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SOCIAL COGNITION

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THE MULTIPLE MEANINGS OF SOCIAL COGNITION

"Social cognition" is a term that is employed without much precaution in psychology even though it is used to mean different things. The first definition refers to the cognitive processes involved in the understanding of other people, social relations, and social institutions, as distinct from cognition about biological, physical, or logico-mathematical entities. Most often, this kind of social cognition is reduced to the inferences performed about others' mental states (i.e. desires, beliefs), notably to anticipate and interpret their behaviours. This perspective is usually associated with Theory of Mind or Folk Psychology, i.e. "the construal of persons as psychological beings, interactors, and selves" (Wellman et al. 2001: 655). This view has recently been questioned because it is more and more accepted that, besides this "mentalizing" strategy, there is also room for a more sociological understanding of other people (Clément et al. 2011; Hirsfcheld 2001; Kaufmann & Clément 2014; Spelke & Kinzler 2007). By detecting hierarchical relationships, for instance, social observers can anticipate how a social interaction is most likely to unfold (Cherafeddine et al. 2015; Cummins 1996; Thomsen et al. 2011).

This first sense of social cognition is therefore cognition *about* the social (i.e. persons and social entities) and it should not be confused with two other meanings. Social cognition can also refer to the knowledge obtained *via* others (i.e. persons or institutions). Social epistemologists tend to call this acquisition process *testimony* (Chinn et al. 2011; Coady 1995 Fricker 1995), a term that is now widely used in developmental psychology since the pioneering work of Paul Harris and colleagues (Clément 2010; Harris 2002, 2012; Koenig et al. 2004). Finally, social cognition can also be understood as the knowledge acquired thanks to a collective process of *reasoning in a group* (Moshman 1998).

The primary goal of this chapter is to show that social cognition, which appears to be an oxymoron (i.e. cognition being, as a product of the brain, fundamentally individual), is indeed a pleonasm, because no form of knowledge can be devoid of a social dimension. It will also be shown that, from a developmental perspective, the influence of the social environment on epistemology takes the form of a progressive awareness of the normative procedures linked with knowledge acquisition. In other words, it is

very likely that learners do not initially possess epistemic beliefs (Schommer-Aikins 2002), but instead that they possess epistemic *cognitions*: in a first step, children's control of the informational acquisition process is mainly procedural and they are not yet able to think reflexively about how knowledge is, or ought to be, acquired. With experience and more contact with different sources of knowledge, they progressively develop a more reflexive understanding of the different processes, individual or collective, involved in the acquisition of justified information. In a sense, students are endowed from a very early age with what could be called a *naïve epistemology*; with time, this competence develops into a more sophisticated and explicit set of *epistemic beliefs*, which may also be influenced by the cultural form of thinking about knowledge acquisition and justification (i.e. *folk epistemologies*).

THE SOCIAL DIMENSION OF INDIVIDUAL COGNITION

Including a chapter on social cognition in a handbook on epistemic cognition may seem paradoxical. Epistemic cognition is generally considered as a "personal matter," as an individual quest towards finer and more justified beliefs (Stein 1996). As cognition is understood to be an inferential process, because it goes "beyond the information given," as in the title of Jerome Bruner's (1973) famous book, epistemic cognition tends to be understood as an individual endeavour, a path to improving coordinated and reflexive inferences (Moshman 1998). In a nutshell, epistemic cognition is often described as the main path from inherited preconceptions to knowledge and a way to achieve, thanks to critical thinking, better control of one's life (Kuhn 1999). From this perspective, it is hard to see how something "social" could be of any use to these essentially reflexive cognitive processes.

Of course, it is hard to deny that at least some of people's knowledge originates from their social environment. The human species is characterized by very long maturation and, without constant care from their significant others, it would be impossible for humans to become adults. As children are embedded within speaking communities, which share norms, values, and beliefs, at least part of this heritage is transmitted from generation to generation. However, even if that fact of nature is acknowledged, such inherited information is often not recognized as true knowledge. The founder of child psychology, Jean Piaget, insisted on the fact that it is not necessarily because young children can reproduce a number sequence correctly that they understand quantity; in a way, they could be compared to parrots, able to mimic sounds without any conceptual hold on what they refer to (Harris 2012).

Since Piaget, how scholars have conceived of children's understanding has considerably changed. To continue using the same example, it is increasingly accepted that even 3-month-olds have some understanding of small numbers, or a "naive arithmetic" (Simon et al.1995; Spelke 2000; Wynn 1992). Indeed, numerous researchers have shown that infants build knowledge very early and spontaneously, not only about small numbers but also about their physical environment (i.e. naïve physics) (Baillargeon 1987; Spelke 1994), about living beings (i.e. naïve biology) (Atran 1998; Springer & Keil 1998), about others' mental states (i.e. naïve psychology) (Baron-Cohen et al. 2000; Wellman 1990), about rules of welfare and justice (i.e. naïve morality) (Nucci 2001; Turiel 1983), and about social entities such as social groups, norms, and relationships (i.e. naïve sociology) (Cummins 1999; Hirschfeld 1995, 2001; Jackendoff 1994; Kaufmann & Clément 2014). Of course, this knowledge is not reflective, but the surprise displayed by infants when one of the rules belonging to one of these different

domains is violated constitutes proof that their cognitive system is already making inferences and predictions about *what should happen* in these different environments (Baillargeon et al. 2010). However, children are dependent on adults for the acquisition of many beliefs. For instance, how could they learn by themselves that the Earth is round, that germs cause illness, or that thoughts are dependent on brain activity (Clément 2010; Harris 2012)? But does this imply that these beliefs that they acquire from others, these *testimonies* that they subsequently take for granted, are not justified and that they cannot be considered as knowledge?

From an epistemological perspective, where a mental representation can be considered as knowledge if and only if it is (1) justified, (2) true, and (3) believed by the person (Greene et al. 2008), both naïve theories and testimonies seem to be beyond the scope of justified and true beliefs that are socially transmitted. On the one hand, core knowledge (e.g. expecting that objects maintain their identity through time) appears to emerge from encounters between individual modular cognitive systems and their environments, which are not dependent on others' teaching (Hirschfeld & Gelman 1994). In other words, it does not seem to be a matter of *social* cognition. On the other hand, testimonies rely on the transfer of knowledge, the reliability of which does not rely on the receiver; in this sense, testimony would not qualify as social *cognition* either.

My objectives on the following pages are to show that (1) even the cognitive operations underlying the acquisition of core knowledge have a *social* dimension, and (2) the acquisition of knowledge via testimony involves, from a very young age, *cognitive* operations in order to "filter" the incoming information.

THE SOCIAL DIMENSIONS OF CORE KNOWLEDGE

The research on core knowledge systems has predominantly focused on the internal mechanisms that enable infants to represent and make sense of ecologically relevant entities and events (Spelke 2000). However, even if humans are genetically "equipped" to process certain kinds of information and generate specific inferences, this process does not happen in a social void. First of all, these systems need inputs to function and, given the state of children's helplessness, the stimulation required to activate their potential capabilities would be limited to what happens in close proximity. Fortunately for them, babies are not only fed but also "transported" to many different sites and confronted with numerous situations by their caregivers. This social support enables them to accumulate sufficient elements to train their competences and develop representations about the different domains that are specific to their environment (Carey & Spelke 1996).

However, the importance of others in the development of naïve theories is not limited to this basic "life support." In particular, adults do not interact with these very young learners as they do with their peers. Brand and her colleagues (2002) showed, for instance, that mothers' demonstrations to infants, compared to demonstrations to adults, are higher in interactiveness, enthusiasm, repetitiveness, and simplicity (i.e. *motherese*). More recently, Csibra and Gergely (2009) even proposed a *natural pedagogy* hypothesis, stating that humans have so much general knowledge to acquire from bits of episodic information that infants are able to rapidly generalize a piece of information proposed ostensively by experts, and that experts are prone to ostensively communicate information that is generalizable.

Moreover, the development of knowledge is not linear and solipsistic. As Piaget has already shown, some notions are not easy to assimilate (Piaget 1937), and social

interactions with individuals that have already mastered a notion of ability can be crucial. This is notably the case when core knowledge produces predictions that differ from what is factually deducible. In such cases, children progress faster when they are confronted with other children exhibiting different cognitive strategies (Doise et al. 1975; Perret-Clermont 1980). This is notably the case for liquid conservation, a task that has often been used to trigger a socio-cognitive conflict by putting a child who already masters liquid conservation in the company of a child who does not. In these interactional contexts, "the subject comes to reorganize and restructure cognitions as a result of confrontation with opposing points of view" (Bell et al. 1985: 42).

More recently, the idea that knowledge is a personal endeavour obtained by progressively refined coordination of inferences and by the improvement of reasoning abilities has been challenged by a radical perspective whose nature is fundamentally *social*. This new perspective demonstrates that the goal of reasoning, individually or collectively, is not to improve knowledge and make better decisions, but rather that its function is argumentative and that it has been designed by evolution to persuade others or to avoid being manipulated by others (Mercier & Sperber 2011). This hypothesis, which could be considered an "epistemic sacrilege" because it attacks the traditional association between truth and reasoning, seems to account for a wide range of poor rational performances that have always been problematic for more standard theories. The plausibility of this idea again underlines how the improvement of knowledge is embedded in interactional social contexts, as is more and more accepted by social epistemologists (Goldman 1999).

In summary, even if it is taken for granted that there are some parts of knowledge acquisition that rely on systems of core knowledge with principles that enable people to individuate and support inferences of certain kinds of entities (Spelke & Kinzler 2007), this does not mean that these processes are devoid of any social dimension. Without others, (1) newborns would never be able to access the information necessary to trigger their naive theories, (2) children would not make important epistemic progress when confronted with others' opinions, and (3) individuals would not benefit from the refinement of knowledge through argumentation.

THE COGNITIVE DIMENSION OF SOCIALLY ACQUIRED KNOWLEDGE

After insisting on the *social* dimension of personally acquired knowledge, it is important to insist on the *cognitive* aspect of socially acquired knowledge. Indeed, a very important part of what people consider to be true has not been acquired through personal observations or inferences, but by testimony. Indeed, the importance of others' inputs in knowledge acquisition is now realized by philosophers. Social epistemologists admit that their discipline has long been "individualistic, focusing on mental operations of cognitive agents in isolation or abstraction from other persons" (Goldman 1999: 4). In fact, even the more sophisticated discoveries of science are dependent on a refined division of cognitive labour where trust in others is absolutely essential (Kitcher 1995). From a cognitive point of view, the difficulty is to assess the way people incorporate others' testimony in their own knowledge. In philosophy, this debate is known as the conflict between *reductionists*, who think testimony by itself is not sufficient to legitimate any acquired knowledge (Fricker 1995), and *non-reductionists*, who claim that beliefs acquired merely on the basis of a speaker's testimony can be justified without other positive reasons (Burge 1993; Coady 1995; Goldman 1999). Developmental

psychology could play an important role in this debate. If children are, from the beginning, like the parrots that Piaget talked about, simply repeating what someone told them without any understanding of its content, it would indeed be hard to describe such information as "knowledge." However, if people have, from an early age, some cognitive means to filter the communicated information, then it may be appropriate to describe such acquisition as "epistemic" in nature (Clément 2010).

Recent research in developmental psychology seems to indicate that even young children are not passive when confronted with others' testimony; a sort of "filtering" of communicated information seems to be in place even at a very young age, enabling children to evaluate the epistemic qualities of their sources (Sperber 2001). This is compatible with what is called the "epistemic vigilance hypothesis," based on the nature of communicated information (Sperber et al. 2010). Communication is extremely important for humans as it serves to enrich their knowledge about relevant aspects of their environment without incurring the risks associated with perceptual acquisition of information. In a way, language and communication enable people to "have more eyes to see" (Quine & Ullman 1978: 50). However, the risk of getting deceived, intentionally or not, is particularly high. This is notably the case because the interests of others and people's own interests do not always coincide. Indeed, in a variety of situations, people's interests are best served by misleading or deceiving others. For the communication to remain advantageous, it is therefore crucial that people do not indiscriminately accept everything that they are told.

Evidence of such basic filtering mechanisms has been highlighted by developmental research on *testimony*. Contrary to what would have been expected if children were completely credulous, it has been shown that they choose their informants according to multiple criteria based on properties of the source and of the message (Clément et al. 2004; Harris 2012). For instance, when preschoolers could choose between two informants, of whom one has been unreliable in the past, 4-year-olds, and sometimes even 3-year-olds, were able to put their trust in the more reliable source. This was particularly true when one of the informants constantly gave wrong labels for known objects; when children had to decide who was giving the right name for unknown objects, they chose the source which had previously been reliable (Jaswal & Neely 2006; Koenig et al. 2004; Koenig & Harris 2005). Moreover, this epistemic preference is stable across time: one week after having observed that one informant was more reliable than another, 3- and 4-year-olds were more likely to trust the source that had been reliable in the past (Corriveau & Harris 2009).

Preschoolers are also able to evaluate which of two informants has better access to certain information. For instance, when 3-year-olds observed that one source had perceptual access to a given content, while the other source did not, they were able say who was the better informed (Pillow 1989; Robinson et al. 1999). Some research seems to indicate that even younger children are able to discriminate between informants. For instance, experiments related to social referencing showed that 12- to 18-month-olds were influenced by the relevant emotional reaction of an adult who could see the same ambiguous toy as the infant, but not by the emotional reaction of an adult who could not see the toy (Moses et al. 2001). More recently, it has been shown that even 8-month-olds who were familiarized with two female faces, one systematically looking at a box which happened to contain something interesting (i.e. an animation), the other at a box which contained an animation only 25 per cent of the time, trusted the reliable face more (Tummeltshammer et al. 2014). In summary, when children do not

have any prior information about certain states of the world, they are prone to evaluate who, between conflicting informants, is better informed, and they have more faith in such reliable sources.

The level of agreement triggered by a statement is another important cue when it comes to making a decision about whom to trust. Here again, it has been shown that even young children are able to take this kind of epistemic cue into account. For instance, when two adult bystanders consistently signalled assent (i.e. via nods and smiles) to the claims of one informant, and dissent (i.e. via head shakes and frowns) from the claims of the other informant, 4-year-olds subsequently trusted the informant who had received more bystander assents (Fusaro & Harris 2008). Even younger children are able to use adults' nonverbal expression of agreement and disagreement with a speaker's claims. In Fusaro and Harris's (2013) study, 24-month-olds observed an adult nodding or shaking his head after two conflicting statements about the location or identity of an object by a speaker; the children were then able to use this cue to infer the correct name and location of the object.

Even without any sign of confirmation from an audience, detecting which direction a majority is "leaning towards" is often a good way to choose between conflicting statements. Interestingly, children take into account consensus when they have to evaluate contradictory statements. For instance, when 3- and 4-year-olds were shown unfamiliar objects and had to decide which one was the "modi" (i.e. an invented label), they chose the object that had been pointed at by three adults, and not the one pointed at by only one adult (Corriveau et al. 2009). Even 2-year-old children give priority to information delivered by a consensus. When they had to decide how to use an unknown box to get a reward, they were more likely to imitate three demonstrators doing one action than a single demonstrator doing the same action three times (Haun et al. 2012). The level of consensus is therefore an important dimension that is detected by children early in their development, and is used to evaluate the epistemic reliability of a claim.

In the absence of any direct evidence about the level of informativeness or unanimity of their sources, children are not completely caught off guard. First, they are able to take into account the benevolence of the sources. Mascaro and Sperber (2009), for instance, showed that 3-year-olds trusted a source that had been nice toward the experimenter and rejected a source that had been nasty. Even when the only distinction between two informants was their emotional expression (i.e. anger versus happiness), children were more likely to trust the apparently benevolent informant (Clément et al. 2013).

In general, it also seems reasonable that people listen to those who they trust in their daily lives and with whom they are familiar. For most children, it would be expected that caregivers would be given a kind of epistemic priority. This has indeed been demonstrated for children as young as 4 years old who enjoy a secure affective bond with their mother: when the testimony of their mother conflicted with the testimony of an unknown adult, they preferentially chose their mother's assessment (Corriveau et al. 2009). Similarly, children from 3 years of age gave more weight to information transmitted by people with whom they are familiar. Corriveau and Harris (2009) showed, for instance, that preschoolers trusted a familiar teacher more than an unfamiliar teacher. Familiarity seems to extend to much wider social circles, including unknown people who possess some cues of group membership. Although race does not seem to trigger preference at an early age (Hirschfeld 1996; Kinzler et al. 2009; Kinzler & Spelke 2011), accent is an important cue for in-group membership and children

rapidly recruit it for epistemic decisions. For instance, after having seen videos of a native- and a foreign-accented speaker of English who each spoke for 10 seconds, and then silently demonstrated different functions with novel objects, 4- and 5-year-olds chose to select the nonverbal information given by the native speaker and imitated her action (Kinzler et al., 2011).

When no cue about the potential reliability of the source is available, it is still possible to check the coherence of the communicated message itself. For example, if people contradict themselves, or if a message contains contradictions, it is probably good to be sceptical about its content, as a precautionary measure. Detecting such contradictions seems to be a complex task but, again, evidence shows that even pre-schoolers are able to conduct such epistemic evaluations. For instance, my colleagues and I have shown that children as young as 3 years of age seem to favour an opinion supported by a strong argument over an opinion supported by a circular argument (Mercier et al. 2014). Similar results have been obtained by Corriveau and Kurkul (2014), who showed that 5-year-olds, and in simpler conditions, 3-year-olds, demon-strated a selective preference for noncircular over circular explanations. It is worth highlighting that this evaluation of consistency is also done through the detection of logical connectors. When 4- and 5-year-old children had to choose between two statements differing only by the presence of the connector "because" (i.e. "The ball is in the green box, Jane always puts her ball in the green box" versus "The ball is in the green box because Jane always puts her ball in the green box"), they selected the state-ment containing the "because," even if its use did not add anything to the explanation (Bernard et al. 2012).

To sum up, from a very early age, individuals do not unconditionally accept the different testimonies that may enrich their knowledge. Even preschoolers are able to evaluate the reliability of their informants, judging that certain sources are more knowledgeable than others. They are able to decide which of two informants has had better informational access to a given fact and, as a consequence, to judge which is therefore more trustworthy. Also, children track past reliability and use it to decide whom to trust in the future. Humans seem to be "equipped" to take into account the degree of agreement on a given statement, granting greater epis-temic value when a consensus has been reached. The benevolence of the source is also taken into account and, from a similar perspective, group membership; these cues are related to the level of cooperativeness of the informants and they are also detected at a very early age. As the children get older, the coherence of the message is also evaluated and they are ready to discard statements that are circular. With time, students learn to evaluate the level of trust that they can accord different sources of knowledge, given their perceived expertise (Bråten et al. 2009) and benevolence. This sensitivity to others' accuracy is in line with the overall move toward an evalu-ativist epistemology (Kuhn 2001), where arguments are evaluated as being more or less reliable judgments.

Given such diversity in evaluative processes, and its precocity, it would seem strange to discredit *a priori* the epistemic nature of socially acquired knowledge. But it is nonetheless legitimate to wonder to what extent these kinds of evaluative pro-cesses are *epistemic* in nature. In particular, it is widely admitted that epistemic cog-nition requires metacognition (for a subtle discussion, see Barzilai & Zohar 2014); can the basic evaluative processes that were described previously be considered metacognitive?
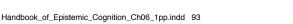
SOCIAL COGNITION, METACOGNITION, AND EPISTEMIC COGNITION

Contemporary theories about epistemic cognition tend to be rather demanding about what qualifies as an epistemic belief. In philosophy, epistemology is essentially concerned with the *justification* of knowledge and is therefore related to rationality, to *explicit* conceptions about the reasons that enable us to consider any given belief as true. This perspective tends to give a certain prevalence to the individual level of justification, although it does allow for the justification of knowledge to come from external sources such as testimony (Greene et al. 2008). However, this implies that individuals are able to take a step back in order to consider the evidence for a particular belief. It is in this sense that metacognition is generally related to epistemic cognition, as a "cognition that reflects on, monitors, or regulates first-order cognition" (Kuhn 2000: 178). In other words, epistemic beliefs are often thought of as being *metarepresentational*, i.e. representations whose content is *about* other representations (Sperber 2000). In the case of social cognition in general, and for beliefs acquired via testimony in particular, the same requirements seem necessary. For example, if someone told you that eating cranberries is good for your health, you should not only be able to recall this content but also retrieve who, and in which context, this advice had been given to you. If the source was your family doctor, for instance, or a recent paper in a prestigious scientific journal, your belief would be quite justified (Burge 1993).

Taken seriously, this metacognitive perspective is cognitively demanding and it is interesting to consider whether most of people's beliefs could really be explicitly justified. Indeed, even if there is no machine monitoring what people consider to be true, it is a safe bet that people would not be able to systematically explain the reasons that lead them to believe what they now take for granted. Even if children's minds are less crowded by beliefs than adults, this is even more the case for children. For instance, young children are not even very good at remembering the sources of their beliefs: Gopnik and Graf (1988) showed that 3-year-olds could remember the contents of a drawer but were not able to remember if they had seen it, if someone had said it, or if they had inferred it from a cue. Moreover, metacognition is generally conceived as being inextricably linked to theory of mind (Kitchener 2002), and young children are known for their very partial mastery of second-order representations, i.e. they have difficulty in attributing intentions and beliefs to others (for a review, see Wellman et al. 2001; Sodian, this volume). In adopting a cognitively demanding conception of epistemic cognition then, it seems impossible in general terms to speak of epistemic beliefs in young children, and it follows that this would also be the case for social cognition.

There are, however, an increasing number of experiments that seem to show that children are able to evaluate their own level of certainty in order to decide whether to update their belief according to the "quality" of the communicated information. Everything happens as if "epistemic measuring scales" enable children, from a very early age, to weigh the different available evidential cues. On these scales, information obtained via *perception* weighs most heavily. For example, when a statement given by someone who has been reliable in the past conflicts with a perceptual belief, preschoolers cease to follow the source and stick to what they have observed in the recent past (Clément et al. 2004). This is also the case when a consensus's statement conflicts with a perceptual belief (Corriveau & Harris 2010; Bernard et al. 2015). More generally, representations that have already been determined to be true seem to be used automatically to filter the newly communicated information. This can be illustrated by two

different sets of studies. Pea (1982) showed that 2- to 3-year-old children spontaneously corrected false statements. More recently, Koenig and Echols (2003) demonstrated that even 16-month-old infants looked longer at people who incorrectly labelled objects that were already familiar to the infants. Infants even tended to correct the false labels when the person produced them. Such results indicate that children possess, from an early age, a way to automatically filter incoming information with representations already taken to be true. The presence of these mechanisms is in line with the epistemic vigilance hypothesis, i.e. the idea that humans are biologically equipped with a suite of cognitive mechanisms to filter communicated information (Sperber et al. 2011).

People even seem to be sensitive from an early age to the level of knowledge possessed by others and to take it into account when deciding whether to "update" their beliefs. For instance, when 3- and 4-year-old children were presented with two informants, one being an expert on dogs and another not, they trusted the expert more when it came to naming new unknown dogs, but not when naming unknown artefacts (Koenig & Jaswal 2011). From 3 years of age, children take into account the level of knowledge that is associated with familiar experts, demonstrating a certain understanding of the division of cognitive labour (Lutz & Keil 2002). Even more interestingly, when choosing between two informants, infants as young as 24 months old are able to take into account nonverbal expressions of level of confidence (Brosseau-Liard & Poulin-Dubois 2014). Everything happens as if the infants are able to detect another person's level of trust in their own epistemic states; in other words, at 2 years of age, children seem to be able to use certain cues (e.g. the person shrugging, palms up) to detect procedural metacognition.

These recent results could dramatically change the way scholars look at metacognition and at its role in social cognition. Indeed, metacognition is usually conceived as inseparable from theory of mind (Carruthers 1999; but see Proust 2007, 2013). However, this cognitive ability to represent mental representations, of others or oneself, is far from completely acquired by children as young as 2 or 3 years of age (Sodian, this volume; Wellman et al. 2001). Nevertheless, young children are capable, to a certain extent, of evaluating their own, and other people's, level of confidence in their epistemic states. To explain the different results mentioned in this chapter, one has to posit that metacognition is not entirely explicable through metarepresentational abilities. This is compatible with a conception of metacognition as *procedural*, i.e. a form of dynamic control of the "informational quality" of one's epistemic state that relies on some feelings, in particular of fluency (Koriat 2000; Proust 2013). This form of metacognition has been detected even in nonhuman primates, who are able to skip a task when they evaluate that they are too uncertain of being able to complete it successfully (Beran et al. 2006). Similar results have been obtained with 3.5-year-olds (Balcomb & Gerken 2008), and Lyons and Ghetti (2011) showed that even 3-year-olds, probably relying on response latency, could reflect on their sense of certainty about the likely accuracy of their decisions.

Given all these findings, I propose that a basic form of metacognition exists from an early age and most likely continues to function throughout the entire lifespan. It enables people to monitor their epistemic states and to evaluate the different "epistemic weights" of different sources of information, including testimony. Given that children are unable to access these evaluative procedures explicitly (i.e. via second-order representations), it does not seem appropriate to speak in such cases of *epistemic beliefs*. Indeed this is often the situation for adults too. However, it seems appropriate,

given the rather sophisticated evaluation documented by many experiments in developmental psychology, to speak of *epistemic cognition*.[1] More specifically, I propose that individuals are biologically equipped to evaluate the content of their epistemic state (i.e. trusting oneself) and the reliability of information communicated by others (i.e. trusting others). In other words, humans are endowed, from an early age, with a *naïve epistemology*.

CONCLUSION: FROM NAÏVE EPISTEMOLOGY TO FOLK EPISTEMOLOGY

Even if I were to admit that there is something like a naïve epistemology that plays a crucial role in social cognition, this does not dismiss the fact that personal epistemologies undergo profound modifications during childhood and adolescence (Hofer & Pintrich 1997; Moshman 1998). In particular, individuals develop *epistemological beliefs*, i.e. conceptions about the definition of knowledge, about the way it is constructed, how knowledge is evaluated and how knowing occurs (Kitchener 2002). These beliefs are obviously metarepresentational and they correspond to what is most often considered "folk epistemology." Individuals become able to justify their knowledge; they can, for instance, provide evidence in support of what they consider to be true, or mention authority and expertise in defending their beliefs (Hofer & Pintrich 1997). In a sense, this move from tacit commitments (Chinn & Brewer 1993) to explicit epistemic belief is akin to the contemporary distinction between cognitive processes belonging to System 1 (i.e. automatic and tacit, or *heuristic*) and System 2 (i.e. reflexive and controlled, or *analytic*) (Evans 1984; Kahneman 2011). This "royal path" to critical thinking (i.e. the process by which one revises and improves, individually or collectively, the reliability of one's beliefs) is often considered an individual endeavour (Kuhn 1999), with individuals becoming increasingly successful at organizing their thinking in a more and more rational way (Moshman 1998; Moshman & Geil 1998).

This individual dimension is undoubtedly important but there is clearly also a significant social dimension to epistemological beliefs. In every human group, there are epistemological folk theories, cultural traditions that help individuals to be attentive to certain dimensions of the knowledge acquisition process and that propose different strategies to improve knowledge. This sociocultural dimension of epistemology, which corresponds to what could be called a "folk epistemology," is a very interesting aspect of epistemic cognition that requires further research (Nisbett 2003). For instance, it is possible that the basic factors underlying naïve epistemology (e.g. accuracy, reliability, consensus, coherence, expertise) are shaped differently according to specific cultures and socializations. It could be true that, in similar contexts, individuals from different cultures give more weight to certain cues than others. It may be the case, for example, that in small communities, where social cohesion is crucial for the wellbeing of everyone, consensus could often predominate over accuracy or coherence. On the contrary, one can expect that the multiplication of potentially conflicting sources of information in the modern environment favours the emergence of individual and collective epistemic inquiries, notably to separate the epistemic wheat from the deceptive chaff (Bråten et al. 2011). It is, however, far from obvious how to foresee the potential consequences of such an intense and potentially disturbing circulation of opinions. It could lead to a more distanced view on social conventions and profound discussions about people's common humanity (Gabbenech 2007; Habermas 1999). But such a profusion of ideas could also generate a sort of epistemic panic and an intellectual retrenchment

on a set of cultural, notably religious, beliefs judged as immovable and irrefutable. To explore these paths, a close collaboration between philosophers, psychologists, and anthropologists is more than ever required; this constitutes in itself an appealing invitation for a new epistemological journey.

NOTE

1   Therefore, I use this notion in a slightly different way from Karen Kitchener (1983). For her, epistemic cognition refers to the individual's reflection "on the limits of knowing, the certainty of knowing, and criteria of knowing" (Kitchener 1983: 222). In my sense, it is not required to be reflective for epistemic cognition because it is possible to monitor epistemic states without "reflecting" on them.

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