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FOLK EPISTEMOLOGY AS NORMATIVE SOCIAL COGNITION

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1 Folk Epistemology: Theories and Intuitions

Epistemology *tout court* is a philosophical inquiry into the nature of knowledge (as a product) and knowing (as a process that produces knowledge). One of the epistemologist's goals is to separate the epistemic wheat from the doxastic chaff, the knowledge from the mere belief; another one is to describe the very nature of knowledge: its features, conditions, sources, justification and limits. Folk-epistemology is the folksy version of this philosophical investigation.

I will here use a definition of folk-epistemology that—I hope—does not specify in advance what would be a proper characterization of it. Folk-epistemology refers to the ordinary, commonsensical, everyday, naïve and intuitive conceptions of knowledge. As Kitchener puts it, it is “our ‘untutored’ views about the nature of knowledge (R. F. Kitchener, 2002, p. 89).

Under various labels¹ folk-epistemology has been an object of study for many researchers. This research falls in two broad, sometimes overlapping, categories that we might call *epistemic theories* and *epistemic intuitions*. Research on the former seeks to elucidate how people think, reason and represent knowledge (a field often referred to as “personal epistemology”).

¹ Such as: of personal epistemology, epistemological beliefs/theories/resources/reflections, reflective judgment, ways of knowing, epistemic beliefs, epistemic intuitions, intuitive epistemology, genetic epistemology, tacit epistemology, experimental epistemology, folk-epistemology.

Subjects are asked to explicit their beliefs about knowledge, its source or justification, etc. Research on the latter seeks to probe “any immediate (or not explicitly inferential) assessment of any claim of interest to epistemologists” (Nagel, 2007, p. 793). In these experiments, instead of being asked about their beliefs as to what knowledge is, subjects are typically presented with scenarios and must decide whether someone *knows* or *believes*.

Epistemic theories

Intuitive theories of knowledge have been prominently studied by cognitive, developmental and educational psychologists (Bendixen & Rule, 2004; Hofer, 2001; Hofer & Pintrich, 1997, 2002; King & Kitchener, 2004; Kuhn, 2001; Muis *et al.*, 2006; Schommer, 1994; Schommer-Aikins, 2004). Starting with Piaget (1950) and Perry (1970), this line of research has been interested in epistemological folk beliefs and theories, mainly their developmental progression and individual variations. For instance, King and Kitchener suggested that epistemological development goes through seven stages divided in three levels, from prereflective thinking (stages 1–3), quasi-reflective thinking (stages 4–5), and reflective thinking (Stages 6–7). Knowledge is first seen as certain, definite and transmitted from an authority figure; then as something constructed and uncertain; and finally construed as testable and refutable, fallible but based on evidence, (King & Kitchener, 2004). Again, vocabulary and definitions are not standardized across the literature, but the development of folk-epistemology follows usually these stages (analogous to Piaget’s logical and Kohlberg’s moral stages). Beyond stages, other psychologists are interested in epistemological *styles*: Deanna Kuhn, for instance, showed how Absolutists, Multiplists and Evaluativists (roughly similar to King and Kitchener’s stages, but in a synchronic fashion) answer differently to a question about experts. Discussing the reasons why prisoners become repeat offenders, Kuhn asked her subjects: “Do experts know for sure what the cause is?”. Typical replies were:

Absolutist: If they're experts, they know.

Multiplist: I don't think anybody knows for sure really, because there really isn't one right answer

Evaluative: Well, I think they're close. I mean, nothing's for sure, but I'm sure they have good ideas about why people fail.

(Kuhn, 1992, p. 169)

Other studies addressed how education or academic specialization affects folk-epistemologies. Students in “hard” (engineering and science) vs. “soft” (social science and humanities) sciences differ in their beliefs about whether knowledge is a collection of fact, whether it is something certain and unchanging and whether experts and teachers are reliable source of

knowledge. Social science and humanities students were more inclined toward a conception of knowledge as atomistic, uncertain, changing and of experts and teachers are reliable source of knowledge of and while students in engineering and science were more inclined toward the opposite (Palmer & Marra, 2004). Finally, other studies research studied variations related to gender and culture (Belenky, 1986; Karabenick & Moosa, 2005; Unger, 1992).

Globally, research in this domain indicates that epistemic theories are generally on par with how individuals manage conflicting evidence. The more subjects believe that knowledge is complex, tentative and organized (a more-or-less pragmatist conception), the more easily they adopt multiple perspectives (in everyday controversies as well as in academic context), revise their convictions and withhold their judgment until more information was available. This capacity appears to be positively correlated to their comprehension of scientific textbooks and persistence in working on difficult academic tasks (Schommer, 1990; Schommer-Aikins & Hutter, 2002; Whitmire, 2004).

1.2 Epistemic intuitions

Epistemic intuitions have been studied by cognitive psychologists and experimental philosophers (Alexander & Weinberg, 2007; Nagel, 2007; Weinberg *et al.*, 2001, 2003). Examining a whole range of variations in perception, cognition, decision-making and judgment between Easterners and Westerners, Nisbett and his collaborators suggested that “tacit epistemology” (another name for epistemic intuitions) varies with cultures (Nisbett *et al.*, 2001). For instance, Easterners accommodates contradiction, change, and plurality of point of view more easily than Westerners, more prone to categorical and essentialist judgments. Following this lead Weinberg, Nichols and Stich tested whether culture influences philosophical intuitions about “Gettier cases” (Weinberg *et al.*, 2001). In a well-known paper, Edmund Gettier presented apparent counter-examples to the traditional philosophical definitions of knowledge as justified true belief (Gettier, 1963). He devised examples that suggested that someone may be justified in believing that P, where P is a true belief, yet not really *knowing* that P. Weinberg, Nichols and Stich used a Gettier-like example to see how Westerners and Easterners construe the belief/knowledge distinction.

Bob has a friend, Jill, who has driven a Buick for many years. Bob therefore thinks that Jill drives an American car. He is not aware, however, that her Buick has recently been stolen, and he is also not aware that Jill has replaced it with a Pontiac, which is a different kind of American car. Does Bob really know that Jill drives an American car, or does he only believe it?

Bob is justified in believing that “Jill drives an American car”, and hold the true belief that “Jill drives an American car” but it seemed to many philosophers that Bob does not really *know* that. This standard philosophical answer was common among Westerners, while a majority of Easterners think that Bob really knows. Other experiments by Weinberg, Nichols and Stich reveal that socio-economic status also influence folk-epistemological judgment. The only scenario where a large agreement was found is the following:

Dave likes to play a game with flipping a coin. He sometimes gets a “special feeling” that the next flip will come out heads. When he gets this “special feeling”, he is right about half the time, and wrong about half the time. Just before the next flip, Dave gets that “special feeling”, and the feeling leads him to believe that the coin will land heads. He flips the coin, and it does land heads. Did Dave really know that the coin was going to land heads, or did he only believe it?

Regardless of their socio-economic status or their cultural background, a striking majority of subjects believed that Dave only believes it. Weinberg, Nichols and Stich speculated that this type of intuition might be at the core of folk-epistemology.

In the next section, I will highlight some theoretical blindspots, i.e. features of folk-epistemology neglected by the two paradigms. Note that it is not really a criticism, but rather a constructive contribution to the development of a sound model of folk-epistemology.

2 Epistemic blindspots

The study of folk-epistemology thus revealed a panoply of representations of knowledge. People use epistemic intuitions and epistemic theories to assess the truth, meaning and justification of different claims such as “does X know that P?” It is implicitly assumed that folk-epistemology is an epistemic filter that operates sometimes in intuitive mode, sometimes in a deliberative mode. These two paradigms, however, neglected certain important questions that I would like to raise here. First, what is the relationship between epistemic intuitions and epistemic theories? Second, what kind of mechanisms do folk-epistemological capacities require? Third, what is someone doing when she uses her folk-epistemological capacities, i.e., what is the purpose and domain of folk-epistemology? Tentative answers to these questions will set the stage for my characterization of folk-epistemological capacities in the next section.

The relationship between epistemic intuitions and epistemic theories

The two lines of research on epistemic theories and intuitions developed rather independently, motivated by different goals. On the one hand, em-

empirical research on epistemic theories was mostly interested in the educational relevance of an accurate description of folk-epistemology: how individual conceptions of knowledge evolve and how this could influence teaching and education. On the other hand, empirical research on epistemic intuitions—a rather new movement in philosophy—aimed at testing philosophical intuitions so as to find whether they are cultural variation or universal pre-conception. Experimental philosophers use quantitative methods to provide an empirical basis to philosophical theories. Since they both address the nature and functioning of folk epistemology, there might be some connection between them, just like we should expect our moral intuitions and moral theories to be somehow related: when Kohlberg conducted his interview, he asked first if a particular behavior was morally good (intuitions), then asked why people said so (theories). There might be also some loose connections: in moral cognition, it has been observed that people may have strong feelings about the goodness and wrongness of certain acts, while being unable to tell exactly why they find it good or bad, a phenomena known as “moral dumbfounding” (Haidt & Hersh, 2001). Similarly, we might imagine cases of “epistemological dumbfounding”, where we don’t know why something is true or something count as genuine knowledge but strongly feel so.

To make sense of all these data on folk epistemology, it might be useful to think of epistemological conceptions has having many dimensions (Schommer, 1994). Three are particularly relevant here, because they figure in many “non-folk” (philosophical) theory of knowledge. Theories, developmental stages and conceptions of knowledge can be distinguished by their position regarding:

- 1- The source of knowledge: God, experts, authority, science, the society, language, perception, understanding, reason, intuition, introspection, etc are reliable source of knowledge.
- 2- The robustness of knowledge: Knowledge is (at one extreme) eternal, absolute and universal vs. (at the other extreme) changing, relative to a perspective and local.
- 3- The organization of knowledge: Knowledge compartmentalized (atomistic) vs, integrated (holistic).

Note that by epistemological *space*, I mean an artifact that accounts for the similarity between epistemic conceptions by plotting each of them as a point in a multidimensional coordinate system. Color spaces, for instance, are not conscious representation of colors, but spatial depiction of color similarity along several dimensions such as hue, saturation brightness (Gegenfurtner & Kiper, 2003). This conceptual space encompasses many different folk epistemic theories, from the children who sees knowledge as absolute and transmitted by teachers to the social science university student

who sees knowledge as subjective and constructed by ideologies. Moreover, one can see Descartes, Nietzsche, or Quine not as thinkers who build another space, but rather as thinkers who explored, secured or optimized certain regions of it: Quine put forth the holistic structure of justification, Nietzsche advocated the context-relativity of knowledge while Descartes made a strong case for introspection.

In this picture of intuitions-theories relationship, epistemic intuitions license the application of epistemic theories to pieces of information. Once information is recognized intuitively as knowledge, we can deploy our articulated theoretical reasoning and justify (or revise) our intuition. Of course, this is at best a partial picture. For instance, epistemic theories certainly influence our epistemic intuitions:

What one takes as a reasonable standard for accepting that something is true should affect when and whether a new assertion is accepted and hence the likelihood of belief revision and conceptual change (Kuhn, 2001, p. 1)

If you believe that science is a reliable source of knowledge, the mere fact of hearing “a scientific study says that P” might be enough to trigger the intuition that P is knowledge; someone else having a complete distrust of science might have different intuitions. Studies of epistemic intuitions, however, mostly addressed the issue of demarcation between belief and knowledge, and thus can provide indication as to when or how epistemic theories are solicited: epistemic intuitions distinguish knowledge from non-knowledge and allow epistemic theories to be applied to the former. Sperber has a convenient distinction between *intuitive* and *reflective* beliefs that may be used here. Intuitive beliefs are mental representations that do not need to be “thought about”: however we acquire and justify them, they are basic representations treated as data, independently of any other reasons. Reflective beliefs involve mentally represented reasons, justification or causal histories. More precisely, reflective beliefs are *metarepresentations*, i.e. representations of representations. I can have an intuitive belief that Gettier cases are not instances of knowledge. When one *argues* that Gettier cases are not instances of knowledge, or that experts do not really know something, one is providing reasons, and articulating two levels: the reflective attitude (I believe that P, I doubt that P) and the first-order belief (P).

The mechanism of folk-epistemological capacities

Psychologists and experimental philosophers conducted instructive research on how people represent knowledge. Most of what we know about folk-epistemology, at least in the epistemic theories/intuitions paradigms, is restricted to people’s beliefs. Epistemic intuitions deal with intuitive beliefs, epistemic theories with reflective beliefs. Subjects are either asked to make decisions that reveal their beliefs (“Did Dave really know or only believe?”)

or asked directly about their beliefs (“Do you think experts really know? Why?”).

Therefore, to draw an analogy with research on folk-psychology, this research mainly focused on *external*, instead of *internal*, folk-epistemology (Stich & Ravenscroft, 1994). Epistemic intuitions and theories are external accounts of folk-epistemology because they do not propose cognitive mechanisms of epistemic categorization or inference: they rather systematize folk conceptions. Drawing on David Lewis (1972) account of folk-psychology as a set of common sense “platitudes” (obvious, shared, intuitive generalizations), Stich and Ravenscroft (1994, p. 465) define *external* accounts of folk psychology as:

- (1) the “set of folk psychological ‘platitudes’ that people readily recognize and assent to” and
- (2) “a theory that systematizes the folk psychological platitudes in a perspicuous way”.

Epistemic intuitions and theories, respectively, analyze folk-epistemological platitudes the same way, although in many cases there is no longer a supposition that intuitions and theories are common sense, at least not outside certain groups (the epistemological platitudes of adult Western scientists might differ from those of Eastern childrens). People assent variably to epistemic intuitions (1) while epistemic theories systematize their variable intuitions in a perspicuous way (2). Incidentally, this external account provides a firmer unity to the two paradigms: epistemic intuitions and theories are both in the same language-game.

External accounts of folk knowledge (psychological or other), however, do not specify the mechanisms by which folks use this knowledge. In cognitive science, there have been many discussions whether folk-psychology is implemented in an inferential-theoretical mechanism or in a simulatory mechanism, and whether folk-psychological mechanisms are modular or integrated, domain-specific or domain-general (see Stueber, 2006, chapter 3). Each of this problem concern not common generalizations, intuitions or platitudes, but the process whose outputs are folk-psychological platitudes. Research on folk-epistemology, however, lacks a clear account of its mechanisms. Sometimes, a vague account of relationships between theoretical beliefs is given, such as Schommer-Aikins’ “embedded systemic model of epistemological belief system”:

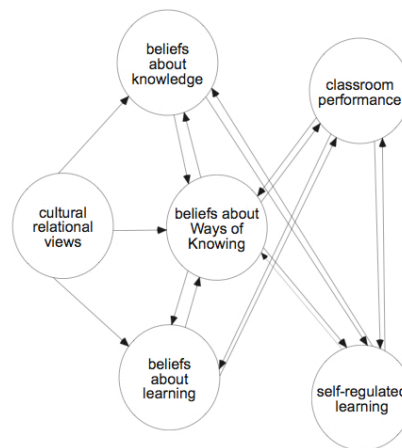


Figure 1, from Schommer-Aikins, 2004

There is a sense in which it is a mechanism, because it fleshes out the interactions between beliefs systems, learning, and so on, but it barely count as a neural or cognitive mechanism, since we don't know what operations could be performed, how basic processes such as categorization, decision-making, perception, working memory, etc. are involved.

A plausible suggestion is that folk-epistemology is a metacognitive process (Hofer, 2004; K. S. Kitchener, 1983; Nagel, 2007; Pintrich *et al.*, 2000). Metacognition, generally speaking, is any cognition about cognition (Flavell, 1979). A standard construal of metacognition describes it as a cognitive process realized through two interacting subsystems: monitoring and control (Koriat *et al.*, 2006; Nelson & Narens, 1990, 1994; Proust, 2007). The monitoring system tracks cognitive states and process. The stereotypical example of metacognitive monitoring is the tip-of-tongue phenomena: one can remember those how those black flat-bottomed boats used on Venetian canals look likes, know that one usually know their names but not being able to recall "gondolas". The tip-of-tongue is a variety of the "feeling of knowing" (Koriat, 2000): the intuitive feeling that we know that P before recalling P. Other metacognitive monitoring processes track our estimation of learning or memory: how confident we are in our mastering of a skill, our capacity to find an information, etc. The metacognitive control initiates, maintains or ends epistemic actions, such as memory search: once we feel that we know something, we allocate our attention to cues and past memories to find it. Thus some epistemic intuitions, at least about *our* knowledge of something, may be generated through metacognitive mechanisms.

It is not clear, however, how exactly metacognition can instruct a mechanistic analyses of folk-epistemology outside auto-epistemology. Metacognition is a self-directed evaluative process of one's own mental processes: its function is to "predict, retrodict and evaluate one's own mental dispositions, states and properties" (Proust, 1997, p. 291). It fixes intuitive beliefs about whether we know (or could remember, etc.) that P, but it is hard to explain how these auto-epistemic feelings are involved when we wonder if Bob really knows that Jill drives an American car or only believes it. A first possibility is that in this case, we rely on another metacognitive feeling, the "feeling of another's knowing" (Brennan & Williams, 1995). This concept, nonetheless, extends metacognition outside of its initial domain. First, metacognition involves a causal contiguity: monitoring and control processes interact through a closed causal loop. Control uses monitoring to evaluate its commands, while monitoring informs control about

ongoing cognitive activity (for hypothesis about neural implementation, see MacDonald *et al.*, 2000). The feedback from the monitoring to the control is internal, not external, i.e., there is no need to look in the world in order to have the feeling of knowing: the feeling is arrived at through simulation or imagination. Second, metacognition requires procedural reflexivity: a metacognitive feeling is the output of a process that tracks another process, the “tracking” being a direct, non-inferential relations. Hence cognition is directed toward the external world, metacognition is directed toward cognition:

Metacognition, when it is present, draws on a kind of information that is not delivered by the problem situation, but by the subject’s own procedural self-knowledge. For that reason, metacognition can deal with novel decisions, while well-practiced routines remain within the scope of cognition (where external cues can be used as predictors). (Proust, 2007, p. 284)

The “feeling of another’s knowing” is therefore a red herring. The term refers to situations where prosody or facial expressions indicates that someone else is confident or not in its answer. These feelings do not have access to someone else’s procedural self-knowledge, but infer it. We cannot monitor, non-metaphorically, the uncertainty feelings of someone else like we monitor ours because the feeling is directed at external, environmental cues. It is cognition, not metacognition. Moreover, it is also hard to see how we can use this feeling in Gettier cases: we don’t have a cue that indicate whether Bob displays signs of confidence. One solution might be that we simulate his perspective, “put myself in his shoes” and use the output of this process to conclude whether Bob knows or only believes. Again, this is another way to say that the process is not metacognitive in essence, but rather metarepresentational social cognition.

There is often confusion, in philosophy and psychology, between *metarepresentation* and *metacognition* (see Proust 2007 for a detailed analysis; I follow broadly her account). Metarepresentations are reflective beliefs, in Sperber’s sense. Metarepresentations represents mental representations (e.g. Peter believes that the Earth is flat), linguistic representations (e.g. John said that the Earth is flat) or more abstract representations (“The hypothesis that the Earth is flat is absurd”). As mentioned above, metacognition involves causal contiguity and process reflexivity. Metarepresentation does not: my believing that John said something is not oriented toward my own cognitive processes and procedural knowledge. Metacognition is inherently self-predicative and self-evaluative: metarepresentation is not. Finally, we can have *recursive* metarepresentations (I believe that she believes that we believe, etc.), but not recursive metacognition: there is no such thing as feeling that I feel that I feel, etc. that I know something. I either feel it (to different degrees) or not. Consequently, metacognition can

hardly contribute to elucidate epistemic intuitions, except those where we are the knower or believer. Whenever we appeal to social cognition (or any other type of non-self-oriented cognition) or metarepresentation to explicit folk-epistemological mechanisms, we no longer involve metacognition.

What about epistemic theories? Here again, propositions conflate metacognition with metarepresentations or other types of mental processes. For instance, Hofer (2004) proposes a metacognitive account of epistemic cognition but neglects metacognitive monitoring and focuses instead on beliefs and metacognitive control. In her model of epistemic cognition, she distinguishes epistemic metacognitive knowledge (beliefs about the nature of *knowledge*: e.g. certainty), metacognitive judgments and monitoring (beliefs about the nature of *knowing*: e.g. justification) and metacognitive self-regulation and control of cognition (the regulation of cognition during knowledge construction, e.g. deciding to learn more about something). In this model, there is no “feeling of knowing” or other metacognitive phenomena but mostly reflective beliefs. Having a belief about knowledge, such as “knowledge is absolute”, involves entertaining a metarepresentation, not a metacognitive mechanism. There is a genuine metacognitive process in self-regulation and control, but this only indicates that once folk-epistemological judgment is effective, metacognitive processes are recruited for the implementation of a solution to a learning problem. Moreover, it is hard to see how metacognitive feelings figure in articulated theories about the validity and source of knowledge. Hence we still don’t know which cognitive mechanisms distinguish knowledge from belief, and which generate our folk-epistemological judgment.

Hence, we still lack a clear *internal* account of folk-epistemology. In order to articulate one and before doing so, I suggest that we step back a little and ask: what is the purpose and domain of folk-epistemology? What is one doing when she uses her folk-epistemological capacities? It is assumed that folk-biology is about living beings, folk-psychology about intentional agents, folk-physics about physical objects. What is folk-epistemology about?

The purpose and domain of folk-epistemological capacities

A recurrent feature of folk-epistemological studies is their focus on concepts and beliefs. As the last section highlighted, researchers ask their subjects to make decisions that reveal their beliefs or ask them directly about their beliefs. Consequently, students of folk-epistemology routinely use questionnaires, surveys interviews or “think aloud” protocols. They elicit folk-epistemological faculties in explicit and conscious problem-solving. But how, why and when, outside the lab and without thinking ex-

plicitly about knowledge or epistemic problem, do we use our epistemic intuitions and theories? Here are three examples of their deployment in everyday context:

- (1) You argue with your colleague whether the evidence was sufficient in O.J. Simpson's trial: "Even if the glove did not fit, it does not mean that he is not guilty"
- (2) At the grocery stores, the clerk says that the white chocolate cookies you were looking for are back-order. "How could it be, you say, I saw someone walking out of here with a box"; The clerk replies that you conflate the donuts box (that the last customer bought) with the white chocolate cookies box; they have similar design.
- (3) At home, you spouse, partner or roommate says that it's your turn to wash the dishes. "Nope my dear. Today is Monday and on Mondays it's your turn"

In each case, there is a question as to whether something is true or justified. I take it to be the case that whatever we call folk-epistemology, it is at play in these examples. As Dewey argue, epistemological concerns arise only when we have to *evaluate* something:

Truth and falsity present themselves as significant facts only in situations in which specific meanings and their already experienced fulfillments and non-fulfillments are intentionally compared and contrasted with reference to the question of the worth, as to reliability of meaning, of the given meaning or class of meanings (Dewey, 1910, p. 95).

But Dewey neglect to mention that intentional comparisons and contrasts are primarily situated in social context. We primarily assess the truth and validity of *assertions* and we do it in the context of what Sellars (1956) and Brandom (1994) called the "Game of Giving and Asking for Reasons" (GGAR): the dialogical, linguistic interactions by which humans ask and reply to "why?". When someone says something, we may not only agree or disagree, but also cite reasons as to why we agree or disagree and require the person to provides us more reasons. Many of our greatest institutions are formalized version of the GGAR: a tribunal, a scientific conference and a parliament are structured and formalized GGARs. We make claims, justify them with reason (proof, evidence, studies, rapport, commissions, etc.) and expect others to be able to provide reasons for their claim. Note that I will not advocate all of Brandom's account of meaning or normativity: I will only, as he does, acknowledge the central role, in human interactions, of the GGAR.

Hence what I am suggesting here is a reversal in the order of explanation. The *platonist* order of explanation, as Brandom calls it, starts with concepts and then explain their use in terms of their content. Traditionally,

epistemology figures out what the concept of knowledge is, then determine when someone applies it correctly. Researches on folk-epistemology allow us to adopt another methodology: starting with people intuitions (hence judgment) and theories (an inferentially articulated network of judgment) and try to infer their concept of KNOWLEDGE from these. What I put forth here is a *pragmatic* order of explanation, a naturalistic version of Brandom's: starting with the use to explain the content. We should not first explain the content of the concept of KNOWLEDGE and then determine its use, but rather start with explaining the use of the KNOWLEDGE concept and then infer its content. This shift in perspective suggest that (internal) folk-epistemology is primarily a social tool whose domain are *assertions* and *inferences* in dialogical interactions and whose function is to evaluate these claims. Everyday epistemological problems and those that arise in many professional contexts (tribunal, universities, politics, administration) are about justifying assertions: how can one say that X is guilty, that experiment Y proofed that P, that legislation X decreases crime, or that policy Z facilitate interdepartmental communication, without having any reasons to support this claim? In making a claim, we commit ourselves to the claim, to its consequence, and to what implied our claim. To use Brandom example, is I say "the watch is red", I am also committed to the "the watch is colored". A competent English speaker will expect me to implicitly hold the second claim as true, and to hold "the watch is blue" as false.

This social-inferentialist perspective neglect, of course, all the epistemology of perception that figured importantly in the history of epistemology. There are situations where we wonder if our claims are true or justified when we *perceive* something: if my foot looks bigger than the sun, does that means that it is so? (Aristotle, 1986, pp. 428b 426-427); if all the perceptual qualities of a piece of wax change after being heat, is it the same, and how would I know it? (Descartes, 1998, p. Meditation 2). However, these problems are problems only for highly social mammals like us who entertain complex judgments and abstract representations. Since we depend upon each others for our education and security, lives in groups forever (from hunter-gatherers bands to modern states), and learn about everything we have to learn from others either directly (through linguistic communication) or indirectly (through reading, books, tv, radio), etc., epistemological problems are likely to take place in social context. Moreover, even the epistemology of perception has a social dimension: besides philosophers, people rarely wonder if their perception is reliable when they are *alone*: the epistemological problems raised by perception usually place in a GGAR. It is when we argue over the justification of an assertion that we discuss the validity of perceptions (or, for philosophers, when they teach or write a book, two social-communicative contexts). Thus epistemology, resume Goldman,

“must come to grips with the social interactions that both brighten and threaten the prospect for knowledge” (Goldman, 1999, p. vii). It should also, I would like to add, come to grips with the cognitive underpinnings of these social interactions. The suggestion I would like to put forth is simply this: folk-epistemology is normative social cognition. It is a set of psychological mechanisms (yet to be discovered) that evaluate assertions and make the GGAR possible. I describe this in more details in the next section.

3 Folk-epistemology as normative social cognition

The ideas advanced in the last section suggested that folk-epistemology is about assertions. Whatever the actual mechanisms are, it would be productive to see them as primarily directed at assertions, and primarily involved in evaluating the justifications for these assertions. In other words, if (internal) folk-psychology is a set of mechanisms by which mental states attribution are arrived at, folk-epistemology is a set of mechanisms by which assertions evaluations are arrived at. It is employed for detecting unjustified claims. Its natural domain is thus the production of declarative sentences, at least if we see folk-epistemology as a product of *gene-culture co-evolution*.

According to Gene-Culture Co-evolution or *Dual Inheritance Theory*, culture and cultural learning mechanisms co-evolved and shaped each others (Boyd & Richerson, 1985; Boyd & Richerson, 2005). On the one hand, our psychological mechanisms are biased toward interacting with others and especially toward *learning* from them. Our sophisticated cultural capacities such as imitation or pedagogy are Darwinian adaptations to cultural life. Adapted cultural learning mechanisms catalyze the establishment of a non-genetic system of inheritance: culture. On the other hand, this cultural inheritance system is also evolving. Thanks to our psychological mechanisms, certain “memes”² (belief, behaviors, skills, norms, etc.) are more easily assimilated or propagated. Cultures evolve through a gradual accumulation of innovations. Psychologically speaking, we should expect cognitive processes to be endowed with *content* and *context* biases (Henrich & McElreath, 2007). Content biases facilitate cultural transmission in virtue of certain features of what we learn about. For instance, Boyer showed that religious beliefs are easily transmitted because they exploit common features of our evolved psychology: ghosts and gods, for instance, “piggyback” on folk-

² Although the concepts of a science of memetics is nowadays falling in disgrace, the expression “meme” is however a useful umbrella to refer to a wide range of cultural entities that may be replicated. Thus I will use the term here as a practical label, not as a theoretical statement.

psychological mechanisms (Boyer, 2001). *Context* biases facilitate cultural transmission not in virtue of the features of *what* we learn about (such as food or supernatural agents), but in virtue of the features of *who* we learn it. For instance, we may be sensible to successful or prestigious people and therefore be biased in adopting their beliefs and behavior (Henrich & Gil-White, 2001). Medical students, for instance, often select their specialty based on influential medical role models (Wright *et al.*, 1997). We may also be biased to acquire beliefs, skills and behaviors because they are widely shared or because we want to go along with a group. The *conformist* bias is a tendency to acquire the most common cultural variants in one's environment, while the *success* bias is a tendency to acquire cultural variants found in successful or prestigious individuals.

As Sperber (2001), Tooby & Cosmides (2000) and Sterelny (2006) argued, this hyper-sociality comes at a price. There are good reasons to think that our abilities for evaluating assertions are an adaptive response to the cost of misinformation and deception in an environment where much of what we learn comes from others. In communication there is an advantage for the communicator to be trusted, and for the addressee to have true information. Much of our institutions (justice, science, etc.) make sure that communication take place in a truthful/trusting environment. However, without those external constraints, these advantages do not necessarily coincide. The communicator might benefit from being trusted even if she is untruthful (in which case it is disadvantageous for the addressee). Words are cheap, and credulous addressees risk a lot: an agent believing anything could be easily exploited. Linguistic communication shows no reliable signs of truth and is costless to produce. Thus, context biases (conformist or success) can be adaptive in social settings, but without a capacity to suspend your judgment and ask (to yourself or to someone else) if an assertion is justified, these biases can be harmful. This capacity, and all the processes that support it, is folk-epistemology.

Folk-epistemology thus requires many processes: working memory, attention, linguistic competency, and mostly cognitive control or executive function (Norman & Shallice, 1980; Shallice, 1988). Besides cognitive control and other executive functions, folk-epistemology also requires affective states (Hookway, 2003). We need at least the "irritation of doubt" as Peirce called it (1878) to pay attention to claims that seems unjustified and a "feeling of conviction" (Quine, 1960, p. 60) to take a claim for granted. But without executive functions, we would be unable to hold multiple hypotheses (or countefactual) and compare them. Cognitive control requires the overcoming of automatic or habitual patterns of thought. An extreme lack of cognitive control is exemplified in subjects who suffer from "environmental dependency syndrome" (Lhermitte, 1986): they will spontaneously

do what their environment indicates of affords them. For instance, they will sit on a chair whenever they see one, or undress and get into a bed whenever they are in presence of a bed (even if it's not in a bedroom). An unreflective conformist bias would induce a "social dependency syndrome", where the individual would accept any assertion. Hence folk-epistemology provides an antidote to conformism and to automatic trust. Consequently, paranoia is an exaggerated distrust, where no claims are seen as reliable.

4 The epistemology of action

I said above that folk-epistemology is about assertions, and that folk-epistemological mechanisms evaluate the justification of claims. Put this way, it sounds like these mechanisms manipulate essentially linguistic representations. Sperber for instance, suggest that we evaluate claims mostly by coherence checking: we see whether an assertion is internally coherent or if it is coherent with other assertions. Brandom's "deontic scorekeeping" is a similar process whereby one sees what an assertion implies, and what is implied by an assertion and thus assertion evaluation is done by checking inferential relations between propositions. Tooby and Cosmides posit also a set of inferential procedures that tag information structures as true or false, or assess various aspect of internally represented propositions (source, scope, etc). Although all these suggestions might be on the right track, I think they miss an important feature of assertion evaluation: since an assertion is an action, evaluating an assertion is roughly equivalent to evaluating an action. Hence my last suggestion to further the understanding of folk-epistemology is to organize our knowledge of folk-epistemological capacities around the inferential mechanisms deployed in the folk theory of intentional actions.

Malle and other social psychologists who investigate the folk concept of intentionality have produced a unified model of the representation of intentional action. Their studies suggest that the conceptual framework is relatively similar from one individual to another (Knobe, 2006; Malle, 2001, 2007). Almost everybody agrees whether an action is intentional or not: subjects rely preferentially on causes to explain the unintentional actions and reasons to explain intentional ones. About 70% of the intentional actions are explained by primary reasons: beliefs, desires but also valuing (e.g. "she get home late because she liked the show"). When primary reasons are not evoked, subjects use either a *causal history of reasons explanation* or an *enabling-factor explanation*. The first one explains why a person decided to do X not because of her beliefs/desires, but because of factors that bring about reasons to act: for instance, "she comes from a respectful culture".

The *enabling-factor explanations* cite—after the action is performed—the condition that made its performance possible without referring to the agent’s intentions or motivations (e.g. “she had two week to prepare the talk”). In sum, the folk concept of intentional action is a system of inferences based on reasons, causal reason histories and enabling factors organized as in the following graphics:

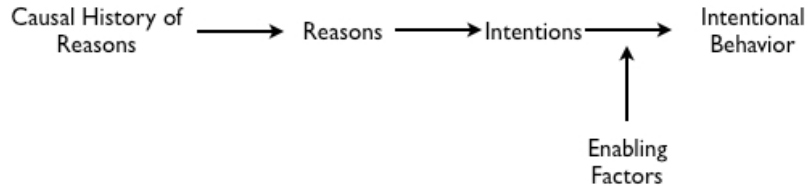


Fig. 2 from Malle, 2007

We see an intentional action as the product of an intention (enabled by certain factors), based on reasons that have a causal history.

As many philosophers argued, an assertion provides more than semantic information (Austin, 1962; Grice, 1989; Searle, 1969). Saying is also acting, and an assertion is a speech act or an illocutionary act. “I bet you can make it” expresses more than an opinion: it is rather a challenge, or an invitation to to engage in a contest. Thus, if we take for granted that assertions are actions, we can slightly modify Malle’s schema:

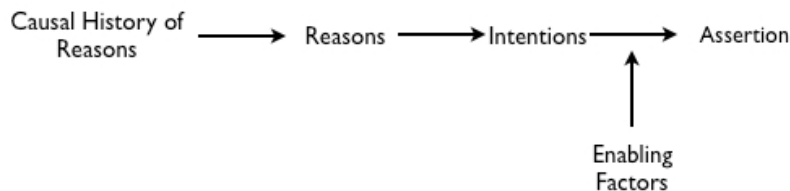


Fig. 3. Modified version of Malle (2007) schema

This hypothesis is not incompatible with coherence checking or deontic scorekeeping: it is rather a refinement of these ideas. The suggestion, in

terms of cognitive processing, is that folk epistemology mechanisms recruit those mechanisms involved in the evaluation of an action. The logical relationships between assertions (compatibility, implication, etc) might be framed by this schema. In this picture, epistemic evaluations are positive (an assertion is seen as justified) when the whole causal chain from the history of reasons to the production of assertions is seen as correct, and negative (an assertion is seen as unjustified) when the causal chain is incorrect in some aspect. Following this schema, an assertion can be seen as false or unjustified for many reasons, related to a default in the chain:

1. *Causal history*. The locutor might have been exposed to false or unreliable information all her life.
2. *Reasons*. The locutor might entertain unwarranted or incoherent claims, or be plainly irrational.
3. *Intentions*. The locutor might be dishonest, deceptive or manipulative.
4. *Enabling factors*. The locutor has defective cognitive (inferential, mnemonic or others) capacities but does not know it.

All epistemic virtue (such as truthfulness, honesty, rationality, reliability or logical soundness of assertions) refers therefore to the normal or excellent operation of the causal chain.

This model of internal folk-epistemology might represent the basic features of epistemic evaluations. A plausible hypothesis is that the model can be redeployed in other domains where the assertion is not an utterance (e.g. writings, email), or even when the evaluated person does not explicitly make an assertion but can be interpreted as being disposed to assert something. Since oral language predates written language, it is plausible that this schema is redeployed in evolutionary recent context.

The model can thus reconcile the methods and findings of the two research paradigms in folk-epistemology introduced in the first section, epistemic intuitions and epistemic theories. The assertion schema occupies an intermediate position between both faculties. First, it structures our intuitive categorization of epistemic vs. non-epistemic states: we perceive an appropriate causal chain in the first case, an inappropriate in the second. Westerners just see Gettier cases as inappropriate causal chains to acquire a disposition to say "I know that P". Everybody (Easterners and Westerners) agree that Dave (in the example above, section 2) does not really know the results of his flipping a coin because of his "special feeling" because about every aspect of the causal chain is broken.

Second, the schema is explicated, refined and analyzed when we extrapolate as to what is knowledge where does it come from. Different theories of knowledge are different settings of the schema: in Kuhn's experiment (see section 2) the Absolutist's conviction that experts have absolute

knowledge is a representation of expertise as an appropriate (and non-negotiable) causal history and/or enabling factors, while the Multiplist's convictions that there is no right answer stems from her representation of expertise as an inappropriate causal history and/or enabling factor.

Of course, this model will not capture all folk-epistemological capacities, but a good deal of what we call knowledge and knowing, in everyday context, can be seen a normative social cognition applied to assertions.

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