CONCEPTS, INTUITIONS AND EPISTEMIC NORMS

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ABSTRACT: In this paper, I argue that Dual Process Theories of cognition, as recently defended by Keith Frankish and Jonathan Evans, Keith Stanovich, Peter Carruthers, Richard Samuels, and others, offer a useful framework that can transform our conception of the nature and role of concepts in cognitive science and the role of intuitions in epistemology. The result is that recent debates concerning competing accounts of concepts, the role of intuition in epistemology, and debates between internalists and externalists concerning the nature of epistemic justification and knowledge, can be usefully advanced given the resources of such Dual Process Theories.

KEYWORDS: dual process, intuition, concepts, internalism, externalism.

Some would say that concepts give rise to epistemic intuitions, and epistemic intuitions ground epistemic norms. Suppose that is true. A bit of crafty skullduggery would be all that is necessary to provide an explanatory story adequate for the linkages and we would be off to Belmont. But not so fast! One would still need an account of concepts in order to enjoy the races. But providing such an account of concepts turns out to be a nontrivial task. Be that as it may, I favor an evolutionary version of informational atomism unlike the originator of informational atomism, Jerry Fodor. Still, further problems await since any account of concepts would seem to be parasitic on an account of the mind. Here I have gone on record as defending the massive-modularity account of Cosmides and Tooby over against the peripheral modularity view of Fodor. Lately, however, proponents of the dual process theory (such as Keith Stanovich, Keith Frankish and Jonathan Evans, Peter Carruthers, and Richard Samuels) have changed the game. In what follows, I will clarify some of the claims of dual process theorists in section one. In section two, I will evaluate the implications of dual process theory for the cognitive science debate surrounding the nature of concepts. In section three, I will evaluate the implications of dual process theory for debates concerning the nature and role of intuitions in epistemology as it relates to the

internalist/externalist debate concerning the nature of epistemic justification and knowledge.

1. Dual-Process Theories

Dual-Process theorists argue that there are two minds in each cranium. These two minds employ two distinct processing mechanisms and employ different procedures to deal with deductive reasoning, decision making, and social judgment. As Keith Frankish and Jonathan Evans put it: "Typically, one of the processes is characterized as fast, effortless, automatic, nonconscious, inflexible, heavily contextualized, and undemanding of working memory, and the other as slow, effortful, controlled, conscious, flexible, decontextualized, and demanding of working memory."[1] And dual-process accounts of learning and memory have also been developed, "…typically positing a nonconscious implicit system, which is slow learning but fast access, and a conscious explicit one, which is fast learning but slow access."[2] Human cognition is then seen as involving two multi-purpose reasoning systems, System 1 and System 2. The former have the fast characteristics and the latter, the slow characteristics. Of course, there are a variety of differences among the positions held in this debate. Jonathan Evans provides the following chart of typical properties of System 1 and System 2 theories of cognition:

System 1	System 2
Evolutionarily Old	Evolutionarily New
Shared with animals	Distinctively human
Unconscious, preconscious	Conscious
Controlled, volitional	Automatic
Fast, parallel	Slow, sequential
Associated with language	Independent of language
Associative	Rule-based
Belief-based, pragmatic reasoning	Abstract, logical-reasoning
Implicit knowledge	Explicit knowledge
Independent of cognitive capacity	Dependent on cognitive capacity
Personal	Subpersonal[3]

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[1] Jonathan Evans and Keith Frankish, eds., *In Two Minds: Dual Processes and Beyond* (Oxford: Oxford University Press, 2009), 1.

[2] Evans and Frankish, *In Two Minds*, 1.

[3] Evans and Frankish, *In Two Minds*, 34.

It is often claimed that System 1 is early evolving, shared with other animals and includes implicit learning and modular cognition. In contrast, System 2 is recent, uniquely human, and is related to working memory and general intelligence. As such, System 1 is much more like the Cosmides and Tooby massive-modularity position in the recent literature[4]. Whereas, Fodor's peripheral modularity combined with a nonmodular, general intelligence capacity at the center of the mind is more like the hybrid System 1/System 2 combination. For Evans, in contrast, the idea is that System 1 and System 2 are responsible for type 1 and type 2 processing. Type 1 processes are fast, automatic, have high-processing capacity and require only low effort, while Type 2 processes are slow, controlled, of limited capacity, and require high effort to utilize. Evans follows Wason and Evans[5] in using the type terminology. Evans then adds a System 3 processor to deal with conflict and control issues concerning the interaction of System 1 and System 2. On his view, these systems are tokens. In contrast, Richard Samuels has recently argued that the token systems view is mistaken as he argues for the system type or cognitive kinds position. Samuels also makes the important point that each system involves clusters of co-varying properties. That is, processes that exhibit one property typically possess the other properties. This matters since the fact that clusters exist suggests an underlying suite of mechanisms subserving such co-variation. This abductive inference then paves the way to posit a "bipartite division between cognitive mechanisms."[6] In short, there are natural kinds that underwrite cognition where Samuels construes 'natural kind' in Richard Boyd's sense as homeostatic property clusters. According to Samuels, dual-process theorists endorse two claims:

> 1. Dual-Cluster Thesis: cognitive processes tend to exhibit either the S1 or S2 property clusters.

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[4] See Leda Cosmides and John Tooby, "Origins of Domain-Specificity: The Evolution of Functional Organization," in *Mapping the Mind: Domain Specificity in Cognition and Culture*, eds. Lawrence A. Hirshfeld and Susan A. Gelman (New York: Cambridge University Press, 1994), 85-116.

[5] P. C. Wason and J. St. B. T. Evans, "Dual Processes in Reasoning," *Cognition* 3 (1975): 141-54.

[6] Richard Samuels, "The Magical Number Two, plus or minus : Dual-Process Theory as a Theory of Cognitive Kinds," in *In Two Minds: Dual Processes and Beyond*, eds. Jonathan Evans and Keith Frankish (Oxford: Oxford University Press, 2009), 131.

> 2. Dual-Systems Thesis: there is a division in our cognitive architecture – a division between cognitive systems – that explains this clustering effect.[7]

Samuels thinks that there are two ways of developing these generic claims: these are the token and the type thesis. The Token Thesis maintains that there are just two particular cognitive mechanisms or systems. The System 1 mechanism subserves cognitive processes that exhibit the S1-property cluster. The System 2 mechanism subserves cognitive processes that exhibit the S2-property cluster. Each human mind exhibits a fundamental, bipartite division into these two particular systems. Evans accepts a version of this claim because he argues that we have an old mind and a new mind that consists, respectively, of a group of System 1 and a group of System 2 processes. In contrast, according to the Type Thesis, each mind is constructed out of two types or kinds of cognitive system. Systems of the first kind subserve processes that tend to exhibit the S1-cluster. Systems of the second kind subserve processes that tend to exhibit the S2 cluster. But there is no overarching old mind/new mind dichotomy or Token Thesis at play. The Token Thesis implies the Type Thesis but not vice-versa. As such, the Type Thesis is logically weaker than the Token Thesis. Samuels defends the Type Thesis as more plausible than the Token Thesis principally because there seem to be *many* system 1 and system 2 devices in the mind. For instance, the human visual system involves many subsystems for depth perception, color identification, and categorization.[8] And, these subsystems themselves decompose into smaller units, and so on. Now one might try to avoid the trivialization of the token thesis by relativizing the claim to some, fairly abstract, level of decomposition. But, as Samuels says,

> …even at quite abstract levels of decomposition, it's just not plausible that our minds contain only two systems. On any plausible decomposition, there are likely to be a great many systems for a wide range of different mental processes, including perception, memory, reasoning, emotion, language, and no doubt many others. Moreover, it's not plausible to treat all these devices as constituting just two systems. Not, at any rate, unless one is prepared to countenance systems that are wildly heterogeneous in character.[9]

One might like to defend the idea that there are exactly two reasoning systems in each mind. Samuels demonstrates that this view cannot be sustained

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[7] Samuels, "The Magical Number Two," 132.
[8] Stephen E. Palmer, *Vision Science: Photons to Phenomenology* (Cambridge: MIT Press, 1999).
[9] Samuels, "The Magical Number Two,"134.

under a variety of construals of the key notion of what counts as a reasoning system. Now dual-process theorists acknowledge Samuels point here but often claim that the collapse of the Token Thesis is not two-way. That is, there are many System 1 mechanisms but only one System 2 mechanism. But Samuels finds this just one System 2 mechanism claim dubious too since the processes and mechanisms posited in each System 2 domain are not characterized in the same way. For instance, in social cognition, Matthew Lieberman and colleagues posit a mechanism for controlled social cognition, the C-System, whose processes exhibit many S2 properties but these properties vary from the properties that researchers posit who work on deductive reasoning.[10] Maybe researchers are moving toward a single System 2 for reasoning across all these domains but Samuels doubts that this goal will be achieved, preferring the idea that the researchers are identifying different mechanisms that subserve processes of the same general type, i.e., the S2 cluster. Suppose that Samuels is correct and the cognitive kinds or Type Thesis is correct, how would this bear on issues concerning concepts, intuitions, and epistemic norms? I propose to discuss these issues in two separate sections. In section two, I will discuss concepts and, in section three, I will discuss intuitions and epistemic norms.

2. Concepts

Nativists, like Fodor, defend the idea that all of our lexical concepts are not learned while more moderate nativists, such as Susan Carey in her recent book, *The Origin of Concepts*, maintain that only core cognition principles are innate.[11] *In The Language of Thought*, Fodor argued that all of our lexical concepts are not learned because they are all innate.[12] But critics thought it somewhat unlikely that 'carburetor' and the other 500,000 primitive lexical concepts are innate. In her recent live stream debate with Jay McClelland at Ohio State University, Carey called radical concept nativism 'absurd.'[13] Fodor's response to this sort of criticism was contained in his book, *Concepts*, where he rescinds radical concept nativism by arguing that our primitive lexical concepts are neither learned nor innate, but

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[10] Matthew Lieberman, "Reflective and Reflexive Judgement Processes: a social cognitive neuroscience approach," in Joseph P. Forgas, Kipling D. Williams, and William von Hippel (eds.) *Social Judgements: Implicit and Explicit Processes* (Cambridge: Cambridge University Press, 2010), 44-67.

[11] Susan Carey, *The Origin of Concepts* (New York: Oxford University Press, 2009).

[12] Jerry Fodor, *The Language of Thought* (Cambridge: The MIT Press, 1975).

[13] Susan Carey's debate with Jay McClelland at Ohio State University, April 16, 2010.

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acquired.[14] On his informational atomist view, we 'lock to' or 'resonate to' mind dependent concepts by virtue of innate neurological mechanisms. First, we learn the doorknob stereotype by experiencing good instances of doorknobs and then we acquire the concept doorknob by virtue of innate neurological mechanisms. The first step is psychological; the second, biological. In contrast, Stephen Laurence and Eric Margolis defend the learning part of Fodor's account but reject the biological part and so defend a straight learning account of concepts.[15] Fodor's updated two-step account in *The Language of Thought Revisited* attempts to retell the locking story by appeal to an attractor landscape metaphor but represents no change, or improvement, in his view.[16] So there is an impasse here between Laurence and Margolis on the one hand, and Fodor, on the other. This impasse was mirrored in the recent live stream debate between McClelland and Carey at Ohio State University where Carey played Fodor against McClelland's Laurence and Margolis in the broad sense that Carey is a nativist about concepts and human knowledge while McClelland defended a learning theory about knowledge and concepts. Of course, Carey's nativism is much more moderate than Fodor's, and McClelland's learning theory is a connectionist associationism which Laurence and Margolis have never defended.

I mention these debates between nativists and learning theory folk about the status of concepts and knowledge for one reason. Dual-process theory may provide a route out of multiple impasses that exist in the cognitive science literature. What I have in mind is that we may not need to choose between a learning account of concepts (and knowledge) and a locking, acquisition account of concepts. Maybe the concepts that are 'locked to' are the one's involved in System 1 processes, while the concepts that are learned are the product of System 2 processes. This would provide an interesting resolution to a debate that has raged for a very long time: some concepts are acquired and some are learned. Now I don't think my suggestion will come as any surprise to many. After all, Carey in her live stream "Origins of Knowledge" talk in April said (approximately) that: "The key issue is not if there are any innate perceptual primitives but how much is innate."[17] The key issue is the extent of the innate conceptual and knowledge mechanisms in place. Carey thinks that the face recognition mechanism, inter alia,

[14] Jerry Fodor, *Concepts: Where Cognitive Science Went Wrong* (New York: Oxford University Press, 1998).
[15] Eric Margolis and Stephen Laurence, eds., *Concepts: Core Readings* (Cambridge: The MIT Press, 1999).
[16] Jerry Fodor, *The Language of Thought Revisited* (New York: Oxford University Press, 2008).
[17] Susan Carey in her live stream "Origins of Knowledge" Talk in April 2010.

is a clear example of such an innate structure. Of course, she accepts that once we have such structures then McClelland, and others', connectionist models become very important for clarifying how learned concepts emerge. Hence, any adequate acquisition story must show how innate conceptual structures and mechanisms give rise, with the aid of informational input to learned concepts and knowledge via, perhaps, connectionist models. Carey thinks that core cognition is not core knowledge, as Elizabeth Spelke calls it[18], because such representations need not be veridical. Core cognition is shared with nonhuman animals and is the developmental foundation for human conceptual understanding. As she notes: "Like sensory and perceptual features of the world, the entities in core domains of knowledge are identified by modular innate perceptual-input devices. Therefore, the extension of the symbols that articulate core cognition is fixed in part, by evolutionarily underwritten causal relations between entities in the world and representations in the mind."[19] Such core cognition representations differ from fully explicit conceptual representations that pick out intuitive theories. Causal connections mediated by perceptual-input analyzers determine the referents of core cognition, while the explicit conceptual representations of intuitive theories also involve social processes via inferential roles for their articulation (ala Kripke, Putnam, and Burge). On Carey's view, only humans create conceptual representations that go beyond sensory representations and core cognition. Humans create new representational resources that are 'qualitatively different' from the representations that they are built from. As such, she denies the Fodor/Macnamara continuity thesis that all the representational and inferential capacities that underlie adult belief systems are present throughout development or arise from processes such as maturation. Fodor calls a version of this thesis connected to language the compositionality constraint on concepts. For Fodor, since concepts are the constituents of thoughts and often of each other then mental representations inherit their contents from the contents of their constituents. Hence, complex concepts decompose into primitive concepts and their relations. The result is the familiar Fodorian claim that belief is productive and systematic. Productive, since there are an infinite number of beliefs that one can entertain and systematic, since the ability to entertain one thought implies the ability to entertain lots of others related to the content of the first one.[20] Carey denies this claim insisting that

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[18] See, for example, Elizabeth S. Spelke and Katherine D. Kinzler, "Core Knowledge," *Developmental Science* 10, 1 (2007): 89–96.

[19] Carey, *Origins*, 11.

[20] Fodor, *Concepts*, 26.

conceptual development is discontinuous. Humans are capable of novel thoughts using novel concepts. For example, the integer list is a cultural construction with more representational power than any of the core representational systems on which it is built. The notion of a rational number, likewise, transcends the integer representations available from the outset of the construction process in ontogenesis. Children, in effect, create incommensurable new concepts through maturation. Kuhnian conceptual revolutions occur due to Quinian bootstrapping mechanisms, Carey thinks, like those discussed in the history and philosophy of science by Nancy Nersessian.[21] Theoretical knowledge that transcends core cognition is facilitated, by such, Quinian bootstrapping. She also notes that such intuitive theories are not innate, the entities in their domain are not identified by input analyzers, their format is not iconic, and they are not continuous throughout development.[22] Carey has the System 1/System 2 distinction in mind here in the sense that she accepts that the concepts of core cognition are evolutionarily old, result from modular processors that are fast, shared with animals, associative, involve implicit knowledge, and are associated with language. In contrast, the intuitive concepts of explicit theory are evolutionarily recent, uniquely human, conscious, slow and sequential in production, involve abstract, logical reasoning, explicit knowledge, and so on. As such, she endorses the idea of distinct kinds of concepts and knowledge for each system. It should also be noted that some representations in core cognition may be nonconceptual as with early perceptual representations.

My own view is that informational atomism combined with an evolutionary acquisition account best captures the concepts of System 1, while definitionism or the classical theory of concepts captures one example of a System 2 learning account of concepts. Of course, there are other examples of System 1 and System 2 concept accounts on offer. Fodor and Carey provide two distinct examples of how one might provide distinct accounts of concepts that depend on the System 1/System 2 distinction. My examples are simply meant to illustrate what can count as an account of concepts relative to System 1 or System 2. The point that I want to drive home is that we need a distinct account of concepts for each System. This is a crucial point and one, in effect, denied by, for instance, Alison Gopnik and

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[21] Nancy Nersessian, "How do scientists think? Capturing the dynamics of conceptual change in science," in *Cognitive models of science*, ed. Ronald N. Giere (Minneapolis: University of Minnesota Press, 1992), 3-44.

[22] Carey, *Origin*, 22.

Andrew N. Meltzoff[23] when they claim that scientists and young children share the same type of representations when they theorize. On my view, and Carey's view, this cannot be so because distinct types of representations attach to children's core cognitive representations as opposed to their mature intuitive theories that are developed once they become adults. The child has no theories in the sense that the scientist does precisely because children fail to have the same kind of concepts that the scientist has. In effect, children have no intuitive theories at all. With this understanding of the distinction between two kinds of concept in mind, I now want to see what the implications might be for our understanding of intuitions, and the role of intuition, in philosophical theorizing.

3. Intuitions and Epistemic Norms

Alvin Goldman has argued that a-priori intuitions are the product of our concepts.[24] As Hilary Kornblith notes concerning Goldman's view about the relation between concepts and intuitions:

> Armchair methods in philosophy work as well as they do, according to Goldman, because there is a certain kind of causal relationship between our concepts and our intuitions. In particular, our concepts are causally responsible for our intuitions; more than this, the manner in which our concepts bring about our intuitions makes our intuitions reliable indicators of the truth of their contents. So if intuitions and concepts are related in this sort of way, the armchair methods employed by philosophers will be extremely revealing of the nature of our concepts.[25]

Suppose Goldman is correct. We might still ask whose intuitions we should appeal to. What are pre-theoretic intuitions? As Kornblith points out, Frank Jackson thinks conceptual analysis involves characterizing widely shared 'folk concepts.' This would seemingly have us consulting large groups of people about their intuitions. In fact, both Goldman and Jackson advocate soliciting pre-theoretic, spontaneous, intuitions from one's students. Philosophical practice, in contrast, has relied heavily on the intuitions of professional philosophers whose

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[23] Alison Gopnik and Andrew N. Meltzoff, *Words, Thoughts, and Theories* (Cambridge: MIT Press, 1998).

[24] Alvin I. Goldman, "Psychology and Philosophical Analysis," and "Epistemic Folkways and Scientific Epistemology" in his *Liaisons: Philosophy Meets the Cognitive and Social Sciences* (Cambridge: MIT Press, 1992), 143-153, 155-175.

[25] Hilary Kornblith, "Naturalism and Intuitions," in *Philosophical Knowledge: its Possibility and Scope*, eds. Christian Beyer and Alex Burri (Amsterdam-New York: Rodopi, 2007), 30.

intuitions have been shaped by years of study and the shaping of intuition by epistemic concepts like justification and knowledge. These reflective intuitions are anything but the pre-theoretic intuitions of the folk. Jackson suggests that we should consult the intuitions of our students but these intuitions are not pre-theoretic either. Typically, such intuitions are only sought once a great deal of background theory has been force fed to the supplicants. And, as Kornblith points out, the public showing of hands is subject to a number of biases, such as the anchoring effect.[26] Kornblith also points out that: "Finally, the very sort of controls which psychologists routinely bring to bear on experiments of this sort, such as controlling for order of presentation, are rarely if ever brought to bear on philosophy classroom surveys."[27] This suggests that philosophical practice must be dramatically changed if the goal is to elicit pre-theoretic folk intuitions. On the other hand, Kornblith thinks that it is odd that we should consult folk intuition at all when doing naturalized epistemology, we would never do that in science. Why would we do that in philosophy? And, where conceptual analysis has had some successes, we should not simply alter what we do. It is a truism in philosophy of science that observation is theory infected. The goal, therefore, is simply to infect observation with the correct theory.[28] As Kornblith notes, the idea that observation might obtain without dependence on theory at all is now simply taken to be a logical positivist ideal that few would want to defend today. This is an interesting point that Kornblith makes but keep in mind that Carey thinks that not all observation is theory-laden. In particular, core cognition and perceptual primitives do not constitute theories at all. In effect, Carey rejects Quine's claim that the simple observation that 'that is an object' is the result of a theory. Intuitive theories come much later in development. Hence, even if theory does infect some observation, it does not infect all observation. This is a crucial point. Moreover, the intuitions that are the product of System 1 would be distinct from the intuitions that are the product of System 2. In effect, philosophers of science have been guilty of thinking that there are only observations that are framed by System 2 concepts and their intuitions. This is false. There are observations framed by concepts from System 1 and their intuitions. The well-worn Muller-Lyer Illusion is one such example where our observations are not informed by

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[26] Kornblith, "Naturalism," 33.

[27] Kornblith, "Naturalism," 33.

[28] For my purposes, I am going to make the neo-positivist assumption here that theories are sets of sentences that decompose into concepts in various syntactic relations. In an extended sense, I will also assume that theoretical concepts give rise to theoretical intuitions.

background theory so that we continue to see lines of the same length as unequal due to the modularity of our perceptual apparatus and the concepts and intuitions that inform this module.

If this point generalized which it no doubt does, then we might expect that intuitions that are the product of System 1 concepts would produce fast, pre-theoretic, raw intuitions. In contrast, the more careful, slow, reflective intuitions characteristic of philosophy would be the result of System 2 processes and concepts. This might help to make sense of the recent literature on intuition in epistemology. Instead of a zero sum game where competing accounts of intuition are defended, we could simply recognize that some intuitions have their source and role in System 1 concepts and other intuitions have their source and role in System 2 concepts. This would constitute an interesting result that would help philosophers adjudicate between competing accounts of intuition. The untutored intuitions of the unwashed nonphilosophical public concerning knowledge would simply lead to our knee-jerk understanding of the acquired, System 1, concept of knowledge common to all species (and defended by externalists and reliabilists) while the sophisticated intuitions of the philosopher would be employed to render the reflective notion of knowledge unique to humans and sought after by epistemic internalists. Now some naturalists, such as Kornblith and Clarke, will not be happy with this result because they think that knowledge is not a concept at all and that the phenomena of knowledge is a univocal, natural kind (Kornblith) or set of natural kinds (Clarke) to be discovered in the world. How might we respond to these worries here? We might begin by suggesting that, at the very least, since there are two kinds of concepts related to each of System 1 and System 2 processors that there are two kinds of intuitions parasitic on these two kinds of concepts. Now if that is true, then when internalists refer to knowledge then they must be referring to the System 2 reflective concept of knowledge and the intuitions that underlie it. If that is right, then it would seem to follow that perceptual knowledge from the internalist standpoint is a misnomer. Perceptual knowledge must be different in kind from reflective knowledge since the intuitions that support it must be different in kind from the intuitions of System 2 knowledge. That is, perceptual knowledge must be the result of System 1 concepts and intuitions. In contrast, reflective knowledge must be the result of System 2 concepts and intuitions. For an internalist, knowledge and justification must turn out to be bipartite according to their own lights. Nonreflective knowledge, if this is correct, has been largely ignored in the internalist tradition in the sense that internalists have tried to explain nonreflective knowledge in reflective terms, not understanding that a completely different analysis of it was necessary. One thinks

here of the somewhat turgid and unlikely account of perceptual knowledge of C.I. Lewis[29]. But what about externalists, like Kornblith: what epistemic sins has he committed? Kornblith (following Goldman, Dretske and other externalists) denies that knowledge requires any sort of reflection, contra internalists. If that is so, he has ignored the concept of reflective knowledge involved with System 2 mechanisms and the intuitions that underlie that type of system. Kornblith would say that the concept of nonreflective knowledge and the concept of reflective knowledge are one and well worth studying. However, his interest is in the phenomena of knowledge in the world. The study of such a natural kind, like any other natural kind, requires that we study the empirical theory of, for instance, ethologists and see how they refer to the knowledge of, say, the piping plover. In this way, we will begin to understand the phenomena of knowledge as it occurs in the wild where empirical theory is squared with the empirical judgements we make when we see birds, for instance, protecting their young from predators by engaging in broken wing displays and so on. Kornblith suggests that we should take the language of ethologists literally when they talk about piping plover knowledge because that talk plays an essential role in successful, empirically informed, theory. Theory is squared with informed empirical judgement on his view, not with nonreflective or reflective intuition. But this is not a problem since we are no longer attempting to *square* our *concept* of knowledge with *intuitions* about knowledge. Of course, an interesting residual question here concerns the relation that might obtain between our *concepts* of knowledge and the *phenomena* of knowledge. Kornblith glides over this important issue in his 2002 book, *Knowledge and Its Place in Nature.*[30]

Another issue concerns the relation between theory and evidence as opposed to concepts and intuitions. The philosophical literature, as Jennifer Nagel points out, contains two conceptions of the relation between "particular case intuitions and more general theories in epistemology."[31] She notes, following Stich in *The Fragmentation of Reason*,[32] that advocates of reflective equilibrium, such as Nelson Goodman, maintain that philosophical progress is made by adjusting general theories to better match our judgments about particular cases while also adjusting our judgments about particular cases to conform to our general

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[29] From Clarence Irving Lewis, *An Analysis of Knowledge and Valuation* (LaSalle: Open Court, 1946).
[30] Hilary Kornblith, *Knowledge and its Place in Nature* (Oxford: Oxford University Press, 2002).
[31] Jennifer Nagel, "Epistemic Intuitions", *Philosophical Compass* 2, 6 (2007): 792-819.
[32] Stephen Stich, *The Fragmentation of Reason: Preface to a Pragmatic Theory of Cognitive Evaluation* (Cambridge: The MIT Press, 1993).

theories.[33] Where Stich accuses Goodman of advocating a conservative policy here, Nagel notes that Goodman also allows for theoretic reform where, due to convenience or theoretical utility, we allow a theory to run counter to the mandates of common usage. As such the new definition alters, rather than merely extends, current usage. In contrast, Rudolph Carnap[34] adopts a more radical conception where philosophical progress occurs by virtue of a process he calls 'explication.' On this view, we refine a messy and vague pre-scientific concept (the explicandum) into a simpler and more exact scientific term (the explicatum). As she notes: "A successful explication delivers an exactly defined term that applies to most of the terms once picked out by the explicandum; this new term should be both simple and fruitful, readily connected to an existing network of scientific concepts and helpful in the formulation of new laws."[35] She also notes that where reflective equilibrium gives equal weight to particular and general judgments, explications assigns them very different roles. In explication, we start from particular cases but once the scientific definition is formed "it is not subject to further constraint from reflection on the intuitiveness of its application to particular cases."[36] Instead, once we have the new scientific meaning of a concept our intuitions about cases are simply guided by the definition. Alternatively, we might use the definition where precision is required saving the ordinary explicandum for everyday use. Notice that determining folk epistemic usage ala System 1 might be facilitated by the Goodmanian reflective equilibrium method, while the method of standard analytic epistemology over the last fifty years seems more attuned to the Carnapian explication method ala System 2. Kornblith's own naturalized version of studying the phenomena of knowledge as scientists use it, in contrast, is much more like adopting the results of the scientists as they use a scientific version of the Carnapian method of explication with one alteration. Kornblith denies that the appeal to particular cases, or intuitions, plays much role in science nor should it in philosophy. Such intuitions should be shelved as soon as observations become available for the construction of theory. In essence, philosophical theory construction should become scientific theory construction since philosophical theories should be empirical theories. Little wonder then that

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[33] For Goodman's defense of reflective equilibrium see his *Fact, Fiction, and Forecast* (Indianapolis: Bobbs-Merrill, 1965), 66-67.

[34] In Rudolph Carnap, *Logical Foundations of Probability*, 2nd ed. (Chicago: University of Chicago Press, 1962). See also his "P. F. Strawson on Linguistic Naturalism," in *The Philosophy of Rudolf Carnap*, ed. Paul Arthur Schilpp (LaSalle: Open Court, 1963), 933-940.

[35] Nagel, "Epistemic," 795.

[36] Nagel, "Epistemic," 795.

the Carnapian notion of explication should sound a lot like Kornblith's proposed method: Carnap was also adapting scientific method for philosophical purposes. From such a perspective, philosophical method should simply be the scientific method. Scientific method, on the other hand, is the paradigmatic case of a System 2 processor. Science involves a slow, conscious, evolutionarily new, distinctively human, sequential, attempt at acquiring explicit knowledge by means of abstract, logical-reasoning given empirical inputs. But note also that we do not have to choose between the Goodmanian reflective equilibrium method and the Carnapian explication method of philosophizing. If our goal is to understand folk epistemology, then we should use the Goodmanian method since it operates using System 1 intuitions alongside System 2 reflective processes. In contrast, if our goal is to understand the exact concept of knowledge or the phenomena of natural kind or kinds that are knowledge, the Carnapian notion of explication is what is needed and the system employed, essentially, will be System 2. Of course, this latter natural kind inquiry will have as output, not the concept of knowledge, but a well-developed theory of the natural kind or kinds that constitute the phenomena of knowledge.

Despite Kornblith's claim from *Knowledge and its Place in Nature* that the phenomena of knowledge is the same in animals and humans and that no reflection is essential for knowledge, he has recently added that reflection, where it occurs, is similar in humans and nonhuman animals. In "The Myth of Epistemic Agency," his April Invited Lecture at Northwestern and also in *Knowledge and its Place in Nature*, Kornblith argued that Sosa's reflective knowledge versus animal knowledge distinction, cannot withstand scrutiny.[37] Why? The problem is that the divide implicit between animals and humans concerning reflection is mistaken. The commonsensical picture that human knowledge involves reflection while animal knowledge does not is just false because it underestimates the sophistication of animal knowledge and over intellectualizes human knowledge. Both humans and animals update their beliefs about the whereabouts of objects without any reflection. As he notes:

If whenever I see a fox approach, I come to believe that it is dangerous, the discovery that a particular fox is harmless will not be something that I simply register atomistically; it will bring about a change in the inferences I draw when I

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[37] Hilary Kornblith, "The Myth of Epistemic Agency" (Graduate Philosophy Conference, Invited Address, Northwestern University, 2010). For Sosa's reflective knowledge versus animal knowledge distinction see Ernest Sosa, *A Virtue Epistemology: Apt Belief and Reflective Knowledge, Volume 1* (Oxford: Oxford University Press, 2007), 30-36.

am confronted with this particular fox-assuming, of course, that I can recognize it when I see it again. But the same sort of inferential integration, and change in inferential tendencies, can be found in many non-human animals, including for example, piping plovers. One needn't have anything like the cognitive sophistication of a primate, let alone a human being, in order to integrate information in this sort of way. The suggestion that this ability is a by-product of the ability to reflect, and thus, unique to human beings, is mistaken.[38]

Humans, Kornblith thinks, do not utilize reflection in such cases and nonhuman animals integrate information in the same way that humans do. It is important to note that Kornblith accepts the point that human reflection does occur and that it is unique to us, it is just that we should not exaggerate its prevalence or reliability. He claims that both first-order processes and second-order reflective processes that result in belief are a mixed bag, sometimes they are reliable and sometimes they are not. In particular, some second-order reflective belief processes give rise to false belief. Certainly the catalog of belief biases in the cognitive science literature stands as a testimony to his claims here. Even once subjects are asked to reflect on their beliefs, they often become even more convinced that their false beliefs are true as Kornblith pointed out in Chapter Four of *Knowledge and its Place in Nature* concerning the position effect[39] and the anchoring effect.[40] In fact, reflection may reduce the accuracy of our beliefs and create the illusion of providing a real check on the reliability of our first-order, or System 1, processes. The other familiar Fodorian fact that Kornblith emphasizes is that because many cognitive processes are informationally encapsulated in cognitive modules, they will not be available to introspection and even if they were available, they will not be alterable by appeal to reflection. The by now clique example of this is the Muller-Lyer Illusion where background knowledge that two lines are the same length will not penetrate the perceptual module that determines that the lines are not the same length, where arrows appended in different directions at the end of each line lead us astray. The perceptual module, in other words, is informationally encapsulated from, or sealed off from, background information in such cases. For all of these reasons, the role and utility of reflection in human knowledge has been greatly exaggerated.

At any rate, this dual picture of concepts and intuitions has the potential to help us rewrite the recent history of epistemology in a way that is informed by the

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[38] Kornblith, "The Myth."
[39] Kornblith, *Knowledge and its Place*, 111.
[40] Kornblith, *Knowledge and its Place*, 113.

results of cognitive science. But, perhaps, more importantly, it would help us determine which epistemic intuitions should be consulted when our goal is to understand epistemic norms.

4. Conclusion

Now consider: If epistemic norms are grounded in epistemic intuitions, and epistemic intuitions emerge from our concepts then if those concepts are parasitic on either System 1 or System 2 mechanisms it would seem to follow that knowledge and justification are the products of one, or both, of these two systems. In particular, if I am even close to the mark, the debate between externalists and internalists is really a debate that is parasitic on, and confuses, the contributions of System 1 and System 2 mechanisms. We would not have to choose between internalism and externalism in epistemology, the insights of both camps could be recognized. In this way, we would have dissolved some hotly contested debates in cognitive science and epistemology by recognizing that there was something right about the apparently incompatible positions involved in these debates. Resolution would be effected by dissolution.

The dual-process account allows us to relativize the insights of competing views in order to see the unique contributions of apparently competing authors more clearly. Of course, this sorting out of internalism and externalism only works if the naturalists/externalists, e.g., Goldman and Dretske, in question accept the notion that they are studying the concept of knowledge. For a naturalist/externalist who denies the claim that epistemology involves the study of our concepts of justification and knowledge, such as Kornblith and Clarke, things get more complex. If epistemologists should be studying the phenomena of knowledge in the natural order to discover the natural kind (Kornblith) or set of natural kinds (Clarke) that constitute knowledge then philosophical method must be dramatically changed to reflect such facts. For instance, one might study System 1 mechanisms and their inputs in order to understand the phenomena of System 1 knowledge. Equally, one would need to study System 2 mechanisms and their inputs in order to understand the phenomena of System 2 knowledge. My attempt in *Reconstructing Reason and Representation*[41] to provide a modular account of knowledge can now be seen as an attempt to explicate the System 1 phenomena of nonreflective knowledge using System 2 reflective reasoning.[42] What now needs to be undertaken is the explication of System 2 reflective knowledge using the

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[41] Murray Clarke, *Reconstructing Reason and Representation*. (Cambridge: The MIT Press, 2004).

[42] My student, Guillaume Beaulac, made this point in conversation.

resources of System 2 reasoning. Subsequently, one would need to explain the relationship between our concept of reflective knowledge and the phenomena of knowledge. The sort of inquiry launched would radically transform the standard methodology of epistemology. In effect, epistemologists would become experimental philosophers. Of course, I have not attempted to clarify the details of the emerging nonreflective and reflective concepts of knowledge and the relationship between these concepts of knowledge and the phenomena of knowledge. Clearly, much work needs to be done on these issues. Still, the idea of integrating the new dual-process account of the mind with a revised epistemology is enticing because it promises rich philosophical rewards.