

TAKING SERIOUSLY KNOWLEDGE AS A MENTAL STATE

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1. Introduction: meaning and knowledge psychologised?

Frege, it is often said, liberated the theory of meaning and logic from epistemology. He despised the neo-Kantian *Erkenntnistheorie* of his time as just another form of psychologism. He was not interested in how we come to know numbers, meanings and logical laws, but in what it is for numbers, meanings, and logical laws, to be the objects of knowledge, independently of any human subject. He accepted that there must be some way in which the various objective entities which he postulated are grasped by the mind and thus known, but he was not interested in spelling out how this was achieved. The positivists, on the contrary, wanted to epistemologise meaning and logic: for them the theory of meaning was epistemology done by other means.¹ So they were interested in how we come to know the meanings of various kinds of statements. The linguistic turn, in its ordinary language version, liberated again the theory of meaning from epistemology: the only kind of knowledge that one needs to understand the expressions of our language is a knowledge of rules and practices associated to them. The formal version of the linguistic turn, which studied the semantics of natural languages through the lenses of formal semantics, was also anti-psychologistic: to know the meaning of expression we need only to know their truth conditions and the abstract functions associating semantic values to possible worlds. It is only recently that the so-called cognitive turn reintroduced epistemological and psychological elements in semantic theory.

For the analytic tradition in which the philosophy of language took the place of primary philosophy, the notion of knowledge was never really expelled, but, to use a phrase of Davidson's, "epistemology was seen in the mirror of the theory of meaning". Michael Dummett (1975, 1976) has interpreted Frege's insistence on the idea that the sense of an expression is associated with our understanding and our knowledge of what the expression refers to (and in the case of the sense of sentences, of our understanding and knowledge of their truth conditions) as imposing a knowledge constraint of meaning. The meaning of an

¹ I borrow this expression to Skorupski 1997.

expression or sentence is what the speaker knows when he knows how to use the expression or to assert the sentence. Dummett believes that the understanding and knowledge in question can be spelled out as a set of capacities and dispositions to assert sentences, construed as a knowledge of the verification conditions of sentences. Davidsonians too insist on the knowledge condition of meaning, although they construe the knowledge in question as a knowledge of truth conditions, which can be spelled out within a theory of interpretation of speech. As Barry Smith (1995) as lucidly described the problem, the equation :

(U) A theory of meaning is a theory of understanding (of knowledge of meaning)

can be read from right to left, from left to right, or from both sides. From right to left the theory of meaning, as an abstract idealised account of truth conditions, is a description of what the speaker knows (the Davidsonian position). From left to right, the theory of understanding takes precedence, and one has to state first, from outside the theory of meaning, what speakers know, perhaps as a set of basic capacities. Or one can also refuse to give priority to either side of the equation, and adopt a form of Wittgensteinian or McDowellian position: neither a theory of meaning nor a theory of understanding take precedence of the other.²

Now if, as Elisabetta Sacchi suggests³, the Fregean apparatus has to be psychologised in some sense, and if we retain Dummett's proposal that a theory of meaning is a theory of our knowledge of language, we have to read the above equivalence from right to left, by giving precedence to the idea of knowledge of meaning. Then the notion of knowledge that we shall need will itself have to be, at least in part, a psychological notion. In other words, what a speaker knows has to be a mental state, or a cognitive state of some sort, and not simply what an ideal radical interpreter would know, or what an ideal subject would be disposed to assert. This leads us of course to a psychological theory of linguistic competence, along the lines of those which are familiar from Chomskian linguistic and the cognitive psychology of language.

It is not, however, my purpose here to argue for such a cognitive conception of language understanding. My concern is not with knowledge of meaning, but with the notion of knowledge in general. To what extent should it be a psychological notion? The relationships between knowledge in general and knowledge of linguistic meaning are complex, and we cannot expect that what is true of the first notion transfers automatically to the second, but it is important to elucidate first whether there is a viable psychological notion of knowledge in general. This is why I would like to examine this question first, leaving for

² I have dealt with these issues in Engel 1994, chapter 7

³ In her contribution to the present volume [title ???]

another occasion an examination of whether a psychological of knowledge in general can be extended to the epistemology of language understanding.⁴

Until recently the very idea that the notion of knowledge could be a psychological notion, and that knowledge could be a mental condition has been fairly unfashionable within the analytic tradition in philosophy. In a way one could tell for the analysis of the concept of knowledge a story parallel to the story about meaning. Early analytic philosophy distanced itself from any psychologistic doctrine about the nature of knowledge. But in Russell's hands in particular the theory of knowledge took again an empiricist path, which was followed by the positivists⁵. But then again the post-Gettier examination of knowledge took the form of a purely *a priori* analysis of "X knows that P", conceived as an armchair exercise of triggering intuitions from various cases. Externalist and reliabilist theories of knowledge, however, have reintroduced the idea that knowledge is a psychological condition by emphasising the causal nature of the states and processes which underlie it.

It is this very thesis which is my concern here. If knowledge is in some sense a psychological state, to what extent could it be studied by natural science? What exactly would be the extent of the psychologisation of knowledge? In particular, given that most epistemological notions are loaded with normative implications, to what extent should we try to explain, or explain away, these implications? These questions have loomed large in recent epistemology. I examine here a narrower question, which one can formulate thus. If we accept Williamson's view that knowledge is a mental state, to what extent can psychology confirm or disconfirm it? In itself Williamson's analysis is meant to be a purely logical and conceptual analysis, in the style of *a priori* epistemology. But if we try to take seriously the idea that knowledge is a mental state, what kind of mental state can it be, and what can we learn from psychology about it? There are, however, several ways of psychologising, so to say, the notion of knowledge. In the first place one can take an eliminativist or a radical naturalised epistemology stance. This is the Quinean line taken by Stich: there is no theory of knowledge in the normative or a priori sense, there is just the concept of knowledge that people have, which can be studied through psychology, anthropology, or social psychology. In the second place there are the various causal and reliabilist analyses of knowledge of Dretske and Goldman, which attempt to explain the reliability of knowledge in terms of the reliability of our cognitive processes. In the third place there is the view, recently defended by Kornblith, that knowledge is a natural kind. It is only with this later view with which I shall here take issue. I shall first explain in what sense knowledge can be said to be a mental state, along the lines of an

⁴ One of the reasons why an account of the concept of knowledge in general cannot be easily extended to an account of knowledge of language and of meanings is that the former, but possibly not the later, is a form of propositional knowledge.

⁵ I have analysed Russell's trajectory in Engel 2005

externalist theory of knowledge such as Williamson's (2000). Then I shall try to see whether this view could be explained along the lines of Kornblith's view that knowledge is a natural kind. I shall argue that it can't. In section 4, I shall explain how a less comprehensive notion of knowledge, that of "core knowledge", defended in the work of some psychologists like Susan Carey and Elisabeth Spelke, can fit the bill for the Williamsonian view that knowledge is a mental state, and in section 5 I will give a few remarks on the relationships between knowing how and knowing that.

2. Williamson on knowledge as a mental state

On the traditional analysis of knowledge, knowledge is justified true belief. True belief is a necessary but insufficient condition for knowledge. Justified true belief, as Gettier counterexamples to the traditional analysis show, may be necessary, but is also insufficient. One of the implications of the traditional analysis is that although belief is a mental state, knowledge is not, because it is composed of belief and of a non mental condition, truth, possibly justification. Knowledge is a hybrid state, composed of something mental (belief) and something non mental (truth, justification). The reasoning implicit to this view is that when one merely believes that P, one remains in the same mental state whether one's belief is true or not, whereas when one knows that P, something, which is not in the mind, is added to belief, since the belief is necessary true, if it is knowledge. As Fodor says summarising the orthodoxy, there is a psychology of belief, but there is no psychology of knowledge.⁶ In this sense, cognitive psychology, conceived as a theory of the inwards of the mind, or as "individualistic", cannot be a psychology of knowledge, but only a psychology of belief. Actually when one reads the writings of cognitive psychologists, when they talk of "knowledge representation" or of "knowledge processing", they are actually talking of true beliefs, and do not seem to make any difference between these and knowledge.

Williamson (2000) turns this image upon its head. In the first place, he argues that the tripartite traditional analysis is wrong because one cannot decompose knowledge into a combination of elements such as belief, truth and some condition of justification. Williamson has three main arguments in favour of this claim. The first proceeds for a general scepticism about analysis in philosophy and about the analysis of knowledge in particular: decades of gettierology have not been able to produce a satisfactory analysis of knowledge along the lines of the tripartite definition, so that we may suspect that there is no satisfactory definition of knowledge to be had. The second is that this situation is not exceptional: one cannot, for instance analyse being red as the conjunction

⁶ J. Fodor, *Representations*, MIT Press, Cambridge, Mass., 1980, quoted by Williamson 2000.

of being coloured and so other condition without mentioning in one way or another the *definiens* within the *definiendum*. The third is a specific argument for what Williamson calls the primeness of knowledge as a mental state, that is the fact one cannot isolate a purely internal element in knowledge by opposition to an external element (a “narrow” vs a “broad” condition in the usual terminology). His argument is complex, but it can be summarised with the following example. There is certain condition C, which is prime, and such that one can describe three cases, A, B and G, in which G is similar to A internally and similar to B externally, but where condition C is present. When there is a combination of an internal and of an external state, there is no knowledge. Let A be a case where one sees a glass of water normally with his right eye. The left eye receives light rays identical to those which it would receive with a normal glass, but which are emitted in the absence of any glass in front of one. Nevertheless a cerebral lesion prevents information from being transmitted from the left eye. Let B a case similar to A, except that it is the left eye which receives the information but does not transmit it. G is similar to A internally and not externally: none of the eyes transmits the information, and therefore no eye sees the glass of water. In G one does not see, unlike in B, the glass of water. (Williamson 2000: 62-92, see also Williamson 2005).

The main reason, however, why we have to take knowledge both as a mental state and as a broad mental state is that knowledge is factive. To know is necessarily to be in some relation with a fact. To be factive a mental state or attitude A has to be such that if one As that P, therefore P. If one sees that P, then P, if one hears that P, then P, etc. Knowledge is the most general factive mental state, and if a state is factive, it is a form of knowledge.

The main obstacle to the view that knowledge is a mental state is that it seems to imply a form of Cartesian conception of the mind, where the subjective certainty of a belief is a mental condition which is sufficient for guaranteeing knowledge. But how can there be a purely mental condition which could by itself be directed at the facts *and* be such that it hits the facts? How can subjective certainty yield objective certainty?

The answer is that knowledge is not a mental state in the *internalist* sense of a sort of condition of super-belief, but in the *externalist* sense. Being factive, knowledge is a mental state which is *essentially* factive. And being external, knowledge is a condition which is such that one can possess it without being aware, or conscious that one has it, and also without knowing that one has it. The reason why we are reluctant to grant that knowledge is a mental state is that we implicitly think of mental states as internal conditions of an individual. But Williamson wants to say that knowledge is a mental state *in virtue of* its being external.

Now, in what sense is knowledge a state? One can contrast states such as weighing 100 kgs or being ill with dispositions, such as solubility or irritability. Or one can contrast states and processes such as fattening or balding. We can

report a process with the present progressive, but not a state. It is in this sense that Williamson says that knowledge is a state: we can say a child is learning arithmetic, but we cannot say that he is knowing grammar. But certainly believing is also a state, so this does not distinguish knowledge from it. The main point is that *believing truly that P* is not a state, because it can be divided into believing (a mental state) and *that P* (a non mental condition, a fact), whereas knowing that P cannot be so divided: for knowing that P is, so to say, essentially directed at the fact that P, which cannot be dissociated from it.⁷ In this sense knowledge is not what is usually called a propositional attitude: for a propositional attitude can be separated from its content, whereas knowledge cannot be thus separated.⁸

This still does not tell us why knowledge is a *mental* state. What exactly makes knowledge something mental? Williamson tells us that one can define the notion of mental state through the notion of a mental concept: a state is mental if there could be a mental concept of the state. But he does not tell us what is the criterion for recognizing a mental concept, only that it is a state of a subject. Williamson, however, does not pretend to give a definition of “mental state” or of “state of mind”. It is enough that one understands that knowledge is a factive mental state, to be conceived on the model of perceptual states such as seeing, remembering or hearing, and a second condition on mental states as externally individuated, which is that they are not “transparent” or “luminous”. Failure to see this is perhaps another reason why it is difficult to understand that knowledge can be a mental state: for mental states are ordinarily thought as transparent in the sense that those who have them can have a reflexive access to them. Not only Williamson strongly denies this transparency for most mental states, but also he strongly denies it for knowledge. Knowledge does not imply that one knows that one knows (the “KK principle”). Williamson has a quite elaborate “anti-luminosity” argument to this effect (Williamson 2000, ch.4), but I shall not deal with this argument here. The important point is that knowing that one knows is neither a necessary nor a sufficient condition on knowing.

Does the fact that knowledge is unanalysable prevent us from associating the notion of knowledge to other notions? No. In the first place Williamson agrees that knowing entails believing, although he insists that the former should not be analysed in terms of the latter. Actually believing should be understood in terms of knowing: belief aims at knowledge. To believe that P is to treat one's attitude as if it were knowledge. Belief is thus “botched knowledge” (Williamson 2000: 46). This feature is closely associated with the role of knowledge in assertion. Williamson defends the view that assertion is subject to the norm of knowledge: when one asserts that P, it is implicit that one knows

⁷ Williamson 2000 : 28-32. This conception has its origins in HH Prichard 1950, as Williamson himself notes.

⁸ In Wittgensteinian language, one could say that cognitive attitudes such as belief, judgement, or acceptance have a « bipolar » content, which can be either true or false, whereas knowledge can only have a unipolar content, as a relation to facts. For this notion of polarity, see Dokic 1998

that P, or at least that one represents oneself as knowing that P (Williamson 2000: ch.7). In the second place he admits that knowing, although it is not defined in terms of such notions as justification and reliability, has some obvious connexions with the notion of reliability and other causal notions (Williamson 2000: 41). We could also think that the notion of knowledge has some connexions with notions such as those of sensitivity in Nozick's sense (1981): If S knows that P, then S would not believe that P if P were not true, or the notion of safety : If S knows that P, S would believe that P if P.⁹ The notion of "margin of error" used by Williamson implies a condition of safety of this sort. Roughly the idea is that when one knows that P one could not easily be wrong in the cases close to the actual world or in the similar cases. This allows a notion of inexact knowledge, but with the important proviso that the inexactness of our knowledge is a reflection of our ignorance, not a reflection of some vagueness in reality, as the epistemic theory of vagueness defended by Williamson has it (Williamson 1994).

Williamson also insists that knowledge is closely associated to action. He argues that one should revise the common assumption that action explanation goes by the mention of beliefs and desires of the agent, and instead suggests that action is most of the time better explained by the fact that the agent knew something rather than believed it (Williamson 2000: 61-65).¹⁰ This implies a revision of the ordinary conception of practical reasoning. Most of the time and for a wide range of cases, practical reasoning is effected on the basis of propositions which are known rather than on the basis of propositions which are simply believed. In other words, if something is known, it is apt to become the premise of a practical reasoning (Williamson 2003) and if a proposition is a premise of a practical reasoning, it is apt to be known (Hawthorne 2004). Thus the central role of belief in the conceptual triangle involving assertion, truth and action is revised: knowledge becomes the main building block of this conceptual triangle.¹¹

We thus have the following main features of the concept of knowledge according to Williamson's analysis :

- (i) It is a genuine mental state
- (ii) It is factive (the most general factive mental state) and prime (broad)
- (iii) It is not transparent (knowing that one knows is not a necessary condition)

⁹ See Engel 2006 : ch. 3

¹⁰ His example : « A burglar spends all night ransacking a house, risking discovery by staying so long. We ask what features of the situation when he entered the house led to that result. A reasonable answer is that he knew that there was a diamond in the house. To say just that he believed truly that there was a diamond in the house would be to give a worse explanation, one whose explanans and explanandum are less closely connected.» (p.61)

¹¹ I borrow the image of the triangle truth-belief-assertion to Williams 2003 ; see also Engel and Rorty 2005

- (iv) It is primitive, i.e not analysable in terms of other notions, but it is associated with other notions such reliability, safety and sensitivity
- (v) It plays an essential role in the explanation of belief, assertion and action

Williamson's account aims more at (re)locating the concept of knowledge within the territory of the philosophy of mind and of epistemology than at giving a specific account of the various kinds of knowledge. It is not my purpose here to defend this account, although I think that it is fundamentally correct.¹² But it leaves a lot of questions without answer. In particular: is knowledge mainly a matter of knowing *that* or is it a matter of knowing *how*? what are the relationships between the general concept of knowledge and its subspecies (i.e memory, perception testimony, etc.), and to what extent should we take seriously the thesis that knowledge is a mental state? If knowledge is essentially a broad mental state, how is self knowledge possible and what is the status of first person authority over one's mental states? Can there be tacit knowledge? Williamson answers some of these questions. He makes it clear that for him knowledge is fundamentally propositional knowledge, and argues that knowledge *how* can be reduced to knowledge *that* (Stanley and Williamson 2000). It is also implicit in his view that all sorts of knowledge are kinds of perception. In this respect he follows the classical tradition of Locke, who held that knowledge is a form of perception. But apart from these general features, it is not clear what kind of consequences we can draw from this account if we are to take seriously the idea that knowledge is a mental state.

What would it mean to take seriously this idea? There are two main options. On the one hand one could say that Williamson's view is meant to characterise knowledge only at the conceptual or *a priori* level, locating it within the other epistemological concepts, and placing it at the centre of normative epistemology. This interpretation squares well with his mostly logical analysis of the concept of knowledge. On the other hand the claim could be interpreted as a claim about the nature or essence of knowledge. If this is so, the nature of knowledge would not necessarily be investigated only by purely *a priori* means. Some recent remarks by Williamson himself against the claim that conceptual analysis could be purely *a priori* and non empirical point in that direction (Williamson 2005a). But would the claim that knowledge is a mental state imply that one could in some sense look for the real essence of knowledge as a psychological state, or as a biological state? This would involve a strong version of naturalised epistemology, and it would not square well with Williamson's insistence that knowledge cannot be fully analysed. That it cannot be fully analysed conceptually does not imply that it could be fully analysed in

¹² I have argued more in favor of this view in Engel 2006

naturalistic terms. As far as I know, nowhere does Williamson commit himself to any version of naturalised epistemology. But it is worth trying to see what it would mean to say that knowledge is a mental state within such a naturalistic framework.

3. Knowledge as a natural kind

The obvious point of departure for an analysis of knowledge as a mental state which would have the characteristics emphasised by Williamson is to start from the factive states, such as seeing, hearing, touching, and in general the states which involve perception. Since other mental states such as memory, attention, and noticing are also factive, we would also have to consider these. So basically an analysis of knowledge along the lines of Williamson would have to start from the psychology of perception and of memory. Many of the features of Williamson's conception of knowledge derive from those of perceptual knowledge (in particular his anti-luminosity argument). But we need also to characterise knowledge at a more general level, in order to include other sorts of knowledge than perceptual, such as inferential knowledge. We also, if we intend to develop an appropriate cognitive conception of knowledge, need to consider kinds of knowledge which are *essentially* non transparent, and the obvious candidate for such knowledge are the states which are located at the "sub-personal" or "tacit" level of cognition. Finally, we have to consider states which can be analysed at the appropriate causal level.

Now, if we are looking for a conception of knowledge which would have features (i)-(v), we have obviously to turn to a naturalistic account characterising knowledge as a unified state, in externalist and in reliabilist terms, and such that knowledge plays a central role in action. As it turns out, many reliabilist analyses of knowledge have been proposed along these lines, and in this respect Dretske's (1980) information theoretic account, Goldman's (1986) causal-reliabilist account, or Millikan's (1984) account. As we have seen, although Williamson does not intend to define knowledge in terms of reliability, he admits that knowledge is highly sensitive to features like reliability. But most reliabilist conceptions of knowledge are very distinct from a "knowledge-first" account such as Williamson's, for they take reliability to be a feature of *true beliefs* rather than a feature of knowledge. Goldman, for instance, is quite explicit on the fact that a reliabilist analysis of knowledge takes it as a maximisation of true beliefs. So no proper emphasis is made, on such accounts, on the distinctive character of knowledge.¹³

¹³ This is also why Goldman's analysis is subject to what is usually called the « swamping problem » : since there is not difference of nature, but only of degree, between true belief and knowledge, the proper importance and value of knowledge over true belief is not acknowledged, a point often emphasized by virtue-theoretic analyses of knowledge.

This is not the case with the naturalistic analysis of knowledge recently proposed by Hilary Kornblith (2002). Kornblith's general view is both reliabilist and evolution-theoretic, and he makes essential reference to cognitive ethology, intending to place human knowledge within the general domain of animal knowledge. On Kornblith's analysis, knowledge is a distinctive kind of state from true belief. Kornblith does not assimilate knowledge simply to true beliefs, reliably produced, that are instrumental in the production of behaviour successful in meeting the biological needs and thereby implicated in the Darwinian explanation of the selective retention of traits (Kornblith 2002: 62), but to the capacities which underlie these true beliefs. When one intends to explain the individual animal's behaviour, true beliefs and desires are enough. But when one wants to explain how the *species* as a whole is successful in reproducing itself, then one has to ascribe general capacities which are able to produce knowledge, and not merely true beliefs. As he says:

“ Explanations of individual behavior require reference to desires and beliefs, but a distinction between belief and knowledge is simply irrelevant here. If we want to explain why a particular plover left its nest and thrashed about in the open while moving away from the nest, we need only appeal to the plover's belief that a predator was nearby and approaching more closely, together with the plover's desire to protect its eggs. In explaining this behavior, it is irrelevant that the plover's beliefs happen to be true. Given that the plover has these beliefs, it would behave this way whether the beliefs were true or not.

When we turn to an explanation of the cognitive capacities of the species, however, the theoretical enterprise we are now engaged in requires more than mere belief. We are no longer interested in explaining why a particular plover moved from its nest in a way that was bound to bring the predator's attention; instead we are interested in an explanation of how it is that members of the species are endowed with a cognitive capacity that allows them successfully to negotiate their environment. It is the focus on this adaptation of these cognitive capacities to the environment that forces us to explain the possibility of successful behavior, and it is the explanation of successful behavior that requires the notion of knowledge rather than mere belief. Knowledge explains the possibility of successful behavior in an environment, which in turn explains fitness (Kornblith 2002: 56)

Now cognitive ethology has to work with a general and unified conception of knowledge which not only can be applied at the species level, but also which can be characterised through common features *across* the various species. In this sense, according to Kornblith, knowledge has to be a “natural kind”, a real property of a set of species which underlies a whole set of behaviours and which can be studied at an appropriate level of generality:

Cognitive ethologists are interested in animal knowledge precisely because it defines such a well-behaved category, a category that features prominently in causal explanations, and thus in successful inductive predictions. If we wish to explain why it is that members of a species have survived, we need to appeal to the causal role of the animals' knowledge of their environment in producing behavior which allows them to succeed in fulfilling their biological needs. Such explanations provide the basis for accurate inductive inference. The knowledge that members of a species embody is the locus of a homeostatic cluster of properties: true

beliefs that are reliably produced, that are instrumental in the production of behavior successful in meeting biological needs and thereby implicated in the Darwinian explanation of the selective retention of traits. The various information-processing capacities and information-gathering abilities that animals possess are attuned to the animals' environment by natural selection, and it is thus that the category of belief (Kornblith 2002: 62)

Thus there is, according to Kornblith, a single property, or a unified set of properties, which constitute knowledge across various species. Such knowledge is externalist in nature, for by definition the animals who have such capacities do not have reflective knowledge of their exercise. In other words, all knowledge is what Ernest Sosa calls "animal knowledge", rather than reflective knowledge. Knowledge is also, on Kornblith's view, intrinsically associated with the success of actions: not actions at the individual level, but at the level of the species, the criterion of success being the evolutionary one.

So on Kornblith's view we have a conception of knowledge which satisfies most of the properties of Williamson's conception: knowledge is a primary mental state distinct from true belief, it is individuated externally, it is non-transparent, and it is associated with such properties as reliability of processes. The idea that knowledge is a natural kind would thus be the parallel naturalistic component of the idea that knowledge is the most general factive mental state, over and above the various subspecies of knowledge such as perception, memory or inference. The notion of natural kind is associated with the notion of a real essence, yet unknown, which would underlie all these different sorts of knowledge.

In spite of its attractions, this conception cannot qualify as the naturalistic underpinning for Williamson's position. In the first place, Williamson does not intend to give a kind of naturalistic account, and although Kornblith's view is not clearly reductionistic, his view is certainly that knowledge as a natural kind studied by cognitive ethology underlies the real essence of knowledge states. In the second place, the analogy between the concept of knowledge and that of a natural kind is strained. "Gold", "Water" or "tiger", according to most post-Kripke-Putnam accounts of natural kinds are such that there is a set of common features of the kind which are presupposed by our use of the natural kind terms, but which natural science could in the long run reveal. The problem is that it is not sure that the ordinary concept of knowledge has such presuppositions. Although it is true that any kind of knowledge rests upon certain capacities to process information, the way the information of processed differs largely from one kind of knowledge to the other. To say that reflective knowledge, testimonial knowledge, self knowledge, or linguistic knowledge of the kind of those than humans display differs largely from animal knowledge would beg the question against Kornblith since he precisely intend to say that there is one and only kinds underlying all these, but even within the domain of animal knowledge the unity is not evident. Certainly there are some general capacities

which, in the animal world, account for, say, visual knowledge for creatures with eyes, but in spite of the structural and functional analogies it is difficult to extend it along very different set of species, such as insects, molluscs, and the like. We can of course, as Kornblith himself suggests, stay with the general category of information processing, but then the difference between knowledge and true belief fades away. It seems obvious that knowledge is *based* upon a set of information processing capacities of a general kind which deserve the name of “natural kind” at least for the sake of a research program. But it is unclear that this can allow us to characterise the mental state in which knowledge consists, especially if such a state is supposed to be common to animals and humans. In particular, even if we insist, like Williamson, upon the non transparency of knowledge and its roots in perception, one cannot ignore the huge difference created in human cognition by the advent of language and the processes of reflexion and higher-order cognition.¹⁴ If we insist that the core notion of knowledge is that of information processing common to a range of animal species and underlying their behaviour, and if we also accept that the main feature of knowledge is that it is factive, then at least we must grant that knowledge involves a capacity to track, reliably or safely, certain facts about the creature's environment. These facts needn't be as fine grained as those which are individuated linguistically, for the animal does not have the relevant concepts, but at least they will need some sort of articulation in a representational repertoire. The kinds of representations that animals have of their environment need not be propositional as in a lot of human cognition, but the more one accepts the difference between animal representation and human representation, the more difficult it is to accept that there is single state of knowledge underlying all instances across all species.

The difficulty of finding a single kind of state which could be a natural kind for all species in the animal realm is but a version of what has been called the “generality problem” for reliabilism about knowledge. If knowledge is more than true belief, and if it includes some sort of warrant condition, we must be able to characterise this condition in general terms. But we may not be able to assess all the reliable features which contribute to the formation of a given belief in a given environment, for there are too many factors involved (Conee and Feldman 1992). Now a conception of knowledge such as Williamson's, which does not aim at giving a set of necessary and sufficient conditions for knowledge, and which does not imply that the warranting feature is reliability is not open to this form of criticism, but a conception such as Kornblith's, which proposes that there is a set of fixed underlying features behind the notion of knowledge is threatened by the generality problem.

So it does not seem to me that Kornblith's view can satisfy the conditions (i)(v) after all.

¹⁴ In this respect I concur with Bermudez 2006, in his criticism of Kornblith.

4. Core knowledge

One of the reasons why knowledge as a mental state may not be a natural kind is, I have suggested, the utter variety of the kinds of information processing that we are willing to treat as knowledge. It may be useful, as a sort of regulative concept, to suppose that they cover the same real essence, but it is belied by the facts. On the contrary, a lot of recent research in cognitive science has shown how *domain specific*, how specialised knowledge can be, both in the kind of processes which underlie it and in the kinds of representations which subserve, at the cross specific level and at the interspecific level. Cognitive psychology has in the past thirty years revealed that much of our knowledge (human knowledge) is domain specific: knowledge of ordinary material objects, of persons and agents, of artefacts, of numbers, or time and space, imply vastly different resources and kinds of representations, at the ontogenetic and at the phylogenetic level. This specificity or “modularity” of many of our knowledge features should be bad news for a unified view of cognition and knowledge. If we turn to these domain specific capacities, and to what they have in common, we might find a better candidate for the kind of mental state we are after.

Developmental psychologists such as Elisabeth Spelke and Susan Carey have argued that there is set of basic set of capacities, which can all be called “knowledge”, which both human infants and primates share, but which, nevertheless, have the following characteristics: they are domain specific and represent different sorts of entities (agents, numbers, objects, places, sounds, etc.); they are associated to specific tasks, and answer different sorts of questions (“who did it?”, “where?”, “how?”, “what does that do?” etc.), they are relatively “encapsulated”, having different inputs and outputs, and corresponding to different architectures in the cognitive system and involve different regions in the brain, they are relatively automatic and fast (on thus recognises many of the features that Fodor 1983 attributed to “modules”). Not researchers in this field (Spelke 2000, Spelke and Hausman 2004) emphasise, like Kornblith, the fact that these capacities extend across species, and are subject to evolutionary explanations. The way human infants and infant monkeys learn how to locate food, for instance, have much in common. So this view is certainly not incompatible with the view according to which knowledge is a natural kind. But it also emphasises the large variety of processes and systems which are at play, and the divergences between animals and humans. For instance, the case of numbers and numerosity, which has been widely studied by Spelke and her associates (in particular in the pioneering work of Karen Wynn), reveal both a sense of numbers in primates and huge differences in handling quantities in them and in human infants.

The idea that there can be, for a given species, a specific equipment, which can nevertheless be shared to some extent by other species, is congenial to the view that knowledge is a general factive state. But it does not prevent us from seeing a large variety in the kinds of knowledge which belong to the “core”. Spelke makes also very clear that the elements of the core knowledge (numbers, objects, agents,) are “prim e” in W illiam son s sense, and externally individuated. She emphasises also the connexion of knowledge with action, and of the basic capacities with, in particular capacities to track objects and to manipulate them.

Core knowledge, thus defined, is neither perceptual knowledge nor inferential and conceptual knowledge. It is rich and various, but not as rich as knowledge which is fully propositionally articulated. But it has connexions both with perception and with inference, as well as with action.

It is useful to contrast the conception of knowledge with underlies Spelke s, Carey s and other cognitive psychologists work with a broadly empiricist conception such as Quine s. On Quine empiricist and behaviourist outlook about the ontogenesis of our ordinary knowledge of objects (Quine 1977), the child does not have, at early stages the concept of enduring, spatio-temporally continuous, and divided objects; indeed children do not master, before they have language, any concept of reference. On the cognitive psychologists view , on the contrary, children do master, at a very early age, not only the notion of an object, but that of reference, identity, and number. For an empiricist, child perception cannot be knowledge, and full blown knowledge of objects is acquired much later, through language, and mostly through inference. According to the core knowledge conception, perception, at a very early age, yields knowledge of the environment, because a large part of this knowledge is innate and available to the child “for free”.

Developmental evidence does not only suggest that there is genuine knowledge of the environment in the form of a structure network of concepts about objects, space, time, and their individuation by children at a very early stage. It also suggests that the acquisition of the very concept of knowledge by children gives to this concept a primacy among psychological attitudes. One of the interesting facts provided by the huge literature on the acquisition of psychological concepts by children is that the concept of knowledge is acquired by children much before the concept of belief, and belief attributions seems to be supervenient upon the acquisition of the concept of knowledge. So naive psychology seems itself based on knowledge instead of belief.¹⁵

So it seems to me that Spelke and her associates analysis of basic or core knowledge is the kind of psychological theory which locates at the proper level the main features of knowledge as the most general factive, externally based,

¹⁵ In Engel 2002 that was my only argument for giving some psychological uderp inn ing to W illiam son s view . It is, nevertheless, a bit short. I hope that the elements brought in this paper comfort better my view that to a certain extent, W illiam son s conception of know ledge can be harm onized w ith em pirical research in psychology .

primary, and non transparent kind of mental state. Spelke's view also emphasises the appropriate connexions of knowledge with action, what it share with "animal knowledge" and its evolutionary basis, without reducing knowledge to a natural kind. The idea of core knowledge by no means implies that all sorts of knowledge can be based on it, or even reduced to it: on the contrary a lot of knowledge is built out of the basic systems of core knowledge, recombined and advanced. Carey and Spelke (1996) suggest that humans have the unique capacity, among primates to be able to bring together the various systems which constitute their basic equipment, in order to expand their knowledge. They suggest that scientific knowledge has its roots in the form of recombination and expansion which occurs already within the child's mental life. A lot more questions should be examined in order to complete an account of knowledge which would be, in the sense adopted here, reasonably mentalistic. In particular, if knowledge is a mental state, it is important to understand how it relates to physical states, and how the contents of knowledge states supervene upon physical states. In particular if there is a set of states responsible for core knowledge of various kinds of objects, properties, and tasks, one should expect that common mechanisms in the brain underlie this set of states, and that they have a common evolutionary basis both in primates and in humans (Hauser and Spelke 2004). But I shall not go into this, and shall deal only with one last question, the nature of the capacities involved.

5. *Knowledge how and knowledge that*

It is often said that knowledge is a mental state because it is capacity, or a set of capacities and dispositions. In fact, in much of contemporary philosophy of mind, knowledge is said to be a mental state *because* it is a disposition or a capacity. As we remarked above, this is quite common ground: if one knows that P, one's knowing is not an occurrent mental state, like a sensation, but a standing state. Indeed the psychological literature dealing with core knowledge takes it consist in a set of capacities. But the notion of disposition raises familiar difficulties: are dispositions states, or are they dependent upon states which form their basis? Let us leave this issue aside, and consider one of them most common claims about capacities: that they involve a form of knowledge how, or practical knowledge, rather than a knowledge that, or propositional knowledge. Indeed since Ryle 1949 it has been a sort of orthodoxy that skills, capacities, abilities, and all form of knowledge how constitute a specific kind of knowledge, distinct from propositional knowledge. If Ryle's thesis is true, it poses several problems for my proposal to consider core knowledge states as a paradigm of factive, prime, and non transparent knowledge, for two reasons: first because developmental psychologists insist that core knowledge is, although tacit, a kind of theoretical knowledge (the metaphor of "the child as a theoretician" is fully accepted by Carey and Spelke 1996 for instance), second

because on Williamson's account of knowledge, knowledge is essentially knowledge that, or propositional knowledge (Williamson 2000:). So it seems that if both Williamson's conception of knowledge and my proposal to take core knowledge as a cognitive paradigm of this conception are to be correct, the Rylean theory has to be false.

And indeed, as I mentioned above, Williamson himself has argued that the Rylean theory is false. Stanley and Williamson 2000 argue that Ryle's argument for distinguish knowing how from knowing that fails, and that knowing how is actually a species of knowing that. In substance they attribute to Ryle the view that (i) any action presupposes the exercise of a knowing how or an ability, and that (ii) according to the "intellectualist legend" all actions are preceded by occurrences of knowing that, which would lead to an infinite regress. They argue that this argument fails, because both premises (i) and (ii) are false. I shall not evaluate here their argument, which has been criticised (see e.g. Rumfitt 2003, Snowdon 2000, Noë 2005). Their positive argument in favour of the reduction of knowing how to knowing that involves the consideration of knowledge attributions and the claim that there are, on examination of the syntactic structure of sentences of the form "X knows that ___" and "X know how to ___", much more similarities between the two constructions that meets the eye. Their positive proposal is that knowing how constructions can be parsed as "X knows that this is the way to do A", where "a way" is a "demonstrative practical mode of presentation". I cannot here evaluate these arguments either. They are convincing in so far as they show at least that it is not obvious that the distinction between knowing how and knowing that is so clear cut, and that a lot of knowing how involves knowing that and propositional knowledge. To know, for instance, where to find a good restaurant, or how to locate oneself on a map is, in a sense, a capacity or ability, but it involves a lot of knowing that. But Stanley and Williamson's arguments are unconvincing in so far as they are purely linguistic, and it is not clear to me that a purely linguistic argument can show that knowing how is a form of knowing that. I find much more convincing to that effect the psychologists claim that a lot of capacities, such as recognising faces, moving within a space, or coordinating certain actions, are based on propositional knowledge of a tacit form.¹⁶

I have proposed that we identify a layer of knowledge which has the Williamsonian characteristics (i)(v), with the core knowledge of developmental cognitive psychology. The exact nature of this kind of knowledge is still unclear, but its intermediary status between perceptual and inferential knowledge make it a good candidate for being a specific kind of knowledge. Interestingly, it is neither fully theoretical, or propositional, nor fully practical. If this is correct,

¹⁶ It is surprising that Williamson 2005, note 10, suggests that work on embodied cognition gives a characteristic example of prime states and of factive basic knowledge, since it is precisely the aim of the writers who defend this kind of view that embodied cognition is a form of knowing how, not a form of knowing that. See in particular Noë's 2005 reaction to Stanley and Williamson 2000 (Noë 2005).

then it provides us a good ground to reject the division between knowing how and knowing that.

6. Conclusion

I have attempted here - quite sketchily - to give some psychological reality to Williamson's thesis that knowledge is a mental state. I have suggested that some of the structures that cognitive psychologists postulate to account for basic capacities of primates and infants - core knowledge - are a good candidate for a kind of knowledge which is factive, non transparent, externally individuated and prime. This by no means implies that one should identify all knowledge with this core; on the contrary, if Williamson's account is correct, *all* our knowledge, from children's basic capacities to our scientific knowledge, has these properties. Nevertheless, taking seriously the idea that knowledge is a mental state implies trying to bring together empirical findings in psychology and the general conceptual features of knowledge. This does not amount to a reduction of the concept of knowledge to a naturalistic concept or essence, contrary to the proposal that knowledge could be a natural kind. A difficulty with such proposals is to formulate them at the appropriate level of generality, and I am not sure to have done so. But the proposal, if correct would go some way along the lines of the weak form of psychologism which I have defended some time ago (Engel 1996).

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