

The Qua Problem and the Proposed Solutions

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One basic idea of the causal theory of reference is reference grounding. The name is introduced ostensively at a formal or informal dubbing. The question is: By virtue of what is the grounding term grounded in the object qua-horse and not in the other natural kind whose member it is? In virtue of what does it refer to all horses and only horses? The problem is usually called the qua problem. What the qua problem suggests is that the causal historical theory in the final analysis depends on some kind of unexplained intentionality. This is a great problem since the whole project is an attempt to explain intentionality naturalistically. In this paper, I have two aims: (i) to discuss the most important attempts at solving the qua problem; and (ii) to evaluate the solutions. (i) I focus on the following attempts for the solution of the qua problem: Sterelny (1983), Richard Miller's (1992), mentioning briefly more recent attempts by Ori Simchen (2012) and Paul Douglas (2018). I also concentrate on the attempts in mind and brain sciences as presented by Penelope Maddy (1983) and more recently by Dan Ryder (2004). (ii) In evaluating the solutions, I argue that when a metaphysical question "what is to name" is replaced/or identified with the question about the mechanism of reference, namely "in virtues of what does a word attach to a particular object", then the final answer will/should be given by neurosemantics. The most promising attempt is Neander's (2017), based on the teleological causal explanation of preconceptual content to which the conceptual can be developed, as Devitt and Sterelny suggested in their work (1999).

Keywords: *Qua* problem, reference grounding, mechanisms of reference, intentionality, neuroscience, neurosemantics.

1. Introduction: the causal theory of reference and the qua problem

According to the representatives of the description theory (Frege 1893, Russell 1905) reference is determined by a description or descriptions that the speaker can give for the person or the thing. According to causal theorists, Keith Donellan (1972), Saul Kripke (1980), Hilary Putnam (1975) and further elaborated by Michael Devitt (1981), reference is not determined by descriptions but by a causal chain that links the speaker to the person or a thing. Here I concentrate on the theory elaborated by Devitt and Sterelny (1999). The first attempt was given in Devitt (1981).¹

One basic idea of the causal theory of reference is reference grounding. The name is introduced ostensively at a formal or informal dubbing. The other basic idea of the causal theory is reference borrowing. Hearers can gain the ability to use the name in conversation by the fact that they are told what the term is by others who have also learned about it from somebody else. The chain goes back to the grounder.

The *qua* problem is the problem arising in reference grounding. The problem is the problem of discovering *in virtue of what* a term is grounded in the cause of a perceptual experience *qua*-one-kind and not *qua*-another (Devitt and Sterelny 1999: 79–82).

Devitt favorite example is the cat named ‘Nana’. The use of that name was grounded in virtue of perceptual contact with that particular cat. That is, the name refers to that cat in virtue of a grounder/baptizer having had perceptual contact with her. However, the contact is not with that entire particular cat, some contact with Nana could be perhaps as she peers around a corner. The question that the *qua* problem poses is why ‘Nana’ refers to the whole individual and not an individual time-slice or an undetached part of her. The same problem arises in case of a natural kind term such as ‘horse’. The term can be grounded in a couple of horses or even one horse, but horses are not only horses, they are vertebrates, they are mammals. They are members of different/many natural kinds. By virtue of what is the grounding term grounded in the object *qua*-horse and not in the other natural kind whose member it is? In virtue of what does it refer to all horses and only horses? Why does the term applied in such groundings not project to other members or these other natural kinds? The problem is even worse. What limits such kinds to only natural kinds? Object of ‘horse’ could be grounded as a pet, wooden toy, etc. Why do we not ground them as members of such kinds? The term ‘*qua* problem’ has been coined by Kim Sterelny (1983).

¹ A short power point presentation of this paper was given at the International conference: *Devitt’s 80th. Many Faces of Philosophy* held in Maribor (May 9–10, 2018). A much shorter version of this article will appear in Borster and Todorović (ed.) forthcoming, celebrating Devitt’s 80th birthday.

The solution that Devitt and Sterelny (1987/1999) explore is that the baptizer/grounder needs to have some idea—some mental content—about the thing that she/he is naming. For example, you need to have an idea that you are naming a whole individual, despite the limitations of your causal contact with it. Having such an idea/mental content allows the descriptive element to enter the causal chain, so Devitt and Sterelny consider compromise with descriptivists to solve the *qua* problem. “It seems that the grounder must, at some level, ‘think of’ the cause of his experience under some general categorical term like ‘animal’ or ‘material object’” (1999: 90–93). The supposition is that the individual or kind actually named must be the individual or kind the speaker intends to name, so that facts about the speaker’s beliefs and concepts enter into the determination of reference. Only indefinite descriptions are required along with some causal historical contact. What the *qua* problem suggests is that the causal historical theory in the final analysis depends on some kind of unexplained intentionality. This is a great problem since the whole project is actually an attempt to explain intentionality naturalistically.

Thus Devitt and Sterelny (1999) say they are torn between two explanations of reference. The interest in the final explanation takes them away from the descriptive theories towards causal theories. But the historical-causal theory of reference has a deep problem, the *qua* problem which, as Devitt and Sterelny say, does not seem to have the resources to solve. Later in 2002 Devitt says: “I have struggled mightily with this problem (1981a: 61–4; Devitt and Sterelny 1999: 79–80), but I now wonder whether this was a mistake: perhaps the problem is more for psychology than philosophy” (2002: 115, note 15).

The question is then: Can the *qua* problem be solved and is it a philosophical problem?

I proceed as follows: In section 2. I focus on the following attempts for the solution of the *qua* problem: Sterelny (1983); Richard Miller (1992); and two recent ones by Simchen (2012) and Douglas (2018). In section 3. I concentrate more on the attempts to the solution of the *qua* problem in the sciences, as presented by Penelope Maddy (1983) and Dan Ryder (2004). In section 4. I look more closely into Devitt and Sterelny (1999) and Karen Neander (2017) proposal and suggestions. Section 5. is a reflection on the mechanisms of reference and section 6. is the Conclusion.

2. *The qua problem and (possible) pure causal solutions*

There has been a number of attempts at solving the *qua* problem. I will look into, to what I consider, the most important ones. And chronologically I start with Sterelny (1983).

2.1 Kim Sterelny (1983)

Sterelny's solution to the *qua* problem from 1983 adds two additional requirements on the grounder. First, the grounding requires not just contact with the sample of a general kind but the "assignment of causal powers to the kinds" (1983: 116). The grounder must have in mind a set of causal powers of the sample, possibly the observable ones. These causal powers are grounded in some structure which is common to a certain kind (e. g. cathood for cats). So, for example, if the grounder has in mind something like 'mouse catcher', or 'coachroach-eater', she will be able to ground the term 'cat' in the sample of the kind cat.

The second requirement is the possession or acquisition of recognitional capacities of a general category, i.e., the grounder of the name must have acquired a reliable recognitional capacity for the kind referred to. "One can ground a term on a kind only if one has the ability to discriminate, reasonably reliably, members of the kind" (1983: 116). Thus, the speaker will ground the term only if he has in mind the causal symptoms of kindhood and if he has the ability to discriminate those symptoms. Talking about the recognitional capacities to discriminate general categories, Sterelny says that they are not psychological states individuated internally but that they are constituted by the way an individual is embedded in his physical and probably social environment (1983: 117). The individual simply identifies. He has a learned perceptual capacity similar to an ability to recognize shapes. In that sense, it is only knowledge-*how*.

Miller (1992) who himself tries to offer a better solution to Devitt and Sterelny's solution from 1987 rightly notices that Sterelny's solution to the *qua* problem has the following weak point. What is problematic is the second requirement, i.e., the requirement that the grounder has a reliable ability to discriminate members of the kind. Miller says: "The reliable ability to discriminate kangaroos will not serve to pick out kangaroos *qua* kangaroos because our hypothetical grounder of the term also discriminates speedy herbivores, hopping marsupials, tourist attractions, and food sources. Since the speaker has the ability to discriminate all these classes, reference to these classes is not ruled out by the restriction as it stands" (1992: 428). Miller does not mention the first requirement, 'the assignment of causal powers to the kinds', i.e., that the grounder must have in mind a set of causal powers of the sample. In my view, it is rather mysterious how the grounder has the causal powers in mind when the causal powers can be multiple: 'cathood', 'animalhood'. How does the grounder decide? That is the problem that *qua* problem poses, so it cannot be the requirement or the solution to the problem.

2.2 Richard Miller (1992)

Miller offers, what he believes is, a purely causal theory of grounding. He argues that Devitt and Sterelny's (1987) descriptive-causal theory

of grounding doesn't work as a theory of reference, but that a purely causal account does. Miller points out that although the problem was first recognized more ten years ago² it remains unsolved and largely neglected. He also stresses that the difficulty seems crucial also to causal theories of perception and mental representation. He focuses on reference but says that "causal theories of perception and mental representation unavoidably hover in the background" (1992: 425).³

Miller sets himself a task of showing that although Devitt and Sterelny (1987), tentatively explored a compromise with descriptive theory in order to solve the *qua* problem for reference grounding, he thinks that compromise is "unwise" because "no hybrid theory can solve the *qua* problem" (1992: 427). Miller's suggestion rests on Sterelny's reliabilist solution which should be modified to bring out the fact that the sample upon which the term is grounded causes the reliable ability to discriminate the kind in virtue of its membership in the kind itself. The more precise formulation of his solution is the following: *The speaker S can use his perceptual contact with x to ground 'N' on the kind Q if x qua Q causes S to acquire a reliable ability to discriminate Qs.*

This 'tightening up', as Miller puts it, of the causal relation, solves the *qua* problem. Individuals—in Miller's case individual kangaroos—have the causal powers that they do in virtue of the classes to which they belong. Miller stresses that the 'x qua Q causes S' locution needs to be explained. The *qua* problem arises because individuals can correctly be said to belong to many classes. His solution depends on the fact that individuals have causal powers in virtue of their belonging to certain classes. There is no need to look outside the causal powers of things for a solution to the *qua* problem because the *qua is built into the causal powers themselves* (italics mine). The particular stands for whichever class shares the causal nature which brought about the acquisition of the ability to use the name (1992: 429). In other words, to stress once again: The *qua* is built into the causal powers.

One may surely wonder how is the *qua* built into the causal powers themselves? And this is exactly what Miller asks: In virtue of what was the grounding in the natural kind to which the individual belongs and not in any of the other kinds to which it also belongs? His answer is that what the grounder gained was a disposition to think 'kangaroo' when confronted with kangaroos and not a disposition to think 'kangaroo' when confronted with marsupials, tourist attractions or food sources. In virtue of what was the grounding in an individual and not its time-slice? What the grounder gained was a disposition to think 'George' when confronted with George and not a disposition to think 'George' when confronted with the time-slice of George. The individual

² And now more than a quarter of a century ago.

³ He also points out that: "Philosophers who complain that CTR is too sketchy to be worthy of serious consideration ought to examine the detailed and systematic development of the theory in Michael Devitt, *Designation* (New York: Columbia University Press, 1981: 61–63)" (1992: 425, footnote 2).

or kind referred to reliably causes the speaker to think 'N' (1992: 430). However, there is no need for the individual acquiring the name to be aware of the properties which caused her to acquire it. In fact, she will often not be conscious of them at all. Miller concludes: Even children with vocabularies of less than one hundred words do it with ease. It is a brute fact that people learn to react one way to 'dogness' and another way to 'catness' without the need for descriptions. The underlying natures of dogs and cats are causes and our ability to use 'dog' and 'cat' are effects. The descriptions we come up with are mere epiphenomena.⁴

There are a couple of problems with Miller's pure causal suggestion.

1. "The speaker S can use his perceptual contact with x to ground 'N' on the kind Q if x qua Q causes S to acquire a reliable ability to discriminate Qs." This seems to run immediately into the ignorance and error problem, i.e., grounders need not have this ability to discriminate in order to refer. The speaker can refer even when ignorant of what the person or kind really is.

2. Miller says: "There is no need to look outside the causal powers of things for a solution to the *qua* problem because the *qua* is built into the causal powers themselves" (1992: 429). Apart from this claim about something (some stuff?) being built in the causal powers and even if we grant that *qua* is somehow built into the causal powers the grounder still has to think about which causal power is in question. Miller says: "If this had been a marsupial but had not been a kangaroo, it would have caused the speaker to acquire the ability to discriminate marsupials" and "if this had not been a marsupial and had been a kangaroo, it would have caused the speaker to acquire the ability to discriminate kangaroos" (1992: 429). But the grounder is confronted *at the same time* with marsupial and kangaroo. How is the possible fact that *qua* is built into the causal power going to help the grounder? Causal power is built into kangaroos and causal power is built into marsupial. How does the grounder know? Obviously, he has to "think" of one or another. There does not seem to be a straightforward direct or pure causal link.

3. Miller says: "The truth of these referential hypotheses depends on the truth of the counterfactuals: "If this had been a marsupial but had not been a kangaroo, it would have caused the speaker to acquire the ability to discriminate marsupials" and "if this had not been a marsupial and had been a kangaroo, it would have caused the speaker to acquire the ability to discriminate kangaroos" (1992: 429). The counterfactual suggestion has the same problem as stated above in 2. The grounder, again is confronted with both marsupials and kangaroos and the counterfactuals cannot determine which disposition (to think 'kangaroo' or 'marsupial') is going to gain priority in reference fixing. How

⁴ He adds: "This ability to react to underlying natures without knowing what they are will probably seem mysterious to descriptivists, but it ought not. Such an ability is obviously present in mammals" (1992: 431).

does the grounder acquire “a recognitional capacity which fits George like a glove fits a hand” (1992: 430–31), is unanswered.

4. Miller mentions the fact that even children with vocabularies of less than one hundred words react to underlying properties. He says that it is a brute fact that people learn to react one way to ‘dogness’ and another way to ‘catness’ without the need for descriptions. But the innate ability to react to underlying properties is not a good argument for the *qua* problem since this problem needs the answer *in virtue of what* we react and not which ability makes us react. In sum, Miller’s solution is not the solution to the *qua* problem seen as a pure causal mechanism.

There are two more recent attempts which try to solve the *qua* problem by pure causal mechanism, i.e., avoiding intentional element(s) in the grounding and I try to show that they also fail.

2.3 Ori Simchen (2012)

Ori Simchen in his article “Necessity and Reference” (2012) takes up a question: Is it possible for a name that in fact names a given individual to have named a different individual? Simchen focuses on the relation between referring tokens (utterances or inscriptions) of proper names and the referents of those tokens. He argues that the relation is a necessary one: a referring token could not have failed to refer to the thing to which it actually refers. It is plausible that a name refers to something only because its referring tokens refer to that thing. Building on this view, Simchen argues that referential intentions necessarily specify the things they actually do, so no referring token of a proper name could have failed to refer to its actual referent. Simchen tries to show how this approach solves the *qua* problem. He says: “We note that the present approach contains a ready response to a version of what Michael Devitt has termed “the *qua* problem” as applied to referential intentions” (2012: 217–218).

In a rather intricate argument Simchen claims that in employing a name referentially, the primary referential intention is a specific attitude even if it is accompanied by a secondary generic attitude in the form of a descriptive intention to refer. There should be difference between primary referential (cognitive) attitude and secondary referential intention and Simchen states that the primary referential intentions are nondescriptive, they are specific cognitive attitudes rather than generic ones (2012: 220). These cognitive attitudes seem to be a matter of necessity. Simchen says: “We conclude that a given token of a referring term refers to what it refers to as a matter of necessity” (2012: 222). On the other hand, referential intentions are different from primary cognitive attitudes which are supposedly nonintentional although it is not clear how. Jessica Pepp in her overview of the collection, when presenting Simchen’s article, does not even mention the nonintentional cognitive attitudes which seem to be crucial for the solution of the *qua* problem as seen by Simchen. All she says is that “Simchen’s argument

for the necessity of the relation between tokens and referents relies on the view that speakers refer to things in virtue of their intentions to do so” (2012: 18). If the view is that speakers refer to things in virtue of their referential intentions, then one cannot see how this could be the solution of the *qua* problem. Furthermore, if referring term is a matter of cognitive necessity how does this answer the question that the *qua* problem poses, namely, *in virtue of what this cognitive necessity creates a particular referential links?* It is doubtful that Simchen proposal is the solution to the *qua* problem.⁵

2.4 Samuel Paul Douglas (2018)

Samuel Paul Douglas in his article *The Qua-problem and meaning scepticism* (2018) offers another solution to the *qua* problem. The article is not primarily concerned with the *qua* problem but considers solutions given to meaning scepticism and tries to see why Kripke (1982) did not consider a causal-theoretic approach to meaning scepticism. I shall mention meaning skepticism problem only in passing, concentrating on Douglas’s offered solution to the *qua* problem.

While Kripke (1982) considered a range of solutions to the sceptical paradox, a causal or causal-hybrid type of solution was not among them. It has been argued by Kusch (2006) that this is due to the *qua* problem. Kusch argues that the absence of a possible causal solution was justified since the attempt of solving the *qua* problem leaves the causal response still open to the sceptical challenge. This is because the *qua* problem includes the requirement that the baptizers have some idea of what it is that they are naming and this introduces an intentional element that the sceptic can potentially exploit.

The core question that sceptic asks is the same as the question asked for *qua* problem: What fact makes it the case that a speaker means, or refers to, one thing rather than another. As we saw, the solution that was proposed to the *qua* problem by Devitt is to introduce a descriptive element into the act of baptizing.⁶ In other words to repeat, speakers would need to have some idea—some mental content—about of what kind of thing they are dubbing or baptizing. Before offering his own so-

⁵ Andrea Sauchelli (2013), in discussing Ami Thomason on existence question mentions that Thomason bases her solution on the solution that Devitt and Sterelny gave. Thomason’s introduces something that she calls the *conditions of applications* which are supposed to solve the *qua* problem. Namely, for example, the name ‘Hokusai’ is grounded and refers successfully because, in the grounding process, the agents responsible for the naming of Hokusai implicitly intended to apply the name to an entity *qua* human being. But like in Simchen’s case, Devitt and Sterelny’s claim is that, by introducing intentions, the *qua* problem is created. Namely, exactly what is implicitly intended is left unspecified and this underspecification is actually the core of the *qua* problem.

⁶ Douglas misquotes Devitt and Sterelny (1999) as Devitt (1991) which is actually Devitt’s book on *Realism and Truth* (Oxford: Blackwell) where there is no mention of the *qua* problem.

lution, Douglas mentions the approaches of Sterelny (1983) and Miller (1992). Douglas argues that the *qua* problem can be overcome in a way that resists sceptical attack by making use of the notion of *assertability conditions*. His approach requires two key premises. The first is that there are conditions under which some assertions made by speakers will be accepted by their linguistic peers, or they will be not accepted, and that these conditions constrain the behaviour of speakers (2018: 75). Let us mention right away that this premise is relevant for reference borrowing thus not for reference fixing and reference borrowing is not a problem in question. The other key premise is that these assertability conditions supervene upon the same causal chain of events that ground reference under Devitt and Sterelny's (1999) account. This is the premise that is relevant to reference grounding. In Douglas's words: "The reference of a term supervenes upon the causal chain of events that connects our use of that term with its referent (this is the point of a causal theory of reference). At any given time, assertability conditions *must* supervene upon that very same causal chain of events" (2018: 76). Douglas offers an example: Consider a hypothetical situation where an individual the linguistic community known as Sam was baptized with a different name—Bob—and the causal chain of events proceeded from there as previously described. If this were the case, the assertability conditions would necessarily be different to those we experience now. If the chain starts with "Bob," and no alternative grounding events occur to change which name refers to that individual, then the assertability conditions are always going to push speakers towards saying "Bob" and not "Sam," because only Bob features in the causal history of that individual in the relevant sense.

First thing to notice is that this example is again more relevant to reference borrowing, (what the speakers in the community are going to do) rather than reference fixing. Douglas says: If the chain starts with "Bob". But the relevant question is not if it starts but *how* it starts, how "only Bob features in the causal history of that individual in the relevant sense." As Devitt puts it, to paraphrase, *in virtue of what has the grounder grounded the term in Bob*. In virtue of what the individual was named Bob and not Sam? Or in Douglas's own words: "... speakers would need to have some idea—some mental content—about what kind of thing they are dubbing or "baptizing." Douglas's solution does not give an answer to the question that is asked. Further on Douglas says: "If the past use of a word has no influence on the present use of a word, or its influence is indeterminate in nature, trying to make sense of language becomes fraught with difficulty" (2018: 76). But past uses are not going to give us an answer to the question how the *first use* of the term was determined. If it was determined by what was in the mind of the baptizer, then the intentional element that the *qua* problem points to is still a pending danger.

Douglas thinks that he has solved the *qua* problem and he says:

“Finally, this principle (assertability condition) needs to be applied to solving the *qua*-problem. *This solution lies in the fact that all the words a baptizer might think in the process of baptizing, are themselves constrained by their causal history and the resulting conditions under which certain meanings of them can be asserted.*” (2018: 76, italics mine). What is puzzling is the following: How can *all the words a baptizer might think in the process of baptizing...* be interpreted? Isn't it the case that the *qua* problem in order to be solved by pure causal links has to eliminate the fact that baptizers “think” in the process of baptizing?

3. *Qua problem and the brain sciences*

The first attempt at solving the *qua* problem by adverting to the functioning of the brain and giving the neural explanation was made by Penelope Maddy (1984) in her article ‘How the Causal Theorist Follows a Rule’. She is engaged in considering Wittgenstein’s views on rule following but almost her whole concern is focused on the *qua* problem. In this section I also discuss a more recent relevant attempt by Dan Ryder (2004).

3.1 *Penelope Maddy (1984)*

Maddy says that her goal is “to suggest that the causal theorist has the beginning to a reply to Wittgenstein’s sceptical conclusion” (1984: 464). Maddy is arguing that there is a way to solve sceptical problem without appeal to descriptions or intentional states. I present Maddy’s arguments and I want to show that Maddy’s suggestion has a lot going for it. She mentions the role of reference borrowing and the historical chain that goes back to the initial baptizing but she rightly concentrates on the moment when the word’s reference is fixed where inevitably the *qua* problem looms large. Talking about the natural kind gold and the *qua* problem she points out that “the causal theorist would agree that the gesture of pointing is not enough to pick out the metal as opposed to its shape or color” (1984: 464). Her answer to the *qua* problem relates straightforwardly to the neurological theory. How does the baptizer, for example, perceive and name something as a triangle rather than the apexes of the triangle? Here is the quote of the relevant suggestion in full:

The evidence suggests that our ability to perceive develops over time by the growth of neural structures called ‘cell assemblies.’ Repeated viewing of a triangular figure first produces an assembly that responds selectively to apexes, then assemblies for base angles, and finally an integrated assembly that responds to triangles. This large assembly incorporates the others, though they can still function independently. Without these assemblies, the pattern of stimulation from causal contact with a triangle is a short-lived and chaotic buzz; with them, that same pattern of stimulation produces a much longer, more organized reverberation. The development of the triangle assembly is what allows us to see the triangle as a unit, as similar to

other triangles, to remember it, and so on. In other words, given only the original pattern of stimulation from the triangle, we could only be said to “see” it in the sense in which one “sees” a hidden figure in a complex drawing before one notices it. With the cell assembly, we can be said to perceive the triangle as such. (1984: 465)

Maddy discusses a number of objections that someone (including sceptic) can raise to her suggestion that the answer to the *qua* problem lies in neurology. I mention the most relevant ones for the present discussion.

1. One demand is that the analysis of psychological notions be conceptual and not scientific. The argument is the following: “We could have the psychological properties we do, that we could perceive and refer, with very different bodies, and perhaps even with no bodies at all. If so, even if cell assemblies and such do give a causal account of the mechanisms by which we actually happen to perceive and refer, this sort of account cannot tell us what perceiving and referring actually are” (1984: 467). Maddy gives, in my opinion, a very good answer to this objection and that is the following: “But if the point at issue is whether or not our reference is determinate, all that is needed is an account of *how this is possible*, then there is no reason such an account need be conceptual rather than scientific” (1984: 468, italics mine).

2. In her answer to the argument that there could be no reference without a community of referrers, she rightly says that this fact does not establish stronger conclusion that the practice of this community is the mechanism that determines reference (1984: 468). She says: “though conceptual analysis may reveal that referring is a practice employed by a linguistic community, the referents of particular expressions in that community’s language might still depend on mechanisms peculiar to that community and the world it inhabits: no reference without community, but community reference determined by community-specific mechanisms and circumstances” (1984: 468). What is important to notice here is that Maddy puts great stress on specific mechanisms by which reference is determined. In her case these are neurological mechanisms that with learning experience actually come to be “wired in” procedure that the baptizer simply obeys. She argues that reference is not indeterminate since it is determined by various neural and causal facts: “cell assemblies and causal account of the mechanisms.”⁷

3. Kusch (2006) criticizes Maddy’s solution. He says that “at first sight it seems as if Maddy is able to solve the *qua* problem in a way that avoids descriptions and other intentional items. In her theory, the work of fixing the level and scope at which the baptizing occurs is done

⁷ In answering the sceptic (i.e. henchman) she says: “Thus there is a fact of the matter about which of us in the object level debate -me or the henchman- is right. I may not be able to convince the henchman that I am the one who’s right, I may not even be absolutely certain at the meta-level about which of us is right, *but there is a fact about which one of us is right and one of us is wrong*. This is what Wittgenstein (i.e. sceptic) denied” (1984: 469, italics mine).

by non-intentional items such as the stimulation of cell assemblies in the brain” (2006: 135). But Kusch thinks that Maddy’s solution fails to specify the nature of the relation between brain events and mental states. His main criticism is that Maddy does not tell us how these brain events relate to mental states. He considers two options that Maddy could go and finds them both unpalatable. One option is that our mental states are reduced to events in the brain. The other is to go down the road of eliminativism. Perhaps Maddy would prefer to be an eliminativist about intentional states but he finds this an extreme view. He concludes therefore that Maddy’s proposal for improving the causal theory of reference fails and that Kripke (1984) was right not to discuss the causal theory of reference since it is unworkable as an answer to the sceptical argument.

We cannot go into the discussion of Kusch’s suggestion about reductionism or eliminativism but Maddy surely does not go for eliminativism but for reductionism. Maddy does not neglect the question about the relation of the physical and psychological and one of her answers to possible objections that there are no type-type correlations (or identities) between psychological and physical states she says: “It isn’t necessary that your cell assembly for triangles be physically similar to mine; all that is needed is for the patterns of neural stimulation triangles produce in me to belong to a single physical type. This much is assumed by the fairly well supported scientific theory of cell assemblies” (1984: 466–467).

In sum, Maddy is combining the causal theory of reference with neuroscience. Her goal is to suggest that there is a way of solving the *qua* problem without appeal to descriptions or to the intentional states, suggesting that the answer lies in neurology. What the baptizer has named will be answered by his brain state, his cell assemblies. Going back to our example of naming the cat “Nana” depending on whether the baptizer is focusing on the cat, or the color of the cat, or the cat as an animal, the brain of the baptizer will be in different states. The perception is linked to different cell assemblies in the brain. And thus, there will be a fact of the matter as to whether the baptizer “meant” the sample for his baptismal act to be the cat, or color or an animal.

3.2 Dan Ryder (2004)

Before going back to more philosophical suggestions for solving the *qua* problem, I want to look into a much more recent attempt similar to Maddy’s, i.e., the attempt which relies again on neuroscience and computational theory. Dan Ryder in his 2004 article under the title “SINBAD Neurosemantics: A Theory of Mental Representation” presents an account of mental representation based upon the ‘SINBAD’ theory of the cerebral cortex. He says: “The ‘neurosemantic’ theory that I present is derived from the SINBAD model of the cortex... ‘SINBAD’ stands for ‘Set of INteracting BAcKpropagating Dendrites’; it is a computational

theory of cortical plasticity based on functional considerations as well as anatomical and physiological evidence. If the theory is correct, networks in the cortex have a powerful tendency to structure themselves isomorphically with regularities in their environment” (2004: 212). We cannot go into details of SINBAD but here is the main outline of the idea in Ryder’s own words:

Here then, in brief summary, is how SINBAD networks operate. The multiple dendrites on a SINBAD cell must find functions of their inputs that are correlated. Assuming these correlations are not accidental, the cell will tune to their source. In tuning to a source of correlation, a cell will provide other cells with a useful input, i.e. an input that helps their dendrites to find correlated functions. Thus, these further cells, in turn, tune to sources of correlation, and the process repeats. The end result of this complex multiple participant balancing act is that a SINBAD network comes to be dynamically isomorphic to the environment from which it receives inputs. (2004: 222–223)

Ryder concludes that once one understands the underlying SINBAD mechanism, it is relatively simple to understand, in basic outline, the theory of mental representation that emerges from it. SINBAD cells have the purpose, job, or teleofunction of yielding reliable ‘predictions’, by participating in internal dynamic structures that are isomorphic to the environment. Dan Ryder’s SINBAD theory of content appeals to developmental and learning history but focuses primarily on changes at the neural level. Each neuron in the brain receives incoming signals through branch-like structures called ‘dendrites’. He says: “Since the cerebral cortex is the seat of the mind, this gives us some reason to believe that SINBAD representation realizes mental representation in us, and other creatures with a cerebral cortex” (2004: 232).⁸

What is important for our discussion is that Ryder claims to show how SINBAD neurosemantics can provide accounts of the *qua* problem.⁹ Suppose multiple encounters with horses cause a SINBAD cell to acquire matching dendritic functions—is it a horse stand-in or an animal stand-in? Here is the explanation or solution of the *qua* problem.

There will normally be a fact of the matter which kind explains how a cell has acquired its predictive abilities. *The kind horse and the kind animal are sources of different sets of multiple correlations that have different underlying (evolutionary) explanations—that is why they are distinct kinds.* Horses tend to neigh, are usually domesticated, have a particular shape, particular eating habits, hooves, manes, etc. Animals are characterized by a more abstract set of correlated features with a more ancient evolutionary explanation for their coherence: the capacity for spontaneous motion, a range of sizes, a disjunction of typical methods of locomotion, a range of typical colours, and so on. When a cell’s representational content is determinate, its dendritic correlations will be explained by (a part of) one of those sets of

⁸ More on Ryder in Rupert (2008). Rupert sees Ryder’s approach as compatible to his causal developmental theory.

⁹ He also has comments related to misrepresentation, equivocal representation, twin cases, and Frege cases.

correlated properties rather than the other. *It will either be the properties whose correlation typifies horses, or the properties whose correlation typifies animals that will have historically guided the cell to equilibrium by causing synaptic activity.* (2014: 233–234, italics mine)

There is a noticed similarity with Maddy's suggestion in stressing the workings of the brain in the attempt to explain the grounding mechanisms. More on this point in the conclusion.

4. Back to the philosophical solutions

4.1 Kim Sterelny (1990)

The unsolved *qua* problem prompted Sterelny at another attempt (1990: 124–137). Sterelny suggests that the *qua* problem might be solved by adding the teleological element to the basic descriptive-causal solution that Devitt and he proposed in 1987. Sterelny believes that Kripkian story may not be right story for primitive content, but rather plays a role in the explanations of more cognitively sophisticated structure whose content presupposes a conceptual backdrop. The proposal is to add teleological elements to the causal story. Sterelny says that “there will be an important teleological element in our total theory of mental representation, though any attempt to extend the teleological story to the human propositional attitude faces the most appalling difficulties” (1990: 138).¹⁰ Since his proposal is incorporated in the proposal of Devitt and Sterelny (1999) I discuss it in the next section.¹¹ I revert to Sterelny (1990) in section 4.3 for more examples.

4.2 Devitt and Sterelny's (1999) proposal

As we saw, the *qua* problem does not only concern kinds but the *qua* problem also concerns part-whole ambiguity. What has the grounder named: rabbit, parts of rabbits? Or in the vivid example by Sterelny: “Why is my concept of Mick Jagger a name for Jagger, rather than Jagger's voice? Or Jagger's lips?” (1990: 116). There must be something in the mental state of the grounder which determines that the term has been grounded *via* perceptual experience as something as a whole object and a member of a particular kind.¹² Devitt and Sterelny rightly say that it is neither useful nor sufficient to say that it is the grounder's intentions that makes it so. In virtue of what did the grounder intend the whole object? “It seems that the grounder must, at some level, ‘think of the cause of his experience under some general categorial item like ‘animal’ or ‘material object’. It is because he does so that the

¹⁰ See also Devitt and Sterelny (1999: 101).

¹¹ For more on Sterelny (1990) see Jutronic (2000).

¹² See the most recent exchange on this issue between Reimer and Devitt in Bianchi (forthcoming).

grounding is in Nana ‘the cat’ and not in the temporal and spatial part of her” (1987: 65).¹³ I here review their argumentation.

There will be no grounding if the sample of the perceptual experience does not correspond to the general categorial term which is used in conceptualization.¹⁴ Thus concessions must be made. Causal theory of reference cannot be ‘pure’ causal. It has to be ‘descriptive-causal’ because the term is consciously or unconsciously tied with the description in grounding. Descriptive element has entered the designational chain. What is it that determines the nature of the sample? Is it the grounder’s mental state? But Devitt and Sterelny admit that it is very hard to say what exactly determines this relevant nature.

The further claim is that this modification caused by the *qua* problem is only a modification of the causal theory of reference grounding while reference borrowing stays unchanged. Borrowers do not have to associate the right categorial term. Putnam’s examples with ‘elm’ and ‘beech’ is harnessed to their support (Putnam 1975: 226–227). The example with whales also. What people centrally associated with whales was the description ‘fish’ and this is incorrect, but people nevertheless referred to whales.

Devitt and Sterelny offer what they call a hybrid theory.¹⁵ It consists of: 1. Description theory of reference fixing and 2. Pure causal for reference borrowing. The move is from pure causal theory but the extent of the move should not be exaggerated because:

- a. The associated general categorial term does not identify the object.
- b. Modification is only in the grounding theory.

The reference borrowing remains unchanged and pure-causal: borrowers do not have to associate the correct categorial term.¹⁶ They borrow their reference from others and are unlikely to have true beliefs about the underlying nature of the relevant kind but are also unlikely to have beliefs sufficient to identify its members. The causal theory lightens the epistemic burden. Thus, the borrower need not have any true beliefs, let alone knowledge, about the sense. The sense is largely external to the mind and beyond the ken of the ordinary speaker. What about other kinds terms? Devitt and Sterelny claim that we cannot borrow reference for other kinds terms. For example, for the term ‘pencil’ we need the description theory for reference fixing, the ‘experts’ who fix the reference must associate the appropriate description with the term even the rest of us need not. This then can be combined with a causal theory of reference borrowing explaining how the rest of us depend on

¹³ This is the only quote I use from the first edition of *Language and Reality*. For more on the *qua* problem in the 2nd edition (1999: 79–81; 90–93; 98–99).

¹⁴ See more about this in the discussion between Reimer and Devitt in Bianchi (forthcoming).

¹⁵ In section 5.3. and 5.5. (pages 96–101) of their 1999 book.

¹⁶ For discussion on reference borrowing between Devitt and Jutronić see: Devitt (2006; 2008) and Jutronić (2006; 2008).

the experts. But the causal theory for borrowers here is supplemented with descriptions. A person could not use the term ‘pencil’ to refer to pencils if he was completely mistaken about them. Their discussion of hybrid theory is quite dense, with very few examples, so here is my attempt at a possible graphic presentation of their view.

PROPER NAMES (Blanka)			
	descriptive	descriptive-causal	causal
grounding		+	(qua-problem)
borrowing			+

NATURAL KIND TERMS (gold)			
	descriptive	descriptive-causal	causal
grounding		+	(qua-problem)
borrowing			+

OTHER KIND TERMS (pencil)			
	descriptive	descriptive-causal	causal
grounding		+	
borrowing	cannot be borrowed without description		

What is important for the present discussion is the fact that there is a *qua* problem for proper names and natural kinds terms, arguably not for other kind terms. At the end of that section D&S say: “The *qua*-problem for our historical-causal theory gives ample motivation for us to look elsewhere for an explanation of how reference is ultimately fixed” (1999: 101).

The *qua* problem is discussed then in greater details in section 7 on ‘Thought and meaning’. The assumption is that our cognitive capacities are closely correlated with our linguistic capacities. More specifically, the structure of mentalese is closely related to (public) language (1999: 145). The reference fixing of a linguistic word depends on the reference fixing of the mental word that it expresses, so a theory of the one carries over to the other (1999: 156).¹⁷ In this section, they look into and consider pure-causal proposals of indicator and teleological theories. These theories have been developed as theories of the relationship between thought and the world. Devitt and Sterelny think that these theories are best construed as simply theories of ultimate reference fixing to which other theories could be added (1999: 157). They go into presenting criticism for the indicator theories (1999: 161) and suggest to go totally teleological, explaining representation by biological function alone since biological function is explained in terms of the history

¹⁷ The same was assumed by Miller when he said: “that causal theories of perception and mental representation unavoidably hover in the background” (1992: 425). In other words, our ability to refer to things in language, and to create words that refer to things, depends on the prior ability to think and mentally refer. For this reason, discussions of mental reference and reference in language often go hand in hand.

of selection. Their original proposal is the following and I quote it in full:

We are attracted by a less ambitious use of teleology to explain meaning. Instead of taking about biological functions to determine the contents of *thought* we take them to determine the contents of more or more basic representational states, *perceptions*. Perceiving a rabbit is a matter of being in a representational state with biological function of representing a rabbit. An interesting thing about this idea is that it does not *replace* the historical-causal theory of reference fixing, it *supplements* it. That theory...suffered from the *qua*-problem: In virtue of what is a particular grounding of 'rabbit' a grounding in rabbits rather than mammals, vertebrates or whatever? *The present idea offers a teleological answer: the grounding is in rabbits because it involves a perceptual state that has the function of representing rabbits. The teleological theory of perception becomes an essential part of the theory of groundings...*It incorporates teleology into the historical-causal theory of reference fixing. (1999: 162, italics mine)

This is a very important, promising and fruitful suggestion but since there are a very few examples given in their proposal, it is helpful to go back to the ideas elaborated a bit more in Sterelny 1990,¹⁸ and also to see more details about the mechanisms of how this is possibly going to work as a solution of the *qua* problem in Neander (2017).

4.3 Kim Sterelny (1990)

Sterelny stresses that *qua* problem is the key unsolved problem for Kripkian causal theories, and this suggests that Kripkian story, to repeat, may not be a right story of primitive content, but rather plays a role in the explanations of more cognitively sophisticated structure whose content presupposes a conceptual backdrop. If the *qua* problem cannot be solved for non-basic concepts, could it be solved at least for the basic concepts?¹⁹ Sensory concepts are likely candidates for basic concepts but they also pose the *qua* problem. Does my concept RED (when first acquired) name a color or a shade of that color, or even an intensity level of light? "Concepts for which the *qua* problem does not arise look decidedly thin on the ground" concludes Sterelny (1990: 118).²⁰ Nevertheless, it seems very attractive to add teleological ele-

¹⁸ Devitt and Sterelny 1999 proposed solution of the *qua* problem actually relies much on Sterelny 1990 which was also presented in Devitt and Sterelny 1987. Sterelny's chapter 6 'Explaining Content' discusses different theories of content, concluding with the teleological view of perception (1990: 111–137).

¹⁹ Sterelny talks here of concepts while our discussion is about terms. Nevertheless, one theory should be good for both. As Sterelny says: "Kripkian causal theories were originally developed as a semantic theory of language, but if they work at all they should work for the language of thought. The essential idea is that the content of a concept is determined by causal links between the individual acquiring that concept and its reference" (1990: 114). See also footnote 18.

²⁰ Stanford and Kitcher also express their doubts: "We should at least mention Devitt and Sterelny's interesting suggestion ...that there may be primitive terms (categoricals or simple demonstratives, say) which can be directly grounded in a

ments to the causal story since the appeal to the biological function of an internal representation is naturalistic, and it gives a more discriminatory machinery.²¹

In Sterelny's view from 1990, the semantic base consists of concepts that are formed from modular input systems. To go back to the example of color. The structure produced is not a shade of color or a particular intensity of light, although it is caused by some particular shade or some particular intensity. For the biological function of our color vision receptors is the representation of a stable and useful fact about our environment, namely the color of surfaces. For color vision, like many other modular processes, is serviced by constancy mechanisms. Perceptual processing works to keep track of invariances in the world, not the varying stimulations from it. Teleology then solves the *qua* problem, since the base-concepts are modular concepts. Above the base, the story stays much the same, but not quite the same. For example, Sterelny says, that Eric has the concept of tigers partly in virtue of his contact with tiger specimen and partly in virtue of his descriptive knowledge of tigers. Both are required for possession of the concept. Causal contact without any descriptive knowledge is not sufficient and with the descriptive element comes the *qua* problem. Sterelny thinks that with the introduction of the teleological dimension, the descriptive elements of 'tiger' possession in the modular system are not beliefs or intentional states, but the *Gestalt* of tigers. Unless the modularity hypothesis is completely wrong, there will be some course-grained purely perceptual representation of tigers. That representation, of course, has nothing like enough information in it to select the necessary and sufficient conditions of being a tiger. Some tigers will not fit. Something could fit it without being a tiger. The causal link with actual tigers is still necessary for possession of a tiger concept. The teleological dimension added then gives enough cognitive background for the rest of the machinery Devitt and he posited. Other descriptive-causal concepts, and fully defined concepts, can be acquired on these foundations.²²

manner that avoids the *qua* problem. If so, perhaps the descriptions needed for reference-grounding will themselves reduce to primitive terms whose reference can be grounded without any descriptive component. *To our knowledge, however, noone has been able to make good on this suggestion, and we shall not pursue it here*" (2000: 127 note 6, italics mine).

²¹ Sterelny says that "there will be an important teleological element in our total theory of mental representation, though any attempt to extend the teleological story to the human propositional attitude faces the most appalling difficulties" (1990: 138; see also Devitt and Sterelny 1999: 101).

²² Sterelny states a possible objection to his proposal, i.e., that it has much in common with the traditional philosophical program called concept empiricism. The program took sensory concepts to be fundamental and given by our innate perceptual equipment. He then dissociates his view from concept empiricism: the properties modules represent are not sensory properties (our experience of the world) but objective features of the world that: a) were biologically important to our ancestors; b. are reasonably reliably detectable by an encapsulated special purpose mechanism.

Devitt and Sterelny's (1999) suggestion is, in my opinion, the most promising direction for the solution of the *qua* problem. Teleosemantics of *perceptual* content is where to look for the solution. Teleosemantics will yield a perceptual content that can be the basis for explaining in virtue of what the grounder had tiger and not mammal, or part of tiger in mind when he grounded the term 'tiger'. Recently their suggestion seems even more plausible with the fine elaboration of the teleosemantic explanation of the preconceptual/nonconceptual level of sensory perceptual representations found in Neander (2017).

4.4 Karen Neader (2017)

All I want to do in this section is to state some of the most important questions and aims that Neader (2017) makes in her new book *A Mark of the Mental*.²³

The main questions are: Do the mental representations with original intentionality derive it from nonintentional nature and, if so, how? If intentionality is not a fundamental feature of the universe, what is it more fundamentally? What is its ontological grounding? On which nonintentional facts and properties of the world does it depend, constitutively? (2017: 9). Some of the main aims are: to encourage optimism with regard to the naturalization project and also to encourage those who support teleosemantics to look into a causal-informational version of it (2017: 3).

Neander defends a theory of mental content that blends elements of a teleosemantic approach with elements from a causal theory of reference and a version of a (similarity-based) state-space semantics (2017: 22). She has long developed and defended an *etiological theory* whose gist is that the (or a) function of an item (if it has one) is what it was selected to do (2017: 39). The only thing that all teleosemantic theories have in common is the claim that semantic norms, at their most fundamental, supervene somehow on functional norms, among other things.²⁴

The guiding intuition for sensory-perceptual representations is that their contents are not what causes them to be produced but what is "supposed" to cause them, in the teleonomic sense. Their contents are what the systems that produce them have the function to detect by producing them. Her argument says that sensory-perceptual representation refers to what is *supposed* to cause it. (italics mine)

What concerns us here most is her argumentation for content determination. A content-determinacy challenge asks of a given representation to explain why it counts as having the content it has rather than some other content (2017: 150). Why does RED have the content *there's*

In short, he thinks that we need *conceptual foundationalism* without definitions in which we give a teleological account of the content of base concepts.

²³ See her helpful interview on the web, February 15th, 2018.

²⁴ We should, Neander argues, return to something much like Stampe's (1977) starting proposal. His idea was that appealing to functions is a promising way to improve a causal theory of reference.

red (and not, say, *there's color* or *there's a fire truck*)? In the parlance of *qua* problem: Why the grounder names the tiger and not the mammal, or part of the tiger?

Neander proposes what she calls Simple starter theory (2017: 149). Simple starter theory is based on causal theory (CT) which says: A sensory-perceptual representation, R, which is an (R-type) event in a sensory-perceptual system (S), has the content *there's C* if and only if S has the function to produce R-type events in response to C-type events (in virtue of their C-ness). The simple causal version of teleosemantics entails that, for example, the frog's perceptual representation can have the content *there's something small, dark, and moving*, and not *there's a fly* or *there's frog food*. It tries to solve the question of how content is determined.

How does it do it? Here the question of mechanisms come into view. *A sensory-perceptual system has sensory receptors, which are cells or other units adapted for transducing energy from the environment into a medium that a cognitive system uses for information processing. Thus, importantly, if there are two dispositions they call for two different mechanisms* (2017: 169, italics mine).²⁵

Neander mentions Sterelny (1990) and his question: Why does a sensory-perceptual representation (R) refer to C and not to Q when Q is a proximal (intermediate) link in a C-to-R causal chain? (2017: 222). And her answer is that, R refers to C rather than the more proximal Q if the system responsible for producing Rs was adapted for responding to Qs (qua Qs) by producing Rs as a means of responding to Cs (qua Cs) by producing Rs, but it was not adapted for responding to Cs as a means of responding to Qs. (so it is not the shade of color red but color red in the example given by Sterelny 1990). In sum, the simple causal-informational version of teleosemantics, CT, says that a sensory-perceptual representation refers to the environmental feature it is the function of the system to detect by producing the representation. But Neander warns us, its scope is restricted to nonconceptual sensory-perceptual representations.

If the causal-informational version of teleosemantics offered by Neander delivers sufficiently determinate contents for nonconceptual sensory-perceptual representations, then Devitt and Sterelny's suggestion to look for the answer of the *qua* problem in this direction is a promising line that might lead us from preconceptual to conceptual. Rather than introducing a descriptive element into that content there is hope (and now more than hope) that teleosemantics will yield a perceptual content that can be the basis for explaining in virtue of what the grounder had, for example, Mick Jagger and not his lips, in mind when he grounded 'Jagger'.

How we can get from nonconceptual to conceptual content? Neander says: "What is left is the ramping-up problem, which is the problem of understanding how to get from a theory of content for nonconceptual

²⁵ Note the similarity with Maddy and Ryder.

representations to a theory of the referential power of sophisticated human thought” (2017: 26). Neander gives us hints since she (I think rightly) believes that the distinction between conceptual and nonconceptual representations is not that sharp. One of the suggestions is that the mind, for example, abstracts or subtracts from the specific features of specific triangles to form an abstract idea of triangularity (2017: 206).²⁶ Or by averaging the shapes of category members. “We could likely produce recognizable results by averaging the shapes of diverse cows, diverse cats, diverse carrots, diverse cars, and so on. These categories are counted as ‘basic’ categories in part for this reason, and they are apparently learned more easily than other categories” (2017: 210).

5. *What are the mechanisms of reference?*

How much should a philosopher worry about mechanisms, in this particular case, mechanism(s) of reference? Where shall we look for an answer. Turning to the mechanism we are admitting, in Devitt’s words, that we cannot find the answer within philosophy but the answer might be given by psychology or psycholinguistics? Looking into mechanism of reference we seem to be leaving the philosophical ground. However, if the psychological mechanisms point to the solution of the *qua* problem can we say that we have the solution which is in a way indirectly solution to the metaphysical, i.e., philosophical question. If a philosopher who is a naturalist closely relates his answers to science, then scientific answers are very relevant to his philosophical questions and solutions.

It is worth looking at bit more into the relation between metaphysical (philosophical) questions, semantic dispositions and mechanisms behind them. At which point can we say that the *qua* problem stops being a philosophical problem? One thing to notice is that when you look up the entry on reference in *Stanford Encyclopedia* online, all the talk is about mechanisms. Here are just a few passages (italics are mine):

The central issues, the central questions, concerning reference are four: (i) What is the *mechanism* of reference? In other words, in virtue of what does a word (of the referring sort) attach to a particular object/individual?

Assuming that at least certain sorts of terms do in fact refer, the central question regarding linguistic reference becomes: how do such terms refer? What, in other words, is the ‘*mechanism*’ of reference?

This suggests that names are semantically different from descriptions, which in turn suggests that *the mechanism* by which a name refers cannot be identified with some definite description. (Michaelson and Reimer 2019)

Wettstein (2004) says that the phrase ‘the mechanism of reference’ originates with McGinn (1981). McGinn says: “Reference is what relates words to the world of objects on whose condition the truth of sentences hinges. It is natural to wonder what sorts of relations underlie the reference relation, to wonder, that is, *what constitutes the mechanism of reference*” (1981: 157, italics mine). McGinn seems to closely

²⁶ Maddy’s idea about triangles quoted in section 3a is a similar idea.

relate answering the question about the mechanism of reference to answering one of the foundational philosophical question.

In the book *Reference and referring* Pepp stresses: "...reference is often thought of as the bond between language and the world, or between language and the aspects of the world that language is used to talk about. Referring is often thought of as the activity in virtue of which that bond holds. A distinctive question about reference and referring concerns what makes this bond hold, or *what the nature* of this activity is: what is the *mechanism* by which language is tied to the particular things that are its subjects? *I will call this the 'mechanism question' about reference*" (2006: 1, italics mine). Here again, let us notice, the question: *what is the nature of referential relation (bond) is identified with the question what the mechanism of this bond is?*

How is metaphysical question *what is to name related in virtue of what* question? Descriptive theories of reference, to my knowledge, have not been referred to as mechanism of reference. They were replaced by the causal historical theory of reference. The relation between name and referent was reduced to a causal chain. Kripke called it a "better picture" but we can see this label as a metaphorical expression for a new kind of mechanism of reference. Devitt would surely agree that Kripke was giving an important and crucial philosophical contribution to the theory of reference but can still insist/claim that the explanation of the mechanism of reference cannot be given by philosophers. Miller in his article trying to support the pure causal theory of reference grounding says: "... I also trust it will not seem like handwaving for the philosopher to say that a detailed account of the actual causal mechanism of perceptual constancy is a job for the experimental psychologist" (1992: 431). Miller, like Devitt, is actually saying it is not the philosopher's task to give an account of the mechanisms. Or is it an even stronger claim that philosopher is in no position to give such an account?

More generally, beyond the *qua* problem and its solution, one can ask where does a philosophical question stop being philosophical? Neander (2017) distinguishes why questions and how questions and says that why questions ask about the origin, presence and persistence of something while how questions ask about how systems operate. She finds this distinction in Mayr (1961: 1502) who drew a distinction between two main branches of biology that he called 'evolutionary' and 'functional.' The evolutionary biologist is concerned with why-questions, whereas the functional biologist "is vitally concerned with the operation and interaction of structural elements, from molecules up to organs and whole individuals." (2017: 48). Now Neander says that those whom Mayr calls 'functional biologists' are those whom she here calls 'physiologists and neurophysiologists.' She does not say where her own teleosemantic theory, or teleosemantic theories in general, belong. Do they answer why questions or how questions? Where does Neander see herself, as a philosopher or a scientist or something in between?

Obviously as a philosopher but a great deal of her discussion is the discussion of *how* questions since one of her main goals is to solve the *mechanisms* of nonconceptual/preconceptual content.

As we saw Maddy (1984) is giving the answers to the *qua* problem in neurological terminology. “Neural connections between perceptual assemblies for samples and perceptual assemblies for word types are “wired in” (Maddy 1984: 474) and she points out: “But if the point at issue is whether or not our reference is determinate, all that is needed is an account of how this is possible, and there is no reason such an account need be conceptual rather than scientific (1984: 468).

More recently Ryder (2004) is talking about learning mechanism as brain mechanism in which each dendrite is adjusting so as to bring that dendrite’s contribution closer to that of each of the other dendrites that contribute to the firing of the cell in question in order to yield reliable ‘predictions’. The answer is given by science. It is a core assumption in cognitive science that cognitive processes involve *formal* operations on structured representations. That is to say that these operations are conceived as causally sensitive to the physical, chemical, or neurophysiological properties of the representational vehicles rather than their semantic properties.

Going back to Neander, she says that her book is ‘ambitious’ because it tries to make genuine progress in relation to one of the most difficult problems in philosophy of mind—that of understanding the fundamental nature of intentionality (2017: 243). As was pointed out, her argument relies on claims concerning explanatory concepts and practices in the mind and brain sciences.²⁷ She says: “Informational teleosemantics is supported by the explanations of cognition that the mind and brain sciences currently provide” (2017: 74). Teleosemantics is based on what “the mainstream branches of the sciences devoted to explaining cognitive capacities ascribe normal-proper functions to cognitive mechanisms and assume that these include functions to process information. It makes excellent sense to try to understand how far these information-processing functions can take us in understanding the nature of mental content” (2017: 96). Her philosophical argumentation is based on scientific theories and she believes the two cannot/should not fall apart. “Whichever approach is adopted, the science and the philosophy cannot be divorced if the content ascriptions a philosophical theory of content generates are to be relevant to explaining cognition” (2017: 96).

A naturalistic theory of intentionality is one that explains intentionality using the resources available from the natural sciences. From the standpoint of philosophers that are naturalists, semantic naturalism is committed to the idea that the relevant kind of theory of intentionality ought to be reductive and construed in terms of some natural science.

²⁷ See specially section (4) on the *Methodological Argument for Informational Teleosemantics*.

The vocabulary is that of the natural sciences, and in biosemantics this means that it is the vocabulary of biology. Given that functionalism is commonly based on a physicalistic ontology, the mental states that are supposed to be a part of “causal pushes and pulls inside the head” are proclaimed to be physical states, more specifically, neural states. Thus, mental concepts apply to neural states of the brain.

If we accept the above, then it is plausible to talk about levels of explanations of particular referential bonds, starting maybe from common sense, through different kinds of philosophical causal theories on one hand, and neurological “hard-science” explanation on the other. Where philosophy stops and science begins is not easy to say. They are, from naturalistic point of view, continuous. Different philosophers draw different lines between the two. For example, Lycan says: “Remember also that the principles of psychosemantics itself are philosophy, not science. And they remain unsettled to say the least” (in his 2006 talk). He would probably not agree with Devitt when he says “these (referential) mechanism seem to me to be psychological matters, not philosophical ones”. On the other hand, if the ultimate answers are expected to be given by science, in this case brain sciences, and this is probably what Devitt had in mind when he decided to stop worrying about *in virtue of what* question.

6. Conclusion

1. There is no pure causal theory of grounding, in spite of the discussed attempts to show that reference grounding is a causal process. It is clear that descriptions play a role in fixing or grounding the reference. And the given attempts to solve the *qua* problem in purely causal term fail. Stanford and Kitcher in examing what they call “Simple Real Essence Theory” (SRT) say: “As Michael Devitt and Kim Sterelny point out, a theory like SRT is too simple...because it is *utterly mysterious, how without something more than our causal relation to the sample*, we can pick out one, rather than another, of the many kinds the sample instantiate” (2000: 100–1, italics mine).

2. As far back as in 1981 Devitt argued that a causal-historical theory can be naturalized if it is articulated in terms of causal relations of the right kind, although it will then still be incomplete. In other words, it will lack a solution to the *qua* problem. I found Devitt and Sterelny’s suggestion to incorporate teleology into the historical-causal theory of reference fixing (1999: 162) a very promising idea. The idea is straightforward: If mental states or semantic properties as not fundamental, any appeal to them in an analysis of the reference relation must eventually be accounted for in other terms and teleosemantics seems to ground them.

3. If naturalism is an approach to philosophy that involves using sci-

ence, ultimately physics, as our guide to the fundamental ontology of the universe the solution the *qua* problem is found by those who do neuroscience and brain neurology. We saw an earlier attempt by Maddy (1983) and more recent one by Ryder (2004) who also looks for an answer in brain sciences. Since the cerebral cortex is the seat of the mind, Ryder argues that SINBAD representation realizes mental representation with a cerebral cortex. Usher (2004) states that the merit of the SINBAD model is to provide an explicit *mechanism* showing how the cortex may come to develop detectors responding to correlated properties and therefore corresponding to the sources of these correlations. Such and similar attempts offer hope of naturalistic explanation of reference, i.e., in bringing semantic relations within the scope of physicalist view of the world. The real explanatory work is done by science but the work is far from been done as Stanford and Kitcher, discussing the natural kind terms, point out and say: “sadly, the course of reference fixing in actual scientific cases is even more complex than (our) analysis shows” (2000: 114, italics mine).

4. Neander argues that the naturalistic theories on which most work has been done of late are the teleosemantic theories. According to such an analysis (Neander 1991) items of a type have the function of doing what that type of item was selected for doing. Teleosemantics will yield a perceptual content that can be the basis for explaining in virtue of what the grounder had Mick not his lips in mind when he grounded ‘Jagger’. Neander’s detailed analysis of preconceptual content gives great hope that conceptual can be developed from this more basic content and gives us explanation how the *qua* problem can be solved. But as Neander reminds us “we should also keep in mind that serious work on naturalistic theories of content has only been going on for decades rather than centuries and that, on a philosophical timescale, that is quite a short time (in *Stanford Encyclopedia*)”. Or as Devitt said in Maribor: “Rome was not built in a day.”

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