POINTS OF REFERENCE: A NEW ARGUMENT FOR THE LOGICAL POSSIBILITY OF IDENTITY THEORY

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Abstract: In the 1950's and 1960's, Feigl, Place and Smart offered an answer to the mind-body problem called Identity Theory. According to Identity Theory, there are physical descriptions describing the same event as first-person descriptions of experience. In this article, we address the criticism that mind-body identity can be refuted on logical grounds, taken in the widest sense. Kripke's criticism to this effect, as developed in *Naming and Necessity*, will be our central concern. Another notorious argument we will consider is Chalmers's, as developed in *The Conscious Mind*. The Identity Theorists originally held that identity statements could be contingently true. Kripke argues that all true identity statements are true *necessarily*. If the mind-body identity is contingent, as Kripke thinks it must be, it cannot be true. Unlike Identity Theorists, I accept that body-mind identity must be necessary, but unlike Kripke, I argue that it can be. Central to my refutation of Kripke and Chalmers is a more elaborate approach to thinking about reference.

Keywords: Identity Theory, mind-body identity, description, experience, meaning, reference, reference meaning.

I. OUTLINE OF THE PROBLEM

This article concerns the mind-body problem: how are our (phenomenal, qualitative) experiences related to physical processes that go on in our brains? As far as possible answers to the mind-body problem go, the so-called Identity Theory presents one that is appealing because of its simplicity: conscious experience is identical to a brain process. The Identity Theory became popular in the late nineteen-fifties, when it was advocated by philosophers such as Feigl, Place and Smart. When it was first formulated, it was not just

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the anti-dualist character of the thesis[1] that was considered controversial, but its unapologetically metaphysical nature. Behaviourism, logical positivism and phenomenology had all, in their own way, tried to rid philosophy of its metaphysical character. Identity theorists claimed that there was a need and indeed a possibility for a metaphysical claim regarding the fundamental nature of reality.[2] Frege's distinction between sense (i.e. meaning) and reference allowed the identity theorists to speak about actual or possible existing 'things' (references) that are picked out in language by meaning (sense).[3] This allows for the following explication of the Identity Theory:

> „The thesis that sensations are brain-processes is not the thesis that, for example, 'after-image' or 'ache' means the same as 'brain process of sort X'. It is that, in so far as 'after- image' or 'ache' is a report of a process, it is a report of a process that *happens to be* a brain process. … All [Identity Theory] claims is that in so far as a sensation statement is a report of something, that something is in fact a brain process." (Smart, 1969, p. 36)

> „[Identity Theory] claims that there is a synthetic (basically empirical) relation of systemic identity between the designata of the phenomenal predicates and the designata of certain neurophysiological terms."[4] (Feigl, 1963, p. 255)

The Identity Theory holds essentially that for any true description of an experience there is a true description of a physical process that refers to the same actual thing. Because this thesis is about the nature of things, I call this

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[1] Feigl, Smart and Place, were aiming for a theory that would allow an identification of specific conscious phenomena with physical terms. It is clear that the statement that conscious experience is identical to a brain process is not that kind of theory, but merely its core thesis. I will use the term Identity Theory as synonymous with this thesis. By capitalising the term 'Identity Theory' I stress the point that this should be considered a name, and not a description. I will refer to Identity Theory as a *thesis* when I do not use the term itself.

[2] „Positivism, more distinctly than any other point of view, with its notorious phobia of metaphysical problems and its marked tendency toward reductionism, was always ready to diagnose the mind-body puzzle as a *Scheinproblem*." (Feigl, Herbert, *The 'Mental' and the 'Physical', the Essay and a postscript*; Minneapolis, University of Minnesota Press, 1967, p.4.) „[D]espite the powerful impressions made upon me in my Vienna Circle years, I no longer consider most mind-body puzzles as pseudoproblems engendered by conceptual confusions." (Ibidem, p. 137)

[3] Smart adopts the Fregean terminology (Smart, J.J.C., *Sensations and brain processes*; in „Modern Materialism: Readings on Mind-Body Identity", ed. J. O'Connor, New York, Harcourt, Brace & World, Inc., 1969), whereas Feigl usually speaks of intension and extension, or content and designatum (Feigl [1967, 1963]), but this amounts to the same thing. Place speaks of 'definition' and 'composition' (O'Connor, 1969). The notion of 'composition' may be more similar to Kripke's notion of the rigid designator of a natural kind term, rather than its reference, but I will not argue the point here.

[4] Feigl, H., *Physicalism, unity of science, and the foundations of psychology*; in „The Philosophy of Rudolph Carnap", ed. P.A. Schilpp, LaSalle, III, Open Court Pub. Co., 1963, p. 255. Or, in Feigl [1967] p.77: „it is proper to speak of 'identification', not only in the purely formal sciences where identity consists in the *logical* synonymy of two or more expressions, but also in those cases in which the mode of ascertainment is empirical."

an ontological thesis.[1] The ontological thesis concerns the objective nature of the world, independent of our access to it, or the way in which we describe it.

The ontological thesis should be distinguished from further claims that have at times been made by its proponents. In particular, it should not be confused with variations of physicalism.[2] The ontological thesis is a minimal thesis, in that it does not involve any claims about the possibilities of physical research or even physical research combined with phenomenal, experiential information.

Even if it is clear that the ontological identity thesis is not one about the scope of empirical science, it is also clear that it does not follow that we can make a credible case for Identity Theory without mentioning physical science. When we speak of a brain-process, we are using 'physical' terminology to describe this referent. If what we mean by a brain process is not very similar to what neuroscientists mean by a brain process, our ontological identity statement will no longer be an answer to the mind – body problem. Just how we should think about (true) theoretical statements and their relation to ontological facts is what needs to be clarified.

From the beginning, Identity Theory has had to face up to serious challenges. Some of them one might consider epistemological, in that they ask for the justification of the thesis: why is it plausible that two apparently different things, consciousness and the brain processes, might turn out to be one and the same? Others, one might consider ontological, in that they focus on the ontological properties: what are the properties of consciousness and / or physical processes, respectively, and are they compatible? If Identity Theory is to be convincing, it will have to provide answers to both types of questions. The challenge I will take on here is the one that Identity Theory could be defeated on essentially logical grounds. The argument revolves around an inference from semantics to ontology, and is never logical in the strict sense. Three logical criticisms of Identity Theory may be singled out. I will briefly mention them here, before we look at them in more detail.

An early criticism, on the face of it straightforward logical argument, is provided by Eric Polten. Polten argues that „if the sense of 'mental' is different

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[1] Alternatively, we could call it a metaphysical thesis. Neither term has been used exclusively in the way that I propose to use it. I associate the term metaphysics with an overall theory of the world and our relation to the world; the etymology of 'ontology' seems better fit to use it as a theory exclusively about what exists. In any case, nothing hinges on the term.

[2] The terms 'physicalism' or 'materialism' have meant different things to different people. I understand by physicalism or materialism what Galen Strawson has dubbed 'physicalism', „the view—the faith—that the nature or essence of all concrete reality can in principle be fully captured in the terms of *physics*" (Strawson, G., *Realistic monism: why physicalism entails panpsychism*; in „Journal of Consciousness Studies", 13, No. 10-11, 2006, p.3). Smart explicitly considers Identity Theory a physicalist theory (see, e.g., Smart, 2007), whereas Feigl originally did not (Feigl, 1967, p.144). Neither Feigl nor Smart originally considered ontological claims in isolation of theoretical claims, or indeed *vice versa*. The distinction should not be confused with Smart's distinction between ontological physicalism and translational physicalism (Smart, J.J.C. – *The Mind/Brain Identity Theory*, „The Stanford Encyclopedia of Philosophy"; Fall 2008, ed. E.N. Zalta, 2007.)

from 'physical', then, at least as far as primitive conceptions are concerned, so must the source, i.e., the referent be correspondingly different." (Polten, 1973, p. 33) It is the meaning of a term that determines the extension of it. If a term is not synonymous with another, they will not hold for the exact same class of objects, i.e., they will not have the same extension or reference.[1]

The second criticism is due to Saul Kripke. It is a modal argument stating that two terms must *necessarily* have the same referent, if consciousness – brain identity is possible at all, and this is not the case.

> „Let *'A'* name a particular pain sensation, and let *'B'* name the corresponding brain state, or the brain state some identity theorist wishes to identify with *A. Prima facie,* it would seem at least logically possible that *B* should have existed (Jones's brain could have been in exactly that state at the time in question) without Jones feeling any pain at all, and thus without the presence of *A.* (…) If A and B were identical, the identity would have to be necessary." (Kripke, 1980, p. 146)

The third criticism has been developed by David Chalmers, and may be summed up as follows:

> „1. In our world, there are conscious experiences.
> 2. There is a logically possible world physically identical to ours, in which the positive facts about consciousness in our world do not hold.
> 3. Therefore, facts about consciousness are further facts about our world, over and above the physical facts." (Chalmers, 1996, p. 123)

It follows that the Identity Theory is false. This argument is similar to Kripke's, but Chalmers's argument for necessity is fleshed out in terms of supervenience. 'B-properties [conscious properties] are logically supervenient on A-properties [physical properties] if for any actual situation X, the A-facts about X entail the B-facts about X.' (Chalmers, 1996, p.70)[2] Chalmers argues this is not the case.

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[1] The argument is backed up by an epistemological argument: if terms have different meanings, as it would appear in the case of 'consciousness' and 'brain process', it follows that they must be based on different observations and hence must have a different referent. The source of knowledge (observation) is equated with the reference of that knowledge. (Polten, E.P., *Critique of the Psycho-Physical Identity Theory : a refutation of scientific materialism and an establishment of mind-matter dualism by means of philosophy and scientific method*; The Hague, Mouton, 1973, p. 33) This equation has been maintained in anti-metaphysical phenomenalism, the position Feigl explicitly rejects (see e.g. Feigl [1967] p. 26). Polten uses it to defend metaphysical dualism.

[2] Chalmers, D., *The Conscious Mind*; New York and Oxford, Oxford University Press, 1996, p. 70. Although Polten, Kripke and Chalmers all reject Identity Theory on logical (linguistic, modal) grounds, Polten is clearly antipathetic to the whole idea and rejects it on other grounds as well. Chalmers is an overt property dualist in *The Conscious Mind*, but shows increasing sympathy towards Russell's neutral monism – a position much closer to Feigl's 1958 version of identity theory than is often acknowledged. Finally, Kripke regards 'the whole mind-body problem as wide open and extremely confusing' (Kripke, S., *Naming and Necessity*; Cambridge, MA: Harvard University Press, 1980, p. 155, note 77).

The Identity Theorists claimed that logical necessity is no requirement for the Identity Thesis.[1] After all, the properties of physical phenomena are not logically necessary, they're just contingent facts of how reality turns out. Consciousness may just be another contingent property of an entirely physical event. The critics declare that identity has to be somehow necessary. If a conscious event would not be necessarily identical to a brain-event, there could be a situation where something was conscious, but not a brain-event, or that the brain event identified with the conscious event would not be conscious after all. If the two are identical, this could not be possible. This is the dilemma we are faced with and that I will try to resolve in this article. I accept the argument of the Identity Theorists that in *some sense*, the ontological identity is a contingent truth, if it is true at all. Nontheless, there is also a sense in which the identity can be considered an *a priori* logical necessary truth, if it is true at all. The kind of contingency that needs to be maintained is quite different from the kind of necessity that also seems required. The focus will be on the necessity claims. After all, Kripke and Chalmers do not argue against some kind of contingency, but in favour of some kind of necessity. Whether there is some kind of contingency that also applies is not crucial. I will defend a series of arguments that, taken together, demonstrate the logical possibility of the ontological identity thesis. I will start by considering Frege's distinction of meaning/sense and reference (section 2), then develop a framework for thinking about necessity in dialogue with Kripke (sections 3 and 4). In section 5, I will use this framework to refute Kripke's criticism of the ontological identity thesis. In section 6, I will consider Chalmers's supervenience argument - taken as an argument against the ontological identity thesis - and demonstrate that this argument fails for similar reasons. Finally, I will briefly consider Chalmers's ontological claim that must be presupposed for the supervenience argument to be successful. Since Polten's argument is of little historical importance and depends largely on a phenomenalist position that neither dualists, nor monists today endorse, I will mention it only in passing, mainly to point out the similarities that exist among the varieties of logical criticism.

II. MEANING, REFERENCE AND REFERENCE MEANING

Feigl and Smart originally argued for the possibility of identity on the basis of Frege's distinction between reference and meaning. Polten and Kripke acknowledge the validity of this distinction, but they deny that it results in a possibility for ontological identity in the case of consciousness and brain

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[1] Place considered the thesis as purely scientific, suggesting empirical evidence may confirm or disconfirm it [Place 1960]. Smart and Feigl argue that if Identity Theory could explain the mind – body problem, dualist accounts may be disgarded on the basis of the principle of parsimony. (Smart [1959, 1969] pp. 46-7, Feigl [1967] p. 94).

events. In my view, the way that both terms have been used has been a source of confusion - some confusion in the case of meaning (sense) and much confusion in the case of reference. I will therefore introduce a new term, *reference meaning*, to dispel confusions pertaining to 'reference' and make some remarks to further explain what I mean by meanings in the form of descriptions. These form the basic tools for my attack on the logical arguments against the ontological identity thesis.

In *On Sense and Reference*, Frege offers the following explanation of what he means by the two terms: signs refer to a definite object. This object is called *the reference*.

Objects can be presented in different ways. A sign contains such a particular mode of presentation. This mode of presentation is the *sense* of the sign. (Frege, 2003, p. 176)

The usefulness of the distinction is usually brought out in relation to a puzzle concerning identity. In 1914, for instance, Frege presents the following scenario to explain the difference between reference and meaning. There are two explorers. One sees a mountain and finds out it's called 'Aphla'. He writes in his diary that the mountain Aphla is at least 5000 metres high. The other explorer sees a mountain from another position, and the people there tell him the name of that mountain is 'Ateb'. When the two explorers meet, they determine that Ateb is Aphla. The proposition 'Ateb is Ateb 'is trivial, but 'Aphla is Ateb' is not. Therefore, Frege concludes:

> 'Now if what corresponded to the name 'Aphla' as part of the thought was the meaning [reference] of the name and hence the mountain itself, then this would be the same in both thoughts. The thought expressed in the proposition 'Ateb is Aphla' would have to coincide with the one in 'Ateb is Ateb', which is far from the case.' (Frege, 1980, p. 80)

The notion of sense is introduced to explain how two terms picking out the same object could mean something else. This argument has become the standard for arguing for a distinction between meaning and reference, although the paradigm example would be one that establishes the difference in meaning between the Morning Star and the Evening Star, who are both the planet Venus, and thus would have the same reference.

Even if the conclusion of this argument is convincing, a simpler argument in favour of the sense – reference distinction seems already implied. If we were to ask: why is the mountain itself not part of the thought that corresponds to the name, the answer would be that the use of another name for that same mountain would result in a proposition that cannot on all accounts be equated with a proposition containing the name Ateb. It seems to me that there is a more fundamental reason why mountain Ateb cannot be part of the thought. Meanings, concepts or ideas are the kind of things

that can be part of thoughts; not mountains or celestial bodies. Objects are things existing outside of the subject. That is what Frege means by objects, and what most philosophers who are not idealists or phenomenalists mean by it. Signs and objects alone could never explain that language is meaningful to users of that language. *Sense* (*Sinn*) names a phenomenon that could *describe* a cognitive event.

But here a problem arises. When philosophers think about references, they have a *thought about* them and this thought cannot be the actual thing, at least not when they think about planets, gold, or people. (Actually, philosophers often do not even think of actual things as such when they think about references; rather they think about 'actual things' in general.) If by a reference we mean the 'actual things' we think of, what term within the Fregean framework do we have for the thought or concept of such a reference? The only candidate that comes to mind would be the sense.[1] However, when we think of mountain Aphla / Ateb or the Morning Star / Evening Star we do not have in our minds only the sense of Aphla or the Morning Star, but a meaning that comprises the sense of both proper names. Frege himself mentions 'comprehesive knowledge':

> „The sense of a proper name is grasped by everybody who is sufficiently familiar with the language or totality of designations to which it belongs; but this serves to illuminate only a single aspect of the reference, supposing it to have one. Comprehensive knowledge of the reference would require us to be able to say immediately whether any given sense belongs to it. To such knowledge we never attain." (Frege, 2003, p. 176)

Even if we never attain to comprehensive knowledge, it seems undeniable that we are able to give descriptions of a reference beyond the sense of *one specific sign*. For our present purposes, it is vital that we acknowledge that it is these descriptions, and not the reference itself, that constitute how we may think of references. That is to say that anyone referring to a reference must have in mind a sense of the reference and that sense may be made explicit by giving a list of descriptions. This sense is what I will henceforth refer to as the *reference meaning*.

The idea that we need descriptions to identify particular references has been developed by Frege and Russell. Since Kripke criticises the way in which Frege and Russell thought about descriptions, it will be helpful to state some of my views regarding descriptions in relation to Frege and Russell before we look at Kripke's views.

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[1] In fact, Frege allows for a different possibility: we could have an idea. Unlike senses, which are accessible to all who understand a language, ideas are different for every individual and therefore insufficient for communication. (See Frege, G., *On sense and reference*; in „Logicism and the Philosophy of Language. Selections from Frege and Russell", ed. A. Sullivan; Peterborough, Ontario, Broadview Press, 2003, p. 177.)

The position that both Russell and Frege endorse is that, in order to refer to a particular, i.e., a particular actual reference, we must have discriminating knowledge of the reference. If we did not, it would not be clear what we are talking or thinking about. In most cases this discriminating knowledge consists of sense, i.e., descriptions. Both Russell and Frege admit that in our minds we may have non-descriptive elements such as sensations or memory images related to that particular. Frege calls these ideas:

> „If the reference of a sign is an object perceivable by the senses, my idea of it is an internal image, arising from memories of sense impressions which I have had and acts, both internal and external, which I have performed." (Frege, 2003, p. 177)

Whereas a sense is a common property, an idea is personal. For that reason, Frege wants to keep them out of a theory of sense and reference: his aim is for a language that means the same for everyone. Russell considers these sensations and images as the way in which we are acquainted with things. They play an important role, since without them we could not have any knowledge of actual references. According to Russell, for everything outside of ourselves, we need descriptions to refer to it.[1]

Whether ideas or sensations play any part in referring or not, what is important is that our sensations or memories can be articulated in a descriptive form. As such, they may provide important information about the reference. A description such as 'the man on the train I saw looking such-and-such and doing this-and-that at this particular time' would enable to us to refer to it. Russell clearly admits to this as a possible description, but for Frege this would not be admitted as a sense.

There are still other descriptions that are not regularly considered as legitimate ways to refer. For instance, whenever we intend to refer to a particular, we implicitly hold that what we are referring to is a particular. 'This is a particular' is a description of a reference. It is also widely assumed that names themselves cannot be viewed as descriptions. 'The man whom x referred to as y' is a perfectly legitimate description to be considered as a reference meaning.

Minor peculiarities on my part notwithstanding, it should be clear that my view on sense or description and reference are pretty orthodox. Like Frege and Russell, I subscribe to the view that in order to refer to a particular one

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[1] Kripke takes Russell to state that when we refer to something by ostention, we are acquainted with it and do not require any description. This is not Russell's view in *The Problems of Philosophy*, Chapter V; only Bismarck referring to himself constitutes a case for Russell where no description is required (p.54). (Interestingly, consciousness may be of this kind as well.) Objects outside of our minds are presented to us by sensations and an inference, involving description, is required to state anything about the object as such.

must have discriminating knowledge (or 'meaning') of that particular, and that this kind of knowledge can be articulated using senses or descriptions.

III. *A PRIORI* NECESSITY, *A POSTERIORI* NECESSITY

Prior to the publication of *Naming and Necessity*, it had been quite common among philosophers to consider all *a priori* truths necessary logical truths and all *a posteriori* truths empirical and contingent.[1] The intuition that this should be the case can be illustrated by the following example: to state that 'the ball is round' appears to be true simply on the basis of what the term 'ball' means. The statement 'the ball is blue' can only be asserted *a posteriori*, after we have made sure that the ball in question is indeed blue. The truth of this statement is not logical, since it is not on the basis of the meaning of the term 'ball' that the statement is true. Neither would the truth of this statement be a necessary one, since it might have turned out the ball was red.

Kripke controversially claimed that not all *a priori* truths are necessarily true and that *a posteriori* truths are not always contingent. Some *a priori* truths are not necessary truths and some *a posteriori* truths are in fact necessary (Kripke, 1980, p. 38). *A priori* and *a posteriori* are epistemological notions, describing how we may know something. Necessity as Kripke wants to consider it is not an epistemological, but a metaphysical notion (Kripke, 1980, p. 35). Kripke's arguments follow from his consideration of possible world scenarios. Not everything about a reference that we consider true in our actual world is necessarily true: we can consider counterfactual situations in which some descriptions we take to be true of a reference are not true of that reference. Only what remains true in every possible world is necessary of a reference. The term or description that picks out the same reference in every possible world is called a *rigid designator*. Rigid designators are terms or descriptions that we may consider metaphysically necessary for a reference. This bears upon Identity Theory, since Kripke holds that only when two rigid designators pick out the same reference can the descriptions entailed by the rigid designators pick out the same object and such is not the case for pain and C-fibres firing. These are just some of the claims Kripke makes in *Naming and Necessity*. I will try to present what I understand to be the main tenets of Kripke's arguments. The three lectures comprising *Naming and Necessity* deal with proper names, natural kind terms and Identity Theory, respectively. In this section, I will look at some of the claims made in lectures I and II. My criticism of Kripke results in what may be considered an alternative

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[1] A more comprehensive formulation of the 'orthodox' view is given by G.W. Fitch: „Necessary truths are logical, analytic, *a priori* truths and contingent truths are empirical, synthetic, *a posteriori*truths' (Fitch, G.W., *Saul Kripke*, Chesham, Acumen, 2004, p. 88). Since Kripke does not use it for his argument against Identity Theory, I will not be discussing the analytic and synthetic distinction.

framework. This forms the basis of my defence of the logical possibility of the ontological identity thesis in the subsequent sections.

III.1. MODALITIES FROM PROPER NAMES

The first claims I will discuss are those about proper names and necessity. Kripke claims that in the case of proper names it is not a description like a Fregean sense that determines what a proper name refers to; the name itself picks out the same reference necessarily (Kripke, 1980, p. 27). That names should not be viewed as implicit descriptions is argued for by Kripke by considering possible world-scenarios. For example, we can consider a counterfactual situation in which Richard Nixon had not been the President of the U.S. in 1970. According to Kripke, we would still be referring to Nixon, the person who was in fact President of the U.S. in 1970, even when we consider the possibility of Nixon not having been the President of the U.S. in 1970. So, even if we know that Nixon was the President of the U.S. in 1970, this truth is not necessary because Nixon is not the President of the U.S. *in all logically possible worlds*. Nevertheless, it can be said that, given that it is true that Nixon was the President of the U.S. in 1970, any true statement about the President of the U.S. in 1970 will be an *a priori* true statement about Nixon.

When we compare this situation to the examples of Ateb and Aphla, or the Morning Star and the Evening Star, Kripke argues that we do not need discriminating knowledge (sense) to refer to these objects. But how would this work? According to Kripke,

> „[t]here is no reason why we cannot *stipulate* that, in talking about what would have happened to Nixon in a certain counterfactual situation, we are talking about what would have happened to *him*." (Kripke, 1980, p. 44).
> „It is *given* that the possible world contains *this man*, and that in that world, he had lost." (Kripke, 1980, p. 46)

Those adhering to the orthodox view that names are implicit descriptions might well grant Kripke this possibility. It is then only required that we use some description of Nixon, other than him winning the 1970 election, to refer to Nixon in this counterfactual world. This is no problem for Frege and Russell and when, following Searle, we think of names having a cluster of descriptions that may vary according to context, this should be even less of a worry: there are enough descriptions available to pick out Nixon in that counterfactual world too. But Kripke holds that we do not need to give *any* discriminating description „before we ask whether Nixon might have won the election." Instead, „[w]e can simply consider *Nixon* and ask what might have happened to *him* had various circumstances been different." (Kripke, 1980, p. 47) What we are considering when we consider „him", Kripke does not say. Perhaps, Kripke intends Nixon to mean the reference itself; if so, he

believes that the *reference itself* can be a content of thought, which, as I have argued, I hold to be impossible.[1]

Even if we accept Kripke's view that *a priori* is an epistemological notion and necessity is a metaphysical one, it does not follow that we can consider metaphysical modalities without having some *a priori* notion described in terms of descriptions, of what it is we are considering. We can only make modal claims about references on the basis of what we know about these references. Even if we could use indexicals to refer to something, we could not make any inferences about it on that basis, unless we rely on descriptions. Furthermore, if we want to justify our modal claims, we had better make those descriptions explicit, even if this is not the usual procedure in a non-philosophical context.[2]

It follows that whether some description is necessary, possible or impossible for a reference, can be decided *a priori*. Kripke's criticism of Frege's claim that names have descriptive senses challenges this:

> „If 'Aristotle' meant *the man who taught Alexander the Great*, then saying 'Aristotle was a teacher of Alexander the Great' would be a mere tautology. But surely it isn't: it expresses the fact that Aristotle taught Alexander the Great, something we could discover to be false." (Kripke, 1980, p. 30)

This argument loses much of its appeal when it is realised that the reason why it could turn out to be false to us that Aristotle taught Alexander is because Aristotle is in fact identified by us by many descriptions. That is not the vital point when we consider the claim that it is *a priori* and *necessary* that Aristotle taught Alexander. Kripke's position is that metaphysical necessity is not something that can always be decided *a priori*. If we would hold that it is *a priori* true that Aristotle taught Alexander the Great and if we hold that

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[1] Evans uses a distinction between 'thoughts' and 'sayings', where what is 'said' is determined by the language and not the content thought of the speaker. Kripke's rejection of the idea that we use descriptions to refer is taken by Evans to be about 'sayings', not 'thoughts' (see Evans, 182, Chapter Three and Appendix, e.g. pp. 80-1). I do not think this distinction is useful in the present context, since meaning, even if it is determined by a shared language, must still always be expressed in a thought that someone has at some particular time. Furthermore, Evans's evidence to warrant the conclusion that Kripke is interested in 'sayings' is hardly persuasive.

[2] If we do not do this outside of a philosophical context, as Kripke suggests (Kripke [1980] pp. 41-2), this may be because in such a context we are not interested in the modalities that hold for a reference. When we say that Nixon might not have won the election, we are either making some metaphysical point about the (in)determinacy of the world, or we try to consider something else, i.e, the damage that followed from Nixon winning the election. The latter case does not really involve the question whether it is possible that Nixon might not have won, but simply what would have happened had he not won. In such a case we require a discriminating description of Nixon, but that may well include the fact that he did win. Nothing is implied about whether it would have been *possible* for Nixon to lose.

what is *a priori* is necessary, then we could not refer to Aristotle if we said that *that man* may or might not have taught Alexander the Great.

Russell and Frege both thought that different descriptions can pick out the same reference and as long as this is the case, we are referring to the same thing (Russell, 1962, p.54, Frege, 2003, p.176). Kripke has pointed out that when we consider modalities the descriptions need to be rigid designators if they are to pick out the reference in all possible worlds.

In my view, Russell and Frege are right to state that we can use different meanings to refer to the same thing. However, the descriptions we use to think of the reference, the reference meaning, may still differ. It is the reference meaning that determines in what possible worlds we could refer to Aristotle. If we did take 'the teacher of Alexander the Great' to be the reference meaning of Aristotle, then there could be no world in which Aristotle was not the teacher of Alexander. Rather than calling this a tautology, we could formulate this as a logical necessity. What we do when we consider such a counterfactual scenario is to change the reference meaning of Aristotle. The fact that we still use the same signifier when we consider that scenario does not in any way necessitate the fact that we are still thinking of the same person. It is just a basic fact about how people use names that we can take those signifiers to mean different things. The modalities of the reference change when we identify them on the basis of different reference meanings. Since we cannot refer to objects without using descriptions to identify them, claims about references that do not depend on descriptions are not simply epistemologically unjustified, in which case they might still be true, but they are in fact meaningless.

III.2. MODALITIES FROM NATURAL KIND TERMS

In the case of natural kind terms Kripke says that 'yellow metal' is a true description of gold. We may use this description to refer to gold and consider it an *a priori* property of gold that it is a yellow metal. Yet, it is logically possible that a demon tricked us so that we would perceive a blue metal as a yellow metal. Although it is *a priori* true that gold is a yellow metal, it is not necessarily true (i.e., in all logically possible worlds). 'Yellow metal' is a *reference fixer* of gold: it allows us to pick out a reference in the actual world (Kripke, 1980, p. 118).

Given the fact that gold is atomic number 79, gold is necessarily atomic number 79 in any possible world. Atomic number 79 is a rigid designator. Kripke explicitly states that it is a necessary *a posteriori* truth that all gold fulfils the description 'atomic number 79'. The reason that this is a necessary *a posteriori* truth is that it is necessary, whether we know it is necessary (and is part of our meaning) of what we call gold that it has atomic number 79 *or not*. For example, even before people knew gold had atomic number 79,

whether they would have correctly referred to something as 'gold' depends on whether that reference actually had atomic number 79.

In my discussion of proper names, I attempted to show that necessities are necessities in virtue of meaning (i.e., logical necessities) and second, that these necessities are *a priori* necessities. I believe the same holds for natural kind terms. As we have seen, Kripke's discussion of natural kind terms such as gold and his other stock example 'water', involves the claim that there are *a posteriori* necessities. If all necessary claims are logical *a priori* claims, then there cannot be such a thing as *a posteriori* necessity. This raises the issue of how *a priority* and *a posteriority* are to be distinguished. In order to express my thoughts on this, I want to return to the more straightforward example of the *a priori* – *a posteriori* distinction mentioned above, supporting the view that *a priori* truths are necessary and *a posteriori* truths are contingent.

We said that roundness could be considered an *a priori* property of a ball. In a sense, this is a bad example, since it is not necessarily true that anything we may refer to as a ball is round *a priori*. After all, in ordinary speech it is not a paradox to say that a ball is flat. Therefore, the sense of the term 'ball' does not necessarily entail that it should be round. I would have chosen another example if there were uncontroversial examples of descriptions that are necessary for the sense of a term, but not synonymous with it. It happens to be a fact of ordinary language that terms do not on all accounts have a necessary, but insufficient description. I believe that these terms usually have a cluster concept of meaning. What that cluster concept of the term 'ball' might be is something I will not go into here. For the sake of the argument, let us assume that being round is *a priori* necessary of a ball, even though this is in fact not so. It follows that all balls are necessary - *a priori* round. Now, we ask the question whether a ball is blue. It is not necessary *a priori* true that a ball is blue. One may be tempted to conclude that being blue is an *a posteriori* contingent truth of a ball. This all depends on what we mean by 'a ball'. If we mean an actual ball, it is not *a priori* true of this reference that is blue, *but neither is it a priori that it is round*. This is because it is not *a priori* true of a reference that it is a ball. We have a concept of ball and when we examine a reference, we decide whether it has the properties that are necessary and sufficient for something to be referred to as a ball. Only once we have established this, does it follow with *a priori* necessity from the reference meaning we have established that it must be round.

The *a posteriori* contingency of the description 'blue' does not follow from the actual ball, but from the sense of the term 'ball'. We can examine a reference and decide that it fulfills the necessary descriptions of a ball, whatever those may be, and furthermore decide that it is blue. We may still refer to the reference as a ball, but once it has been established that the ball is blue the reference meaning will entail the fact that it is blue. For the reference meaning, it is equally necessarily *a priori* true that it is round *and* that it is blue.

The distinction between *a priority* and *a posteriority* makes sense only in virtue of the sense of a term, not in virtue of the reference meaning of a reference. Logical contingency is *a posteriority*, logical necessity is just *a priority*.

Let us return to Kripke's argument for *a priori* contingency and *a posteriori* necessity in the context of natural kind terms. Gold, for Kripke, is an actual reference. By referring to this reference as 'gold', we are lead to think of it as 'being gold'. This is not an innocent manoeuvre. We must form a concept of gold to understand the utterance that the reference is 'gold'. But what descriptions should that concept entail? Precisely those that will determine whether the description concerned is entailed by that concept or not. If we think that this concept - this reference meaning - is to be 'yellow metal', then the description 'yellow metal' will be logically necessarily true of this reference meaning. This is to say that 'yellow metal' rigidly designates all yellow metal. It is the meaning of the term 'gold' in virtue of which some description will be necessary of that reference meaning.[1] If we think of the reference meaning of gold as 'an object with atomic number 79', it depends on what that meaning entails whether 'yellow metal' will be necessary or not. Let us for now assume that 'yellow metal' is not entailed by 'atomic number 79'. If so, then 'yellow metal' will not be necessarily true of gold (atomic number 79), but neither will it be *a priori* true. On the other hand, 'atomic number 79' will be *a priori*, logically necessarily true of a reference meaning entailing 'atomic number 79'. Kripke's argument that what we mean by 'gold' is the same for both epistemological positions (before we knew about atomic number 79 and after) is unfounded. Even if people really did universally think of gold as something with a particular essence unknown to them, the reference meaning of 'gold' would still have altered once it was discovered (or decided?) that atomic number 79 was that previously unknown essence.[2] It appears that Kripke assumes that the stability of the use of a signifier indicates the stability of meaning. The way in which people use names is an interesting sociolinguistic topic, but it can have no bearing on ontological modality.

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[1] This may be a good place to observe that ways in which Kripke argues against 'yellow metal' being a rigid designator of gold and in favour of 'atomic number 79' seem to differ substantially. Kripke argues for 'atomic number 79' as if it were given that this is a correct description, but against 'yellow metal', as if this may be false, even though it is not in our world. Yet, Kripke admits to the possibility that the description 'atomic number 79' may be superseded by new scientific insights, in which case 'atomic number 79' would not be a rigid designator of 'gold' either (see Kripke [1980] p. 123). I leave it up to the reader to decide whether the distinction may nevertheless be justified.

[2] Note that, when for proper names a reference meaning changes, the same reference may still be picked out, but when the reference meaning of a natural kind term changes, it may in fact pick out a different class of *actual* references.

IV. LOGICAL NECESSITY AND METAPHYSICAL NECESSITY

In the previous section we have considered *a priori* and *a posteriori* modalities and concluded that these notions really concern logical necessity. All sound modal arguments concern the relation between a reference meaning and a particular description or set of descriptions. Nothing that I have argued for so far should be taken to imply that the notion of metaphysical necessity is altogether redundant. The necessities that we have considered, even if they are logically necessary, will still apply to actual references, so at least in some sense they are necessities *de re*. Presently, I will argue that the notion of metaphysical necessity, as distinguished from logical necessity, may still be useful, particularly with regards to the ontological identity thesis we will return to in the following sections.

The way Kripke uses the term 'metaphysical' is equivalent to what I have called 'ontological'. Metaphysical necessities do not follow from what we know of a particular reference, but from what a particular reference *is*. According to Kripke, we can inquire about metaphysical necessity as follows:

> „We ask whether something might have been true, or might have been false. Well, if something is false, it's obviously not necessarily true. If it is true, might it have been otherwise? Is it possible that, in this respect, the world should have been different from the way it is? If the answer is 'no', then this fact about the world is a necessary one. If the answer is 'yes', then this fact about the world is a contingent one." (Kripke, 1980, p. 36)

In this way, we can decide *of the thing* what descriptions are necessarily true of it. To expand on this a little, let us consider some of the examples Kripke provides in his book. He states that it should be metaphysically possible for the actual individual Nixon that he would not be the President of the U.S. in 1970. On the other hand, it would be metaphysically necessary for the Queen to be the daughter of her actual parents, for otherwise, we would not be speaking of the Queen (Kripke, 1980, p. 113). Similarly, it should be metaphysically possible that this table in front of me were not in front of me, but metaphysically necessary that it has been made of the wood it has actually been made of, for if not, we would not be talking of this table (Kripke, 1980, p. 114). On the basis of the citation above and the examples presented, there is the strong suggestion that metaphysical necessity or contingency is something that is true about references, independent of descriptions we use to refer to them. Some things that actually did happen might not have happened, whereas other things could not possibly *not* have happened.[1]

Thus, with its relation to logical necessity in mind, two things can be said of metaphysical necessity:

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[1] Kripke works with intuitions about metaphysical necessity and does not profess to have presented a complete theoretical account of it (see footnote in Kripke [1980] pp. 114-115).

> 1. In the actual world, some facts or events are necessary, and others are merely contingent. This would be true, even if there were no sentient beings thinking about necessity at all. It is an objective fact about the universe and has nothing to do with logic or meaning.
> 2. We can determine, at least in some cases, what these necessities are.

As to the first point, we can ask what kind of necessities could be considered metaphysical in this sense and whether there are metaphysical necessities that are in any way relevant with the ontological identity thesis in mind. First, let us concentrate on the second point. In relation to logical necessity, the second point can be developed in two ways:

> 2.a. The way in which we determine modalities *de re*, does not involve the consideration of the relation between meanings. Not merely the fact of necessity is not logical, but our determination of the necessity is not, either.
> 2.b. The way in which we determine modalities *de re* is a logical enterprise, i.e., metaphysical necessity can be rephrased as logical necessity.

Several remarks and observations by Kripke are suggestive of 2.a. Kripke's view on proper names implies that we may inquire about the reference itself, therefore not considering *logical* entailment of a description by an *a priori* given reference meaning. In the previous section it was argued that the only way in which we can consider modalities is by implicitly or explicitly using a reference meaning. Kripke must have some idea of what the reference considered means, which is to say that he must at least implicitly use some description. Therefore, 2 a. must be rejected.

Let us turn to 2 b. Many of the necessities Kripke considers can in fact be rephrased in terms of logical necessity. In the previous section, it was argued that any description rigidly designates a reference in all possible worlds. If the fact that someone is the child of its actual parents is taken to be the decisive description (rigid designator) of an individual, then necessarily, to be referring to this person, in any possible world, that person would have to be someone born of those parents. When we consider the possibility that the Queen had different parents, we are simply not considering the Queen.[1] Similarly, when we consider the material origin of a table to be the decisive property of a table, then we could not be considering the possibility of *this* table having been made of ice. If H_2O rigidly designates water and water is defined as H_2O, than

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[1] Kripke's view that 'being born of certain parents' rigidly designates an individual is difficult to reconcile with the view that names are also rigid designators of an individual. If we are referring by definition to an actual individual when we use its name, then on that account we could imagine any property to be contingent, including who its parents are, but if this too is a rigid designator, that cannot be so.

in no possible world could water (H_2O) turn out not to be H_2O. If gold is defined as the substance with the property atomic number 79, then in no world could gold fail to be atomic number 79. But similarly, the description 'belonging to a famous actor' picks out all belongings of a famous actor necessarily in any possible world. If we were to be considering an actual reference in any possible world that was not the property of a famous actor, we would not be considering the reference of a thing that necessarily belongs to a famous actor.

Although this shows how necessities *de re* may be formulated as logical necessities; since this can also be argued for something like 'a property belonging to a famous actor' it may appear as though the merits of Kripke's metaphysical modality are illusory: the special rigid designators Kripke is concerned with do not differ from any old description that is true of a reference. To the extent that modalities are determined in the same way, I believe this is true. The relevance of Kripke's use of rigid designators does not lie in the kind of modal arguments that it enables us to make, but in what references it enables to make modal arguments *about*. When, in the next section, we will be considering the ontological identity thesis, we are not interested in all references that can be described by satisfying a property such as 'belonging to a famous actor', but a physical description vaguely similar to atomic number 79 or H_2O will have to be considered. The question of what kind of reference meanings we will be considering is by no means trivial and here metaphysical necessity may serve its purpose.

Some of Kripke's metaphysically (i.e., ontologically) motivated references are clearly the references that are relevant to Identity Theory. When Place (Place, 1969, pp. 23-4) distinguishes between identities of definition and identities of composition, the latter picks out the sort of references Kripke is considering. As we will see, Chalmers's consideration of logical supervenience on physical properties also aims to single out the same kind of properties or descriptions.

If rigid designation does not single out these relevant properties, neither does the qualification that it be a property of fundamental physics. For if only physical descriptions were admitted, then Identity Theory could not properly be formulated. After all, Identity Theory states that a physical phenomenon is identical to a conscious phenomenon. Conscious phenomena are not rigidly designated by physical formulae, if it does not follow from any empirically established physical description that it refers to a conscious phenomenon. What physical descriptions and the description of being conscious have in common is the fact that these descriptions are descriptions of intrinsic properties of a substance. It has sometimes been argued that all properties we have knowledge of are relational properties, since the only way in which we can establish that a substance has certain properties is by means of how it interacts with other phenomena, ultimately relating to the sense data of an observer. Just because in the cases of empirical phenomena we

are able to describe their properties only because of how it relates to others, and ultimately with an observer, it does not follow that some properties may not be said to be the properties of such a phenomenon itself. These properties, that are the cause of certain other properties, may legitimately be considered intrinsic properties.

Once we use descriptions of intrinsic properties to pick out our references, we can consider the modalities of other descriptions. Descriptions synonymous with or entailed by the reference meaning will be necessary. Descriptions logically incompatible with the reference meaning will be impossible. As for other descriptions, they will not be necessary or impossible by virtue of the reference meaning. It should not be overlooked that when we speak about actual references the reference meaning has to be true of that referent. What is true of an actual reference is primarily an epistemological matter and not a logical one. However, once we change the reference meaning by including new information, modalities of descriptions will change accordingly.

To conclude this section, I want to return to the first point about metaphysical necessity. Does it make sense to speak of necessities that exist for actual references, as distinct from logical necessity? The first class of necessities that comes to mind is the one we have been considering. That H_2O should pick out H_2O necessarily is a logical *a priori* necessity. That something is what it is, and not what it is not, is logically necessary. Ontologically, it says perhaps no more than that something 'is'. Necessity is something that holds between two terms, or two things; something is necessary in virtue of something else. Now, it seems to be a fact that in the actual world, the world of our actual references, some things are indeed necessary in this sense. There is nothing controversial in stating that we are able to formulate laws which seem to hold for every occasion we look into. The way in which H_2O reacts to certain other natural phenomena may be formulated in terms of laws which seem to be necessary. Hume may have been right to say that past results offer not guarantee for what will happen in the future. What that does is to pose a limit to the kind of certainty that may be established on the basis of scientific observation. It does not diminish the likelihood that some relations in our world are in fact *naturally* necessary. Such relations may exist not only between different physical spatio-temporally distinct substances that would be described in terms of causal laws, but also for one kind of substance. There may be necessary relations between the pressure, motion and extension of a natural substance like H_2O.

Sometimes, the term 'natural necessity' or 'physical necessity' is reserved for this kind of necessity. Thus far it has seemed plausible that insofar as there are any modalities *de re*, they are only relevant insofar as we consider them in terms of logical necessity. I hold that these 'natural' necessities can in fact be rephrased in logical terms. When we consider necessities that

hold for the reference meaning of H_2O, what is the reference meaning? H_2O may just be a name we use to refer to transparent, tasteless drinkable liquid, in the same way that 'Dartmouth' refers to a city. This is not what ' H_2O ' means for chemists. It is a descriptive term, the meaning of which will become clearer the more we learn about chemistry. It is by no means farfetched to say that the term H_2O implies some necessary properties in virtue of the theoretical context in which it operates. If this is the meaning that is part of our reference meaning, it will follow necessarily *a priori* that some descriptions are not compatible with this reference meaning. I will not be tempted to flaunt my ignorance of chemistry here by trying to indicate what descriptions this will involve. It is probable that even the description H_2O, at some theoretical level, will involve a cluster of descriptions, just as with common terms. How chemists go about naming is a sociolinguistic question that we are not concerned with. To insure our link to references in the actual world, we just add 'if true'. If it is true that H_2O consists necessarily of a combination of a certain quantity of H molecules and O molecules, than it is logically necessary that any substance with those quantities and nothing else will be H_2O and everything else will not. The same kind of necessity holds for other properties that a chemist will be able to ascribe to H_2O. If we consider a possible world where some essential properties of H_2O (essential in virtue of reference meaning) are lacking, we will not be considering a world in which H_2O exists, and we have not discovered that some properties turn out to be not logically or metaphysically necessary of H_2O after all.

What has been established is that when we use an elaborate description for an actual reference, necessities follow from that description. However, at a fundamental level of theory, these necessities will remain logically contingent. For instance, it may be that no theory can explain the fact that pressure, motion and extension correlate for H_2O in the way that they do. If there is such a theory, this is a theory that describes the properties of entities that make up H_2O. But then the correlations between these properties will be contingent, or else those of even more microscopic entities. The point is that logical necessities follow from reference meanings, but these meanings themselves may involve correlations that are logically contingent, but that may be *metaphysically* - in the sense of *naturally* - necessary.

The general framework for thinking about reference and necessity has been set up. These are the main points:

1. Modalities do not follow directly from a reference, but from a reference meaning we hold true for a reference.

2. All logical necessities are *a priori* necessary truths.

3. All descriptions rigidly designate a reference with a reference meaning entailing those descriptions.

4. If we rigidly designate a reference, the modalities of other descriptions may be assessed.

5. Useful rigid designators for the ontological identity thesis are those that describe intrinsic properties.

6. Modal arguments based on metaphysical (ontological, natural) necessities can be described as logical necessities.

V. THE LOGICAL NECESSITY OF THE ONTOLOGICAL IDENTITY THESIS

Let us turn to the following question: what requirements should an identity thesis fulfill according to Kripke? A theoretical identity, i.e., one between two terms, requires that two rigid designators necessarily (i.e., in any possible world) pick out the same reference. If the Evening Star and the Morning Star are proper names, then, according to Kripke, since they designate the same object necessarily, they are identical. Other examples that come up are those involving a natural kind term, such as 'gold' or 'water' and 'atomic number 79' and 'H_2O'.

In *Identity and Necessity* (Kripke, 1970, p. 136), Kripke presents an argument in the formal language of quantified modal logic:

(1) $(x)(y)[x=y) \supset (Fx \supset Fy)]$
(2) $(x) \Box(x=x)$
(3) $(x)(y)(x=y) \supset [\Box(x=x) \supset \Box(x=y)]$
∴(4) $(x)(y)(x=y) \supset \Box(x=y)$

For our present reading, F must be taken to be a rigid designator. The question is what x and y are to represent.

The problem for Identity Theory, exemplified with pain and C-fibres firing is posed as follows:

> „Let '*A*' name a particular pain sensation, and let '*B*' name the corresponding brain state, or the brain state some identity theorist wishes to identify with *A. Prima facie,* it would seem at least logically possible that *B* should have existed (Jones's brain could have been in exactly that state at the time in question) without Jones feeling any pain at all, and thus without the presence of *A.* (…) If *A* and *B* were identical, the identity would have to be necessary." (Kripke, 1980, p. 146)

The problem for Kripke is a lack of necessity. It seems that the necessity required is one that precludes the possibility of the two terms not picking out the same reference. After all, it could not be the case that someone felt 'pain' without there being C-fibres firing, if the two terms necessarily pick out the same reference. Neither could it be the case that somewhere there are C-fibres firing, but no pain is felt. So far, Kripke has been criticised on many points,

but that necessity of this kind is required for the ontological identity thesis seems to me undeniable. On the basis of what I have argued so far, it is not difficult to see that this requirement can in fact be met.

The modality of a certain description depends on the reference meaning we hold true for an actual reference. 'Pain', understood as the experience itself, and 'C-fibres firing', understood as a physical description of a brain event, are each respectively true of a reference that entails the description concerned. Whether these descriptions are true of an actual reference is an epistemological question. Let us assume that these descriptions are indeed true of an actual reference. If the respective reference meaning of both descriptions is simply 'pain' and 'C-fibres firing', then it is indeed possible that one occurs without the other. If, however, the reference meaning would be 'all occurrences of pain and all occurrences of C-fibres firing', then every reference that is picked out by 'pain' would also be picked out by 'C-fibres firing'. In no possible world could something with this reference meaning not be picked out by both descriptions. The ontological identity thesis would be logical *a priori* necessary – if true. For Kripke's formal argument, x could mean: 'the reference meaning of the reference that is necessarily pain', and y: 'the reference meaning of the reference that is necessarily C-fibres firing'.

By formulating Identity Theory as one of necessary identity, we have met the requirement of necessity that we believe it must meet. However, it is not difficult to see that there is a contingency involved in the sense defended by the identity theorists: it is not logically necessarily true of an actual reference that it is picked out by all descriptions of pain and C-fibres firing respectively. Whether the reference meaning that would make this necessary describes correctly an actual reference cannot be decided on the basis of the accepted reference meaning for each designator respectively.

The fact that we don't actually know whether this reference meaning is true for our actual reference should not be held to preclude the possibility of it being so. Kripke's criticism would have been successful if he could establish the fact that the correct reference meaning of both designators is only 'pain and nothing else', and 'C-fibres firing and nothing else'. This is what Kripke's argument suggests: the rigid designator names the reference, and the reference just *is* what the name designates (and nothing else). That this should be so is something a logical argument cannot establish.

Finally, I want to make two points on the role of metaphysical (i.e., ontological or natural) necessity. If any actual reference of pain is also a reference of C-fibres firing, this can be phrased in terms of logical necessity. Yet, the truth of this statement depends on the nature of the actual world. The question may be posed whether it would be at all likely that the nature of the world would be such as to allow for references such as these. At the end of the previous section, we discussed what kind of scenario could be termed metaphysically necessary. These concern *relations* between objects or events, as well as intrinsic properties of events. If the property of something being conscious is always accompanied by the property of something being

physical, this metaphysical necessity is similar to intrinsic physical properties that always hold for (events of) paradigmatic physical objects such as H_2O. Therefore, the metaphysical necessity specified for the reference of pain and C-fibres, in virtue of reference meaning, is not so abnormal so as to warrant suspicion from scientifically minded readers.

Second, as with correlations that may be deemed metaphysically necessary for paradigmatic physical events, so it is true for a reference meaning entailing pain and C-fibres firing that this correlation itself may not be describable in terms of logical necessity.

VI. CHALMER'S LOGICAL ARGUMENT IN TERMS OF SUPERVENIENCE

Chalmers's argument is developed using the concept of supervenience. Supervenience, in general, is explained as follows: „B-properties supervene on A-properties if no two possible situations are identical with respect to their A-properties while differing in their B-properties." (Chalmers, 1996, p. 33)

Chalmers distinguishes two kinds of supervenience: logical and natural. Since his argument against physicalism, including Identity Theory, is fleshed out in terms of logical necessity, we will first look at this notion. We will return to natural supervenience towards the end of this article.

> „B-properties supervene logically on A-properties if no two logically possible situations are identical with respect to their A-properties, but distinct with respect to their B-properties." (Chalmers, p. 35)
> „[W]hen B-properties supervene logically on A-properties, we can say that the A-facts entail the B-facts, where one fact entails another if it is logically impossible for the first to hold without the second." (Chalmers, p.36)

The A-facts or properties in question are always the facts of fundamental physics. The B-facts or properties would typically be facts of natural sciences other than fundamental physics, but of course, the real question is what kind of supervenience relation (if any) exists between fundamental physical facts and consciousness.

Chalmers argues that facts that do not supervene logically on A-facts are further facts about the world. Consciousness does not supervene logically on the A-facts, because it does not follow from any physical facts about our world that there should be something like consciousness. And so we end up with the following argument:

> „1. In our world, there are conscious experiences.
> 2. There is a logically possible world physically identical to ours, in which the positive facts about consciousness in our world do not hold.

3. Therefore, facts about consciousness are further facts about our world, over and above the physical facts.
4. So materialism is false." (Chalmers, 1996, p. 123)

According to Chalmers, this means Identity Theory is false too. I admit that for each of these claims there is a valid interpretation on account of which it is true. This even includes the conclusion that materialism, i.e., physicalism is false.[1] That interpretation, however, does not render the Identity Theory - understood as an ontological identity thesis - false. On the other hand, there is a sense in which claims 2 and 4 are false and the truth of 3 cannot be decided on logical grounds and does not follow from the second claim. The claim about materialism does not directly concern us here, so we will focus on the second and third claim.

The reason that different interpretations of the second and third claim can be given is due to an ambiguity in the terms 'fact' and 'property'. That ambiguity is the same ambiguity inherent in the term 'reference'. On one account, the term fact refers to an actual reference, on another, it refers to a reference meaning.

The second claim is an argument against the logical supervenience of conscious facts on physical facts. Chalmers's definition of logical supervenience makes sense when the A-facts and B-facts are considered descriptions. Taken in this sense, supervenient B-facts are different descriptions of A-facts. When B-facts can in principle be redescribed as A-facts, the B-facts do not refer to anything over and above A-facts. This is to say that the logical entailment of the B-descriptions on the A-descriptions gives us no reason to assume the actual reference of the B-facts is anything over and above the reference of the A-fact. It will be remembered that Smart, Place and Polten discussed the question whether difference in the meaning of terms necessitates difference in reference. Chalmers's account in terms of logical supervenience is a sophisticated version of Polten's, who argued that difference in meaning necessitates difference in reference (Polten, 1973, p.33). Chalmers makes it plain what kind of difference in meaning is allowed for and what difference in meaning is not, and what the relevant descriptions are for ontological identity claims.

For all its sophistication, the claim that failure of logical supervenience implies the existence of non-physical references is tantamount to the claim that no two designators can be necessarily true of the same actual reference. The third claim is meant to demonstrate that this follows. If we interpret the notion of 'facts' to be a description in the third claim, all that it says is that descriptions of consciousness are something 'over and above' physical descriptions in the sense that these descriptions are not logically entailed by physical descriptions. This, however, does not demonstrate that there are

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[1] Physicalism in the sense specified in footnote 2, p. 51.

actual references ontologically distinct from the references of physical descriptions. In fact, for the third claim to falsify Identity Theory, the 'facts' referred to here would need to be taken to be the actual references. If consciousness is a reference over and above physical references, Identity Theory must indeed be false. But, on the above interpretation, this does not follow from the second claim.

To save the inference from the second to the third claim, we could interpret the 'facts' in the second and third claim to be the actual reference. If so, we run into two complications. First, in cases where logical supervenience holds, the B-facts are just the A-facts, so to name them differently would be unwarranted. Second, I have argued previously that logical necessity only applies directly to meanings, not to things. We now run into the same problem as we did with Kripke: we could claim that the reference meaning of the physical facts is only what is picked out by physical descriptions. If so, it could not be the case that a description that cannot be reduced to a physical description designates the reference of that physical description. But that the reference of a physical description is only rigidly designated by that description is precisely what we have no logical grounds for asserting.

So, if we interpret Chalmers's argument to be one about descriptions, claims one to three are convincing, but it does not falsify the ontological identity thesis. If, on the other hand, we consider them to be about references, the second claim is not convincing and therefore, the third does not apply. The interpretation of the argument that Chalmers can be seen to support is one according to which the facts mentioned in the second claim are descriptions and the facts mentioned in the third claim are references. Chalmers in fact believes that the failure of logical supervenience implies that there are things in the world that are not the things physics describes. Chalmers's argument involves his notion of natural supervenience, which corresponds to our notion of metaphysical necessity developed in the two previous sections. To conclude, I will briefly consider Chalmers's reasoning on this.

VII. IDENTITY AND NATURAL SUPERVENIENCE

The argument that links the second and third claim of Chalmers's argument is not logical in the sense in which we have loosely employed the term. The main reason for considering it nonetheless is the following. As pointed out it the first section, the logical critique of Identity Theory has never been strictly logical, since it always involves an inference from logical considerations to an actual object or event. A logical argument is employed to raise doubts about an ontological thesis. Chalmers's supervenience argument is support-

ed by claims that are not logical.[1] Chalmers focuses on the logical argument because he presumably thinks that this is what lies at the heart of the controversy. If the argument from the second claim concerning descriptions to the third claim concerning actual things or events is not controversial, then all we have done so far is to exploit the fact that the argument is not entirely logical. The very least that can be done is to show that Chalmers's main supporting argument *is* in fact controversial.

Apart from logical supervenience, Chalmers discusses natural supervenience. Natural supervenience is described as follows:

> „Natural supervenience holds when, among all naturally possible situations, those with the same distribution of A-properties have the same distribution of B-properties: that is, when the A-facts about a situation *naturally necessitate* the B-facts." (Chalmers, p. 37)

Although Chalmers argues that consciousness does not supervene logically on physical facts, he does think consciousness may supervene *naturally*. Chalmers illustrates a case of natural supervenience without logical supervenience as follows:

> „the pressure exerted by one mole of a gas systematically depends on its temperature and volume according to the law $pV = KT$, where K is a constant […]. In the actual world, whenever there is a mole of gas at a given temperature and volume, its pressure will be determined: it is empirically impossible that two distinct moles of gas could have the same temperature and volume, but different pressure.' '[I]n this instance, pressure supervenes naturally on temperature, volume and the property of being a mole of gas." (Chalmers, 1996, p. 36)

The correlation between temperature, volume and pressure is naturally (or metaphysically) necessary, but not logically necessary. At the end of the last section, I made the point that a similar correlation might exist for 'being pain' and being 'C-fibres firing'. Since Chalmers agrees that consciousness may supervene naturally on physical properties, we are in agreement on this. The crucial difference is that according to Chalmers, these different properties are ontologically distinct, whereas I argue that they need not be.[2] In the

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[1] A similarly subsidiary argument is used by Polten. According to Polten, labels refer to different properties of an individual. These properties are considered ontologically distinct. (Polten, 1973, p. 32) That this must be so follows from the equation of the source of physical knowledge with its referent. This is no logical argument (Polten [1973] p. 33).

[2] The idea that properties must be ontologically distinct is also crucial to Polten's argument. Feigl too would come to embrace it: „I realize that my own previous ('identity') account must also be thoroughly revised. (…) If I had been satisfied with merely extensional identity, I would have been saddled with an ontology of particulars (preferably of events) with *dual properties*. But that is hardly a step in the direction of the thoroughgoing monism I hoped to vindicate." (Feigl [1967] p. 145)

case above, I consider the property of pressure to be something that holds for exactly the same event as the temperature and the volume. It is merely by isolating interactions with causally distinct phenomena that we are able to provide distinct descriptions of the properties true of an event of a mole of gas. One way of arguing against this would involve the notion of possible worlds: there is a logically possible world in which gas might not have the pressure as it does in ours. This is a strategy we have discussed at some length with regards to Kripke. The correlation of pressure, temperature and volume may be an essential property of a mole of gas, in which case it would be logically impossible for there to be the same kind of mole of gas without these correlations. It merely depends on our description which necessities follow logically and which do not. This type of argument does not show that properties describe ontologically distinct references.

Chalmers also provides a different argument, which he also borrows from Kripke:

> „If B-properties supervene logically on A-properties, then once God (hypothetically speaking) creates a world with certain A-facts, the B-facts come along for free as an automatic consequence. If B-properties merely supervene naturally on A-properties, however, then after making sure of the A-facts, God has to do more work in order to make sure of the B-facts: he has to make sure there is a law relating the A-facts and the B-facts." (Chalmers, 1996, p. 38)

If this analogy is meant to demonstrate the intuitive force of the argument, then Chalmers is not doing a good job at it. According to this analogy, God creates a world by creating properties. A common view would be that a property is a property of *something*. If God merely creates properties, then there is not anything that has these properties. It might be argued that God creates a substance for every property he creates, at least when these properties are intrinsic. If so, then if God created the property of pressure, that substance would have some pressure, but it would not yet have any temperature or volume. What's more worrying is that the substance in question would *never* attain these properties, if any distinct property would be created with a distinct substance. Of course, we could consider an object as a collection of correlated substances and then say of that object that it has all these different properties, but this is a matter of semantics, not ontology.

Although physical science sometimes yields extremely counterintuitive theories about the microscopic elements that make up the world, I see no reason to presuppose that Chalmers's property ontology should be among these. It seems more natural to suppose that when God created a substance, this was a substance with mass and extension - and pressure, volume and temperature, for that matter. It may be true that we are in need of different causal relations to distinct events to be able to know what the properties of

an object are, but this concerns our reference fixers, not the intrinsic properties that rigidly designate the reference.

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