The Proxytype Theory of Concepts

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Introduction

Concepts play an important role in our cognitive lives as we employ concepts whenever we have a thought, engage in reasoning or categorise an object. Without concepts we wouldn't be fully-fledged thinkers and the stock of concepts that an individual has limits the thoughts that she is capable of thinking. In the light of this it should come as no surprise that the question as to the nature of concepts has been very prominent within cognitive science and the philosophy of mind in recent years. One of the most significant recent additions to this literature has been made by Jesse Prinz who, in his book *Furnishing the Mind*, develops a new theory of concepts that he dubs 'the proxytype theory'. Prinz firmly places his theory in the empiricist tradition and claims particular inspiration from John Locke and the contemporary psychologist Lawrence Barsalou. In this paper my aim is to evaluate the proxytype theory. Although I have profound admiration for Prinz's work in this area I will offer a number of criticisms.

The Proxytype Theory

The proxytype theory emerges as a result of an examination of the strengths and weaknesses of a number of competing theories of concepts that dominate the contemporary landscape. To describe and evaluate the proxytype theory it will be helpful to begin with an account of one of its competitors, namely, Jerry Fodor's informational atomism (Fodor, 1987, 1990, 1998).[1] Fodor is committed to the existence of a Language of Thought (LOT) (Fodor, 1975, 2008). Although LOT is not a public language such as English, Italian or Japanese, it shares key features of such languages. In particular, it has a battery of meaningful primitive symbols and syntactic rules for combining those symbols to form complex structures such as phrases and sentences. And the meaning of any such complex is determined by the meaning of its primitive components and the way they are put together (that is, the syntactic structure of the complex). Symbols can be realised in the brain. That is, just as a symbol of English can be physically embodied by means of a sound or a mark, a symbol of LOT can be physically embodied by means of a state of the brain. LOT is the vehicle of thought in that whenever an individual tokens a belief, desire or any other propositional attitude she will token a physically embodied sentence of LOT in her brain that has the appropriate content. For Fodor, concepts are symbols of LOT. To have the concept DOG then, is to have a symbol in one's LOT that has the content *dog*. This raises the question of the basis of the content of LOT symbols: why does the LOT analogue of 'dog' have the content *dog* rather than some other content or no content at all? It is Fodor's answer to this question that makes his theory a version of informational atomism.To a first approximation , he thinks that the content of a LOT symbol is matter of what reliably causes it to be tokened. So for example, the LOT symbol DOG has the content *dog* because its tokenings are caused dogs and only dogs. Or more precisely, because it is a law that dogs cause the tokening of DOG.

[1] Prinz himself adopts this tactic in his paper 'The Return of Concept Empiricism' (Prinz, 2005).

Fodor recognises that as it stands this won't do as tokenings of DOG are often caused by things that aren't dogs as when one mistakes a fox on a dark night for a dog or one thinks about dogs as a result of thinking about cats. So, one might ask, why doesn't DOG have the content DOG-OR-FOX-ON-A-DARK-NIGHT or DOG-OR-THOGUHT-ABOUT-A-CAT?[2] Fodor's answer is that there the dog-DOG causal relation is more basic than the other causal relations that DOG enters into in that the latter asymmetrically depend on the former. That is, were it not the case that dogs caused tokenings of DOG then it wouldn't be the case that foxes on a dark night (or thoughts about cats) caused tokenings of DOG, but not vice versa.

This theory is atomistic in that it rejects the thesis that the content of a concept is determined by its relations to other concepts so that, at least in principle, one could have the content DOG without having the concept CAT, ANIMAL or any other particular concept. Thus, for Fodor, concepts are certainly not theories. However, it is important to note that Fodor is happy to allow that complex mental structures such as beliefs and theories (encoded by means of LOT sentences) to mediate the content determining causal relations between concepts and what they represent. It is just that the content of those beliefs and theories doesn't enter into the content of the concepts in question. This explains why you and I could have quite different theories or beliefs about dogs yet still share the concept DOG.

Fodor's approach provides a helpful point of access to Prinz's proxytype theory. Prinz draws a distinction between long term and working memory. Thoughts are occurrent states as opposed to states that exist in the mind for lengthy periods of time. Thus thoughts reside in working memory. And as having a thought involves deploying a concept then concepts also exist in working memory. However, there is a close relationship between working and long-term memory in that items occurring in the former are often constructed from resources stored in the latter. Indeed, such a relationship exists in the case of concepts. With respect to concepts what exists in long-term memory are complex networks of representations. What binds together the elements of these networks are causal connections. The elements are causally connected in that activation of any one element of the network (an activation that involves its tokening in working memory) will typically cause the activation of some other element.

These networks stored in long-term memory correspond to categories of things in the outside world. For example, there is a network corresponding to dogs. Such a network was constructed over time on the basis of perceptual interactions with dogs. Moreover, the network is constructed out of representational primitives that are utilised by our various senses and so represent the kind of properties that we perceive objects to have. For example, these primitives have contents such as *red*, *edge*, *round*, and so on, where their content is a matter of what they casually covary with. Given that their basic representational elements come from a variety of sensory systems, the networks are multi-modal representations.

Prinz doesn't quite want to identify such networks with concepts for the reason alluded to above: concepts are involved in occurrent mental states that are located in working memory. When one employs a concept an element of a relevant network is activated. That is to say, an element is tokened in working memory. When this happens an element of the network goes proxy for the category the network in working memory. For example, whenever you employ the concept DOG in thought an element of a complex network stored in your long-term memory will be tokened in

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[2] This is the so-called disjunction problem.

your short term memory. On different occasions and in different contexts you might token different elements of the complex. On all such occasions you are thinking a thought involving the concept DOG because the representation you token is drawn from one and the same complex, a complex that was constructed on the basis of interactions with dogs.

I began by stating that Prinz identifies concepts with proxytypes. We are now in a position to understand what this claim comes to. A proxytype is any element of a complex representational network stored in long-term memory corresponding to a particular category that could tokened in working memory to go proxy for that category. I also began by stating that Prinz's theory is an empiricist theory and we are now in a position to see what that claim comes to. In the context of concepts empiricism is often characterised as the view that all our concepts are learned as opposed to being innate. Now Prinz does think that the networks that proxytpes belong to are constructed on the basis of experience and so are not part of our innate endowment. However, the representational primitives out of which they are constructed are innate. What makes Prinz's theory empiricist is that these primitives are perceptual representations so that concepts are constructed out of perceptual resources. In other words, Prinz is endorsing Locke's (and ultimately Aquinas's) slogan that nothing is in the mind unless it was first in the senses.

There are several further features of Prinz's account that are worth bringing out. First, in virtue of the fact that different proxytypes are utilised on different occasions when thinking thoughts involving the concept DOG, we don't have a single concept DOG; rather we have many DOG concepts. However, Prinz points out, there is a likely to be a default proxytype that is employed when there is not sufficient context to result in the tokening of a more specific proxytype. Second, Prinz is committed to an atomist view of content. What gives a given proxytype its content is a matter of the content of the complex network that it is drawn form and the content of that network is a matter of the identity of the things that it was constructed on the basis of perceiving. For example, a DOG proxytype is an element of a network that was constructed on the basis of perceptual interactions with dogs.

A third additional feature of the account relates to Prinz's emphasis on the importance of concepts for categorisation and inference. When one categorises something as a dog what happens is a match is found between a current perceptual state and one of one's DOG proxytypes. And when one infers from this that the animal so categorised barks, the proxytype tokened in categorisation causes the tokening of another proxytpe belonging to the network that represents the barking aspect dog behaviour. This second proxytype will have been added to the network as a result of hearing dogs bark.

At this point it should be clear that there are considerable differences between Prinz's prototype theory and Fodor's theory, nothwithstanding the fact that both are committed to an atomistic view of the content of concepts. First, for Fodor concepts are amodal representations. That is to say, they are arbitrary symbols that do not take the form of any representations involved in perception. Prinz, on the other hand views concepts as being built from perceptual representations that are associated with a range of modalities and so that concepts are multi-modal representations. Second, Fodor regards most lexical concepts (that is concepts expressed by a morphologically simple words) as being simple representations whereas for Prinz such concepts are complex representations. Fodor doesn't deny that there are complex representational structures associated with concepts expressed by means of simple symbols of LOT. Consider DOG for example. For Fodor the fact that dogs reliably cause the tokening

of this LOT symbol – thereby playing a role in fixing its content – could depend upon complex structures that represent various properties of dogs including those that are readily perceivable. Such structures would serve as mechanisms that mediate the casual connection between dogs and DOG but they are not to be identified with the concept DOG.

Evaluating the Proxytype Theory

I now turn to the task of evaluating the proxytype theory. One interesting objection is implied by Edouard Machery (2009) as part of a general examination of work on concepts in both philosophy and psychology. Machery argues that psychological and philosophical work on concepts has quite different explanatory ambitions and so cannot be evaluated by the same criteria. Psychologists are primarily concerned with the mechanisms involved in categorisation, concept acquisition and inference (particularly inductive inference). Philosophers, on the other hand, focus on how it is possible for us to have thoughts, that is to say, propositional attitudes such as beliefs and desires. A core element of this project involves explaining how our thoughts manage to be about what they are about. Fodor would be a clear-cut example of someone whose work on concepts addresses a philosophical agenda. An example of a theory of concepts engaging with a psychological agenda would be any version of the prototype theory emanating from the work of Eleanor Rosch. The upshot of this is that it doesn't count against a psychological theory of concepts if it doesn't solve a problem of concern to a philosopher and vice versa.

The objection that this line of thought generates against Prinz is as follows. In motivating the proxytype theory Prinz examines an number of alternative theories developed by both philosophers and psychologists. He judges that all of these are ultimately unsatisfactory in virtue of failing to explain at least one important feature of concepts. Thus, a new theory is needed and the proxytypes theory constitutes this by explaining all the required features. Some of these features belong to what Machery would regard as a philosophical agenda and some to a psychological agenda. But if these agendas are independent of one another it is not incumbent on any theory to engage with both of them. Hence, the proxytype theory is designed to achieve a misconceived goal and the failure of competitor theories to fulfill that goal hardly counts against them.

I'm not convinced by this objection. For it to go through it would have to be the case that psychologists and philosophers were talking about quite different things when they used the term 'concept'. Indeed, Machery seems to be suggesting that this is the case as he says that 'concepts in psychology' are 'bodies of knowledge that are used by default in the processes underlying the higher cognitive capacities) (2009: 7) whereas 'concepts in philosophy' are 'capacities for having propositional attitudes' (2009: 31). I don't deny that there are differences in the aims, emphases and methods employed by, respectively, psychologists and philosophers yet Machery overstates the extent and significance of these differences. Historically philosophers interested in concepts have been concerned with how we acquire concepts, how we use them to categorise and how we make inferences involving them. The British empiricist philosophers Locke and Hume stand out in this regard. Moreover, it is difficult to see how psychologists couldn't be concerned with our capacity for thought. For isn't categorizing something as a dog a matter of thinking or believing that it is a dog? And isn't inducing from one's experience of several dogs barking that all dogs bark a matter of forming one belief on the basis of another? Of course a psychological theory of concepts doesn't have to explain every property of concepts. But a given theory is

problematic if it implies that concepts don't or couldn't have a property that we have independent reason to believe that they have. And it is this thought that lies at the heart of Fodor's objection.

I now turn to objections to the prototype theory that I regard as being more decisive. The first such objection emanates from a response to a criticism that Prinz (200?) directs at Fodor. Here Prinz argues that identifying concepts with amodal symbols fails to explain how we categorise the things we interact with and that this is a major failing given that categorisation is one of the primary functions of concepts. Consequently, in order to make sense of categorisation Fodor also needs to postulate complex representational structures that mediate the causal connection between concepts and the items that fall under them. In the case of DOG, this complex structure will represent the perceivable properties that dogs typically have. But, Prinz continues, the upshot of this is that his account should be preferred on grounds of simplicity. For, by identifying concepts with the kinds of structures that Fodor regards as mediating mechanisms he abandons any need to postulate additional amodal symbols.

A problem with this objection is that it overlooks the chief motivations for postulating the existence of a language of thought made up of amodal symbols. For Prinz categoristion involves the activation of a component of a complex network stored in long-term memory. For example, suppose I am confronted by a dog. A match is found between the perceptual state that the dog causes and a component of the network built on the basis of perceptual interactions with dogs. Thus, that proxtype is activated, an event that constitutes my categorising the animal before me as a dog. Suppose that the dog is silent when I perceive it but that I go on to infer that it barks. This will involve the proxytype I token causing the activation of another element of the network. This element will be a proxytype that was added to the network on the basis of experiences of dogs barking. The kind of reasoning portrayed here is based upon associative learning and involves the tokening of quite simple thoughts. Thus, on seeing a dog I think DOG (or IT'S A DOG) and go on to conclude BARKS (or IT BARKS). Now perhaps the proxytype theory can handle this kind of reasoning. But much of our reasoning is far more complex than this in the respect that it involves many steps, drawing upon information from a range of very different domains, making connections which outstrip one's experience, and tokening thoughts containing many concepts. Consider an example. Suppose that I have to collect my children from school by 6.00 p.m. at the latest. I'm running late as it is 5.00 p.m. and I've just come out of a meeting on a campus 30 miles away. Following my normal route home takes me 50 minutes but I don't automatically select this route as I reason that given the current time that route may well be subject to traffic congestion that would slow me down considerably. So I begin reflecting in order to work out if there any alternative routes that will get me home on time. In doing this I take into account a range of factors such as route lengths, speed limits, the number of roundabouts and junctions, the proximity of the routes to large residential areas, the amount of fuel I have in my tank, and so on. I eventually settle on a route different to my normal one and arrive with five minutes to spare. This is an example of everyday reasoning but it does seem quite distant from the kind that the proxytype theory seems well suited to handle. The relevant point in this context is that it is the kind of reasoning that has a logical character and so is readily explained in terms of the employment of logical rules or principles. But employing such rules involves applying them to representations that have an appropriate logical form. Now the simple symbols of LOT that Fodor postulates belong to a language that has syntactic rules for combining

those symbols to create more complex structures. These complex structures do not merely include complex concepts such as BROWN DOG but thoughts such as THE BROWN DOG THAT LIVES NEXT DOOR INVARIABLY BARKS WHEN THE POSTMAN DELIVERS A LETTER. In other words, they include thoughts that have precisely the kind of logical forms that enable them to be figure in processes of logical inference, processes that involve the application of logical rules and principles. In short then, an important motivation for postulating amodal symbols and identifying them with concepts is to make sense of our complex reasoning capacities. Prinz does think that proytypes can be combined but the kinds of examples he focuses upon involve the combination of two concepts like BROWN and DOG to form the complex BROWN DOG. But what he needs to show is that the proxytype theory can make sense of how we combine our concepts to create the kind of thoughts that we routinely have and that the resultant structures have a form that enables them to figure in processes of logical reasoning.

In a nutshell I have objected that Prinz focuses on simple inferences that, perhaps, can be handled by the proxytype theory, but overlooks the more complex thought processes that Fodor's approach is designed to handle. For what a theory of concepts needs to do is explain both how our concepts can be combined to form the complex thoughts that we are capable of having and do so in such a way that explains how such thoughts could figure in the reasoning processes that we routinely.

A second objection to the proxytype theory relates to Prinz's account of how proxytyes get their content. Prinz argues that the DOG proxytypes have the content they have because they are drawn from a complex network that was built on the basis of interactions with dogs. This readily accounts for misrepresentation for if, say, a fox causes the tokening of a proxytype from this network the fox will have been misrepresented as a dog in virtue of the historical origins of the proxytype. However, Prinz also argues that the networks are constructed over time at any point in their history new elements can be added to them. For example, if I encounter a pomeranian for the first time I may well add more to the DOG network in order to reflect what is distinctive about Pomeranians. But this generates a problem for it is highly likely that at some point interactions with non-dogs has led to additions to the putative DOG network implying that that network was constructed on the basis of interactions with a category of creatures broader than that of dogs with the implication that proxytypes drawn from that network have a content broader than *dog*.

A third objection once more relates to the content of our concepts. Since Putnam's (1975) classic article The Meaning of "Meaning"' externalism has become the orthodoxy in the philosophy of mind. According to such a view the protagonists in Putnam's Twin Earth thought experiment express different concepts by means of the word 'water' (and, therefore, different thoughts by means of sentences featuring that word). This is the case despite the fact that they are molecule for molecule duplicates. Earth dwelling Oscar expresses the concept WATER by means of 'water' in virtue of the fact that the local odourless, colourless liquid that he interacts with is water (that is, H_2O). Twin Oscar, on the other hand, expresses the concept TWIN-WATER in virtue of the fact that the local odourless, colourless liquid that he interacts with is twin-water (that is, XYZ).

The problem for the proxotype theory is this: how can it account for this divergence in content between the respective concepts of the twins and, therefore, the fact that they express different concepts by means of 'water'? Given that proxotypes are ultimately constructed out of perceptual representations the upshot would appear

to be that the twins have exactly the same proxotypes and, therefore, exactly the same concepts.

Prinz is alive to this problem and in addressing it he employs Locke's distinction between real and nominal essences. The real essence of water (that is, the colourless, odourless liquid found here on Earth) is a matter of its microphysical constitution. The nominal essence of water is a matter of the perceivable properties characteristic of water on the basis of which we typically identify a sample of water as such. Corresponding to this distinction is that between real and nominal content. The real content of the respective concepts expressed by means of 'water' by Oscar and Twin Oscar differ. This is because the stuff falling under Oscar's concept has the real essence of being H_2O whilst the stuff falling under Twin Oscar's concept has the real essence of being XYZ. On the other hand, their concepts have the same nominal content as the perceptual representations that figure in the proxytypes that constitute their respective contents are identical. This distinction between real and nominal content corresponds to the familiar one between broad and narrow content. In effect, what Prinz is saying is that the real content of a particular concept possessed by an individual is a matter of the essence of the items that the individual causally interacted with in constructing that concept. As Oscar interacted with H_2O in constructing his concept, that concept has the real content *water*. Whereas, Twin Oscar's corresponding concept has the real content *twin water* as it was constructed on the basis of casual interactions with Twin Water. This way of dealing with the problem posed by Putnam's thought experiment clearly echoes Prinz's approach to dealing with misrepresentation described above.

However, what I have said so far leaves out a crucial aspect of Prinz's line of thought and this has to do with his endorsement of a view that has become known as psychological essentialism. Psychological essentialism is a view that emanates from developmental psychology.[3] According to this doctrine children are innately essentialist about many of the categories for which they have concepts. That is to say, that children think that the items that belong to a particular category are bound together by having a common essence. An essence is a collection of properties that something must have to belong to the category in question and which are the underlying hidden causes of the readily perceivable properties of the category members. Thus, if a child were an essentialist with respect to the category corresponding to the concept WATER she would think that anything falling under that concept did so in virtue of having the relevant hidden properties, properties that are causally responsible for surface properties relating to its appearance and behaviour.

There is considerable empirical evidence in favour of psychological essentialism. To get a flavour of this evidence consider Frank Keil's (1989) classic experiment. Keil showed children and adults a picture of a racoon. When asked these subjects answered that the picture was of a racoon. They were then told that the pictured animal underwent a series of changes including changes to its appearance (through fur-dying its fur and plastic surgery), the insertion of a smell sac, and modifications to its behaviour. They were then presented with a picture of an animal resembling and skunk and told that it was of the original animal post-modification. When asked about the identity of the animal at this stage children over the age of seven and adults systematically answered that it was a racoon despite its appearance indicating that for

[3] Prominent champions of psychological essentialism include Keil (1989), Gelamn (2003) and Bloom (2004).

them something's being a racoon is a matter of its origins and/or hidden nature rather than its observable properties. Typically, psychological essentialists regard children as holding a placeholder conception of essence; that is, children do not usually have any substantial views as to the precise nature of the categories they adopt an essentialist attitude towards (Medin and Ortony, 1989).

Prinz endorses psychological essentialism. Thus, with respect to Oscar he would say that he thinks of the stuff falling under his concept WATER as having a particular essence (the nature of which he may well think himself ignorant) that is the causal basis of the perceivable properties in virtue of which he typically identifies a sample of water as such (that is, the properties that are represented by the relevant proxytype). Thus, Prinz accounts for the real content of Oscar (and our) concept WATER on the basis of Oscar's (and our) essentialist commitments along with the fact that that concept was constructed on the basis of causal interactions with H_2O. Without such an essentialist commitment the concept Oscar and we express by means of 'water' would have a content such as to apply to anything with an appearance like that of water. Thus, it would apply to XYZ as much as to H_2O.

What I will now argue is that that way of dealing with the problem of accounting for the content of our concepts in the light of Putnam's Twin Earth thought experiment is problematic with the upshot that Prinz cannot explain how Oscar and Twin Oscar can diverge in their concepts.

Essences of types of stuff do not always take the same form. Water has a microphysical essence. However, the same is not true of milk as can be seen by considering the following thought experiment. On an arid planet a team of super-intelligent robots who have never previously encountered water, synthesise a collection of H_2O molecules that they store in a beaker in their laboratory. These molecules form a colourless liquid that any visiting human would be unable to distinguish from water. Would this stuff be water? I contend that it would even though it has different origins from the water here on Earth and even though it doesn't play anything like the same role in the life of its home planet that water does here. For example, it doesn't fall as rain, fill any lakes or rivers or help sustain the life of any living creature. This is a simple consequence of water's having a microsphysical essence.

Now suppose that the robots take the water they have manufactured and mix it with a range of vitamins, minerals and fats that they have also synthesized so as to make something that is identical at the physico-chemical level to the glass of milk that I have just poured from a plastic bottle in my fridge. They don't drink this liquid and if they did it would certainly not provide them with any nourishment. Neither did they make it with the intention to provide nourishment for any other things. In fact, they are not in contact with any living things that would be nourished by the liquid. Question: is the liquid they have made milk? My answer is that it is not as what makes milk milk is not its physico-chemical properties per se. Rather, the essence of milk has to do with its origins and function; that it is manufactured in the body of a living creature with the function of sustaining and nourishing its young offspring. In short, the milk-like liquid the robots manufacture doesn't have the relevant origins and function to be milk.

Now consider Twin Earth where the liquid that they call milk – a liquid that is produced in the bodies of the creatures they call 'mammals' and is made and used to provide nourishment for the young offspring of those creatures – is largely made up of XYZ. Question: is this liquid milk? I would deliver an affirmative answer on the basis that it has a relevant origin and function.

In sum then, a sample of liquid can fail to be milk whilst being identical at the physico-chemical level to the milk in my glass and something can be milk whilst being very different at the physico-chemical level to that milk. What this implies is not that milk doesn't have an essence but that its essence isn't microsphysical or chemico-physical; rather it is functional or bio-functional.

Now suppose a child resident on Earth constructs a concept that she comes to express by means of the word 'milk' on the basis of interactions with samples of milk. Will that concept be the concept MILK, will it have the real content *milk*? Prinz would answer affirmatively. Now of course the samples of milk the child interacted with would all fall under the concept MILK. But they would also fall under a distinct physico-chemical concept due to the contingent fact that all milk here on Earth has the same basic physico-chemical makeup (for example, it is all largely made up of H_2O). The child's twin on Twin Earth would also be interacting with milk but the samples there would fall under a different physico-chemical concept as they were made up largely of XYZ. This raises the question of why the child here on Earth constructs the concept MILK rather than a distinct but locally co-extensive physico-chemical concept? Now Prinz needs to provide an answer to this question otherwise his proxytype theory will makes it a mystery how someone could acquire the concept MILK and imply that the concept most people express by 'milk' has an indeterminate content. It won't do to appeal to the child's essentialist commitments. Such commitments will only help if the child's essentialism takes the form of an idea as to the specific nature of the essence of 'milk'. In other words, the child will need to think that the concept she is constructing binds together samples of stuff not on the basis of their physico-chemical nature but on the basis of their bio-functional nature. Now one could coherently attribute to children such a precise essentialist commitment but it is difficult to see how Prinz could countenance such a view for the following reason. It is difficult to see how a typical child could arrive at such a view without explicit instruction or without it's being part of her innate endowment. The first option is hardly plausible for, as Paul Bloom (2000) points out, even educated Westerners don't talk to their children about essences. The second option hardly fits with Prinz's empiricism and his accompanying desire to restrict attributions of innate items to general learning mechanisms and perceptual representations.

This problem doesn't just apply to the concept MILK but also to the more familiar philosophical example of WATER. Every sample of water will fall under a concept that binds together samples of liquid that have a common origin, 'lifestyle' and role in human life and life in general. One might describe this as the concept of a liquid that fills rivers and streams, falls as rain, comes out of taps, and is fundamental to the survival of most living things. I argued that MILK is a bio-functional concept. With respect to the concept I am now describing, it might be described as a functional concept. Call this concept FWATER. Despite the fact that everything here on Earth that falls under the concept WATER also falls under the concept FWATER, and vice versa, the two concepts are not co-extensive as the XYZ on Twin Earth falls under FWATER though it is not water. And the H_2O synthesized by the super-intelligent robots described above falls under WATER but not FWATER.

So the problem for Prinz is to explain how we construct the concept WATER on the basis of our interactions with water rather than the concept FWATER whilst still making sense of how we construct the concept of MILK on the basis of our interactions with milk. A commitment to an unarticulated notion of essence will hardly work given that essences come in different forms and the concept FWATER is just as subject to essentialist analysis as that of WATER. What the child needs is an

articulated notion of essence distinct from that that she employs in constructing the concept MILK, one that enables her to represent the items falling under the target concept as being bound together by having a microphysical (rather than, say, a functional) essence. Once again, the question arises as to how the child acquires such a notion of essence and none of the available answers appear to be open to Prinz in virtue of his empiricism and the implausibility that children receive explicit instruction as to the general form of the essence that water takes prior to having a full grasp of the concept WATER.

In sum then, the proxytype theory has major difficulties explaining how we could acquire concepts such as MILK and WATER in virtue of the fact that these types of stuff have quite different kinds of essence.

Conclusion

In this paper I have given an account of Jesse Prinz's proxytpe theory and argued that it is open to three substantial objections. First, it cannot make sense of reasoning processes that go beyond the simple cases of inferring that something barks from the thought that it is a dog. Second, it cannot deal with the problem of misrepresentation. Third, it cannot explain how such everyday concepts as WATER and MILK have the concepts that they have in the light of Twin Earth thought experiments and their ilk.

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