state concept (e.g., *know* or *think*) does not exist a priori in the child's mind and can only be inferred from opaque references to other words; and, on the other hand, the words themselves have many different uses in activity contexts, only some of which refer to mental states. Consider the mother saying "I think this one goes here," as she places a puzzle piece; in what way might a child differentiate this from the statement "this one goes here?" (The ambiguous meaning of *think* in everyday contexts and psychological tasks is discussed in Nelson et al. 2003.) These comments bear on the authors' research agenda for the study of the development of "shared meaning" (Nelson 1985), which they point out is one of the most difficult and important problems (and, I would add, most neglected) in developmental psychology.

The authors make an important point that children must assume that they live in "a common, stable, external world that is the same for the self and others." But as they note, this assumption is challenged when through language children learn that other people's experience is different. Coming to grips with this knowledge is the entry point to the community of minds and the foundation for the radical change in self and consciousness that takes place during the later preschool years, of which the standard theory-of-mind tasks have tapped one small piece. This knowledge depends upon evidence derived in social interactions but it does not come as a prepackaged concept; rather it requires knowledge construction from accumulating pragmatic evidence. At the same time it is a mistake, I believe, to suggest that the construction is achieved by the individual child, any more than to suggest that it is transmitted as a social construction from parent to child. Rather, the process may best be viewed as a collaborative construction in which the child's emerging awareness of different experiences and different perspectives is supported, explained, and elaborated by parents or others through everyday discourse.

One of the most important kinds of such discourse is talk about the past and the future – reconstructing memories of child and parent and forecasting coming activities. As recent work in the emergence of autobiographical memory has shown, more elaborative talk about the past by mothers is associated with more and earlier personal memories as well as better performance on theory-of-mind tasks by their preschool children (Reese 2002). This is but one indication that theory of mind is not a separate or modular achievement, but rather, one of an integrated complex of developmental moves taking place during the later preschool years, which bring the child to a new level of social and psychological understanding, preparatory to the further developments that will occur later during middle childhood.

Children's understanding of mind: Constructivist but theory-like

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Abstract: Although in general agreement with Carpendale & Lewis's (C&L's) claims, I argue that (1) gradual development is better supported by within-task eye gaze/verbal comparisons; (2) gradual development and social construction do not contradict the theory-theory view; (3) there is good evidence for an early developing self-other distinction; and (4) the language–false belief link could be mediated by parental talk.

Carpendale & Lewis (C&L) argue against the notion that theory of mind is innate. They might concede, however, that there is likely to be some innate basis for theory of mind, such as newborn infants' interest in the eyes and face (Bakti et al. 2000; Johnson & Morton 1991). This interest means that infants' attention is focused on a region that expresses mental states so that they are ideally situated to learn about theory of mind either through their own initiative (e.g., by asking others questions about motivations

for actions; Dunn 1988), or through others' initiative (e.g., through parent teaching or siblings' and peers' influence in play and elsewhere). C&L do a good job of discussing evidence in favor of this latter path and, in so doing, do the field a service.

C&L justify their claims about gradual development using contrasting results obtained with different false belief tasks. Yet differences in information-processing demands or in the concept actually tapped in different tasks weaken such arguments (Perner et al. 1994). A stronger case for gradualism might be made on the basis of within-task discrepancies (Clements & Perner 1994; Garnham & Perner 2001 Garnham & Ruffman 2001; Ruffman et al. 2001b). For instance, we found that children who passed an eye-gaze measure of a false belief task (looking correctly when anticipating a story character's return), but gave an incorrect verbal prediction, could be split into two groups (Ruffman et al. 2001a). The younger such children showed complete confidence in their verbal answer, betting all counters (used to indicate the character's predicted location of return) on the location consistent with their verbal answer. In contrast, some of the older children with correct eye gaze but incorrect verbal performance showed awareness of the knowledge manifest in their eye gaze by placing at least some counters on the location consistent with their eye gaze. Thus, confidence varied for children who showed identical performance on both the eye-gaze and verbal measures.

Likewise, older children who passed both the eye-gaze and verbal measures were not fully confident in their verbal answer, because they placed at least some counters on the location that was inconsistent with both their eye gaze and verbal answer. In sum, changes in eye gaze and confidence over time are consistent with the following pattern of gradual development: (1) children fail both eye-gaze and verbal measures (no understanding evident); (2) children pass the eye-gaze but not the verbal measure, and show full confidence in their verbal response (understanding is implicit); (3) children pass the eye-gaze but not the verbal measure, and lack confidence in their verbal response (the dawning of conscious insight into false belief); (4) children pass both measures but still lack full confidence in their verbal response; (5) children pass both measures and are confident of their verbal response. Increasing confidence seems to indicate a deepening understanding, perhaps because children come to understand better why the character will hold a false belief.

Although I agree that theory-of-mind knowledge is constructed in a social context and understanding is gradual, I do not see either conclusion as a threat to the theory-theory (TT). TT is based on the idea that children form theories about the mind that are in some ways similar to scientific theories. Scientific theories are often the result of years or decades of hard work, sometimes with many scientists from different laboratories contributing. Hence, scientific theories, the very basis for TT, are typically constructed both gradually and as the result of a community (social) effort. Arguments against TT on these grounds are therefore erroneous. Instead, arguments should focus on whether the structure of children's understanding is theory-like (i.e., possesses the characteristics of a theory), and there are good reasons for thinking that this is at least partially true (e.g., Gopnik & Wellman 1992; Perner 1991; Ruffman 1996; Wellman 1990).

There are other more minor issues. First, although C&L restrict their criticisms of TT to false belief understanding, in a broader context current versions of TT do allow for gradualism. For example, it is a basic tenet of TT that desire understanding begins before belief understanding, which begins before belief-based desire understanding, and so on. Second, C&L argue against the simulationist idea that children understand the mind using analogy, claiming that this presupposes a distinction between self and other. Yet, infants understand something about others' desires as different from their own by 18 months of age (Repacholi & Gopnik 1997), and mirror self-recognition indicates some rudimentary understanding of self by 3 or 4 months of age (Rochat & Striano 2002). This allows a role for individual development of social understanding from some time in early or late infancy at least. Fur-

ther, there are also non-introspectionist versions of simulation theory (e.g., Gordon 1992).

Finally, the authors note the robust correlation between social understanding and language ability. One caveat is that this relation might hold only for explicit performance on theory-of-mind tasks. Preliminary evidence indicates that language might not correlate with implicit understanding (Ruffman 2000). In addition, although some might take the language–social understanding relation as evidence for individual, nonsocial factors affecting theory-of-mind development, there is a way of reconciling this relation with the social constructivist view. Mother mental state language is highly related to (1) child mental state language (e.g., Brown & Dunn 1992; Ruffman et al. 2002); and (2) child mental state understanding (e.g., Dunn et al. 1991b; Ruffman et al. 2002). In addition, aspects of mother language (e.g., question asking) are related to later aspects of children's expressive, syntactic language and vocabulary (Hoff-Ginsberg 1986; Hoff-Ginsberg & Shatz 1982; Weizman & Snow 2001). It is entirely possible that the link between child language and theory of mind would be at least partially mediated through parents' linguistic input (e.g., mother language facilitates child general language which facilitates child theory of mind).

Wittgensteinian developmental investigations

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Abstract: I criticize Carpendale & Lewis's (C&L) attempt to produce a Wittgensteinian *theory*, as an alternative to work in the "theory of mind" tradition, not because I disagree with it as theory, but because Wittgenstein would be critical of any attempt to make such a use of his work. His concern is with descriptions, not theories.

Carpendale & Lewis (C&L) want to criticize the whole "theory of mind" tradition in developmental research for its grounding in "individualistic processes." Instead, they want to propose an "alternative theory" drawing on, among others, Vygotsky and Wittgenstein, but especially on "Wittgenstein's arguments." I wholeheartedly endorse their turn to Wittgenstein. However, I am still critical of *their use* of material from Wittgenstein's later philosophy. For, after all, in the *Investigations* he notes with respect to his methods of inquiry that:

> It was true to say our considerations could not be scientific ones . . . we may not advance any kind of theory. There must not be anything hypothetical in our considerations. We must do away with all explanation, and description alone must take its place. (Wittgenstein 1953/1968, No. 109).[1]

His argumentative *and other kinds of remarks* are aimed at a quite different kind of investigation from those of a scientific kind.

Although Wittgenstein is not critical of science as such (in its own, proper context), the whole scientific approach is in fact inimical to the character of his investigations. His investigations are of a *grammatical* kind. Wittgenstein's remarks are thus not at all aimed at *arguing for what is in fact the case*. They are to do with "giving prominence to distinctions which our ordinary forms of language easily make us overlook" (No.132), with drawing our attention to "what is possible *before* all new discoveries and inventions" (1953/1968, No.126) – they are expressions of a concern with what already lies "seen but unnoticed" (Garfinkel 1967, p. 36) in the background to *all* our everyday (*and* professional) communicative activities. Although each of us might uniquely do our own thing – like taking our own particular path through a landscape – if we are not to mislead or confuse those around us, they must be able to see how the path we are taking relates to those possible for them; if they are to coordinate their activities with ours, they need to know, not what we are actually doing now, but its "point," what

it is aimed at in the future, where we are trying to get to; they must be able to "follow" us. Whereas in scientific investigations, "we feel as if we [have] to penetrate phenomena," says Wittgenstein (1953/1968), his grammatical investigations are "directed not towards phenomena, but, as one might say, towards the 'possibilities' of phenomena" (No.90). Hence, theories (and arguments in their support) would be necessary in these investigations only if one were convinced that the influences shaping people's behavior in this grammatical fashion were so radically hidden that they could be discovered only indirectly, by a process of scientific investigation. Whereas, as Wittgenstein (1953/1968) notes: "If it is asked: 'How do sentences manage to represent?' – the answer might be: 'Don't you know? You certainly see it, when you use them.' For nothing is concealed" (No. 435). Indeed, they cannot be concealed, else all around us would have to orient toward us as aliens from another planet.

In other words, like C&L, Wittgenstein sees *all* the events of importance in our teaching our children to be like ourselves (as well as in our coming to an understanding of each other's unique "inner lives") as occurring "out there" in the living *relations* between ourselves and the others and othernesses around us. But, as Wittgenstein (1953/1968) realizes, the relevant events are of such a subtle and complex kind, and "it all goes by so quick" (No. 435), that we cannot easily get an overall view of them. A visual grasp allowing us to *survey* all their detailed interconnections at once – hence, to know ahead of time what might follow from what – seems, at first, impossible.

It is at this point, however, that Wittgenstein and C&L part company. For what C&L miss, as indeed the whole tradition of "scientific" inquiry in psychology misses, is the fact that certain socially shared influences, influences that Wittgenstein calls "grammatical" influences, are always ineradicably at work between us in our use of language. Although we easily fail to notice them because of their socially distributed nature, it is the undeniable fact that these influences are always present in our meetings with each other which he wants to bring to our attention. The meanings of the words we use in our utterances are not, and never can be, a matter of our own choosing.

Because the events relevant to our instructing our children and understanding each other's "inner lives" *are not in fact radically hidden,* Wittgenstein does not turn to theoretical claims and conjectures in their investigation. This is where his later philosophy is quite revolutionary. He introduces a whole compendium of devices – vignettes, dialogues with other "voices," arguments, dramatic scenes, metaphors and similes, striking examples, subtle particularities, and so on – all aimed, not at learning "anything new," but at "understanding something that is already in plain view . . . something that we need to remind ourselves of" (No. 89).

In practice, then, Wittgensteinian investigations into child development would not involve researchers in continually arguing for theories, either in terms of evidence derived from attempts to test them empirically, or conceptually in terms of whether they adequately encompass all the relevant phenomena or not. They would face a different kind of task. Just as we come to know our "way about" inside a particular new house or city by taking the trouble to explore connections between its unique details to gain a sense of what leads to what, so we can gradually develop the same kind of clear understanding of what is involved in our children coming to an understanding of others' minds. And to be confident in this way, we do not feel that we need to be able to write out the whole town map. For Wittgenstein wants in his investigations "to replace wild conjectures and explanations by the quiet weighing of linguistic facts" (1981b, No. 447), thus to produce merely a *description* of the facts that matter in the issue concerned – a description which, if one was initially intellectually disoriented,[2] *justifies* saying to those around one (at least for the immediate, practical purposes in hand): "Now I know how to go on" (1953/1968, No.154). C&L take Wittgenstein's philosophy piecemeal; it needs to be taken as a whole.