NOTES
1. All date-only citations are to Wittgenstein's works.
2. "A philosophical problem has the form: 'I don't know my way about'" (1953/1968, No.123).

Social understanding and the cognitive architecture of theory of mind

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Abstract: Although Carpendale & Lewis (C&L) correctly emphasize the importance of conversation in children's social understanding, they neglect several complex issues. Contrary to their assertion, the focus on mental state processing has not been misplaced, and there is a need to recognize that different aspects of social understanding are liable to undergo distinctive developmental changes that vary in relation to social interaction.

Carpendale & Lewis's (C&L's) article is a welcome addition to the debate on the relation between language and theory-of-mind reasoning that has been stimulated in two recent related *BBS* target articles (Bloom 2001; Carruthers, in press). According to C&L, "A common problem with the dominant perspectives of the field is that each focuses on the cognitive architecture of mental state reasoning, without reflecting on the social landscape in which such reasoning is constructed" (target article, sect. 2.2, last para.). The main motivation for the social interaction approach that C&L propose is the observation that social understanding develops gradually and that research on social understanding is overly fixated on theory-of-mind false belief tasks that prevent us "from examining the longer view of development" (sect. 4.1, penultimate para.). In their proposal, C&L rightly highlight the central role of conversation in development. However, they do not adequately recognize that this role varies according to different aspects of social understanding, and they gloss over the fundamental distinction between having the concept of belief and differences in how specific beliefs are used in judging persons and situations (Scholl & Leslie 1999).

It is no wonder that so much attention has been fixed on the core cognitive architecture of theory-of-mind (TOM) reasoning that involves knowledge of how mental states such as beliefs may not conform to reality. Correlations between performance on TOM tasks and opportunities for positive social interaction from peers and siblings are consistent with the notions that forms of social interaction speed up the manifestation of TOM reasoning and that having TOM may be a good thing for a wider social understanding (Peterson & Siegal 2002). However, as shown on tasks involving predictions of the behavior of a protagonist who holds a false belief, TOM is achieved by all typically developing children by about four to five years of age. Modifications to the structure of these tasks in order to ensure that children understand the relevance and purpose of an experimenter's questions reveal competence at an earlier age (Siegal 1997), and, to a considerable extent, the tasks themselves really amount to tests of children's conversational understanding (Bloom & German 2000). Early immersion in conversation with others may suffice to trigger the display of TOM reasoning even in three-year-olds, alerting children to the fact that others are repositories of information about mental states that may differ from one's own, and from reality.

But obstacles to conversational understanding and hence TOM reasoning can occur. Conditions such as deafness, autism, and anarthria often do not permit the child to engage even minimally in conversations that permit insight into the nature of mental states. In all these cases, children may function quite normally or even excel in situations that involve reasoning about number, biology, or physics and yet have protracted difficulty on TOM tasks. This pattern of results is of great significance to developmental

psychologists and cognitive neuroscientists, as it points to the possibility of early auditory and attentional barriers that preclude participation in conversations and success on TOM tasks (Siegal & Varley 2002). The diagnosis of such barriers promises to alleviate the social isolation of children with developmental disorders, in the process enhancing their communication and literacy. A neurocognitive approach is fundamental to the study of this aspect of social understanding.

Unlike the concept of belief, specific beliefs do vary in typically developing children. In particular, children may vary in their specific beliefs about the usefulness of false belief knowledge in answering questions about what they and others know. C&L cite a study by Varouxaki and colleagues (1999) suggesting that many (but not all) five-year-olds neglect to report knowledge that can be inferred or deny that they are ignorant despite a lack of knowledge. They interpret these responses to reflect the development of beliefs beyond those shown on TOM false beliefs tasks. Yet, in this instance, forces of enculturation and language may either render some children to be more modest than others in their interpretation of knowledge (Lee et al. 1997), or prompt children to give affirmative or other perseverative responses in situations in which they do not yet understand the purpose and relevance for the task at hand (Deák et al. 2003; Fritzley & Lee 2003). Such beliefs involve an altogether different aspect of social understanding from that of simple TOM reasoning – one that does need to be considered on its own merits in terms of social interaction influences.

Therefore, whereas the expression of TOM reasoning itself can be viewed in terms of a "poverty of the stimulus" analysis in that, like the syntax of language, only a minimal environmental input seems to be needed for it to emerge, social interaction can powerfully influence specific beliefs about the knowledge, emotions, and intentions of others. Gradually, the massive cultural differences in adult beliefs come to be reflected in children's beliefs (Hejmadi et al., in press; Shweder et al. 1998) – a development that is distinctive from the core cognitive architecture of TOM.

Can differences in specific beliefs be explained solely through the Piagetian constructivist processes that C&L advocate? It is likely that different aspects of social understanding undergo distinctive developmental changes, much as does development in various scientific domains such as biology, cosmology, and physics (Siegal 2002). For example, in reasoning about food, particularly the edible-inedible distinction that is close to survival, children are constrained to initiate conversations in order to meet the sharply defined goal of avoiding contamination. By contrast, no such conversations are necessarily forthcoming on cosmological knowledge. For children to know about the shape of the earth and the day-night cycle may require direct cultural transmission in school. A constructivist account does not fully characterize either of these changes. Similarly, the landscape of social understanding is huge. It includes the interpretation of facial expressions and the acquisition of cultural traditions of dietary laws and other social customs. We await an analysis dedicated to how children's understanding of such varied aspects of the social world comes about.

Acts of judgment, not epistemic triangles

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Abstract: Carpendale & Lewis's (C&L's) reanalysis of Chapman's (1999) epistemic triangle dealing with the coordination of interactions with physical objects and people's communication is misleadingly incomplete. An alternative proposal is outlined combining the causality of action with the normativity of knowledge in acts of judgment. This alternative is empirical and developmental, with a focus on rich but neglected phenomena.

Carpendale & Lewis (C&L) argue for a third alternative to individualism and collectivism with regard to cognitive development in terms of Chapman's (1999) epistemic triangle (ET). This triangle has a central apex in the coordination of the remaining duality consisting in interactions with physical objects and communications with other people (target article, sect. 3). My argument is that C&L's re-analysis is misleadingly incomplete. My alternative proposal is in terms of the human capacity to make judgments.

What is an object? An answer in terms of Popperian realism about three worlds, recently recast by Bereiter (2001), is instructive: world 1 is the world of physics; world 2, the world of psychology/sociology; and world 3, the world of epistemology. Translated into C&L's re-analysis, an ET is the coordination of world 1 physical objects with minds in societies in world 2. But this is problematic. The objects and properties of these worlds are exclusive, and so problems of Kuhnian incommensurability remain. First, physical objects and their properties are not psychosocial. Nor are psychosocial objects and properties physical. This means that they have in common no distinctive properties – other than causality, which is addressed below – and so C&L's re-analysis has not been carried through. Second, there is worse: Whereas physical and psychosocial objects have causal properties, world 3 epistemic coordination objects would have normative properties. Paradigm cases of normativity include truth-values (only truths can be known) and entailments (knowing 3 + 4 = 7 entails 3 × 4 = 12). Nor are these the only cases in the class (Smith 2002). There is nothing in C&L's proposal to show how this reconciliation of the normative and causal properties of knowing could be carried through in the construction of true knowledge bound by necessitation. Hence, ET coordination in C&L's re-analysis names but does not explain cognitive development.

An alternative proposal is to regard objects intentionally as the content of acts of judgment (Smith 2002; 2003). Acts include physical and communicative interactions, and so straddle worlds 1 and 2. These interactions occur as lawful regularities in contingencies, contexts, and cultures for causal explanation in psychology/sociology. An important type of act is assertion and denial when an agent makes a judgment. The content of a judgment is an intentional object based on norms internal to the act. Norms include rules, obligations, and directives with a common logic (von Wright 1963). They occur in all domains of knowledge and are used by individuals in societies. Acts have agents who regulate their actions in terms of norms – following Piaget (1965a, p. 159) "a subject is always 'normed.'" The implication is not whether agents use norms, but rather which norms these are and how they are used. Regulations may occur as normative facts which are "imperative rules whose origin is in social interactions of all kinds, and which act causally, in their turn, in the context of individual interactions" (Piaget 1977/1995, p. 69). Normative facts are facts and are empirical. They are open to investigation at all developmental levels. Central to this developmental epistemology (DE) is the proposal that (intentional) objects are constructed in virtue of linkages between causal facts and normative facts through uses of the capacity to judge.

Here are some examples of normativity covering both adults and children:

A. Martin Luther was directed at a religious tribunal to explain why his judgment was to be trusted over that of his peers. Luther argued that "I do not accept the authority of popes and councils, for they have contradicted each other. Here I stand, I cannot do otherwise."

B. Galileo argued that the Ptolemaic and Copernican models of the universe were false and true, respectively. He was directed by the Church to accept that this analysis was erroneous. Asked to explain why he had violated this command, Galileo insisted that he had no memory of agreeing to it.

In examples [A] and [B], an individual is in social dispute with peers. This dispute is manifest in incompatible judgments, which are due to commitments to divergent norms in their societies.

C. Mat was asked to add 3/4 and 1/4, adding numerators and

denominators, making 4/8, and then through a pie chart, making 1. Asked a normative question about how to decide which answer was right, Mat replied permissively: "it depends on which method you are told to use" (Kamii 1982).

D. Normative commitments about number conservation were at work in 20% of children's incorrect responses: lengthening one line of counters reduced their number in that "you've taken two away (and so) these two aren't there." These judgments were analogous to a normative disqualification in a game when a player is "sent off" (Smith 2002).

In [C] and [D], children are in causal settings influencing their performances. Their erroneous judgments are made by reference to norms which are divergent from those of their teachers.

E. In a study of mathematical induction, young children repeatedly added one counter to each of two containers, where initially X's contents were one more than Y's. Asked a generalisation question, John replied "that (X) would be right up to the cover in the sky and that (Y) would be right up to God, so then they would still have to be more." This was superb reasoning by analogy through a cultural belief that God lives in Heaven on the top of which was a cover. Thus were the contents of B still more than those of A, and necessarily so (Smith 2002).

Cases [A] and [B] show that normative advances are made by adults, and [E] that they are made by children, with [C] and [D] giving testimony to the difficulties. These rich phenomena cry out for explanation. Central to DE is how "each individual is led to think and re-think the system of collective notions (Piaget 1977/1995, p. 76). Norms are used in the initial "thinking" of sociocultural notions, and are developed in their "rethinking." Key advances are made from causality to normativity (Piaget 1977/1995, p. 51), from "normative pressure" to autonomous normativity (von Wright 1963). Quite how such advances could be made remains indeterminate in C&L's re-analysis.

A penny *is* your thoughts? Reflections on a Wittgensteinian proposal

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Abstract: Although in fundamental agreement with Carpendale & Lewis's (C&L's) position, we discuss a potential source of confusion regarding the socially constituted nature of mental states. Drawing from recent work by Kusch (1997; 1999), we argue, more specifically, that mental states are instances of "artificial kinds," and so, stand between the more common classificatory extremes of "the natural" and "the social."

Most of us, we suspect, labor under the impression that our thoughts are private and that even if Big Brother scrutinizes other aspects of our lives, at least our *mental* lives are safe from prying eyes. To be told otherwise – that is, to hear on good authority that our minds are not the private sanctuaries we have always imagined them to be – would be unsettling. Although this was not our own first reaction to Carpendale & Lewis's (C&L's) broad proposal regarding the socially constructed nature of the mind, we argue here that perhaps it should have been. In their treatment of the debate concerning the relative contribution of social versus individual processes in development, C&L effectively "out" the often closeted "individualistic" assumptions underlying much of the present-day smart talk about children's understanding of mind and, in the bargain, usher in a set of perhaps even more radical claims. That is, Orwellian threats notwithstanding, we suggest something even more insidious is afoot in C&L's proposal, not the least of which is that our mental lives may never be quite so "private" again.