unpleasant, but rather are indifferent to it.

²² One could argue that Kripke can replace the term "C-fibers" with, say, "Whatever is the neural correlate of conscious pain" and then argue that we can imagine "Whatever is the neural correlate of conscious pain" without a conscious pain. Kripke, however, insists that the phrase referring to a neural state is a rigid designator. It is therefore irrelevant what phrase we replace the term "C-fibers" with, as long as it is still to be a rigid designator. And a rigid designator it should be, otherwise we run the risk that the phrase "Whatever is the neural correlate of conscious pain" will refer one time to a state that correlates with the presence of conscious pain, whereas another time to a state that correlates with its absence.

different from the C-fibers firing which will not trigger that pain sensation. Even if one could imagine that such a situation could arise, the current empirical evidence does not support this case. There does not seem to be a situation where one and the same type of neural state sometimes underlies pain and sometimes does not.²³

So, the dilemma is this: either the two neural states will be identical, as Kripke supposes, which inevitably implies that both will have to produce the identical subjective feeling of pain. But then Kripke will not be right that one instance of the neural state involving C-fibers firing would be accompanied by a painful sensation, while in another instance of the same type of neural state painful sensation could be absent. Or if in one instance of C-fibers firing pain is present, while in another instance pain is absent, it can be reasonably assumed that those two neural states of C-fibers firing will not be identical in its neural parameters. This latter possibility again is at odds with the assumption of identical neural states of C-fibers firing on which Kripke's argument is based. In other words, it is hard to imagine two possible worlds in which there would be identical neural states (C-fibers firing 1 and C-fibers firing 2), but in one of them there would be no accompanying feeling of pain, whereas in the other world such a feeling of pain would occur.

This dilemma begs the question against Kripke, who would obviously deny the consequent of both horns. And here our disagreement would lead to what is the crux of the whole debate. What is the relevance of the modal argument when confronted with empirical evidence? And can the transition from conceivability to natural possibility do without this evidence? Kripke's argument is modal, so all proponents of the modal argument will claim that the empirical evidence against it is *post hoc* by definition and therefore not applicable. Although many may disagree, the implications of such a concept are indeed serious. The modal argument is immune to empirical facts because what reality may or will look like is somewhat passively mirrored in what the modal argument has revealed prior to any experience. It provides a framework for what is realistically possible, and that framework simply cannot be transcended. Therefore, empirical evidence cannot be used for or against the modal argument. From my perspective, of course, the use of empirical evidence in the mind-body relation is absolutely crucial, and my argument against Kripke is indeed

²³ The claim that this situation can be easily imagined as naturally/metaphysically possible would need to be substantiated, e.g. by analysing the legitimacy of the transition from conceivability to possibility. Kripke is not concerned with empirical facts but expects his a priori argument to be eventually confirmed by empirical investigations. However, the priority of modal arguments is problematic. On the contrary, it seems that the move from conceivability to natural/metaphysical possibility cannot be convincingly defended as conceivability does not entail possibility (see Pereboom 2011, ch. 3; cf. Chalmers 2002)

based on it, at least to some extent. The dispute now arises as to whether the proponents of modal argumentation or those who regard empirical evidence as an essential corrective to modal arguments are better off.²⁴ Yet if the empirical evidence suggests that any mental change has its corresponding change in the neural domain, and perhaps even modal argument proponents agree on this, then it is simply not naturally possible for one and the same neural state to have a correlated mental state in one possible world but not in another²⁵ (assuming that the two worlds do not differ in anything else, i.e. *ceteris paribus*).

This problem can also be seen as pitting two modally inferred claims against each other. Kripke's view says that pain (or the sensation of pain) can exist without irritating C-fibers (or any other established neural state). The critique claims that it is not naturally possible for such a fact to exist. While the justification of the former consists in the transition from conceivability to metaphysical possibility and rigid fixation, the justification of the latter consists in true empirical evidence. If there is a fundamental disagreement, I cannot see how it could be resolved in favour of the modal argument by claiming independence and therefore the privilege of the modal argument against empirical evidence.

I therefore claim that empirical evidence is necessary for justifying whether pain and C-fiber's firing are identical.²⁶ And even if we assume that the modal argument does indeed precede empirical knowledge and determines what can be discovered as valid by empirical science, the

²⁴ These issues cannot be discussed here, and one can only refer to an important critique of the scope of validity of modal argumentation (Van Inwagen 1998) and its relation to empirical evidence (Cohnitz 2003). For discussion of the relation between conceivability and (natural) possibility, see Chalmers (2002) and Yablo (2002).

²⁵ Yet, such a situation is hardly possible even for ontological dualists. As I read Kripke, his modal argument leads to ontological dualism, and this is also true of Chalmers' defence of the modal argument. For the sake of the argument, let us take ontological dualism to be valid. Let us try to imagine what such ontological dualism might look like if the mind could only manifest itself when it is in close contact with the brain, as Descartes claims. For example, if the mind wanted to move the body, it would have to communicate with the brain somehow. Regardless of exactly how it would do this, that action would result in a change in the state of the brain. A new neural pattern would emerge in the neurophysiology of the brain in the relevant area, different from when the mind does not act on the brain. Again, a change in the mental area would simply lead to a change in the brain. Similar considerations apply to perception. For example, Descartes thought that the mind perceives only through its contact with the brain. This means that any percept, including phenomenal experience, that the mind is currently "experiencing" has its correlate in some brain region. The brain first constructs the relevant neural pattern, which the mind then "reads". So even in this case there cannot be a situation in which the neural state accompanies the phenomenal state on one occasion and not on another.

²⁶ For an excellent analysis showing the problems regarding this transition, see Pereboom's (2011, ch. 3) analysis of Chalmers's (2002) paper which reveals, perhaps not entirely intentionally, that the definition of what is conceivable involves empirical knowledge. And therefore, gives a reason to think that empirical investigation has a crucial role for determining whether conceivable items are metaphysically possible.

proponents of such arguments still need to make sure that a given modal argument does not predict a situation that cannot actually occur.

One of the overlooked problems of modal argumentation rests in the scope of the validity of its thesis. The modal argument concludes that it is metaphysically possible C-fibers could fire without feeling pain. As in the case of zombie beings, however, such a situation will probably not occur in our actual world because our laws of nature do not allow it. David Chalmers (2003, 106) makes this point clear: “But the argument holds that zombies could have existed, perhaps in a very different sort of universe”. Thus, the modal argument asserts the possibility of the above situation (i.e., the presence of a physical state in the absence of a mental state) for a possible world other than our actual world. However, it then makes a comment on the situation in our world and implies that identity does not apply there as well. Identity is said not to take place in our world because another world is possible in which identity is indeed not valid. But the questioning of the validity of identity, and thus of physicalism, concerns that possible world in which such a situation occurs, not our world. Thus, even if we were to consider the modal argument constructed in this way to be consistent, its scope would be that of a universe where different laws of nature than ours apply. Thus, an argument based on empirical knowledge of our world cannot simply be refuted by a situation in some other possible world.

The argument I put forward might be called the empirical argument against modal intuition. It can be reconstructed as follows:²⁷

(P1) Kripke’s argument against identity is an a priori argument.

(P2) Kripke’s argument supposes that one and the same neural state, C-fibers firing, may cause/underlie pain at one instance while not at another.

(P3) The empirical data show that one and the same brain state leads to one and the same conscious state.

(P4) Empirical data trumps a priori arguments.

Therefore:

(C) Kripke’s argument is false.

²⁷ I was led to the reconstruction by the formalization of my reviewer’s argument, on which I partly based the structure of my argument. I thank them for the opportunity to use this formulation.

I shall stress that this argument relies on correlation, so it is not an argument for identity. It is, however, an argument against a modal claim that is based on the premise that phenomenal experience (and its change) need not be mirrored in the neurophysiological parameters of a neural state. Similarly, this argument should also work against the zombie argument, which I think fails to account for the relationship of correlative changes between neural states and phenomenal experience. Chalmers' (2003) argument is based on the fact that there can be a situation where the same neural state is at one time a correlate of phenomenal experience and at another time phenomenal experience is absent, even though the neural pattern remains unchanged. Even if the identity did not hold, it would not change the fact that any shift in phenomenal experience is manifested in the neural domain. If phenomenal experience is absent, it will manifest itself in corresponding changes in the neural patterns. Although this argument has no bearing on the question of the validity of identity, correlations of this type are, in my view, sufficient to reject modal claims.

So my argument does not provide direct support for the type identity thesis, but it does provide a reason why the identity relation should still be considered as one plausible variant of the mind-brain relation. In any case, I believe that this is an important argument against the way Kripke's conclusion about the invalidity of identity theory has been reached. They provide sufficient grounds to reject the modal argument. If not, then we would have to argue that modal arguments matter more than empirical investigation.

7. Conclusion

Kripke's claim that there is a disanalogy between pain and heat identity statements is grounded in essentialism about pain. Essentialism is a claim that a feeling of pain is an essential property of each pain. I have tried to show that this assumption is conventional. It perhaps mirrors everyday folk practice in applying the term pain. It might be interesting to investigate how and why this convention has actually been constituted. I paid no attention here to the rationale for this claim. But the general answer is that it seems to be derived from the everyday experience with pain as a mostly unpleasant psychological phenomenon with negative consequences. Therefore, we define pain primarily as a conscious subjective experience. Why do we not approach heat in the same way? I think it is because heat has never been such a serious psychological phenomenon to humans as pain. And therefore, our intuition about the categorical meaning of "heat" differs from "pain". This consequence of everyday folk practice, however, should not justify the claim that "pain" and "heat" are terms that belong to

different categories.

Kripke's formulation of a modal argument against type identity is based on the controversial premise that there is not an analogy between "pain is C-fibers firing" and "heat is molecular movement". I have argued that both statements are analogous and are to be treated in the same manner. It was the categorical inconsistency in employing the terms "heat" and "pain" which contributed substantially to treating the two statements in question as disanalogous. But above all, it has led to the rejection of mind-brain identity as a hypothesis with testable empirical consequences, similar to claims such as "water is H₂O," or "a gene is a sequence of a DNA molecule".

To some, my strategy may resemble the suggestion proposed by Lewis (1972) and Armstrong (1968). They seek to reduce the phenomenal to the causally functional macroscopic level and to identify it subsequently with c-fibers firing. Conceptually, the strategy aims to eliminate phenomenal terms in favour of terms expressing a functional role and then to identify this role with neural states. However, that was not my aim. From my point of view, the feeling of pain is a fundamental part of our reality and therefore phenomenal concepts have their place in the formulation of identity. But Kripke's argument against the type-identity theory does not, in my view, explain how the phenomenon fits into the physical world. More precisely, his conclusions imply only some form of ontological dualism. My aim, on the contrary, was to avoid ontological dualism.

It should be emphasized that even my strategy does not explain how the feeling of pain or heat fits into the physical world. I have not tried to argue for a particular formulation of the identity thesis. I do not know what it might or should look like. But I believe that future research will help to find principles that allow for an acceptable formulation of identity that does not at the same time give the sense that phenomenal concepts and the experiences themselves have been reduced. After all, even Ullin Place (1956), the pioneer of the type-identity theory, maintained that phenomenal predicates denote properties of brain states in a way that is quite different from how physical predicates refer to the same properties.

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