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Reference Fixing, Conceptual Analysis, and the *A Priori*

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Many philosophers assume a tight link between the concepts we possess and what we know *a priori*. They consequently rely on semantic reflections to explore the extent of our *a priori* knowledge. In this paper, I will acquiesce in this practice. I will explore the scope of our *a priori* knowledge of nature by examining the semantics of natural kind terms. More specifically, I will ponder whether we can *a priori* ascertain substantial truths about, say, water or minks by analysing the notions we associate with the natural kind terms ‘water’ and ‘mink’. Kripke and Putnam argue that we cannot. Although they agree that the mechanics of reference fixing will inevitably produce some *a priori* knowledge, they hold that all substantial truths about natural kinds will be *a posteriori*. The popular neo-descriptivist account propounded by Frank Jackson and David Chalmers appears to sustain a different verdict. Jackson and Chalmers argue that the *a priori* knowledge induced by reference fixing will be substantial enough to sustain *a priori* reductive explanations, and to turn the conceptual analysis of natural kind notions into a sensible endeavour.

I will side with Kripke and Putnam. I will argue that neo-descriptivism cannot well be understood to imply that we yield *a priori* knowledge about kinds that is substantial enough to make the conceptual analysis of natural kind notions a sensible enterprise. I will moreover suggest that neo-descriptivism is most likely a flawed semantics for our natural kinds terms anyway.

1. Descriptivism and the Kripke-Putnam Semantics

Let me call the body of knowledge a speaker associates with a given term in virtue of being a competent speaker a *notion*. Descriptivists assign our notions centre stage in their theory of meaning. In particular, they believe that the notion a competent speaker associates with a term ‘*K*’ – the *K-notion*, for short – determines what ‘*K*’ applies to:

(*RF*) In all possible situations, a natural kind term ‘*K*’ applies to *x* iff *x* satisfies our *K*-notion.

In order to determine across all possible situations what our terms apply to, notions are bound to be rich epistemic structures. Consequently, descriptivists hold that:

- (N) Our notion associated with a kind term ‘*K*’ amounts to a substantial body of by and large communally shared identifying knowledge.

Descriptivists can maintain that notions are implicit rather than explicit. But they have to hold that a competent speaker’s notions are reflected in her intuitive conceptual judgments. Moreover, since our notions determine the reference of our terms, descriptivists are compelled to hold that notions are more or less communally shared. For if your *K*-notion deviated significantly from mine, our terms would apply to different objects, and the truth-conditions of our sentences containing ‘*K*’ would differ.

On descriptivist premises, plausible candidates for our *K*-notions are the communally shared account of what it is to be a *K*, or our standards to discriminate *K*s from non-*K*s. Since we can know the account or the standards, respectively, independently of knowing what our world is like, and since “[w]hat we can know independently of knowing what the actual world is like can properly be called *a priori*” (Jackson 1998, 51), we know our notions *a priori*. The descriptivist account of reference fixing thus forges a close link between the semantic properties of natural kind terms and our *a priori* knowledge about natural kinds. Given the modal character of reference fixing, descriptivism implies this:

- (CA) We know *a priori* that our *K*-notion holds true of all and any *K*s.

Our *a priori* knowledge that is encapsulated in our *K*-notion – and which can be unearthed by conceptual analysis – will thus be substantial rather than insignificant. First of all, the notion is assumed to be detailed enough to identify *K*s across all possible situations. The ensuing *a priori* knowledge will thus be *comprehensive* rather than fragmentary. Secondly, the *K*-notion is true of any *K* in any possible situation. Hence the *a priori* knowledge concerns *necessary* rather than contingent properties of the kinds in question. On descriptivist premises, these necessities are conceptual. Thirdly, the *a priori* knowledge will be *revealing* rather than non-revealing. In spelling out our *K*-notion, we learn about *K*s rather than about people, locations or other items and *their* relations to *K*s. For instance, in spelling out our notion associated with ‘swan’, we will learn that swans are large whitish aquatic birds with long necks rather than that swans are those animals I saw a beautiful specimen of last Monday. Finally, since notions are communally shared, the *a priori* knowledge will be *communal* rather than *idiosyncratic*.

Kripke (1980, lect. 1 and 2) and Putnam (1975) have famously argued that descriptivism founders on two problems. On the one hand, there is the *modal problem*. Descriptivism implies that any *K* will necessarily have all the properties encapsulated in the *K*-notion. For instance, it implies that water is necessarily transparent. Yet the respective predications are typically metaphysically contingent. On the other hand, there is the *epistemic problem*. On descriptivist premises, competent speakers are expected to have substantial identifying knowledge about kinds. But competent speakers often do not possess such knowledge. Most competent speaker do know something about minks or uranium. But they will not be familiar with substantial identifying accounts.

Kripke and Putnam propound a semantics that is decidedly non-descriptivist. Equating the meaning of an expression with a *semantic content* that determines an extension for any metaphysically possible situation, they argue that reference fixing for a natural kind term ‘*K*’ is a two-stage process. In a first stage, we pick out some items or samples in our environment as *reference fixers* for ‘*K*’. In a second stage, the reference fixers

determine what ‘*K*’ applies to across possible worlds. ‘*K*’s semantic content is thus *anchored* in the respective items or samples that stand in as reference fixers:

(RF_{KP}) In all metaphysically possible situations, a natural kind term ‘*K*’ applies to something *x* iff *x* is of the same kind as our reference fixers for ‘*K*’.

This account implies that natural kind terms designates rigidly. It also implies that the intension of a kind term ‘*K*’ depends solely on *which* items or samples stand in as reference fixers. *How* the samples and items are picked out – which *way to identify* its reference fixers is employed – does not affect ‘*K*’s intension at all. This implication shapes Kripke’s and Putnam’s understanding of what a speaker has to know. They maintain that any speaker who uses her kind term ‘*K*’ non-deferentially must be familiar with some way to identify a reference fixer for ‘*K*’. In most cases, it is up to the speaker which of the many available ways she uses. The resulting plurality does not undercut semantic uniformity. As long as the different ways employed single out the same samples or items, or at least samples or items of the same kind, our kinds terms will apply to the same things in all possible worlds, and our utterances will have the same semantic contents.

Kripke and Putnam hold that knowing a way to identify a reference fixer does not exhaust a competent speaker’s *K*-notion. She must moreover be familiar with a standardized description or *stereotype* that sums up presumed typical or normal features of *Ks* (Putnam 1975, 249ff). For instance, any competent user of ‘swan’ must know that swans are large whitish birds with long necks. The *K*-stereotype does not have to be true of all *Ks*, not even of those in our environment. Still, most stereotypes will correctly capture features of specimen we consider typical, which allows us to draw on our stereotypes to identify reference fixers. Apart from that, stereotypes are semantically idle – they do not affect the semantic contents of our kind terms. Their importance is socio-linguistic, since their presence guarantees a certain uniformity in our ideas about the world. The picture we yield is this:

(N_{KP}) The notion we associate with a natural kind term ‘*K*’ typically comprises a *way to identify* some of ‘*K*’s reference fixers as well as a *stereotype* of *Ks*.

The Kripke-Putnam account of reference fixing thus decouples the semantic properties of our natural kind terms from most of the knowledge a competent speaker will possess, and even the speaker’s knowledge that bears on a the semantic properties of her natural kind terms does so only indirectly, *viz.* by picking out a sample or item anchoring the terms’ reference.

In line with their account of reference fixing and their understanding of notions, Kripke and Putnam hold that the *a priori* knowledge we yield by conceptually analysing natural kind terms is severely limited:

(CA_{KP}) All a competent speaker will know *a priori* about *Ks* is what is encapsulated in her way to identify some reference fixer for *K*.

The respective *a priori* knowledge will be insignificant rather than substantial. First of all, it will be *fragmentary* rather than comprehensive. It suffices to know that swans are those large white birds I saw a beautiful specimen of last Monday. Secondly, the *a priori* knowledge gained will be contingent rather than necessary. The reference of a kind

term ‘*K*’ across possible worlds is anchored in items or samples here in *our* world. Competent speakers can – and mostly will – rely on contingent features for the identification. Thirdly, this identification might very well be *non-revealing* rather than revealing. If you identify parrots as those birds Flaubert owned a specimen of, you won’t reveal anything about the kind of bird in question. Finally, the respective *a priori* knowledge will be communally shared only if there is a agreed standard way to identify the respective reference fixer. There is such a way for expressions like ‘meter’, which is why “The meter rod in Paris is one meter long” comes out contingent *a priori*. But for most natural kind terms, there simply is no agreed standard way to determine their reference fixers.

The Kripke-Putnam account avoids both problems descriptivism founders on. Since they hold that items and samples rather than our beliefs determine the intensions of natural kind terms, their account yields the right metaphysical necessities. The Kripke-Putnam account thus escapes the modal problem. The account moreover implies that all a competent speaker who uses her term natural kind term ‘*K*’ non-deferentially must know is a way to identify some reference fixer for ‘*K*’, and the respective stereotype. The Kripke-Putnam account thus escapes the epistemic problem as well.

2. Neo-Descriptivism

Jackson and Chalmers believe that Kripke and Putnam are right: we determine the reference of natural kind terms by picking out samples or items that stand in as reference fixers. However, Jackson and Chalmers do also believe that descriptivism is right: the whole notion we associate with a natural kind term does have a pivotal semantic job to do. The semantics Jackson and Chalmers propound and that I will call *neo-descriptivism* allows its adherents to hold on to both ideas.¹ It apparently has another consequence, for it implies that spelling out our natural kind notions yields substantial *a priori* knowledge.

Neo-descriptivists draw on a sophisticated semantic framework. They think that in describing meanings, we have to distinguish *representational meanings* and *semantic contents*.² The representational meaning of an expression captures how it represents things a being, irrespective of the respective context, whereas an expression’s semantic content is determined by its representational meaning taken together with the respective context. Since both representational meanings and semantics contents can be modelled as intensions, we arrive at the two-dimensional framework familiar from Kaplan (1977) and Stalnaker (1978): for any expression *t*, *t*’s representational meaning determines an extension with respect to any context; and given the thus determined extension with respect to a specific context *c* (together with some additional rules), we arrive at the intension *t* has with respect to *c*, specifying an extension for each metaphysically possible situation.³

¹ See the references at the end of this paper. See especially Chalmers and Jackson 2001, Chalmers 2004 and Jackson 2004.

² Terminology varies considerably. Instead of ‘representational meanings’ and ‘semantic contents’, theorists talk of ‘primary intensions’ and ‘secondary intensions’, ‘epistemic meanings’ and ‘metaphysical meanings’, or ‘diagonals’ and ‘contents’. Very roughly, these distinctions amount to very much the same.

³ I simplify. See Stalnaker 2004 who takes care to distinguish his account from Kaplan’s.

Jackson and Chalmers propound a distinctive understanding of this framework. They understand representational meanings in *epistemic* terms (Chalmers/Jackson 2001, §3, Chalmers 2002, §4, Chalmers 2004, §3).⁴ How an expression represents things a being is, they hold, to be characterised by the ability of a knowledgeable speaker to determine, on reflection, the expression's extension for all epistemically possible situations. A situation is epistemically possible for a speaker in the relevant sense if she has no *a priori* reasons to reject it as incoherent, and the determination of an expression's extension for such a situation proceeds by way of taking it to be the *actual* situation, answering, as it were, the conditional question "If *e* happens to be the actual situation, what am I to apply my terms to?". Here the situation *e* must be given by a *canonical description*, that is by a complete description in semantically neutral vocabulary.

Epistemic two-dimensionalism is tailor-made to accommodate the two ideas mentioned above. It implies that the representational meanings of my expressions cannot be beyond my epistemic ken and hence guarantees that I can in principle ascertain the representational meanings of my words and sentences by *a priori* reflection. It moreover allows neo-descriptivists to endorse the following account of reference fixing:

(RF_{ND}) In all metaphysically possible situations, a natural kind term '*K*' applies to *x* iff *x* is of the same kind as the items or samples that satisfy our *K*-notion in the respective epistemically possible situation.

This account embraces the idea that the semantic contents of natural kind terms are determined by samples or items. Consequently, it escapes the modal problem. Still, the account is *very* different from what Kripke and Putnam maintain. For one, Kripke and Putnam do not build the resources for a systematic change of semantic content into the semantics for natural kind terms.⁵ Neo-descriptivism emphatically does. It embraces the idea that it is part of our meaning of, say, 'aluminium' that if there is an epistemically possible situation in which the stuff satisfying the notion we associate with 'aluminium' is molybdenum, then with respect to that situation, our term 'aluminium' rigidly designates molybdenum. Secondly, Kripke and Putnam do not relativize modal status. Neo-descriptivism does. On this account, whether "Water is H₂O" is metaphysically necessary depends on the respective epistemically possible situation. Thirdly, neo-descriptivism assumes that the notion we associate with *K* is *projectible across epistemic possibilities* – that we can rely on it to identify reference fixers *within* all situations we have no *a priori* reasons to reject as incoherent. Kripke and Putnam do not assume that our notions are projectible at all.

The descriptivist leanings of Jackson and Chalmers become even more evident in their account of notions. Here they put forth a three-way identification (Jackson 1998, 49, Jackson 2000, 331):

(N_{ND}) The representational meaning of a natural kind term '*K*' = our notion of '*K*' = the way we single out the reference fixers for '*K*'.

⁴ For the rival *contextual* understanding of two-dimensionalism, see Chalmers 2004, §2 the Sophisticated Kripkeanism – which is a token-reflexive account – I propound in Nimitz 2003, and esp. Stalnaker 2004, §§1-3.

⁵ Neither does Stalnaker. See Stalnaker 2004, 305ff.

This account reinstates the descriptivist idea that our whole *K*-notion is pivotal for ‘*K*’s meaning. For one, our *K*-notion exhausts the epistemic dimension of ‘*K*’s meaning, since it encapsulates identifying knowledge that guides us in determining what ‘*K*’ applies to across epistemic possibilities. What is more, our *K*-notion determines *K*’s semantic properties more narrowly conceived, since it picks out the reference fixers for ‘*K*’. This holds true across all epistemically possible (and hence potentially actual) situations. There hence is a uniform way we determine the reference fixers for ‘*K*’ for any epistemic possibility, and this is precisely the way we employ *around here* – in our *de facto* actual environment.

The neo-descriptivist account of reference fixing moreover reinstates the descriptivist idea that conceptually analysing natural kind terms is a sensible endeavour. For it is evidently implies that:

(CA_{ND}) We can obtain substantial *a priori* knowledge concerning *K*s by spelling out our notion associated with *K*.

It is not hard to see that the *a priori* knowledge in question will be substantial rather than insignificant. First of all, the respective *a priori* knowledge is likely to be comprehensive rather than fragmentary. The notion a competent speaker associates with a natural kind term ‘*K*’ must suffice to guide her application of ‘*K*’ across epistemically possible situations such that it is sufficiently distinct from the application of the speaker’s other terms. Secondly, the *a priori* knowledge gained will concern necessary rather than contingent features of *K*s. Although the conceptual analysis won’t yield metaphysical necessities, it yields insights into *epistemic* necessities. The *a priori* knowledge will, thirdly, characterize the kind in a revealing rather than in a non-revealing way. It won’t do to know that parrots are those birds Flaubert owned a specimen of. Knowledge of this kind simply does not project well to epistemically possible situations.

At first glance, neo-descriptivism appears to strike a sensible balance between rather plausible descriptivist ideas and the Kripke-Putnam orthodoxy. Yet for all its sophistication, it runs into trouble.⁶

3. Neo-Descriptivists on Notions, Part I: Roles and Fillers

In his *From Metaphysics to Ethics*, Jackson spells out what he thinks a notions is. There he propounds the *role-filler-model*:

(N) The notion we associate with a kind ‘*K*’ term captures the role the shared (as well as rectified) folk-theory of *K*s assigns to ‘*K*’, and the reference fixers for ‘*K*’ in some epistemically possible situation are whatever fills that role in that situation (Jackson 1998, ch. 2).

Jackson equates the *K*-notion with the communally shared (folk-)account of what it is to be a *K*. This implies that any competent speaker must be familiar with roughly the same account of *K*s. Neo-descriptivism hence becomes vulnerable to ignorance. Equating no-

⁶ For additional arguments, see Nimitz 2004.
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tions and folk accounts moreover presumes that our folk accounts guide the application of our kind terms across epistemic possibilities. This, however, can be questioned.

To begin with the first issue, the role-filler model demands that competent speakers are familiar with the shared account of what it is to be a *K*. This runs counter to *empirically manifest ignorance*. For many kind terms '*K*', competent users are incapable to come up with, or even recognize, any remotely compelling account of *Ks*. This might go unnoticed in the cases of 'water' or 'parrot'. But what once we consider, say, 'mink' or 'sulphur', it becomes plain to see. What is more, the role-filler model assumes that speakers *share* a *K*-notion. This runs counter to *variability*. The notion associated with a natural kind term plausibly varies from speaker to speaker. The knowledge I associate with 'spinach' – basically, that it turns scrawny sailors into superheroes – will not overlap much with the account your gardener comes up with.

Coming to the second issue, equating notions and folk theories presupposes that our folk-theory about *Ks* is capable of guiding our application of '*K*' across epistemic possibilities. Let us follow Jackson and Chalmers initial proposal and assume that the description 'the transparent, odourless, colourless liquid in the lakes and oceans around here' captures the core of our folk theory of water (Chalmers 1996, 57, Jackson 1998, 49f). On the premises of the role-filler model, this would make "If *x* is water, then *x* is transparent" an epistemic *a priori* truth. This runs counter to *strongly restricted projectibility*, since our folk-accounts do not even project well to *nearby* epistemic possibilities. Conceive of a world that appears to be precisely like ours, right down to the last H₂O molecule. Now imagine that scientists there discover very tiny creatures they dub 'nano-bacteria'. These bacteria are ubiquitous in all liquids. For quite a while it remains a puzzle what these sub-microscopic organisms do, and what they live on. Then it dawns on our scientists: nano-bacteria live on sub-atomic particle streams or 'vapours' emitted from H₂O molecules. If it were not for these bacteria, all pure samples of H₂O would look whitish and opaque – just like milk. Since they do of course hold that water is H₂O, our scientists conclude: water is not transparent after all. And given that our intuitions are unequivocal in that the scientists' identification is correct, the implication "If *x* is water, then *x* is transparent" fails in our scenario. Given that the presence of the respective bacteria as well as the role they play must be included in the canonical description of our scenario, it follows that equating notions and folk theories does not square with our intuitions.

I conclude that neo-descriptivism fails – *if* it relies on Jackson's role-filler model. Apparently, neo-descriptivists think so, too. Jackson and Chalmers have recently presented adjustments to neo-descriptivism that are evidently designed to undercut the presented line of thought.

4. Neo-Descriptivists on Notions, Part II: Abilities

In their joint *Conceptual Analysis and Reductive Explanation*, Jackson has come around to embrace Chalmers' quite different understanding of what a notion is.⁷ There Jackson and Chalmers endorse the *ability model*:

⁷ However, in his recent Jackson 2004, Jackson's account appears to differ quite fundamentally from what he and Chalmers embraced in their joint Chalmers/Jackson 2001.

(N*) The notion we associate with a kind term *K* is a *rational ability* that is revealed in a subject's evaluation of specific epistemic possibilities. (Chalmers/Jackson 2001, §3).

Jackson and Chalmers hold that on this understanding of notions, we have no reason to assume that we can capture notions with a finite expressions. The best we can do is to approximate a speaker's notion by supplying for each of her notions '*K*' a list of *application conditionals* of the form "If epistemic possibility *e* turns out to be actual, then *Ks* are such-and such". The fact that a speaker *a priori* accepts such conditionals as true is what reveals her *K*-notion. Jackson and Chalmers moreover hold that the ability model allows us to come to terms with variability and restricted projectibility (Chalmers/Jackson 2001, 326ff). They hold that the former is inconsequential, and that the latter reflects the mundane fact that beyond some varying threshold, our concepts will lack determinate application.

These adjustments do not improve the neo-descriptivist account. For all its flaws, the role-filler model provides a psychologically plausible account of what our notions comes to. The far less specific ability model simply assures us that a speaker's *K*-notion is *whatever* her ability to apply '*K*' across epistemic possibilities manifests. In combination with the fact that Jackson and Chalmers embrace variability and restricted projectibility, problems for adjusted neo-descriptivism are not hard to find. Let me mention three potentially fatal ones:

(i) *The Problem of Reductive Explanations*: if we cannot capture what is known *a priori* with finite expressions, it is hard to see how the outcome of a conceptual analysis can possibly figure in a reductive explanation. Since this was the whole point of this variety of conceptual analysis to begin with (Jackson 1998, ch. 1), the adjustments to neo-descriptivism pronounced appear to undercut its very rationale. What is more, given that notions and hence *a priori* knowledge vary from speaker to speaker, it is hard to see whose *a priori* knowledge we are allowed to draw on in reductive explanations anyway. Yours? Mine? Or do we have to ask our experts?⁸

(ii) *The Problem of Canonical Descriptions*: Evaluating sentences in epistemic possibilities proceeds by means of canonical descriptions. But it is doubtful whether we can actually devise a complete as well as semantically neutral description of any situation. It is even less plausible to assume that ordinary speakers somehow draw on them.

(iii) *The Problem of Indistinct Manifestation*: I do have the rational ability to identify grandmothers in nearby worlds: they are little old ladies habitually meeting for *kaffee klatsch*. This rational ability does *not* reflect my grasp of the meaning of the term 'grandmother', which can be given by 'is a female parent of a parent' and which *is* projectible to quite distant epistemically possible situations. So – why should we believe that my rational ability to identify swans is on a par with the latter rather than with the former ability, given that it too is restricted to nearby possibilities? In general, what guarantees that my attempts to identify some kind across epistemic possibilities teases

⁸ For precisely this reason, Jackson 1998, 46 initially emphasized that it is shared notions we analyse.
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out *conceptual* rather than well-entrenched *empirical* knowledge? This assumption is built into the epistemic two-dimensionalism Jackson and Chalmers propound. But we have yet to see a justification for it.

However, let us come back to our epistemic issue. I will argue that adjusted neo-descriptivism itself undercuts the idea that a conceptual analysis of our natural kind notions will yield anything substantial. I will moreover argue that neo-descriptivism is more likely to be flawed anyway.

5. Varieties of Deference, or the Limits of Neo-Descriptivism

The adjustments unfolded force us to relativize the identification claim to speakers. Thus understood, it implies that for any speaker *S*,

- (*) the representational meaning of ‘*K*’ for *S* = the way *S* singles out the reference fixers for ‘*K*’.

In order to determine what the speakers of our community will know *a priori* about natural kinds, and in order to see whether (*) is feasible at all, let us review which ways to single out reference fixers there are. In principle, an ordinary member of our linguistic community could pick out the reference fixers for her natural kind term ‘*K*’ in any of the following ways:

- (1) By a purely general, qualitative account along the lines of “Gold is the stuff that is *F* and *G* and *H* ... and *Z*.”
- (2) By demonstrating a reference fixer along the lines of “These (☞) animals are swans”
- (3) By means of worldly deference along the lines of “Tapirs are those animals I saw in Berlin Zoo that winter day”.
- (4) By means of expertly deference along the lines of “Water is the stuff the experts in my community call ‘water’”.

As for (1), I have already argued that ordinary speakers do not have comprehensive qualitative knowledge suited to yield substantial *a priori* insights. At first sight, (2) appears to be a viable as well as popular way to pick out a reference fixer. So assume that determine the reference fixers for ‘swan’ in a specific situation by way of “These (☞) animals are swans”. At best, the knowledge you acquire is that the animals you have seen there have been swans, and that swans are swan-shaped animals. Neither piece of knowledge is substantial. Moreover, contrary to (*), either will be unsuited to stand in as a representational meaning. On the one hand, your knowledge *that the animals you have seen there have been swans* is *parasitic* in that it relates back to specific objects in our environment. But representational meanings are not allowed to be parasitic: in identifying the swans *within* an epistemic possibility *e*, you won’t be allowed to refer back to some *other* epistemic possibility *e*’. On the other hand, your knowledge *that swans are swan-shaped* will not allow you to accept a single application conditional “If epistemic possibility *e* turns out to be actual, then swans are the such-and such” as true. For given your fragmentary knowledge, even a complete canonical description of *e* won’t

allow you to rule out the possibility that there are no swans in *e*, but rather some swan-shaped animals of another kind.

The same holds true of worldly deference proposed in (3). It is plausible to hold that many ordinary members of our community do indeed pick out the reference fixers for ‘tapir’ by identifying information such as “Tapirs are those animals I saw in Berlin Zoo that winter day”. The knowledge encapsulated in these identification is non-substantial. Moreover, the identification given again is *parasitic*, and we have to conclude that the respective way to determine reference fixers in our environment is unsuited to make up a representational meaning. Again, this runs counter to (*).

Maybe the division of linguistic labour envisaged in (4) yields a different verdict. In deferring to our experts in my usage of ‘water’, I agree to accept their verdict on whether some substance is water. This does not add to *my* knowledge in any way. Maybe the idea is that just as competence can be collective (see Putnam 1975, 228f), we do collectively know *a priori* what the experts *a priori* know individually. So what do they know *a priori*? Our water-experts know all about the chemical composition of water, its physical properties such as its density or conductivity, its interaction with other substances and its common appearance. This physico-chemical knowledge allows our experts to decide in our environment whether a given sample is water. If we now ask a water-expert to identify the water in some epistemic possibility, what will she do? She will draw on her knowledge concerning the physico-chemical properties of water. This is what she considers most important about water, this is what she relies on to identify water around here, and this is what her expertise pivots on. But her physico-chemical knowledge should be considered *empirical*. It cannot plausibly be had independently of knowing what the actual world is like and hence qualifies, by Jackson’s own standard, as empirical. This anyway is what we should expect. Our water-experts are *empirical scientist*. This makes them experts for the substances we are concerned with *around here*. We should hence expect that their ability to apply ‘water’ across epistemic possibilities does not reflect conceptual insights but reveals rather *thoroughly empirically tainted* ideas. However, maybe you want to insist that the intuitions of our experts manifest *a priori* knowledge. Then you have to conclude that that “Water is H₂O” comes out collectively *a priori*. But a driving force behind neo-descriptivism has always been the idea that “Water is XYZ” is epistemically possible for anyone – experts and laymen alike.

I conclude that the conceptual analysis of natural kind terms does not appear to be a sensible endeavour. If we concentrate on our experts, we find that the way they identify natural kinds around here relies on knowledge that is substantial. But this knowledge principally concerns the specific underlying or micro-structural make-up of substances or items – it concerns, on other words, *fillers* rather than *roles*.⁹ Their ensuing intuitions guiding their application of kind terms across epistemic possibilities is hence either as empirically tainted, or it is too strong: even our experts don’t know *a priori* that water is H₂O. If, on the other hand, we concentrate on ordinary speakers and, we do find that their ways to pick out reference fixers do indeed yield *a priori* knowledge. But this

⁹ Jackson 1998, 49 agrees that representational meanings might pivot on underlying nature. However, he goes on to characterize ‘underlying nature’ in *role*-terms, which again allows for variation in the *fillers*. This is not what is argued here.

knowledge will be insubstantial. What is more, we have good reasons to believe that insofar as it is parasitic, this knowledge is unsuited to serve as a representational meaning. For some ways to fix the reference of our kind terms, (*) simply turns out to be false.

6. Upshot

I have set out to ponder whether we can *a priori* ascertain substantial truths about natural kinds by analysing the our natural kind notions. I have argued that neo-descriptivists have to agree that the *a priori* knowledge we will acquire by conceptual analysis will be fragmentary, contingent, non-revealing as well as idiosyncratic – or insubstantial, for short. I have moreover argued that for some speakers, neo-descriptivism will simply turn out to be false. I thus fear that the scope of our conceptual *a priori* knowledge of nature will be very limited indeed.

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¹⁰ For more references, see my Nimtz 2004.
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