

Chalmers' Two-Dimensional Argument Against Materialism

Abstract

Chalmers argues that the truth of materialism does not require that conscious and physical states be identical, only that consciousness supervene on the physical. He then argues that consciousness does not supervene on the physical because of the possibility of zombies. I argue that Chalmers does not make inconsistent the assumption that conscious states might be identical with physical states and that if we assume that those states are, indeed, identical, zombies will be impossible even if they are ideally conceivable.

1. Preliminaries

Chalmers articulates his argument in terms of two-dimensional semantics and so it will be helpful to begin with clarifying some key distinctions that are made within that semantics. We can think of functions (intensions) that assign to sentences and single terms truth values and referents, respectively, across possible (or conceivable) worlds.¹ The function which assigns truth values and referents across possible (conceivable) worlds conceived of as counterfactual is called secondary intension, whereas the function which assigns truth values and referents across possible (conceivable) worlds conceived of as actual is called primary intension.

The value of secondary intension depends on how the actual world turns out. If the actual world turns out one way rather than another, this will affect what is possible (or conceivable) counterfactually. So secondary intension is a posteriori. On the other hand, the value of primary intension, according to Chalmers, does not depend on how the actual world turns out and, in this sense, primary intension is a priori.²

Let's illustrate the above distinctions with examples. Although water is H_2O in the actual world, it is conceivable and possible that there might not be H_2O in the oceans and lakes but XYZ, say. If we think of those conceivable and possible worlds as the ways the actual world might turn out to be, we can say that 'water' picks out XYZ in those worlds and this would amount to saying that the primary intension of 'water' picks out XYZ in those worlds. Likewise, in those worlds the statement "Water is not H_2O " is primarily true. On the other hand, if we think of those conceivable and possible worlds as counterfactual worlds, we are forced to say that 'water' does not pick out XYZ in them and that the statement "Water is not H_2O " is not true in those worlds, either. In other words, the secondary intension of 'water' does not pick out XYZ and the statement "Water is not H_2O " is not true when evaluated according to its secondary intension. For given that water is H_2O , the secondary intension of 'water' picks out H_2O in all worlds and the statement "Water is H_2O " is secondarily necessary.

2. The argument

Let P be the statement that reports the complete microphysical truth about the universe and Q an arbitrary truth about phenomenal consciousness, for example that there is something it is like to see blue. And let (P) stand for premise and (C) for conclusion.

Then Chalmers' argument against materialism goes as follows:

(P1) $P \& \sim Q$ is primarily ideally positively conceivable.

(P2) Whatever is primarily ideally conceivable is primarily possible.

(C1) $P \& \sim Q$ is primarily possible.

(P3) The primary intensions of P and Q are identical to the secondary intensions of P and Q.

(C2) $P \& \sim Q$ is secondarily possible.

(P4) Materialism is true only if $P \supset Q$ is secondarily necessary.

(C3) Materialism is false.³

Before we explicate the key notions involved in this argument, it should be pointed out that this is an argument against the supervenience of facts about consciousness on physical facts. As Chalmers assumes in the premise (P4) materialism will be true so long as physical truths entail truths about consciousness across all possible (counterfactual) worlds and this just amounts to saying that materialism will be true as long as facts about consciousness supervene on physical facts. The relation of supervenience is to be distinguished from the relation of identity. Roughly, B-properties supervene on A-properties if no two possible situations (worlds) are identical with respect to their A-properties while differing in their B-properties.⁴ By contrast, if the properties A and B are identical, then not only there are no possible worlds which are identical with respect to A-properties while differing with respect to B-properties but also there are no possible worlds which are identical with respect to B-properties while differing with respect to A-properties. Chalmers assumes then that the truth of materialism does not require that consciousness be identical with a physical state, only that consciousness supervene on physical states. So in order for materialism to be true it is only required that there be no possible world identical to our world physically but different phenomenally; the truth of materialism is not threatened by the possibility of a world which is identical to our world phenomenally but different physically (an example of such a world might be a world in which there is only consciousness). Having assumed that, Chalmers argues then that there is a possible world, namely a zombie world, which is exactly like our world physically but in which facts about consciousness are different; a zombie world is a world in which physical facts are as they actually are but consciousness is missing. The possibility of such a world is stated

in (C2).⁵ If a zombie world is possible, then consciousness does not supervene on the physical and materialism is false.

Now, there are two key notions involved in Chalmers' argument, the notion of possibility and the notion of conceivability. The notion of possibility that features in (P2) and the subsequent premises and conclusions is the notion of what could have been created by God. Clearly, this is the notion of possibility that is relevant to the truth of materialism. On an intuitive understanding, materialism is the thesis according to which God could not have created a counterfactual world which would be a zombie world.

Chalmers refers to the possibility of what could have been created by God as metaphysical possibility and equates it with logical possibility. By logical possibility Chalmers means roughly what it is rational to believe is possible. It is an open question as to whether everything that is metaphysically possible (that could have created by God) is logically (rationally) possible; this implication may break perhaps due to our cognitive limitations. But certainly Chalmers assumes that anything that is rationally possible is something that could have been created by God. In other words, everything that is logically possible is metaphysically possible for Chalmers.

Let's now turn to the notion of conceivability. Chalmers equates logical possibility with ideal conceivability, so in effect he assumes that anything that is ideally conceivable is metaphysically possible, which is reflected in (P2).⁶ The notion of conceivability is tied to the notion of conceptual coherence. A given statement S is positively conceivable when one can coherently imagine a situation in which S is the case. S is ideally positively conceivable when its prima facie positive conceivability cannot be defeated on ideal reflection. S is primarily conceivable when S is conceivable according to its primary intension.⁷

One interesting question to ask at this point is why Chalmers begins his argument with the primary rather than secondary conceivability of $P \& \sim Q$. The answer is as follows. Chalmers wants to establish an a priori route to conclusions about metaphysical possibility. In particular, he wants to establish an a priori route from the conceivability of zombies to their metaphysical possibility. If so, the conceivability of zombies must be an a priori matter. But whether or not S is conceivable is not always a priori, as Chalmers himself points out. Whether or not S is conceivable is not a priori when the sort of conceivability involved is secondary rather than primary. Conceivability is always a priori only when it is understood primarily. Therefore the conceivability of zombies that is the starting point of Chalmers' argument is their primary rather than secondary conceivability.⁸

We have a pretty clear grasp of the key notions involved in Chalmers' argument. So now we can turn to the initial evaluation of the premises of that argument. Here is how Chalmers describes the force of his premises. The firm intuition behind (P1) is that there is no prima facie conceptual incoherence in the notion of a zombie world. But further, Chalmers argues that there cannot be any incoherence in this notion even on ideal reflection. To render zombies incoherent even on ideal reflection would require that there be some sort of conceptual link between physical and phenomenal concepts and it is plausible to say that such a link simply does not exist.⁹

As for (P3) Chalmers assumes that the primary and secondary intensions of Q are identical although he argues that his argument will go through even if those intensions are different.¹⁰ For the primary intension of Q corresponds to the secondary intension of some proposition Q' and then the primary conceivability of $P \& \sim Q$ will entail the secondary possibility of $P \& \sim Q'$, which is enough to refute materialism. As for the primary and secondary intensions of P, Chalmers allows the possibility that those

intensions might differ. For example, one might reasonably hold that whereas the primary intension of microphysical terms picks out whatever property plays a certain theoretical role, the secondary intension picks out the property that actually plays that role. One might then argue that even though $P \& \sim Q$ is possible primarily it is impossible secondarily. On this view, consciousness would not be necessitated by the structural profile of physics alone but by the combined structural and intrinsic profiles. In response, however, Chalmers argues that this view (which he calls Russellian monism or type-F monism or panprotopsyichism) would be much closer to property dualism than to materialism and that many physicalists would not accept it anyway.¹¹

Let's turn to (P4). (P4) is undisputable by both physicalists and antiphysicalists. Although materialism is a view about our world, it has modal commitments: it can be true only if $P \supset Q$ is true across all possible counterfactual worlds, in other words, only if $P \supset Q$ is necessary according to the secondary intensions of P and Q. To see that, assume that $P \& \sim Q$ is secondarily possible and hence that it is possible that there is a world physically identical to our world but phenomenally different. If such a world is possible, then after fixing the physical facts about our world, God had to do more work in order to fix the phenomenal facts. Intuitively, this consequence would be inconsistent with the truth of materialism.

It is fair to say that (P1), (P3) and (P4) are initially plausible. The only premise left is (P2). Hereafter I will refer to (P2) as the conceivability-possibility thesis (in short, CP). This is indeed the premise that makes the whole argument work. And this is the premise that has been taken to be the most controversial. Chalmers offers different reasons to believe (CP). At some places he defends this premise indirectly, by rejecting various objections to it, and at some other places he gives what he takes to be positive reasons. In what follows I will argue that Chalmers' justification for (CP) fails. Indeed, I

will argue that (CP) is false if we assume that conscious states are physical states are identical and that the primary and secondary intensions of both P and Q coincide. To be sure, Chalmers does not commit himself to the view that the primary and secondary intensions of P and Q coincide. As we just saw, he leaves it open that those intensions might differ. However, part of his argument depends on assuming that the primary and secondary intensions of P and Q do coincide; this is the part of the argument, reconstructed above, that leads to the conclusion that materialism is false. In what follows, then, I will argue that this part of the argument does not go through.

3. Chalmers' argument compared with Kripke's argument against the identity theory

Before evaluating the justification that Chalmers offers for (CP) it is worth comparing Chalmers' argument with Kripke's argument against the identity theory. The forms of those arguments are certainly different. While Chalmers argues against the supervenience of facts about consciousness on physical facts, Kripke's argument is an argument against the identity of conscious states with physical states. Despite this difference, however, both of those arguments have much in common. Both of them rely on assuming that materialism has some modal commitments: whereas Chalmers assumes that materialism is true only if $P > Q$ is secondarily necessary, Kripke argues that the statement of the identity of phenomenal and physical states can be true only if it is secondarily necessary as well. The point of those arguments then is that those commitments cannot be fulfilled given that the falsity of $P > Q$ as well as the falsity of psychophysical identity are conceivable. Thus, it is clear that both of those arguments crucially depend on assuming that conceivability implies possibility. As it will also become clear, the consideration of the reasons for which Kripke's argument may seem

inconclusive will put us in the position to see what is wrong with Chalmers' argument as well.

Let p stand for pain, c for c-fibers firing, and let " $p=c$ " be the statement of the identity of p and c . Let also (KP) stand for premise and (KC) for conclusion.

Following Chalmers we can then reconstruct Kripke's argument as follows:

(KP1) " $p=c$ " is true only if " $p=c$ " is necessary.

(KP2) " $p=c$ " is apparently contingent, which means that " $\sim(p=c)$ " is conceivable.

(KP3) If " $\sim(p=c)$ " is conceivable, there is a possible world with a being in an epistemic situation that is qualitatively identical to mine in which the corresponding statement " $p=c$ " is false.

(KP4) If there is a possible world with a being in an epistemic situation that is qualitatively identical to mine in which the statement " $p=c$ " is false, " $\sim(p=c)$ " is possible.

(KC1) " $\sim(p=c)$ " is possible.

(KC2) " $p=c$ " is false.¹²

Kripke takes (KP3) for granted and argues that the only potential way to block this argument would be to deny (KP4). However, (KP4) cannot be denied, according to Kripke. That is the key part of Kripke's argument. That part of the argument depends on assuming that pain is essentially the feeling of pain.

The potential way of denying (KP4) draws on our intuitions about what is possible outside the phenomenal domain. Take our intuitions regarding water. That water is H_2O is apparently contingent in Kripke's sense and hence it is possible that for a being in an epistemic situation identical to ours the statement "Water is H_2O ", as uttered by that being, is false. So the premise corresponding to (KP3) is true for the statement "Water is not H_2O ". In particular, in a world where watery stuff is not H_2O ,

the statement “Water is H₂O”, as uttered by a being in our epistemic situation, would be false. However, this does not imply, as Kripke points out, that it is possible that water might not have been H₂O. What is possible is not that water might not have been H₂O but rather that watery stuff might not have been H₂O. So when we think that it is possible that water might not have been H₂O we are under an illusion, according to Kripke. The illusion stems from the fact that we misdescribe the possible worlds in which watery stuff is not H₂O as the possible worlds in which water is not H₂O. In our context the key point is that in the case of the statement “Water is H₂O”, the premise corresponding to (KP4) would be false. Now, one might argue that a similar line of reasoning will show that even though (KP3) is true, (KP4) does not follow. That is, one might argue that we are under an illusion when we think that pain might not have been c-fibers firing. The idea would be that even though it is possible that the feeling of pain might not have been c-fibers firing, it is not possible that pain might not have been c-fibers firing and that we mistakenly confuse the possibility of the former with the alleged possibility of the latter.

Unfortunately, Kripke argues, the model that works for water does not work for pain. The model turns on there being a difference between being water and being watery and the trouble is that in the case of pain there is no distinction between pain and the feeling of pain corresponding to the distinction between water and watery stuff; to feel pain is simply to be in pain. In effect, to be in an epistemic situation in which we are, that is, to be in an epistemic situation in which there is the feeling of pain is to be in an epistemic situation in which there is pain. And consequently, any possible world in which the statement “p=c”, as uttered by a being in our epistemic situation, is false is a possible world in which “p=c” is false.

Chalmers proposes to interpret the conceivability of “ $\sim(p=c)$ ” that Kripke is concerned with as the primary conceivability of “ $\sim(p=c)$ ” and suggests that where Kripke speaks of a possible world with a being in a situation epistemically identical to ours we might speak of a world that is possible primarily.^{13 14} Once we make these two adjustments, we will get the following reconstruction of Kripke’s argument in the two-dimensional framework:

(KP1’) “ $p=c$ ” is true only if “ $p=c$ ” is secondarily necessary.

(KP2’) “ $p=c$ ” is apparently contingent, which means that “ $\sim(p=c)$ ” is primarily conceivable.

(KP3’) If “ $\sim(p=c)$ ” is primarily conceivable, “ $\sim(p=c)$ ” is primarily possible.

(KP4’) If “ $\sim(p=c)$ ” is primarily possible, “ $\sim(p=c)$ ” is secondarily possible.

(KC1’) “ $\sim(p=c)$ ” is secondarily possible.

(KC2’) “ $p=c$ ” is false.

(KP4’) results from Kripke’s assumption that both the concept p and the concept c refer essentially, by picking out the very properties that fix their references. (KP3’) reflects a more general premise that Kripke implicitly accepts, namely that if S is an identity statement and S is primarily conceivably false, S is primarily possibly false. Now, an identity statement can be primarily conceivably false only if it is a posteriori. Thus, the more general premise that Kripke adopts can be put as follows: if S is an a posteriori true identity statement, S is primarily possibly false, in other words, if S is an a posteriori true identity statement, S is primarily contingent. Since Kripke’s premise relies on the connection between primary conceivability and primary possibility, Kripke’s premise corresponds obviously to (CP) in Chalmers’ argument outlined earlier. The important point to note here is that whereas Chalmers takes considerable effort to justify (CP), Kripke does not defend (KP3’) but takes it for granted.

Let's list all the key differences between Chalmers' and Kripke's arguments together:

(1) Kripke argues against the identity of p and c and Chalmers argues against the supervenience of any given phenomenal truth Q on the complete microphysical truth P.

As we saw, Chalmers assumes that the truth of materialism does not require that conscious states be identical with physical states, only that facts about consciousness supervene on physical facts. This is then what motivates Chalmers to argue against psychophysical supervenience rather than against psychophysical identity.

(2) Chalmers does not rely on essentialism about phenomenal states. It is essential for Kripke to assume that pain feels like pain in all possible worlds but that is not essential for Chalmers. To assume that pain is essentially the feeling of pain amounts to saying, in Chalmers' terminology, that the primary and secondary intensions of 'pain' coincide. As we saw, then, Chalmers argues that his argument goes through even if the primary and secondary intensions of Q are different. So assuming that Q is a phenomenal truth about pain, this means that according to Chalmers the argument will go through even if the primary and secondary intensions of 'pain' are different.

(3) Most importantly, Chalmers, unlike Kripke, attempts to defend the transition from primary conceivability to primary possibility, which is reflected by his attempt to justify (CP). That is, indeed, the most essential part of Chalmers' argument.

In what follows I will argue that Chalmers' justification for (CP) fails and consequently that Chalmers has not established that consciousness does not supervene

on the physical. My objection to Chalmers' argument can be put directly as follows. Chalmers is right to point out that the truth of materialism does not require that conscious states be identical with physical states, only that facts about consciousness supervene on physical facts. But to assume that is not to deny that if conscious states are identical with physical states, materialism will also be true. Thus, if it can be shown that Chalmers' argument does not rule out that conscious states might be identical with physical states, Chalmers cannot claim that materialism is false. But then it can be argued that Chalmers' argument does not rule out the possibility of conscious states being identical with physical states. It can be argued that it simply does not follow from the primary conceivability of zombies (the primary conceivability of $P \& \sim Q$) that conscious states and physical states are not identical. While the primary conceivability of zombies implies that the statement " $\sim(p=q)$ " is primarily conceivable, where p and q stand for a physical and a phenomenal state, respectively, the fact that " $\sim(p=q)$ " is primarily conceivable does not imply that " $p=q$ " is false. So my point is that if Chalmers is in no position to rule out the truth of the identity of p and q , he cannot claim he has shown materialism to be false. In particular, if conscious states are identical with physical states, psychophysical identity will be secondarily necessary given that physical concepts as well as the concepts of conscious states are rigid. But then, assuming that the primary and secondary intensions of those concepts are identical, psychophysical identity will be primarily necessary as well, which will contradict Chalmers' conceivability-possibility thesis. So in effect, if p is identical with q , Chalmers' conceivability-possibility thesis is false and the whole argument collapses (or at least the part of the argument which relies on assuming that the primary and secondary intensions of P and Q , respectively, and hence those of p and q are identical and which leads to the conclusion that materialism must be false).¹⁵ In the next section I

will argue that Chalmers gives us no reason to think that p and q cannot be identical and that we can consistently assume that p and q are identical. The consequence of that is that Chalmers' conceivability-possibility thesis is, indeed, unjustified and that then the whole argument falls short of showing that zombies are possible.

4. From the truth of psychophysical identity to the falsity of (CP)

Let's assume again that p stands for a physical state, that q stands for a phenomenal state and that " $p=q$ " is the statement of the identity of p and q . Let's also assume with Chalmers that $P \& \sim Q$ is primarily conceivable. As I have indicated, the primary conceivability of $P \& \sim Q$ does not imply that " $p=q$ " is false. That $P \& \sim Q$ is primarily conceivable implies that " $\sim(p=q)$ " is primarily conceivable but that does not imply that " $p=q$ " is false. Consider in this context the case of our conceivability intuitions regarding standard theoretical identities, for example the intuition to the effect that water is not H_2O . "Water is not H_2O " is primarily conceivable but that does not imply that "Water= H_2O " is false. Now, in the case of standard a posteriori identities, the primary conceivability of their falsity goes together with the distinctness of the reference-fixers of the two concepts flanking the identity sign. This raises a difficulty. If we assume that in general the conceivable falsity of an identity statement implies the distinctness of the reference-fixers of the two concepts flanking the identity sign, " $p=q$ " cannot be true if we assume in addition that p and q refer essentially (pick out the very properties that fix their references). By the first assumption, from the conceivable falsity of " $\sim(p=q)$ " it will follow that the reference-fixers of p and q are distinct. But then, assuming that the concepts p and q refer essentially, p and q cannot be identical. For assuming that p and q refer essentially, p and q can be identical only if the reference-fixers of p and q are identical.

This may seem to be a serious difficulty. Indeed, this is the difficulty that led Kripke to think that “ $p=q$ ” cannot be true. For as we saw, Kripke assumed that if S is an a posteriori identity statement, S is primarily contingent, which means that Kripke assumed that if S is an a posteriori identity statement, the properties fixing the reference of the concepts flanking the identity sign must be distinct.¹⁶ This is the general assumption that is reflected in our reconstruction of Kripke’s argument above in the premises (KP3) and (KP3’).

If Kripke’s general assumption is right, “ $p=q$ ” cannot be true. But the assumption does not seem to be right. As Loar points out, we can account for the conceivable falsity of an identity statement (or, in other words, for its aposterioricity) in purely psychological terms, without invoking any difference at the level of reference-fixing properties.¹⁷ This then leaves room for assuming that “ $p=q$ ” can be true despite the fact that both p and q refer essentially.

But further, if we can assume that “ $p=q$ ” can be true, this will have fatal consequences for Chalmers’ argument against materialism. First, notice that if “ $p=q$ ” is true, “ $p=q$ ” must be true across all possible worlds. This means that $P>Q$ must be necessary as well and hence that zombies will be impossible:

(P1*) “ $p=q$ ” is true a posteriori.

(P2*) The phenomenal and microphysical concepts p and q are rigid (have the same referents, respectively, in all possible (counterfactual) worlds).

(C1*) “ $p=q$ ” is secondarily necessary.

(C2*) $P>Q$ is secondarily necessary.

Now, (C2*) by itself does not undermine Chalmers’ argument. For as we saw, Chalmers himself argues that $P>Q$ would be secondarily necessary if the primary and secondary intensions of P differ. Chalmers cannot allow that $P>Q$ should be secondarily

necessary only assuming that the primary and secondary intensions of both Q and P, respectively, are identical. It is clear why he cannot allow this possibility: under the assumption in question, the secondary necessity of $P > Q$ would entail the primary necessity of $P > Q$ and then (CP) would be false. But, of course, the trouble is that it is not obvious why we cannot assume that $P > Q$ is secondarily necessary and that the primary and secondary intensions of both P and Q, respectively, are identical. There does not seem to be any inconsistency here. If we now make this additional assumption, we can complete our reasoning as follows:

(P3*) The primary and secondary intensions of P and Q, respectively, are identical.

(C3*) $P > Q$ is primarily necessary.

Now, one possible line of resistance to this line of reasoning would be that (P3*) is inconsistent with (P1*).¹⁸ If the primary and secondary intensions of P and Q are identical, the primary and secondary intensions of the physical and phenomenal concepts \underline{p} and \underline{q} , respectively, involved in P and Q are identical and this means that the properties fixing the reference of \underline{p} and \underline{q} are identical with the referents of those concepts. So if we now assume in addition that p and q are identical, the properties fixing the reference of \underline{p} and \underline{q} will have to be identical as well. But intuitively 'p=q' cannot be true a posteriori if the reference-fixers of \underline{p} and \underline{q} are identical. We are coming back to the difficulty discussed above.

In response, however, we should say what we have already said above. The intuition that an identity statement can be true a posteriori only if the concepts flanking the identity sign have different reference-fixers has to be rejected. The a posteriori status of a true identity statement can be accounted for purely psychologically, in terms of the conceptual differences between the relevant concepts rather than in terms of the difference between reference-fixers.

Thus, it is fair to say that nothing prevents us from concluding that (C3*) is true if (P1*), (P2*) and (P3*) are true. But if (C3*) is true, $P > Q$ will be primarily necessary despite being primarily conceivably false. So if (C3*) is true, (C1) does not follow from (P1) and (CP) is false. So consequently Chalmers' argument against materialism collapses.

In his response to Chalmers, Loar argues similarly that " $p=q$ " will have to be primarily necessary if we assume that p and q are identical.¹⁹ In Loar's terminology, the argument goes as follows. If p and q are identical, then given that both p and q refer essentially, their reference-fixing properties are identical.²⁰ But then, by the principle of the necessity of property-identity, those properties will be identical in all possible worlds even if it is ideally conceivable that they should be distinct. This means, in other words, that " $p=q$ " will be primarily necessary even if on ideal reflection the statement is primarily ideally conceivably false. So again, to go back to Chalmers' argument, step (C1) does not follow from (P1) and (CP) is false.²¹

The objection I am raising here to Chalmers crucially depends on assuming that the primary and secondary intensions of p and q , respectively, and consequently those of P and Q are identical. To be sure, it is not obvious whether or not this assumption is true, as Chalmers himself points out. While it is reasonable to think that the primary and secondary intensions of q are identical, it is not unreasonable to think that the primary and secondary intensions of p might differ.²² As we saw, then, Chalmers argues that if the primary and secondary intensions of p differ, we won't save materialism even if we assume that $P > Q$ is secondarily necessary despite being primarily contingent. For the resulting view, according to Chalmers, will be much closer to property dualism than to materialism. Now, I do not have an objection to that part of Chalmers' argument. My objection is an objection to that part of Chalmers' argument which depends on assuming

that the primary and secondary intensions of \underline{p} (along with the primary and secondary intensions of \underline{q}) are the same. Assuming that those intensions are identical, Chalmers argues that $P \& \sim Q$ must be secondarily possible once it has been granted that $P \& \sim Q$ is primarily possible and consequently that materialism is false. My claim is that the premise of this reasoning, namely that $P \& \sim Q$ is primarily possible, which is Chalmers' (C1), is unjustified. This is because under the assumption that the primary and secondary intensions of \underline{p} and \underline{q} , respectively, are identical, (C1) does not follow from (P1) if we assume in addition that p and q are identical.

While Chalmers himself assumes that the primary and secondary intensions of the concepts \underline{p} and \underline{q} might be identical, his mistake lies in failing to see what follows from this if we assume that p and q are identical. Chalmers starts off by arguing that the move from primary conceivability to primary possibility is not undermined by Kripke's a posteriori necessities. Having then taken on this basis (CP) as a working hypothesis, he assumes that the identity of the primary and secondary intensions of P and Q strengthens his argument because it justifies the move from (C1) to (C2). If what I argued here is right, however, Chalmers' move from (C1) to (C2) is too quick. And so is his acceptance of (CP). For, again, if we assume that p and q are identical, the identity of the primary and secondary intensions of \underline{p} and \underline{q} gives us the reason to think that $P > Q$ is primarily necessary and hence that (C1) and (CP) are false.

Now, it should be pointed out that while our assumption that ' $p=q$ ' can be true depends on assuming that the conceivable falsity of that statement can be explained purely psychologically, Chalmers now argues that the project of explaining our conceivability intuitions in psychological terms will make sense as contributing to the defense of materialism only provided that the conceptual or psychological differences between phenomenal and physical concepts can themselves be explained in physical

terms.²³ There is no doubt that this may be a serious challenge to meet.²⁴ Chalmers himself is skeptical about the prospects for providing the required explanation. And even if there is such an explanation, he argues, it will no longer support materialism anyway since then we won't be able to appeal to the differences between phenomenal and physical concepts in order to explain the conceivability of zombies. There is no place here to evaluate this dilemma.²⁵ Here my point is that if we take the project of explaining our conceivability intuitions in psychological terms at face value, the two-dimensional argument against materialism simply fails.

Let's also note that even if the differences between phenomenal and physical concepts cannot themselves be explained physically, as Chalmers fears, we may still be entitled to think that p and q can be identical. For the key point is that the truth of that identity cannot be undermined by any conceivability intuitions. The fact that we can conceive of phenomenal and physical properties as distinct simply does not imply that those properties are distinct, which turns on the basic distinction between concepts and properties. The intuition of this distinction between concepts and properties seems to be the real motivation for the project of explaining our conceivability intuitions in purely psychological terms.

5. Chalmers' justification for (CP)

We have seen that there is a straightforward line of reasoning which leads to the denial of (CP). But Chalmers takes considerable effort to justify (CP) and argues that we have no reason to think that this thesis should be false. In fact, he goes further and argues that we have serious reasons to think that (CP) could not be false. It seems to me clear, in the light of what has been said so far, that Chalmers' justification must be misguided. My diagnosis of what leads Chalmers astray is this. When Chalmers justifies (CP), he

does not take into account the possibility of conscious and physical states being identical and when he does discuss the question of psychophysical identity, he assumes (for the wrong reasons) that those states cannot be identical.²⁶ But let's go through Chalmers' justification in detail. Chalmers justifies (CP) in five steps, so let me respond to each of those steps in order.

(1) The two-dimensional analysis of standard a posteriori necessities.

As Chalmers points out, what is primarily conceivable in the case of standard a posteriori necessities is also primarily possible. For example, it is primarily conceivable that water is not H₂O and it is also primarily possible that water is not H₂O. For to say that it is primarily conceivable that water is not H₂O is to say that it is conceivable that watery stuff might not be H₂O and that is certainly possible. Thus, Chalmers argues that (CP) cannot be undermined by Kripke's a posteriori necessities; rather, the two-dimensional analysis of those necessities supports (CP).

In response, it should be said that this is not really a conclusive support. Even if primary conceivability entails primary possibility in the case of standard a posteriori identities, we cannot assume that this how things will be in the case of psychophysical identity. As we saw, if we assume that p and q are identical, the statement "p=q" will be primarily necessary even though it is primarily conceivably false.

(2) Primary possibility is a priori.

Chalmers assumes that primary possibility is to be determined a priori; it cannot depend on any a posteriori truths about the actual world. But if primary possibility is a priori, it must follow from what is primarily conceivable since primary conceivability is (according to Chalmers) always a priori.

Why does Chalmers think that primary possibility is a priori? When we ask about what is primarily possible, we are asking about what the actual world might turn out to be like, and there is no reason, according to Chalmers, why the way the actual world might be like should depend on how it does turn out.

“The primary intension of a concept, unlike the secondary intension, is independent of empirical factors: the intension specifies how reference depends on the way the external world turns out, so it does not itself depend on the way the external world turns out.” (Chalmers 1996, p. 57)

Take the case of water again. The primary possibility of water not being H₂O is not undermined by the fact that water is H₂O in the actual world. The fact that water is H₂O constrains only what is possible secondarily. So Chalmers generalizes this point and assumes that primary possibility in general is to be determined a priori.

In response, Chalmers is not justified in assuming that primary possibility in general is to be determined a priori. For, again, our analysis of the identity statement “p=q” shows that if S is an identity statement in which the concepts flanking both sides of the identity sign are rigid and one whose primary and secondary intensions coincide, the primary possibility of ~S (along with its secondary possibility) will be dependent on truths that are a posteriori, namely on whether or not the identity that S asserts holds. If the identity S asserts holds, then ~S will be primarily impossible even if ~S is a priori conceivable.²⁷

(3) No examples of strong necessities.

If you deny (CP) you are committed to believing in what Chalmers calls strong necessities. A strong necessity is an a posteriori statement with a necessary primary

intension. According to Chalmers, then, no case has been made for the existence of strong necessities outside the mind-body domain.²⁸

Here I do not want to disagree with Chalmers about that. As Chalmers himself admits, even if there are no strong necessities outside the mind-body domain, materialists might argue that there could be strong necessities uniquely inside the mind-body domain. This is indeed the route that has been taken by such philosophers as Hill, McLaughlin, and Loar.^{29 30} According to Chalmers, however, nobody, including the philosophers just mentioned, has actually explained why there should be strong psychophysical necessities.³¹ So this is the next step of Chalmers' justification of (CP).

(4) No explanation of strong necessities inside the mind-body domain.

(4.1) Chalmers' response to Hill and Hill and McLaughlin.

Hill, Hill and McLaughlin, and Loar defend the idea that strong necessities might exist uniquely inside the mind-body domain by appealing to the unique nature of phenomenal concepts. Following Daniel Stoljar, I will refer to this explanatory strategy as the phenomenal concept strategy.^{32 33} Now, the main point of the phenomenal concept strategy, at least in Hill's and Hill and McLaughlin's version, is this: there is no inconsistency between $P \& \sim Q$ being primarily conceivable and $P > Q$ being primarily necessary because we can account for our conceivability intuitions in purely psychological or conceptual terms. Given that this sort of explanation is available, the primary conceivability of $P \& \sim Q$ does not imply the primary possibility of $P \& \sim Q$.

Chalmers complains about this line of thought that although it leaves room for assuming that $P > Q$ could be strongly necessary, it does not actually explain why $P > Q$ should be primarily necessary. In other words, the sort of explanation provided by the phenomenal concept strategy has no tendency to show that our conceivability intuitions

are unreliable. As Chalmers points out, one can give a psychological explanation of why we can conceive of red squares, in terms of the distinct cognitive processes involved in conceiving of color and shape, but no one would infer from this that red squares are impossible.

There are two things to say in response to Chalmers. First, although Chalmers sees the phenomenal concept strategy as an attempt to provide an explanation of why $P > Q$ should be strongly necessary, this is not how the point of the strategy has to be construed. The main point of the strategy is simply to leave room for assuming that $P > Q$ could be primarily necessary despite being primarily conceivably false. If so, Chalmers' complaint can hardly be seen as an objection to the phenomenal concept strategy. Of course, Chalmers is right that merely leaving room for thinking that $P > Q$ could be strongly necessary by explaining the conceivability of $P \& \sim Q$ in psychological terms is not sufficient as a defense of materialism. The defenders of materialism need to show in addition that $P > Q$ is, in fact, strongly necessary. But once we have made room for assuming that $P > Q$ could be strongly necessary, it is not clear why we should be skeptical about the prospects for providing such an explanation. As we saw, we do, in fact, have such an explanation: $P > Q$ will be necessary in the strong sense if p and q are identical.³⁴

To be sure, Hill and Hill and McLaughlin attempt to provide a different explanation of why $P > Q$ should be strongly necessary or, in other words, why our conceivability intuitions regarding zombies (the Cartesian intuitions, as Hill and McLaughlin call them) are unreliable. According to Hill and McLaughlin, the unreliability of those intuitions does follow from the fact that we can explain them in purely psychological terms. In particular, Hill and McLaughlin argue that we have no reason to trust those intuitions because the use of sensory and theoretical-physical

concepts they involve is governed by different epistemic constraints; the corresponding differences do not exist in the case of modal intuitions they we find trustworthy.³⁵

This argument, of course, is not conclusive in the light of Chalmers' objection. Chalmers might say that there are different epistemic constraints involved in conceiving of color and shape, say, and yet that this does not imply that red squares are impossible.

Now, it should be pointed out that Hill argues in addition that we have inductive reasons to think that our Cartesian intuitions are unreliable: the conceptual mechanisms responsible for the Cartesian intuitions are akin to the mechanisms responsible for the intuitions to the effect that commonsense kinds are separable from theoretical kinds (for example, the mechanisms responsible for the intuitions to the effect that water and H₂O are distinct kinds) and the unreliability of the latter gives us the reason to doubt the reliability of the former.³⁶

Again, whether or not this explanation is really successful is an open question.³⁷ But even if it isn't, we have the explanation of why $P > Q$ should be strongly necessary sketched above, that is, the explanation given by the line of reasoning (P1*)-(C3*). As we saw, this is the line of reasoning corresponding to Loar's explanation of how " $p=q$ " could be strongly necessary. According to this line, $P > Q$ will be strongly necessary if we assume that p and q are identical and that the primary and secondary intensions of p and q (and so P and Q), respectively, are identical.

Of course, our reasoning may seem incomplete as an explanation of why $P > Q$ should be strongly necessary. Chalmers might say that our explanation will be complete only if we provide reasons to think that p and q are identical. There are, again, two things to say in response to that. First, we do not seem to have any reasons to think that p and q could not be identical. As we saw, there is a prima facie difficulty in seeing how " $p=q$ " could be true assuming that both p and q refer essentially. If p and q refer

essentially, then p and q can be identical only if p and q have the same reference-fixers and the difficulty was in seeing how the identity statement “ $p=q$ ” could be true a posteriori assuming that the reference-fixers of p and q are identical. In all other cases of a posteriori identity statements, the two concepts flanking the identity sign have different reference-fixers and so it might seem that what accounts for the a posteriori status of true identity statements is precisely the distinctness of those reference-fixers. As we saw, however, Loar argues that this is not the only way to account for the a posteriori status of identity statements. There is another sort of explanation available, one that appeals to conceptual differences between the concepts flanking both sides of the identity sign. So, in particular, that is how we can explain the a posteriori status of the statement “ $p=q$ ”. If that is so, we can consistently assume that that statement can be a posteriori true despite the fact that both p and q refer essentially. That is then the point of the phenomenal concept strategy in the context of the question as to whether the statement of the identity of p and q can be true. The strategy certainly leaves room for assuming that “ $p=q$ ” could be a posteriori true. Chalmers would say in response that what we need to do in addition is to explain why “ $p=q$ ” should be true. But then, again, there seems to be no reason to think that we should be skeptical about the prospects for providing such an explanation. In explaining why “ $p=q$ ” should be true, we might appeal to the fact that p and q play the same roles in the causal scheme of things, that is, to the fact that the physical effects of q are the effects of p . This sort of explanation is perfectly consistent with assuming that both p and q refer essentially.³⁸

(4.2) Chalmers’ response to Loar.

The key point of my response to Chalmers’ complaint about the phenomenal concept strategy is that assuming (with the help of that strategy) that “ $p=q$ ” is, in fact, true, we

have an explanation of why $P > Q$ should be strongly necessary. My response comes close to the response given to Chalmers by Loar. For, again, Loar also argues that assuming that “ $p=q$ ” is true, “ $p=q$ ” will be primarily necessary and there is no inconsistency in holding that “ $p=q$ ” can be both primarily necessary and true a posteriori, that is, no inconsistency in holding that “ $p=q$ ” can be true a posteriori and that the reference-fixers of p and q are identical. Now, Chalmers argues that Loar’s argument fails. That is, Chalmers argues that Loar fails in explaining why psychophysical identity should be primarily necessary and a posteriori. It seems to me clear, however, that Chalmers misinterprets Loar and that his objections to Loar are not well taken.

Chalmers’ main response to Loar is given in Chalmers (1999). Here Chalmers responds to Loar (1997). According to Chalmers, Loar attempts to explain why “ $p=q$ ” should be strongly necessary by trying to explain how the concepts p and q could pick out the same property and have the same reference-fixer despite being cognitively distinct. Chalmers is certainly right that Loar tries to explain how the concepts p and q could pick out the same property and have the same reference-fixer despite being cognitively distinct. But Chalmers is wrong in thinking that Loar thereby wants to show that “ $p=q$ ” is strongly necessary. As we saw earlier, Chalmers thinks that the goal of the phenomenal concept strategy is to provide reasons for thinking that $P > Q$ is, in fact, strongly necessary. Chalmers assumes that this is what Loar attempts to do, too, although somewhat indirectly, by showing that “ $p=q$ ” is strongly necessary.³⁹ It is clear, however, that Chalmers misinterprets Loar. Explaining why “ $p=q$ ” is strongly necessary would require justifying the claim that p and q are coreferential and cognitively distinct despite having the same reference-fixer. Chalmers thinks then that this is what Loar tries to do. But that is not what Loar tries to do. Rather, Loar wants to show that there is

room for assuming that p and q can be coreferential and cognitively distinct despite having the same reference-fixer.

Here is Chalmers' reconstruction of what Loar attempts to do. Loar appeals to two facts about phenomenal concepts: that (a) they are recognitional concepts and that (b) they express the same property they refer to (in other words, refer essentially). According to Chalmers, Loar appeals to (a) in order to explain why p and q should be cognitively distinct and coreferential. Recognitional concepts are in general coreferential with theoretical concepts and this is, according to Chalmers, what leads Loar to think that (a) implies that (a') p and q are cognitively distinct and coreferential. Thus, according to Chalmers the point about phenomenal concepts being recognitional concepts is meant not only to show that phenomenal and physical concepts have different cognitive roles but also to justify the coreference of those concepts. But further, on Chalmers' reconstruction of Loar, (a') together with (b) implies that (b') p and q corefer and have the same reference-fixer and are cognitively distinct.

Having assumed that (b') is what Loar meant to establish, Chalmers now raises the objection that (b) undercuts (a').⁴⁰ The coreferentiality of recognitional concepts other than phenomenal concepts with theoretical-physical concepts is grounded in the two-dimensional nature of recognitional concepts. But phenomenal concepts are one-dimensional (pick out the very properties that fix their reference) and therefore, even assuming that phenomenal concepts are recognitional, we have no reason to suppose that they should corefer with physical concepts.

In response, it is clear that Chalmers misconstrues the dialectic of Loar's reasoning. Loar does not appeal to the recognitionality of phenomenal concepts in order to justify the claim that p and q corefer. Thus, Loar does not assume that (a) implies (a'): the mere fact that phenomenal concepts are recognitional concepts does not imply

for Loar that they do corefer with theoretical-physical concepts. Rather, the point of Loar's appeal to the recognitionality of phenomenal concepts is to secure the assumption that 'p=q' can be true at all. More specifically, the point is to undermine the assumption that if phenomenal and physical concepts are to be coreferential and cognitively distinct, they cannot have the same reference-fixer. This assumption stems from a more general assumption, namely that two coreferential concepts can be cognitively distinct only if they have different reference-fixers. As we saw, then, Loar argues that this assumption is unjustified given that we can account for the a posteriori status of a true identity statement (in other words, the cognitive distinctness of two coreferential concepts) purely psychologically, by appealing to conceptual differences between concepts. In particular, we can explain purely psychologically why phenomenal concepts are cognitively distinct from theoretical-physical concepts, namely by appealing to the fact that phenomenal concepts, unlike theoretical-physical concepts, are recognitional concepts. If this is so, Loar claims, there is no inconsistency in assuming that phenomenal and theoretical-physical concepts can be coreferential and cognitively distinct, on the one hand, and have the same reference-fixer, on the other.

Once we see what Loar's dialectic amounts to, we can see that Chalmers' objection to Loar is not well-taken. The objection was that (b) undercuts (a'): both p and q refer essentially and this makes it difficult to see why p and q should corefer and be cognitively distinct; in all cases of cognitively distinct and coreferential concepts, at least one of the concepts refers contingently. This objection does not really make sense for two reasons. First, the objection does not make sense in so far as it relies on the false assumption that Loar attempts to explain why p and q should corefer. And secondly, the objection does not make sense anyway given what Loar does attempt to do. It is clear that Chalmers' objection stems from assuming that if two concepts refer essentially,

they cannot be coreferential and cognitively distinct. But that is equivalent to assuming that two concepts can be coreferential and cognitively distinct only if they have different reference-fixers and this is precisely the assumption that Loar rejects by appealing to the fact that the cognitive distinctness of two coreferential concepts can be explained purely psychologically. Paradoxically, then, the objection that Chalmers raises to Loar is the objection that Loar renders ineffectual.⁴¹

Of course, Chalmers is right to insist that the successful defense of materialism requires showing that p and q do corefer if they do. But as I have suggested earlier, this does not seem to be an impossible task to accomplish. Materialists might argue that p and q corefer given that p and q play the same role in the causal scheme of things.

It should be pointed out that Chalmers (1999) raises one more objection to Loar.⁴² He argues that by assuming that (a') and (b) can together be true, Loar assumes that phenomenal concepts might conceive of physical properties under a necessary (phenomenal) mode of presentation and hence that there might be a necessary connection between physical properties and phenomenal feels. But that is just the sort of necessity that is in question. So rather than explaining strong necessities, Loar's account presupposes them. It is not difficult to see that this objection results from misunderstanding Loar as well. Loar, indeed, thinks that there is no inconsistency between (a') and (b). But that is not an arbitrary assumption on his part, as Chalmers presupposes. Rather, Loar accepts this assumption after defending it against the objection that the only way to account for the cognitive distinctness of two coreferential concepts is by assuming that they have different reference-fixers.

(5) Modal rationalism.

Chalmers argues that in the absence of the explanation of strong necessities, they will be brute and inexplicable in the sense in which fundamental laws of nature are brute and inexplicable. But while there may be brute and inexplicable laws about our world, the realm of the possible has no room for this sort of arbitrary constraint. Laws of nature are metaphysically contingent and so a posteriori fundamental laws relating consciousness with the physical should be contingent, too.

Clearly, this objection loses its force once we appeal to our account of why $P > Q$ should be strongly necessary. On our account, the necessity of $P > Q$ is not brute and inexplicable. But Chalmers claims further that there is still one most fundamental reason why strong necessities are unacceptable. The reason can be put as follows. Modality is constitutively tied to what it is rational to believe but strong necessities break the tie between modality and rationality.⁴³ More specifically, Chalmers' reasoning is as follows. There is a range of modal phenomena in which we have reason to believe, such as counterfactuals, the content of thought, rational inference, the semantics of language and the framework of possible worlds is useful in explaining these phenomena. Now, in order to explain the phenomena in question one needs to appeal to rational modal notions, such as validity, consistency, rational entailment, conceivability. The framework of possible worlds that is constitutively tied to such rational modal notions is what Chalmers calls the framework of logically possible worlds. Thus, it is the framework of logically possible worlds that can do the required explanatory job. Strong metaphysical modality is of no help here. For strong necessity breaks the tie between modality and rationality by breaking the tie between conceivability and possibility. Why does this then lead Chalmers to deny the existence of strong necessities? The reasoning is as follows. All the untendentious modal phenomenal that we have reason to believe in are the phenomena that can be accounted for within the framework of logically possible

worlds. There is nothing else for strong metaphysical necessity to explain (apart from the tendentious modal 'data', such as the truth of materialism). So consequently, there is no reason to believe in any such necessity.

Here is how Chalmers' reasoning might be articulated in the specific context of zombies. Zombies are ideally conceivable. So it is rational to believe they are possible and we need the framework of possible worlds in order to make sense of this possibility. Chalmers assumes then that the framework of possible worlds we need here is the framework of logically rather than metaphysically possible worlds, where the notion of metaphysical possibility is to be understood in the strong sense. The idea that $P > Q$ should be strongly necessary makes no sense of what it is rational to believe about the possibility of zombies for if you believe that $P > Q$ is strongly necessary, according to Chalmers, you must assume that zombies are impossible even though they are ideally conceivable and hence even though it is rational to think they are possible. But then Chalmers goes further to argue that there is nothing left for the alleged strong necessity of $P > Q$ to explain. All the untentious modal phenomena about consciousness to be explained have already been explained within the framework of logically possible worlds. So consequently, there is no reason to believe that $P > Q$ should be strongly necessary.

In response, I think that Chalmers is right that strong necessities must seem problematic if they break the tie between modality and rationality. However, the explanation of strong necessities we have given here does not commit us to breaking any such tie. On the contrary, on our account, the tie between modality and rationality is preserved. On our account, zombies are impossible precisely because it is not rational to think they are possible after all. Chalmers assumes that the thought about the possibility of zombies must be rational since zombies are conceivable. But that inference seems to

be invalid. The conceivability of zombies implies only that the idea of zombies is conceptually coherent relative to the concepts involved in this idea and regardless of any a posteriori truths about the world. Certainly, if we restrict ourselves to the concepts involved in the idea of zombies, we will not be able to uncover any incoherence. As Chalmers points out, given the fundamental difference between phenomenal and physical concepts, it is likely to say that we may not be able to uncover any such incoherence even if we take into consideration future science.⁴⁴ So, in this sense, zombies may be conceptually coherent even on ideal reflection. However, if we assume that p and q are identical, it will not be rational to believe that zombies might be possible after all. If p and q are identical, the rational thing to say would be that zombies are impossible even though they are, in one sense, ideally conceivable.

Thus, contrary to what Chalmers thinks, the assumption that $P > Q$ is strongly necessary has some explanatory role to play. It certainly accounts for what it is rational to say with respect to the possibility of zombies. If this is so, then Chalmers' skepticism about $P > Q$ being strongly necessary, based on the supposition about the explanatory uselessness of strong modality, is unjustified.

Chalmers assumes that the believer in the strong necessity of $P > Q$ must embrace a modal dualism, with distinct primitive spaces of logically and metaphysically possible worlds. Now, this assumption may be right if the space of logically possible worlds is coextensive with the space of ideally conceivable worlds. But assuming that logically possible worlds are the worlds it is rational to believe in, we have no reason to identify those worlds with ideally conceivable worlds. All logically possible worlds are ideally conceivable but the reverse is not true. Some ideally conceivable worlds, the zombie worlds, are not logically possible. Consequently, the denial of the possibility of zombies

does not commit us to introducing any new sort of modality, distinct from logical modality.

6. Conclusions

Chalmers argues that if we assume that the primary and secondary intensions of P and Q, respectively, are identical, zombies will be not only primarily but also secondarily possible. For the primary conceivability of zombies implies their primary possibility and then, by the identity of the intensions in question, the primary possibility of zombies will imply their secondary possibility as well. I have argued that this line of reasoning is flawed. The primary conceivability of zombies does not rule out that conscious and physical states might be identical and, in fact, we have reasons to think that those states are identical. But assuming that they are identical and assuming in addition that the primary and secondary intensions of P and Q coincide, psychophysical identity will be both secondarily and primarily necessary. This, in turn, implies that the conditional $P \supset Q$ will be both secondarily and primarily necessary as well and hence that zombies will be both secondarily and primarily impossible. If this is so, then Chalmers has not established that consciousness does not supervene on the physical. In particular, it is clear that the key premise of his argument, namely that primary conceivability implies primary possibility, is unjustified. In justifying that premise Chalmers argues that assuming that $P \supset Q$ is primarily necessary despite being primarily conceivably false (in Chalmers' terminology, strongly necessary), the necessity of $P \supset Q$ will be brute and inexplicable and that it will break the intrinsic tie between modality and rationality. I have argued that the strong necessity of $P \supset Q$ is not inexplicable. Assuming that psychophysical identity is true, we do have an explanation of why $P \supset Q$ should be strongly necessary. Our explanation appeals to the fact that the primary and secondary

intensions of P and Q, respectively, are identical. What is more, this sort of explanation does not commit us to viewing the strong necessity of $P \supset Q$ as a new sort of modality, one that goes beyond what it is rational to believe.

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¹ As we will see, Chalmers argues that there is no difference between what is (ideally) conceivable and what is possible. But since this is the point that is at issue here, as it will become clear, I chose to speak of possible and conceivable worlds separately, at least for the purpose of introducing the two-dimensional framework.

² I take it that in some cases primary intension will not be a priori. More on this below.

³ This is Chalmers' own reconstruction of his argument. See Chalmers (2006b).

⁴ See Chalmers (1996).

⁵ According to Chalmers, zombie worlds are not the only kind of possible worlds which are identical to our world physically but not phenomenally. The other kind of worlds are worlds in which conscious states are inverted in relation to our world. If zombie worlds are possible, those other worlds, call them inverted worlds, are possible, too, and the possibility of such worlds will also imply the lack of supervenience of consciousness on the physical.

⁶ Chalmers assumes that logical possibility implies ideal conceivability and that ideal conceivability implies logical possibility. I will argue here that whereas logical possibility implies conceivability, the reverse is not true. There are worlds that are ideally conceivable and such that it is rational not to believe they are possible. As I will argue below, those worlds are zombie worlds.

⁷ For a detailed discussion of the notion of conceivability, see Chalmers (2002).

⁸ In (2006b) Chalmers assumes that since secondary conceivability (along with secondary possibility) is affected by what is the case, zombies will not be secondarily conceivable if conscious and physical states are identical. But then, assuming that the primary and secondary intensions of P and Q are identical, Chalmers should say that zombies will not be primarily conceivable in this case, either. So allowing the possibility of the identity of conscious and physical states certainly creates a loophole in Chalmers' argument. In what follows I will argue that whether or not the conceivability of zombies is affected by assuming that conscious and physical states are identical, the identity will certainly imply that zombies are not possible.

⁹ See Chalmers (2003a).

¹⁰ See Chalmers (2003b) for the claim that the primary and secondary intensions of P and Q are different.

¹¹ See Chalmers (2006b).

¹² See Chalmers (2006b).

¹³ See Chalmers (2006b).

¹⁴ This last suggestion, according to Chalmers, would validate (KP3). For (KP3), as it is stated by Kripke, is unjustified, according to Chalmers. As Chalmers points out, it is not true in general that the conceivability of a given statement implies that the statement should be true for a possible being in an epistemically identical situation. Consider, for example, the statement “Bill is not phenomenal blueness”, where ‘Bill’ is a rigid designator for the phenomenal quality (blueness) that I am currently experiencing. That statement is certainly conceivable but not possible in Kripke’s sense.

¹⁵ Chalmers himself admits that in general modal arguments for dualism that are cast in terms of identity are less conclusive than modal arguments cast in terms of supervenience. Just because one can imagine that A and B are not identical, it does not follow that A and B are not identical. But then in response to the objection that his conceivability argument does not show that consciousness is not identical with a physical state, Chalmers says that this is to misunderstand his argument. The form of the argument is not “One can imagine physical state P without consciousness, therefore, consciousness is not physical state P” but rather “One can imagine all the physical facts holding without the facts about consciousness holding, so the physical facts do not exhaust all the facts”. (Chalmers 1996, pp. 130-31). It seems to me that Chalmers’ response shows that Chalmers misses one crucial point, namely that if the conceivability of zombies does not rule out the identity of consciousness with a physical state, then if that identity implies the supervenience of consciousness on the physical, the conceivability of zombies will not imply that consciousness does not supervene on the physical.

¹⁶ By contraposition, if the reference-fixers of two concepts flanking the identity sign are identical, those concepts will pick out the same property in all worlds considered as actual and therefore the identity statement which links those concepts will be primarily necessary.

¹⁷ See Loar (1997; 1999).

¹⁸ As we will see in section 5, Chalmers raises a corresponding objection to Loar's account of how "p=q" could be primarily necessary and a posteriori. More on Loar's account below.

¹⁹ Loar (1999).

²⁰ Loar's assumption that p and q refer essentially corresponds to Chalmers' provisional assumption that the primary and secondary intensions of P and Q , respectively, are the same.

²¹ Chalmers claims that because Loar holds that "p=q" can be primarily necessary and a posteriori, he is committed to putting brute and arbitrary restrictions on the space of what is possible. But Loar argues in response that given that the primary necessity of "p=q" is based on the necessity of property-identity, Chalmers' charge of arbitrariness is unjustified. Surprisingly, Chalmers does not respond to this point of Loar in his response to Loar in (1999). I will discuss Chalmers' response to Loar in detail in section 5.

²² See our discussion of (P3) in section 2.

²³ See Chalmers (2006a).

²⁴ This challenge has also been raised independently of Chalmers by Joseph Levine. See Levine (2006).

²⁵ For a critical discussion of Chalmers' dilemma, see Papineau (2006).

²⁶ As it will become clear, the reasons why Chalmers thinks that psychophysical identity cannot be true are exactly the same as Kripke's reasons discussed earlier.

²⁷ Block and Stalnaker (1999) argue that primary intension is not a priori in the sense that there are certain limits as to what we would regard as the value of primary intension and those limits are not determined a priori but depend on our theories and methodological principles. For example, even though the value of the primary intension of 'water' in other possible worlds does not depend on the fact that water (watery stuff) is H₂O in the actual world, we would not regard any possible sort of watery stuff as water. However, Block and Stalnaker do not make this point to show that primary conceivability does not imply primary possibility but rather to show that it is not true a priori that water is watery stuff: that water is watery stuff in the actual world depends on the fact that watery stuff is H₂O and the fact that we decided to regard H₂O as water in the light of our theories and methodological principles.

²⁸ See Chalmers (2006b).

²⁹ See Hill (1997), Hill and McLaughlin (1999), and Loar (1997; 1999).

³⁰ This list is not complete. See Chalmers (2006b).

³¹ See Chalmers (1999).

³² See Stoljar (2005).

³³ In (2003a) Chalmers admits that this is perhaps the most interesting response from a type-B materialist, the sort of materialist who denies (CP).

³⁴ As we will see later, the main reason why Chalmers is skeptical about the idea of P>Q being strongly necessary has to do with Chalmers' analysis of modal concepts. According to Chalmers, there is no room for strong necessities within our conception of modality. I will argue, however, that Chalmers' argument has no force against the explanation of strong necessities suggested here.

³⁵ According to Hill and McLaughlin, the difference between sensory and physical concepts lies in the relation between experiences that justify the application of those concepts and what those concepts pick out. In the case of sensory concepts, those experiences are identical with the referents of sensory concepts. In the case of physical concepts, on the other hand, the experiences that justify the application of those concepts are caused by the physical phenomena that physical concepts pick out.

³⁶ Let me at this place say something about the dialectic of Hill's response to Kripke. Similarly as Chalmers, Hill assumes that merely explaining the Cartesian intuitions in psychological terms will not work as a defense of materialism. We need to show in addition that those intuitions are unreliable. However, Hill seems to be led to assuming that partly because he misconstrues Kripke. Recall that for Kripke the only way to secure the necessity of psychophysical identity against the Cartesian intuitions would be to show that those intuitions are misdescriptions of certain situations that are possible. Kripke refers to this strategy as the strategy of explaining the Cartesian intuitions away. Unfortunately, as we saw, Kripke points out that this strategy will not work in the case of psychophysical identity. Hill thinks then that in order to rebut Kripke's argument against materialism we need to find another way of showing that the Cartesian intuitions are unreliable. So Hill takes himself to be challenging Kripke's assumption that there is potentially only one way of doing that. However, Hill fails to realize that Kripke's assumption in question follows from Kripke's another assumption, namely that conceivability is a reliable guide to possibility; I refer to this assumption as (KP3/KP3') in our reconstruction of Kripke's argument given earlier. If we accept the latter assumption, it seems that we must accept the former. That is to say, if we assume right at the outset that conceivability implies possibility, we won't be able to show that the Cartesian intuitions are unreliable unless we can show that although they do imply the

possibility of some situations, those possible situations are not the ones that we think the Cartesian intuitions imply. This does not imply that Hill's attempt to find another way of explaining the Cartesian intuitions away must fail. The point is that once we realize what Kripke's dialectic amounts to, we can see that rebutting Kripke's argument does not require showing that the Cartesian intuitions are, in fact, unreliable. It will do to show that Kripke is not justified in assuming right at the outset that conceivability is a reliable guide to possibility. Thus, instead of showing that the Cartesian intuitions are unreliable, it will do to show that we can consistently assume that they are. Of course, part of Hill's response to Kripke is that this sort of explanation is available.

³⁷ The mechanisms responsible for the Cartesian intuitions are akin not only to the mechanism responsible for the intuition about the separability of water and H₂O but also to the mechanism that generates the intuition about the separability of watery stuff and H₂O. But the intuition about the separability of watery stuff and H₂O is reliable. So are the corresponding intuitions about the separability of heatish stuff and molecular motion, and so on. If so, it is arguable that Hill's inductive argument does not go through.

³⁸ See Papineau (1999) for a defense of this account of the coreference of phenomenal and physical concepts.

³⁹ Chalmers even thinks that the attempt to explain why psychophysical identity (or psychophysical conditional) is strongly necessary is something that distinguishes Loar's version of the phenomenal concept strategy from Hill's and Hill and McLaughlin's.

⁴⁰ See Chalmers (1999; 2003a; 2006b).

⁴¹ Of course, Chalmers' objection is not original. Chalmers repeats the objection that has already been raised against the identity theory by Kripke.

⁴² See also Chalmers (2003a; 2006b).

⁴³ See Chalmers (1999; 2006b).

⁴⁴ See Chalmers (2006b), in particular his response to Van Gulick (1999) and Worley (2003).