'What on Earth is Smenkhkare?' WH-Questions, Truth-Makers, and Causal-Informational Account of Reference

Introduction

According to the Millian semantics defended by Kripke in Naming and Necessity, the only semantic function of names is their reference to things they name. This function, known as *semantic reference*, is precisely the relation of the name to an object that is relevant for determining the truth-value of a sentence in which that name is used.[1] The causal-historical theory of names, championed by Kripke, adds to this semantic framework a story about how names are coined and how their reference is transmitted in a community of language users. This paper is inspired by that story and aimed at adding more metaphysical flesh to the bones laid out in *Naming and Necessity*.

According to Kripke, names are coined at an *initial baptism* (often more metaphorical rather than a literal one) to label or tag things. The baptizer must be in position to name the thing either ostensively (as when parents name their baby) or else by some uniquely identifying description (e.g., 'the cause of perturbations in Uranus' orbit') picking out an individual thing to bear the name. After this, names are transmitted in a linguistic community from speaker to speaker by *reference borrowing*, in which a person picks up a name from someone already in possession of it and uses it to refer to the same things as others have prior to him. Such uses and borrowings of names, then, form *historical chains of communication*, connecting the name causally to the thing originally baptized by that name.

Even if Kripke's *description* about how reference works is correct – as I believe it essentially is – the picture he offers contains no *explanation* of how reference comes about. We learn that contrary to what so-called description theorists think, the ordinary name borrower need not have any individuating information about the referent. All he or she needs to do in order to refer to the object named by the name is to receive the name, and use it consistently with the existing use, and voilà, reference happens. But for a theory of reference, description of how reference works is only the beginning. What I see as a crucial aspect of such a theory is an explanation about how such reference comes about in the first place. Without such a story available, we seem to have only a description of the phenomenon, and no actual theory at all. To see that this is problematic, we can compare theory of reference to a theory of human reproduction. A theory that would describe copulation, pregnancy, and childbirth – with convincing arguments that contrary to what some believe, no storks are involved in the process – would be highly unsatisfactory as a *theory* of human reproduction, even in case it described correctly the phenomenon. Without explaining *the mechanisms* that actually lead

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[1] Kripke is slightly vague about whether he means just this by his use of 'semantic reference' in case of names (see 1980, 25, fn 3), but it seems reasonable that he does, and I will so assume in what follows. The vagueness is due to his conflation of names with descriptions, which I will argue near the end of this paper is a mistake.

to the existence of a new human being, there seems to be no actual theory to begin with. So, even if Kripke describes correctly *how* reference is, he in fact says very little about *what* reference is.

To be fair, Kripke does not pretend to develop a theory of reference but is explicit that he is offering just a better picture of reference than the one offered by description theory. *Naming and Necessity* is not, as already the name makes clear, a book about theory of reference but of two distinct topics and their interrelatedness. However, the ideas concerning reference presented in *Naming and Necessity* contain seeds for a full-blown theory of reference very much in line with the 'better picture' Kripke presents. This paper is about one possible way to pick up those leads and tie them together into something – a sketch or a proto-theory – that might in due course be developed into an actual theory of reference.[2]

The view I will be sketching is a *causal-informational theory of reference*, though like Kripke, I do not pretend to lay out a complete theory. The notion of reference I will be working on is closely tied to *truth-making relations*, and I will make use of intuitions about how the truth-values of answers to *WH-questions* are determined.[3] The notion of *information* I rely on will be roughly familiar from certain theories of information, though I view information as constituted by (physical) *data* with *patterns* or *structures* that for some observer-interpreter might be interpreted as *semantic content*, or simply, *information*. The resulting view sees names as entities which are constituted essentially by the causal-informational histories in conjunction with a pattern in the data (such as a sound-pattern). The upshot of the view is, however, that the actual pattern used (e.g., the linguistic form) is not essential for the name and can undergo significant variation without losing its referential connection.

During the course, I will take up cases and thought experiments that will help to make my points. I will first argue that even a parrot-society can transmit reference, which is just as we should expect. As I proceed, I make alterations to the scenarios so we can control relevant parameters to see what is at stake. After presenting my own view of causal-informational connections as 'the mechanism' of reference, I turn to discuss name introduction and argue that certain familiar cases, which appear to 'fix the reference' of a name by using a description, are in fact clear instances of causal-informational 'ordinary' reference. Finally, I will again use to parrots to point out that even if we can use descriptions to introduce new expressions to our language community, that maneuver is not by itself sufficient to bring about new referential connections – without causal-informational connections to objects such process does not generate a name with a reference that could be transmitted from speaker to speaker. That is, 'initial baptisms' taking place in absence of causal-informational connections cannot bring about reference *de novo*.

Conventions and Mechanism of Reference

The suggestion present also in *Naming and Necessity* about semantics of proper names is that the function of names in English and many other natural languages is simply to name an object. According to this Millian view (that stands in contrast to *descriptivist* views Kripke

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[2] Most notably Michael Devitt has taken up the same task and developed his version on causal theory of reference from essentially the starting point laid out by Kripke. As this paper is about Naming and Necessity, I will relegate all remarks about Devitt's views as well as those of others to footnotes, when such remarks seem to be called for.

[3] WH-questions are questions demanding an indicative statement as an answer instead of mere 'yes'/'no' answer. I will be mostly dealing with WH-questions (i.e.,) that are formed with the verb 'to be'.

argues against[4]), names have only a *denotation*, but lack a *connotation*.[5] Or as Ruth Barcan Marcus put it, names are merely *tags* for things.[6] In yet other words, names lack any other 'semantic content' beyond the objects they refer to.[7]

According to the 'better picture' (in contrast to descriptivism) Kripke puts forward, names function as tags for objects because of causal chains of uses, starting at a metaphorical or literal baptism. After this the name is transmitted in the language-community as a tag, so that subsequent speakers, not present at the initial baptism, can use the name to tag the same object. The reference is upheld by *reference borrowing*, so that as long as a borrowing speaker intends to use the name in the same way as the speakers before her, the reference remains fixed. Kripke elucidates:

> Someone, let's say, a baby, is born; his parents call him by a certain name. They talk about him to their friends. Other people meet him. Through various sorts of talk the name is spread from link to link as if by a chain. A speaker who is on the far end of this chain, who has heard about, say Richard Feynman, in the market place or elsewhere, may be referring to Richard Feynman even though he can't remember from whom he first heard of Feynman or from whom he ever heard of Feynman. [- -]. A certain passage of communication reaching ultimately to [Feynman] himself does reach the speaker. (Kripke 1980, 91.)

As I see it, this 'better picture' is nothing but a *description* about how reference is – arguably – in our world. There is no explanation about how reference comes about, only a story about how we can tag things with names and transmit those tags onto other speakers. Nevertheless, I think Kripke's elucidation is also semantically significant: among other things Kripke here elucidates is, if only implicitly, a plausible two-part *convention* governing names in English. On the one hand, there is a rule how to coin a new name, and on the other, another rule about how to use a pre-existing name. It goes something like the following.

Firstly, you *create a name* by connecting a word with an object by using it as a tag for that object. Secondly, *you must use the names* you acquire from other speakers to tag the same objects as they tag with them, even in cases you happen to lack any individuating information concerning which object is thereby tagged, in order to make systematic communication possible.

From now on, I will assume that this convention about names or something very similar to it is true of English. Thus, for the rest of the paper, I will be working firmly inside a framework of Millian semantics, and the only argument for that general semantical view to be found on the following pages is the overall plausibility and explanatory force of the particular Millian view that emerges from my considerations (the evaluation of which, of course, I leave to the

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[4] Kripke presents the view he opposes, the 'cluster theory' version of description theory of names in (1980, 64–66). His arguments against the view are usually counted as constituting three different arguments: 'the modal argument' (1980, 53; 57; 61; 74), 'the semantic argument' (1980, 80–87) and 'the epistemic argument' (1980, 87–93). For a sustained evaluation of these arguments, see Noonan (2014); see also Raatikainen (2020).

[5] Mill's views on names, proper and general, are to be found in his (2011). For an extensive discussion between Mill's views and Kripke's take on them, see Schwartz (2013).

[6] See e.g., Marcus (1961, 310).

[7] The post-Frege views inspired by Mill have been labelled *New Theory of Reference*, and its early proponents include, in addition to Kripke, Keith Donnellan, David Kaplan, John Perry and Hilary Putnam. For an overview of the New Theory, see Raatikainen (2020).

reader). I also emphasize that what interests me specifically is *the mechanisms* that make this kind of 'tagging' and 'tag-borrowing' possible – in other words grounds the possibility of Millian semantics in our actual world – with the aid of conventions like these. What exact forms such conventions turn out to have is largely irrelevant for my purposes. Let me explain a bit more.

Semantic reference, in which I am interested in this paper, is the relation between a referring expression belonging to a language and an object relevant for determining the truth-value of a sentence (of the same language) in which the expression in question is used. As this slightly cumbersome characterization makes clear by referring to *a language*, what partly determines the reference of a word are the social, public conventions governing that language, whatever they may be. For a sentence uttered or written by a language user to have a semantic reference, the conventions making systematic use of the language in question must be respected. Arbitrary assignment of novel references and meanings to sounds or inscriptions already in use – *Humpty Dumpty use of words* – is always possible, but usually counterproductive or destructive to the principal communicational purposes for which public languages exists.

My one important aim is to underline the distinction between the linguistic aspects of reference, pertaining to these public conventions, on the one hand, and the metaphysical mechanisms upon which the operationality of the public conventions rest, on the other. Both are crucial for understanding semantics and seem like a natural way of looking at how languages in real world work.

My reason for connecting the passage quoted above with the conventions rather than the actual mechanisms that enable reference should be clear. Even if Kripke's description about how reference works is correct (as I believe it essentially is), the picture he offers contains no explanation of how reference operates or comes about – on what kinds of worldly mechanisms make our reliance on conventions of public languages possible. Those mechanisms and their nature are the subject of this paper.

I make my first point towards explicating the matter in the guise of a thought-experiment. The important feature of reference I wish to flesh out with the case, in order to present my account later, is mundane. However, I suspect that mundane cases are not sufficient direct the attention properly to the mechanism that is at stake and must come in only later. Therefore, let's examine how sound-mimicking parrots can transmit reference of names.

Of Psittaci and Pharaohs

Imagine a society of parrots living in a remote African jungle, far out of reach of everyday human influence. The parrots are peculiar, for they happen to be capable of mimicking sounds very accurately and are especially prone to pick up and mimic noises from other parrots and elsewhere they happen to find especially amusing. They often repeat such sounds that please them, and other parrots in their turn pick up those noises and start repeating them. Because of such habits, there sometimes, though rather rarely, emerge chains of systematic transmissions in which a noise picked up by one parrot gains popularity also among others, and eventually is transmitted on and on for several parrot-generations, the sound-pattern remaining quite unchanged in the process.

One day an ornithologist arrives to that remote jungle and witnesses the parrots making sounds. To her surprise, she hears repeatedly one noise that resembles very much spoken human language – the parrots appear to repeat the word 'Smenkhkare'! The ornithologist is astonished by the human-language quality of the sound and is soon convinced – though lacking any justification for it – that the sound is in fact a word, and not merely a random sound. Intending to use the word, as-if it is governed by ordinary linguistic conventions of her linguistic community (English, let's suppose), she utters out loud: 'What on earth is Smenkhkare?'

It is useful to pause to point at this juncture that it is specifically a *WH-question* presented by the ornithologist. Such questions have the property of requiring an answer in the form of an indicative sentence. Though the question itself lacks a truth-value, the purported answers will, because of their linguistic form, be statements with a truth-value. Interestingly (for our purposes at least) the reference made to a thing *within the question* (or by referring expressions contained in it) is what determines the relevant object for determining the truth-value of the purported answers. This can be seen, for instance, in the fact that often the answer makes use of an anaphorical pronoun, the reference of which is parasitic on the reference made earlier, the only such earlier reference possible being whatever the reference was made by the inquiry. In cases of serious ignorance, the question can be asked of a thing about which we know next to nothing except for our ability to refer to it, as could be done by asking the question in complete ignorance of the referent: *what is it* (or *that*)? In case the truth-maker of the answer should be distinct form the referent of the original WH-question, the answer would not be answer to *that* question at all, the question actually asked.[8]

Given that the ornithologist managed to refer to something by the putative word 'Smenkhkare' (as I will assume), that *something* is the referent of the word, as uttered by her, and is therefore what is relevant for determining the truth-values of the sentences that are put forward (actually or possibly) as answers to the ornithologist's question. The refence must be so determined, for otherwise many obviously wrong answers to the question she *actually* asked would not be wrong answers.[9]

To get back to the original example, imagine next two different origins for the sound that happens to please the parrots so much. In the first scenario, let's imagine that the sound was originated when one unlucky parrot was, say, choking on a peanut a long time ago. The sound thus originated by sheer accident yet happened to be so peculiar that the other parrots picked it up and repeated it for generation after generation. In such a scenario, it seems that the ornithologist does not succeed in making a question about any actual *thing*, but her background assumptions about the sound are simply mistaken. If the fact of the matter about the origin of the sound could be conveyed to her, an apt reaction to her own question would be: 'Oh, I see I made a mistake there. There is no Smenkhkare, it's just a funny sound.'

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[8] This in implicit in Kripke's Feynman example, but obviously entailed by it (Kripke 1980, 91).

[9] Just consider someone hearing for the first time about Aristotle, the philosopher, becoming puzzled and asking out loud: 'Who is Aristotle?' A seafaring enthusiast overhears just the name, not knowing anything about the previous conversation and jumps in to say: 'He was the greatest ship-magnate!' Obviously, the enthusiast is guilty of changing the topic (unwittingly, of course) and it would be appropriate, if bit awkward, by other discussants to contradict him: 'You are mistaken, we were referring to the philosopher, and she made a question about *him*, not Onassis'.

In the other scenario, let's imagine, the sound-pattern was introduced to the parrot community around 1332 BCE when an isolated Egyptian wondered into the remote jungle (maybe he was banished from his city for misconduct or so). In despair, the unlucky Egyptian prayed for mercy from his pharaoh, Smenkhkare. He chanted the name of the pharaoh out loud in his prayers, and a parrot living in that part of the jungle picked up the sound-pattern and started repeating it. The parrot thereby started also a systematic chain of sound-pattern transfer lasting for centuries, until the day our ornithologist arrived in the jungle.

In this latter case, it seems to me, there are correct and incorrect answers to the question the ornithologist asked, the truth-maker of the answers being the ancient ruler to which the sound-pattern is connected by the parrot-transfer chain. Thus, in this second scenario, the correct answers to her question would include: 'One of the Egyptian rulers of the ancient Amarna period', and (possibly) 'The successor of Akhenaten' and whatever happens to be true of historical pharaoh, Smenkhkare.

If I am correct, then the answers that are correct in the latter scenario are not so in the first. In the first scenario, the ornithologist's question is not a case of using a name at all. She merely uses a meaningless sound as-if a name, as-if a referring expression, which in fact does not refer to anything. In the latter case, the ornithologist manages to ask a question about the pharaoh, which then is the truth-maker to all the possible answers to *that* question. So, the same answer (e.g., 'He is the successor of Akhenaten') to the questions in the different cases would have a different truth-value. According to the view I will sketch out shortly, in the first case the truth-value of *that* statement as an answer would be false, while in the second it would be true.

Reference Transmission

If I am correct, by picking up the sound-pattern the origin of which connects that pattern to Smenkhkare, the ornithologist is able to refer to Smenkhkare. She is, for instance, able to inquire after the identity or 'nature' of *that* particular – the thing to which the sound-pattern is connected in the right way – and not some other thing.[10] The connection to the thing she has by receiving the sound-pattern from the parrots (which she manages to use as a naming device) is what determines the truth or falsity of answers to her question.

It seems, then, that the parrots can transmit reference even though they patently are not language-users, *they* do not refer to anything, and lack any kind of linguistic intentions altogether (we will assume). So even despite absence of actual language users, reference transmission can take place, and something other than linguistic factors must enable reference transmission. A right kind of transmission of something (e.g., a noise) that has been used to name a thing, in the right circumstances, by appropriate kind receivers, seems sufficient to enable reference transmission.[11]

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[10] This obviously should not be confused with the possibilities of acquiring such information; what is at stake is merely the possibility of asking question of *that* thing.

[11] As Kripke does not elaborate his own view about reference transmission but is content to leave things at the level of a sketch of how reference borrowing can take place (see esp. 1980, 93), the above consideration cannot and should not be viewed as an argument against his view. On the contrary, it seems likely that Kripke could easily allow that his 'reference borrowing' is after all just one instance of more general phenomenon of reference transmission.

This should not be surprising. Reference transmission by way of borrowing in any case requires some physical medium, necessarily. It requires things like vocal cords, sounds waves, eardrums; ink inscriptions, eyes, and light rays; and so on. What the parrots manage to do is not in fact anything special given all we know about ordinary ways of transmitting references. Consider simply books, letters, stone engravings, and so on. They are a medium that can transmit reference without themselves being language-users, and any acceptable theory about reference transmission must allow their function as proper reference transmitters. The only difference between such stable, physical media and the parrots is that the parrots are an organic and changing community. They are much like human language-users who borrow references from other speakers. The parrots, of course, 'borrow' only sounds and not words nor references from each other, but it would still seem odd to view a centuries long transmission-chain involving hundreds of generations of parrots as only the same kind of media as physical inscriptions in books or engravings on stelas. It seems appropriate to say that such stable media merely record or store reference, but the parrots really transmit it.

Notice, that if we take certain amount of linguistic understanding away from human beings, also they can turn out to be mere 'reference transmitters' just like the parrots of the example. Consider the business of transcribing books in the medieval times. Imagine a society of scribes, copying Latin books with occasional Greek writing stating some things about Aristotle along with his name. Not able to read Greek, the scribes simply reproduce the Greek letters very accurately (instead of writing 'graeca sunt, non leguntur' or so in place of the original Greek text).[12] A book might be transcribed repeatedly in this way, without any one in the process being able to understand the Greek passages. Yet given that there is no significant corruption in the symbols, a reader with Greek skills at some later stage could easily read and understand the text. What is more, that reader would thereby gain the ability (if she didn't possess it already, that is) to refer to Aristotle. All that this requires really is the transmitters' ability to transmit certain physical marks onwards, and a certain amount of linguistic sophistication, but the latter *only* on behalf of the reference receiver. Reference transmission itself doesn't seem to require any linguistic abilities at all but happens as soon as a right kind of physical transmission of something appropriately connected to a thing (sound, inscription) takes place.

The cases discussed so far have assumed transmission of something (sound, inscription) that was originally used as a referring linguistic expression (i.e., as a name). For instance, we imagined that the sound the parrots transmitted was in Ancient Egyptian and then in modern English the name (more specifically a royal titulary, initially coined for a pharaoh as a mark of his coronation) and used by his contemporaries simply to name that individual. All the parrots did was transmit the sound-pattern previously used in this way, while themselves not using the sound as a name, but still with the result that the modern-day ornithologist was able to refer to that pharaoh with that sound.

Now it may appear that all this rests on the steady transmissions of a specific pattern (or in the case of scribes, an inscription). I assume that what most people, even in philosophy, treat as the name, is just such a pattern (instead of the historical connection of the pattern to a

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[12] This case seems to be somewhat close to the case of the person in Searle's (1980) famous Chinese room, with the exception that in Searle's thought experiment the person needs to respond appropriately to the inscriptions he receives (by deferring to an instruction manual) whereas the scribe only reproduces the same strings of symbols he sees. In both cases no linguistic understanding about the symbols is required to perform the task, but still in both cases transmission of reference can take place.

thing). I assume that they also would believe that should that pattern be corrupted significantly enough, no reference transmission would result either. I would like to challenge this intuition next.

Let's re-imagine the parrot-scenario in which there is a actual connection between the sound and the pharaoh. Let's add to this story the supplement that as the parrots transmit the sound, the sound-pattern slowly decays in time so that it is beyond recognition at the time the ornithologist picks it up. No person, present or past, could anymore recognize that pattern as the name of the pharaoh. Would the ornithologist still manage to refer to the pharaoh when asking her question with the seriously corrupted sound pattern? I think she would. There is no other thing connected in the right way to the sound-pattern (it is still the pharaoh's name, not something else, albeit in a corrupted form), and the ornithologist manages to use the sound as a name (so I stipulated).

To see why I think it is natural to view the corrupted sound pattern still as the same name, consider again the monolingual scribes mentioned above. Imagine that as the generations of scribes diligently copy the Greek inscriptions, which they cannot read, they unintentionally produce gradual decay in the original letters. As a result, what used to be a name for Aristotle, written in Greek, is now merely an undecipherable scribble not even resembling Greek letters. Next imagine a scholar studying the most recent transcripts. He sees the scribble but cannot make any sense of it, despite his extensive skills in interpreting ancient manuscripts in ancient languages. Like the ornithologist, he on impulse entertains the possibility of the scribble being a name (quite unwarrantedly, as the ornithologist did with the sound-pattern), and asks: 'To what does *that* refer?' The scholar is now in exactly the same situation as the ornithologist, with the sole exception that the pattern involved in this case is writing instead of a sound-pattern.

Now, briefly turn attention to a lesson from Kripke's 'Feynman' example.[13] A point Kripke makes about names is that all you need to have in order to refer to the thing originally tagged with the name is to acquire the name, nothing else. This enables you, for instance, to ask WH-questions about the thing the name refers to, and to go on to find more about *that* thing. The ornithologist as well as the scholar studying the text containing the scribble can go on asking similar questions using those corrupted words. Of course, as they use the corrupted names, they could not be understood by any present or past language user, because of the corruption. In fact, the only difference between someone receiving a usable name without any information about its referent, on the one hand, and the cases of the ornithologist and the scholar on the other, is that in the latter cases there is no ordinary way to acquire any more information about the referents (Smenkhkare and Aristotle, respectively) while in the case of a non-corrupted name there usually are several such ways (asking others, Googling, reading a book…). This epistemic blind-alley, however, should not affect our intuitions about the cases. In the case of the scholar, these distorted intuitions can be removed by adding another twist to the story.

Imagine that the scholar can miraculously retrieve or reconstruct most of the transcripts as well as the original manuscript, tracing the corrupted inscription pattern to its original, uncorrupted form. As this happens, he realizes that what the unskilled scribes were intending to duplicate was in fact the name 'Aristotle'. He thus realizes also that the answer to his earlier

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[13] See Kripke (1980, 91).

question 'To what does *that* refer?' is the philosopher. The scribble indeed was a name for Aristotle, though the attempts to copy the same pattern had failed. Even in the process of corruption, the new, altered patterns are connected to a previous form that has a historical connection to the object originally named. What this case suggests is that a pattern's being *a name* does not depend that much on the actual surface patterns, but on the causal history of the pattern alone.

Notice that again the phenomenon we are dealing with is quite ordinary, though the cases discussed are exceptional instances. There are numerous actual cases in which names we use today for the famous ancient figures probably don't resemble at all the ways those persons were addressed by their contemporaries at foregone times. We have numerous customs about substituting native language names, say, for royalty and biblical figures, which bear little if any resemblance to the pronunciations nor spellings of those names in the original languages. Such cases don't appear problematic. In these unproblematic cases the transmission of a pattern is such that it makes inquiries about the referent easy, for the alteration in the pattern doesn't happen in the dark but there will be authorities – experts and dictionaries – who can verify that (a token of) 'Ἀριστοτέλης' is in fact the same name as (a token of) 'Aristotle' – that they refer to the same individual (say, the master, and not the magnate). In the odd cases we imagined there are no such authorities available. Besides this obvious difference, there seem to be no other relevant differences between the ordinary and the odd cases. As the historical referential connection of a name is a matter of objective fact, the mere epistemic shortcoming that it is impossible to find certain answers should hardly affect our initial ability to ask the relevant questions about the thing. And if the truth-maker to the answers to those questions will be the thing causally connected to the pattern, despite the corruptions in the pattern, then we were able to refer to those truth-makers already by asking the questions. The cases just discussed seem give reasons to think that even scribbles and corrupted sound patterns can be used to ask the relevant questions, not too differently from the patterns altered 'beyond recognition' by more familiar linguistic processes.

If the above considerations are correct, then names, as referential devices, are essentially constituted by their referential histories rather than the surface patterns by which we recognize those names. In other words, the identity of a name *qua* a name is not tied to a particular phonetic or morphemic pattern, but to the historical (causal) relations that are relevant for the truth-value of sentence containing the name. This also amounts to affirming what some of us accepted already: that the semantic reference of a name is constituted by its causal history.

Let me next turn to sketching some considerations about metaphysics of 'information' that can help us understand better the nature of reference. My remarks will hardly constitute a theory of reference but are meant to point out a way of using causal relations for the purposes of theory of reference in a way that would help to understand better the metaphysical mechanism of reference instead of merely describing how reference is.

Informational-Causal Connections as Reference

Information can be understood for our purposes as constituted by certain *data* that that has a *structure* or *form* that can, by suitable receiver, be interpreted as meaningful.[14] For our purposes, we can simply assume that *data*, though not necessarily information, is always at least at bottom *physical*. All that really matters here is that data be something capable of having structure or form in the intended sense (though notice that having a structure in the relevant sense does not entail complexity[15]). What precisely matters here is the possibility of someone or something observing those forms and using them to certain purposes (to be explicated soon). What cannot be observed, detected, or perceived by anyone – even a possible someone would suffice – cannot be data in the intended sense.

The data itself is a matter of objective fact, discoverable empirically *if* suitable means are available. However, whether that data constitutes also information is relative to a degree. There are obvious cases in which the individual capabilities of an observer will affect whether the data available to her constitutes also information *for her*. For instance, the data that constitutes our current scientific understanding about the expansion of the universe (cosmological redshift) was presumably there from the beginning of the universe but receiving and understanding that data became possible only after means to measure it (telescopes) and interpret it (Hubble's law) became available. For our purposes, then, we must bear in mind that data becomes information only once it is interpreted.[16]

A structure in some data, like electromagnetic radiation, of course need not be *intended* as information in order to constitute information. Consider a pulsar, a star that emits beams of electromagnetic radiation out of its magnetic poles to the space surrounding it. Because of its extremely fast rotation, the radiation is spread into the space like the beam of a lighthouse, making the radiation to arrive to earth in very regular pulses (hence the name 'pulsar'). When first discovered, the regularity of the signals in fact suggested to the astronomers the possibility that they could be witnessing a communication attempt by an extra-terrestrial civilization.[17] After it turned out that there in fact is no intelligent sender responsible the signal, the signal still provided significant information abouts its source. The data is the electromagnetic radiation coming to earth and the regular sequences appearing in the data

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[14] On the face of it, my conception of information as data-*cum*-meaning is a version of the General Definition of Information (GDI), used in several fields today, including philosophy of information (see e.g., Floridi 2011). Such accounts usually rely on ideas originating in works of Shannon (1948).

　　However, most accounts assimilate information as data plus meaning. For the purposes of a causal account of reference, it is useful to distinguish more carefully the causal data from the interpretation of that data. In my use, information is rather what most accounts view as 'meaning' though I emphasize that this meaning should be understood to be a matter of interpreting some data. In addition, as my examples make clear, I do not wish to impose any restrictions on the data, such as well-formedness, as required by the GDI. If such restrictions are applied to my account, they must always be considered relative to the interpretation (one made by receiver or that intended by the sender).

[15] Depending on context, a singular simple thing like a quark or a point could be information for someone's purposes. Notice, however, that lack of structure should not be construed as data, though it can be information. Against certain background assumptions absences can be very informative, as silence can be when waiting for an answer to a question. Such absences are best understood as privations, lack of something that should be there, and their informativeness is due to the inferences our unfulfilled expectations allow us to make. The relevant structure in such a case, then, is the larger structure lacking certain expected structures.

[16] I believe this difference is often not considered sufficiently in discussions concerning information. See, for instance, Drestke's (1981) account.

[17] See Burnell (1977).

provide information about the origin of the data.[18] Such information as is provided by physical data with patterns, such as the electromagnetic radiation emitted by the pulsar, I call *simple causal information*.[19]

When Jocelyn Bell Burnell first observed the signal coming from a pulsar, she likely was in a situation similar in certain ways to that of our ornithologist. She likely asked to herself (or out loud) the question 'what is sending *that*?' Though 'an extra-terrestrial civilization' would be much more intriguing an answer to the question than the correct answer 'a highly magnetized rotating compact star', it would be a wrong answer. Why? Because the *truth-maker* of the interpretations about the information Burnell had received was and is intimately tied with the simple causal information she was dealing with and about which she asked a question (or so we imagine). Even if an extra-terrestrial civilization could have sent a qualitatively indistinguishable signal from that sent by a pulsar, the actual source of the information remains a crucial part of the truth-maker to the answers to such questions about, or interpretations of, the information itself. What determines the truth or falsity of our interpretations of some purported information is the actual causal history of the data delivering that information and its origin.[20]

Imagine next that the signal Burnell observed indeed was a communication attempt by an extraterrestrial civilization (a kind of interstellar 'Hey, we are here!'). As already noted, the data observed by Burnell would have been indistinguishable from a signal coming from a pulsar, so there would be no difference in the simple causal information consisting of the physical data. However, in case of a communication attempt, there is also further information that is being communicated than mere the simple causal information: a message. I will label the information the data is intended to carry as a message *communicational information.*

Communicational information differs importantly from simple causal information only in this respect: the correct interpretation of the data that is used to convey it involves also understanding the rules of communication that are used to encode the information into data.[21] The truth-making relations of simple causal information and communicational information are distinct, yet the latter is essentially dependent on simple causal information

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[18] For instance, the sequences provide information about the rotation speed of the star.

[19] It is worth pointing out explicitly at this juncture that causation needs to be understood in a rich enough way, so that so-called Humean causation is not an option. More suitable accounts for my purposes have been provided by

Bertrand Russell (2009) and Wesley Salmon (e.g., in 2002). I have used my interpretation (Sinokki 2016) of Descartes' account of causation as 'transfer of reality' from the cause to effect as an inspiration for the causal-informational account presented in this paper.

[20] Some philosophers have been skeptical about the possibility of individuating 'semantic content' by causal relations. Gareth Evans is an example, when he claims it is obscure how 'the sheer difference between the causal relations could generate a difference in content between the two mental states, given that it need not in any way impinge on the subject's awareness.' (Evans 1982, 83.) I assume this point about the relevance of the causal origin for truth-making relations about interpretations (beliefs) concerning two indistinguishable pieces of data, yet from very different sources, is enough to show that such skepticism is not warranted.

[21] A familiar case makes this visible. The lack of understanding of shared set of conventions was what once made it impossible to decipher Ancient Egyptian text written in hieroglyphs. Only after the discovery (and painstaking interpretation) of Rosetta Stone those rules were properly understood by twentieth century Egyptologists. The stone engravings that constitute the data were right there for anyone for several millennia. What was lacking was understanding of a set of linguistic rules that made correct interpretation of the intended message possible. In such cases, whether an interpretation about the data is correct or incorrect depends essentially in getting right the rules used to encode the message.

that constitutes is data.[22] (Their distinctness is shown by the difference in the truth-makers to the questions 'Who said that?' and 'Is that true?' asked of the *same* statement.) To pass over the complexities of theories of linguistic communication in one fell swoop, we can simply notice that even communicational information is dependent on the simple causal-historical connections between patterns of sounds and objects initially tagged by them *in conjunction with* the rules that govern the intended communication (in case of a natural language these are constituted by syntax, semantics, phonetics, and pragmatics, or something equivalent).

This rough sketch of causally transmitted information, and causal pathways it constitutes, is enough to give us understanding about the mechanism I see as constituting real world referential connections. I assume that something like it is implicitly assumed by Kripke and attributed to him by many of his readers. It is a natural addition to the 'picture' Kripke offers us, and at that, it makes explicit what reference is.

The peculiarity of things we call proper names can be seen clearly. Their reference is constituted by chains of simple causal information, which do not necessarily preserve the data patterns from 'segment' to 'segment' (i.e., as in case of corruption of the pattern), but still constitute a historical, causal connection between a use of a name and the object named. It is this connection that makes use of certain data as tags possible for objects in the first place. Names, of course, belong to the sphere of communicational information, for their use presupposes certain communicational rules – such as the conventions about using name as a 'mere tag'.

It can also be appreciated why *meaning* (in the Russellian sense[23]) and *reference* are not to be confused. Meanings are something that are brought about by communicational rules or conventions, so that even a proper name can have many meanings in this sense.[24] Such meanings, however, are a matter of association of information with the name, not information 'carried' by it. In fact, the only information the name really carries itself, is the pattern-of-data, which as we saw can undergo significant alteration. But the causal history connects that data pattern to an object and makes its use as a tag possible.

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[22] Every speaker's voice is unique because of the differences in the constructions of their larynx, and these differences can in principle be detected by observing the differences in their voices. Such simple causal information is also important for our communication – we distinguish different speakers by differences in voices, for instance.

[23] See Russell (1905). Russell's view about meaning as something attached to an expression by a user, and not a feature of the expression itself (in contrast to what he calls 'denotation') is in line with what I present here, though I of course acknowledge that 'meaning' has several other 'meanings' (cf. e.g., Putnam 1975). See also footnotes 26 and 36 below.

[24] For instance, the name 'Saul' can mean (for some speakers) the First King of Israel even as the name is used to refer to a famous philosopher. The same name can mean in its original language something like 'asked-for'. Also, the name can obviously provide some probable (communicational) information about the referent, say, about the sex, cultural and linguistic background, and sometimes even age of the referent (if one knows about the trends of baby names, etc.). Also, certain conventions about naming can provide additional information about the way the object came to be named in certain way. In Iceland, for instance, the surnames are patrilineal (or occasionally matrilineal), so that person's surname provides information about his or her father (or mother) as 'Johnson' would in case only sons of John's could bear it. In astronomy, variable stars (stars whose brightness varies) are named in accordance with a variation of *Bayer designation format* which reveals the constellation to which the star belongs and the rank of the star in the order of their discovery. For instance, 'UY Scuti' names the 38th variable star discovered in the constellation of Scutum.

Proper Names

As a final step in my sketch about the mechanism of reference, let's turn to ordinary proper names and their referential use discussed also by Kripke. It seems uncontroversial that when a baby is born, the parents tag a name onto their newborn via simple causal information.[25] All that such tagging really requires is a simple transmission of data that provides informational connection to the baby.[26] We can here ignore all the complexities about human perceptual and cognitive systems and simply assume that all cases of ordinary perception or 'acquaintance' with ordinary objects are cases of the subjects receiving some simple causal information from the object. If this is correct, then the tagging of a thing with a name is a way of enabling *reference* to that object via the causal-informational connection also in future uses of the tag. However, Kripke allows that sometimes reference of names are 'fixed' by using a description instead of ostension.[27] I believe such 'fixing' is not in fact possible.

It seems that most familiar instances of 'refence fixing' by description turn on closer inspection to presuppose ordinary causal-informational connections. Consider the famous case of fixing the reference of 'Neptune'.[28] Alexis Bouvard first noticed certain irregularities in the orbit of Uranus and suggested that their cause of is another planet (as opposed to the Le Verrier, who only later calculated the location of the suggested planet). If Bouvard used the name 'Neptune' for that planet, then his coining this name for the planet took place by simple causal-informational connection. There was the data (visible light) that was information about an event (unexpected irregularities in Uranus' orbit), which originated from something. With the realization that the cause of the perturbations is singular thing, a planet, Bouvard used this causal-informational connection to tag this object (not yet directly observed) with the name 'Neptune'. Importantly, even before coining the name, there was a question to be asked by using the data Bouvard was trying to interpret: 'What is that?' or 'What is the cause of that?'. The truth-values of the answers to these questions are determined already by the actual history of the causal information coming from an object about which the question is asked, so also reference must precede the use of any description used to *introduce* the name.

What I think this case shows is that there is a crucial ambiguity in the term 'fixing the reference'. On the one hand, it might mean bringing about reference when previously there was none, creating reference *de novo*. On the other, it might mean simply connecting a label with a pre-existing referential connection. The case of Bouvard 'fixing' the reference of Neptune seems obviously to be like the latter case.[29] I assume that the same is true of most cases discussed as purported examples of reference fixing via use of a description: on a closer

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[25] See Kripke (1980, 96, fn 42).

[26] This is what Donnellan (also) called *reference* in distinction to (Russellian) *denotation*, which amount to picking out an object by satisfaction of description (Donnellan 1966).

[27] As has been pointed out by Almog (2012, 182), Kripke's 'reference fixing' is a misnomer. What Kripke is interested in *Naming and Necessity* is 'fixing' of rigid designators, which are whatever happen to 'designate' the same object in every possible world (if the object exists). Reference, in the sense used in this paper, is a simple and necessary ingredient of natural languages, used to convey information about the worlds, which would still exist even if it turned out that in natural languages there are no rigid designators at all.

[28] Kripke presents the example of 'Neptune' as the paradigm case of fixing the reference of the name by using a description (1980, 79, fn 33). Donnellan (1977) discusses the case at length in context of Kripke's view about modal knowledge, but seems to miss the fact the naming of Neptune is clearly case of his referential use of description (1966) if anything is.

[29] It should be noted that this is not the answer given by Kripke in his (1977). However, given his view in *Naming and Necessity*, I believe this is the answer he should have given. See also Almog (2012).

inspection they will turn out to presuppose a causal-informational connection to the thing 'baptized' with a new name.[30] If so, it will be easily detected by performing the by now familiar WH-question-test.[31]

The only cases that seem to lack a prior referential connection to an object before the name is introduced are rare, but they seem possible.[32] Tagging the name 'Stockholm Beanpole' to whoever happens to satisfy the description 'the tallest person in Stockholm' apparently is one such a case.[33] Given we could differentiate heights so accurately that no two persons turn out to have the same height, we can rest assured that the description used really picks out a unique individual, though we don't have the slightest of idea who that might be. Therefore, it seems that also any name introduced by using that description will refer to the same individual as is picked out by the description.

In the case of 'Stockholm Beanpole' the only reasonable WH-questions to be asked prior of the naming must make use of the description itself ('Who is the tallest man in Stockholm?', etc.). And before using the description there is nothing of which ask any questions. This seems sufficient to show that the case of 'Stockholm Beanpole' is not like the case of 'Neptune', one involving a causal-informational connection to an object. But then, what is such a case really like, independently of intuitions affected by reading Kripke's view about the matter? Is this a case of creating reference *de novo* via a description?

While arguing against Donnellan's challenge for his views, Kripke discusses a case of using 'non-rigid descriptions' (we can ignore the precise nature of such things for our purposes) to 'fix the reference' of a name, and writes:

> It would be logically possible to have single words that abbreviated nonrigid definite descriptions, but these would not be names. The point is not merely terminological: I mean that such abbreviated nonrigid definite descriptions would differ in an important semantical feature from (what we call) typical proper names in our actual speech. (Kripke 1977, 260, fn 9).

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[30] Take 'Jack the Ripper' (Kripke 1980, 79–80) as an example. The Victorian era detective (or journalist or whoever) first nominating thus the culprit for certain horrific murders in Whitechapel in years 1888–1891 could have used a definite description to introduce the name by an act of baptism. As he did so, he was already in position to ask the relevant WH-questions. Thus, the description did nothing to fix the reference, it was already in place.

[31] That is, the uses of descriptions in those cases which WH-questions have a truth-maker independently of those descriptions are *referential* (as opposed to *attributive*). See Donnellan (1966).

[32] One case which might seem yet different would be the coining of the name 'Vulcan' with a description 'the planet causing the observed perturbations in Mercury's orbit'. There was no planet, so the name is supposed not to refer or to refer to a non-existent. This might seem to contradict what was just claimed. However, I think the name-coining of 'Vulcan' was successful, but the thing to which Le Verrier referred turned out to be something else he thought. It was not a planet he was tagging a name onto, but something else. Compare: it could turn out that 'Banksy' is not a name for an individual but a collective. We can be mistaken about the nature of the thing *to which we were referring*. This is not the place to pursue this further, but I think some familiar negative existentials such as 'Vulcan does not exist' can be provided interesting analyses by looking at the actual historical introductions of those names and comparing them with the background assumptions about the things supposedly referred to (such as planets, when there turn out to be no such supposed things).

[33] The case of 'Saint Anne' (i.e., the mother of Jesus's mother) might seem to be another exception to this, but I assume – without being able to argue it here – that the discussion above in relation the causal-historical connections and persons ancestry are likely sufficient to treat this case as one involving ordinary causal-informational connection. See Dummett (1973, 113).

I would like to make the same argument against 'names' introduced by an attempt to 'fix' their reference by using a definite description. Such linguistic items will not be names, for they will – because of their originating process – lack a referent. I will argue shortly that even if the description used should pick out a unique individual (as is the case with 'the tallest man is Stockholm' we will assume), this is not sufficient for the newly introduced name to have a referent.

Let's first get out of the way a case that is *not* under discussion, so we don't confuse it to what is under discussion. We could easily choose a definite description to pick out an object, then after this find out which object in actuality satisfies the description. As the object is found or individuated, we could tag it with a name. Such a maneuver would *not* be a case bringing about a new reference with the description, for such a two-step process would be obviously an instance of tagging an object with a name by using the causal-informational connection, though such a connection is unearthed by individuating the object which satisfies a description. I think not paying enough attention to how the reference is brought about in such two-step processes can lead to the false impression that the description itself 'fixed' the reference of the newly coined name. But obviously, that is not the case.

The real cases of bringing about a reference *de novo* by use of description would be such in which the name inherits a relation-to-an-object from the description directly, without any prior causal-informational connections to that object. I would now like to argue that such cases cannot in fact bring about reference, they do not result in an actual – or *proper* – name.

Consider the parrot-example one final time. Let's suppose that the unfortunate Egyptian driven to the jungle was not chanting out a name of any kind as the parrots picked up the sound-pattern 'Smenkhkare' from him. In fact, let's suppose that prior or after to the incident we will presently imagine, 'Smenkhkare' was never used as a name of any kind in any linguistic community. Instead, suppose the Egyptian was gazing at the starry night sky, wondering which one of the stars is the largest of them all. As he marveled at the bright spots against the black depths of endless space, knowing little if anything about the true nature of the things he was witnessing but still aware of peculiarities of sizes and superlatives, he solemnly pronounced something like 'I shall hereby baptize the largest of all stars ever existed, whatever it is, 'Smenkhkare'. As this 'baptism' happened, a parrot picked up the noise, and… you know the rest.

In this scenario, the ornithologist again manages to use the sound-pattern as if a name (without any warrant to do so, as before). But now, given that the newly coined name was picked up by the parrots immediately after the event baptism, and no one in the process did have the means to connect that name causally to the thing the Egyptian intended to baptize with the name, what is the truth-maker to the answers given to the ornithologist's question: 'What on earth is Smenkhkare?' If a description is sufficient to endow a reference to a name, then that truth-maker is a red supergiant star, UY Scuti (or so we can suppose).[34]

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[34] Actually, UY Scuti is not currently even the largest star (in diameter) presently known to mankind. Previously its diameter was estimated as being possibly over 1.700 times larger than our sun. However, due to improvements in measuring techniques it was discovered that the star is almost twice as close to earth than was previously thought. Thus, also the size of the star was miscalculated as being almost twice as big as it (likely) is. This is a beautiful example of how interpreting the same causal data as information depends on the ability to accurately receive the data. Still let's assume, for the argument's sake, that UY Scuti is the largest star there is, ever was, or will be.

This case should be just like the case involving a pharaoh, if the description can bring about reference. But it is not. In the pharaoh case the truth-maker to the answers to the ornithologist's question is intuitively the pharaoh. In the star-case under discussion, it seems wildly implausible that the pulsating variable star UY Scuti would have anything to do with the correct or incorrect answers to that question. There just is no connection between the name and the star, even if a description that plausibly picks out just that star was used to introduce the name. The reason seems to be this. The person (the ancient Egyptian) who coined the name had no connection to the thing the description picked out (if any). There was no reference there to be transmitted by the parrots.

The Egyptian certainly himself had no idea about which star is the biggest. We can even assume that the 'name' was in used more widely in the Egyptian society as the name for the biggest star, whatever it is. Still it seems to remain the case that the correct answer has nothing to do with UY Scuti, for no person in ancient Egyptian language community was causal-informationally connected to the star – it is invisible to the naked eye, and Egyptians did not have telescopes. Therefore, the correct answer to the ornithologist's question in this final scenario cannot be about any star whatsoever, but merely about the sound-pattern she received. The correct answer is something along the lines: 'Smenkhkare is the name Egyptian(s) used for what ever is the biggest star in the universe'.[35] And the appropriate reaction on behalf of the ornithologist would be: 'Oh, I see I made a mistake there. There is no Smenkhkare, it's just a sound the Egyptian(s) used as if a name for something they knew not what.'

If this is the correct reaction, as I believe it is, in this final case 'Smenkhkare' was a mere linguistic placeholder for a description in the face of ignorance about the object picked out by the description (if any). The pattern might look and behave a lot like a name. But if name's function is to tag an object, or to provide a truth-maker-object for sentences containing the name, then in this case the sound-pattern simply is not a name.[36]

I suspect that the possibility of creating reference *de novo* by using a description has seemed viable for so many philosophers, including Kripke, simply because of the possibility of finding a thing satisfying the description. But as noted, in such a case the referential causal-informational connection to the object is acquired only through individuating the relevant object. The point of this final thought-experiment was to consider a case in which such individuating is not made at any stage after coining the name. And the result we got is that in absence of such individuation, the resulting 'name' does not really refer yet.[37] Therefore, the mere act of introducing a linguistic label by using a description is not sufficient to create a name, for it lacks the essential property of names – causal-informational connection to a thing

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[35] I here omit quotation marks around the name, thought they strictly speaking would be needed for the answer to be correctly formulated. But then the answer would clearly talk at cross-purposes with the question, mentioning not using the name. However, as the answer is essentially a correction of a background assumption of the question, which would be made clear by use of the quotation marks, this is just as it should be.

[36] This shows the difference between *denotation* and *reference.* See Russell (1905) and Donnellan (1966). See also Almog (2012) and Kaplan (2012). Denotation is a formal property of linguistic expressions, which – as Russell explains in the outset of *On Denoting* – has nothing to do with how or whether the expressions connect to things. Reference, in contrast, is a relation between a linguistic item and a thing.

[37] In fact, the introduction of names without actual referents is the hallmark of fiction, which results in name-like entities such as 'Sherlock Holmes' which despite their linguistic behavior are not tags for any objects (and thus in my view, are not *proper* names). This result seems interesting for thinking about names of fictional entities, but I cannot pursue this further here.

tagged by the label that constitutes what we call reference. Though this result is in contradiction with what Kripke writes about 'reference fixing' with descriptions, I think that that doctrine is not essential to any of the central theses of *Naming and Necessity*. If anything, this result seems to fortify Kripke's general rejection of descriptions as being related to naming in anyway.

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