

# I

## Constructivist to the Core: An Introduction to the Volume

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This volume contains a collection of essays honoring David R. Olson on the occasion of his official retirement from the Ontario Institute for Studies in Education, University of Toronto. Although some contributions range more broadly, the general theme is Olson's work on literacy and on children's theory of mind, and its influence on educational thought. The title *Minds in the Making* reflects Olson's lifelong interest in the development of children's minds, and his role in developing graduate students' minds as they wrestled with the problems of cognitive development. It also acknowledges his Presidential Address to the Canadian Psychological Association, in which he reiterated his belief that "mind" is a cultural invention (Olson, 1989). The contributors are former students, postdoctoral fellows, and colleagues, all of whom have spent some time at OISE/UT discussing these issues with David, whose own work in the area began almost 40 years ago, in the early 1960s.

The sixties hold a special place in our collective memory, even for those who don't go back so far. Times were changing fast, no less in psychology – where mind was making a comeback – than in the rest of the world. In the early 1960s Olson published his first academic papers while completing his doctorate in the Graduate School of Education at the University of Alberta. Their titles reflect the learning theories of earlier decades (e.g., "The effect of foreign language background on intelligence test performance," Olson & McArthur, 1962). By the mid-1960s, however, Olson was at the newly created Harvard Center for Cognitive Studies, joining in, indeed, helping to foment the cognitive revolution. By all accounts these were exciting times (Bruner, 1983b). It was here that Olson's constructivist views were first formed, prompted and inspired by his conversations with Jerome Bruner – I will not reiterate the story that Bruner tells in the Foreword to this volume (p. xv) but merely repeat his point that all of Olson's work has been informed by a constructivist perspective: "the reality we experience is constructed, not just 'there' to be found or stumbled upon."

## Constructing the World

Olson was also prompted by George Miller, Co-director with Bruner at the Harvard Center for Cognitive Studies, and his persistent questions. For example, when Olson presented his findings – that young children cannot copy diagonal patterns – to a Center research group, Miller was not content with data showing that children got better at the task as they became older. His concern was with the younger children's performance – *why* they did what they did and what they *thought* they were doing. As Olson (1995, p. 281) tells it, he gradually came to realize that Miller's question is the vital one, and the one that has dogged him ever since – not “what is the child doing?” but “what does the child think he or she is doing?” That is, the critical issue is how the child represents a problem to him or herself. The world is not given to the child but is constructed by the child's representational system and his or her understanding of the world changes as representational abilities develop. It is easy to see the sea change from learning theories' considerations of input–output conditions, and revealingly, by the late 1960s Olson's papers have titles like “Tapping the mind of the child” (Olson, 1967).

During the following decade, Olson started to grapple with the topic that has dominated his career, that is, literacy and in particular, the cognitive consequences of literacy. I think there are (at least) two reasons for his move into this area. In addressing the question of how children represent the problem of the diagonal, Olson (1970a) argued for the Vygotskian idea that children's mental representations of a problem are verbal representations. Yet he was aware that the ability to represent diagonals came at the age when children enter school and learn to read and write, not at the age when they learn to talk, and so there was something more involved than the influence of speech on thought. Spurred on by McLuhan's (1962) claims that more sophisticated cognitive abilities result from exposure to written text, he became convinced that the ability to represent diagonals was a consequence of literacy, without being clear why this effect occurred. Perhaps it was due to the acquisition of specific semantic terms that literacy provided. Whatever the reason for the effect, Olson continued to puzzle over the relations between language and thought, words and intentions, semantic and pragmatic meaning, eventually claiming that meaning resides in intentions, not in words (Olson, 1970b). However, the problems encountered here (see Astington, Chapter 16) led him to distinguish between meaning in speech and in writing (Olson, 1977), arguing that in speech, meaning resides in the speaker's intentions, while in writing, meaning resides in the words. That is, pragmatic meaning is primary in speech and semantic meaning is primary in written text. Although in oral communication what is actually meant may be implied by, for example, the speaker's tone of voice, in writing, meaning has to be made explicit in the text. For example, “The chair's been moved,” shouted exasperatedly, may well mean “Put it back,” but in writing it is a statement about a rearrangement of the furniture.

## Constructing Textual Meaning

Thus, according to Olson in the 1970s, meaning is in the text, which means what it says, so that authors and readers can treat texts as autonomous representations of meaning. Explaining, defending, and justifying this large claim has occupied much of Olson's subsequent career. Indeed, he never intended to imply that meaning is there for the taking, because his constructivist outlook precludes the notion that anything can be provided gratis. Textual meaning is constructed by the reader, just as the natural world is constructed by the observer (Olson, 1994). The question is: what is there to inform the construction? Olson's point is that, in constructing textual meaning, all that is available is the text itself. Writing excludes the prosodic features of utterance (stress, pitch, timing, rhythm, melodic tone) and extralinguistic features (eye contact, gesture, and surrounding context) that together convey information regarding intended meaning in speech. Written text has none of these and is interpreted by readers who may be remote from authors in time and space. Texts can be understood because they are interpreted within a community in which authors and readers assume a shared background (see Feldman, Chapter 2).

The crucial point is that textual meaning is constructed. Just as we construct representations – mental models – of the world, so we construct representations – textual models – of written language. The meaning is not really in the text, rather, Olson's point is that writing is based on the assumption that meaning is in the text, that is to say, that texts can be written and read as if they were independent and self-contained. His interest is and always has been (Olson, 1977) what effect this has on the mind. That is, what are the cognitive consequences of reading and writing texts that are assumed to be autonomous representations of meaning?

Over the past two decades, Olson has modified his claims about the effects of literacy on the mind (see Brockmeier, Chapter 4), focusing more recently on its metalinguistic effects (Olson, 1991; 1994), that is, its effects on language awareness. He has shifted toward a more cultural view, that the effects of literacy are less due to individual cognitive consequences of learning to read and write, and more due to growing up in a literate culture which highlights the metalinguistic aspects of language use (Olson, 1991). Western children acquire a literate mind and a consciousness of language because they are immersed in a literate culture (Brockmeier, Chapter 4; Vinden, Chapter 3).

One of the main features of this culture is its focus on the life of the mind, on the beliefs, desires, intentions, and so on that govern our interactions with one another. Why might this be? Why such consciousness of mental life and what is its link with literacy? Writing can easily reproduce the form of what someone said, or the form an author wants to express; by "form" I mean vocabulary and syntax. However, writing can less easily reproduce the "force," that is, how it was said, or how the author wants it to be taken – is "the chair's been moved," a request for it to be returned to its original position or a comment on the new arrangement?

We know well what a text says; indeed, better than we do for speech, because

writing fixes what is said – the words are held for all time. But we may know less well what the author meant by them, that is, how he or she intended the text to be taken. In informal writing, such as letters to a friend, we may use exclamation marks, capital letters, and underlining to indicate prosody, to put our voice into the text. Indeed, in reading such a letter we often hear the friend's voice in our mind's ear. E-mail provides an interesting recent example. The message is hardly a text, it is more like a phone message, but it is written and so the voice is absent. Devout e-mailers have developed an elaborate system of marks, called *emoticons*, in order to convey the missing aspects of the message (e.g., ‘-’) means “wink”; :-I means “hmmm . . .”; :-& means “tongue-tied”; :-/ means “skeptical” etc.; Ahmad, 1996).

However, there is a limit to how far one can go with punctuation and emoticons. One cannot capture the subtleties and nuances of intended meaning, which can so easily be expressed para- and extralinguistically in oral language. In written text the words are all that one has and so one is forced to elaborate the words. That is to say, a consequence of literacy is the development of lexical terms to indicate intended meaning (Olson & Astington, 1990). And a cognitive consequence of this is a heightened awareness of intentions and of beliefs, desires, and other mental attitudes underlying our intentions. In attempting to compensate for what writing lacks that speech possesses – intention behind the utterance, the force of what is expressed, our attitude toward it – we become more aware of these things. They are implicit in speech, that is, implied by tone and gesture, but in writing they are made explicit using lexical terms, and this makes us conscious of them. As Olson (1995, p. 290) puts it: “Ironically, much of the intellectual impact of writing comes from the attempt to compensate for what was lost in the act of transcription!”

### Constructing Minds

The terms that we use to explicate meaning in text draw attention to mental states. It is this aspect of his theorizing that led Olson in the 1980s into the newly developing field of children's theory of mind (see Astington, Chapter 16), and it is within this field that he has put forward the most original and daring of his constructivist ideas. Olson is a constructivist through and through – not only is the world constructed, not only is textual meaning constructed, but also the mind itself is constructed.

This proposal is developed in a series of papers (Olson, 1988b; 1989; 1993; see also Campbell & Olson, 1990; Olson & Campbell, 1993; 1994; Campbell, Chapter 10) which all contain the paradoxical idea that mind is constructed. From a constructivist perspective, nothing is given but only taken as given; our models of the world and of text are constructed through our perceptual and conceptual activities, that is, our mental activities – our mind. The paradox is this: if the mind too is constructed, what is doing the constructing? The brain, of course. But perceiving and conceiving are not brain functions, rather they are mental processes. They are constructions, like their folk-psychological counterparts, seeing and thinking, which

are part of the construction we create to represent human action and interaction. Mind is not there, any more than the “real” world is there; they are both constructions.

Here Olson provides his response to the perplexing question of how a physical, biological system, the brain, can be a mental system that operates on the basis of beliefs and meaning, that is, how a causal system can be an intentional one. He rejects the view that mind is just a folk-psychological notion and human behavior is a direct causal response to states in the world (e.g., Churchland, 1986; Stich, 1983), and aligns himself with the view that behavior has to be explained by appeal to representational states (e.g., Fodor, 1987; Pylyshyn, 1984) but insists on taking a developmental stance on this issue. The infant has no representational states; the perceptual system of the infant brain allows for causal connections between child and world, but the infant child has no symbols, which are later constructions.

Olson (1989, 1993) highlights three stages in the construction of mind. First, the sensory-motor stage of infancy when the infant can perceive and think about objects in the world. Second, a symbolic-propositional stage, which develops in the second year of life and allows the child to represent propositions and to think about properties of objects in the world. And third, a representational-belief stage, around four years of age when metarepresentational abilities develop, allowing the child to think about propositions, that is, not just to represent a proposition but to relate a proposition to some aspect of the perceived world, which is needed to represent false beliefs. Olson postulates that this sequence of development comes about because of increasing resources to hold something in mind while relating it to something in the world (Keenan, Chapter 14). Thus:

“Making up your mind” in this sense implies that mind is not an object in the world which is there to be discovered, but rather something which has evolved along with human culture and which each of us invents for ourselves, in the course of cognitive and social development. (Olson, 1989, p. 617)

The outcome of this claim is that “mind” may not be universal (Vinden, Chapter 3) and may not be there in infancy (but see Zelazo, Chapter 9, who disagrees with Olson on this point).

One might argue that Olson’s theory is essentially Piagetian constructivism, although Olson gives more role to language and culture than did Piaget, and might wonder why I referred to it as the most original and daring of Olson’s constructivist ideas. Perhaps in this post-Piagetian era, where many would agree that mind develops at least in part according to constructivist principles, what is daring in Olson’s version is his holding fast to Piaget’s idea that “mind” is constructed out of “no mind” (Zelazo, pers. comm. 19 November 1999). One might also argue that Olson’s theory lacks much empirical support, and probably he would not disagree; his concern is the theoretical scheme, not the mechanisms involved. As he himself says, in writing about the development of the representational-belief stage (Olson, 1993, p. 300) “precisely *how* this is done, again, is not my major concern. Rather it is with

*what* is done” (emphasis in the original). Olson is more concerned with the ideas than the processes of constructivism. I am reminded of the charming title he gave to his invited address when receiving an honorary degree from his alma mater, the University of Saskatchewan: “Writing and the mind: Extravagant theories and modest facts” (Olson, 1997).

### Constructivism, Conversing, and Teaching

I intended the volume title *Minds in the Making* not only to evoke Olson’s interest in children’s cognitive development and his argument that mind is constructed in the course of development, but also to acknowledge his role in the development of graduate students’ minds. A vital part of the making of minds is the contribution from the social world, where children’s development is scaffolded by parents and teachers. Parents treat infants as having intentions and beliefs, and so they come to see themselves as intentional beings and as holders of beliefs (Bruner, 1983a). As children start to talk, at home and school, they participate in conversations without full understanding of all the words – and thus come to understand the words (Nelson, 1996). The child extracts the meaning of a word from its use in discourse by identifying the relevance of the word within the context. The discourse provides clues, not explicit meanings, which are gradually derived. “The process of *use before meaning* . . . may be engaged by the child, from which *meaning from use* gradually accrues” (Nelson, 1996, p. 145, emphasis in original).

Not just in childhood. Olson remembers Bruner, at the Harvard Center for Cognitive Studies, as having “. . . the gift of treating beginners like myself as if we were knowledgeable colleagues. The mere fact that we were treated as knowledgeable assured that, so far as possible, we became so” (Olson, 1995, p. 280). Perhaps this gift was passed on from Bruner to Olson or perhaps it is a characteristic they share. Whatever the source, it is obvious in reading the chapters in this volume that David Olson’s students remember him as a teacher like Bruner, who made them full participants in any seminar conversation, who assumed they understood and had ideas and opinions that counted and mattered. Olson was always open to new ideas, treating even the wildest ones with a seriousness they perhaps didn’t deserve.

Thus, Olson carries his constructivism into conversations: “He listens – and goes on listening until he comes up with a reasonable version of what you mean” (Bruner, Foreword, p. xix). Never mind if the meaning he comes up with is not the one you intended. Perhaps sometimes it is better than you intended, and if it is not, there is always chance for another round of debate and disagreement. Indeed, the chapters of this volume are inspired as much by disagreement with Olson as by agreement, and this is real constructivism. As his colleagues put it: “I have benefited enormously from his provocative observations, even when I don’t agree with them. Indeed, there is nothing so stimulating for one’s own thinking as the attempt to construct arguments to counter the opposition” (Wells, Chapter 8, p. 115), and

“. . . nothing is more supportive and growth promoting than to have the good luck to be in a small band of closely focused scientists, each with a divergent view” (Feldman, Chapter 2, p. 20).

## Structure of the Volume

The chapters are divided into two sections, which correspond roughly with the two areas of Olson’s work discussed above, that is, literacy and its cognitive consequences, and children’s theory of mind. The first section covers a broad range of issues, all essentially concerned with the construction of meaning in various ways and forms.

### *Meaning making, literacy, and culture*

In Chapter 2 Carol Fleisher Feldman gets to the heart of the problem of meaning making – how on earth do we do it? Speakers and authors produce words, and listeners and readers make meaning from them. Feldman argues that what makes this possible is the fact that the language, whether oral or written, is produced within a community whose interpretive system is shared by speakers and listeners, or by authors and readers. She illustrates her argument by citing a case from 15th-century Italy where this was not so. A man who had taught himself to read but who had no theological education, was charged with heresy for creating his own interpretations of theological writings that conflicted with those accepted by the ecclesiastical authorities. The example allows us to identify and subtract out the interpretive system from the reading process, and shows us how meanings are usually socially shared within an interpretive community. Feldman adds a dynamic aspect to this model, illustrating the important role of time – short term and long term – in permitting the incorporation of new patterns, which gradually change the old pattern of interpretation and allow for the creation of new meanings. Her discussion of evolution in the shared knowledge of any active interpretive community over time sheds new light on the idea of “communities of learners,” much discussed in education circles currently, and well exemplified in Wells’ (Chapter 8) description of a Grade 2 science project.

Penelope Vinden (Chapter 3) explores how we enter and become part of an interpretive community by drawing parallels between the child’s participation in the social world and the adult’s participation in a new educational world. Throughout the chapter she sustains a parallel between the child’s development in the social world and the student’s progress through graduate school. She maintains that both are situations of “minds in the making” and makes a strong claim for mind making as essentially a process of enculturation. Parents and professors pass on theories of mind and world to children and students through the ways in which they use language in the context of experience. To have one’s mind made up is to receive, in interaction with those who are more expert, a frame of mind, a language, and a frame of action through which to live. However, both children and students, she

claims, are active collaborators in this enculturating process and to learn a culture is also to make up one's own mind.

The idea of mind making as enculturation continues in Chapter 4, where Jens Brockmeier explores a shift in Olson's thinking about the cognitive consequences of literacy. Olson (1991) moved away from strong claims about direct autonomous cognitive consequences of a child's learning to read and write, toward a view that children acquire a literate mind – essentially a consciousness of language – because they grow up in a culture of writing. Literacy, Brockmeier argues, is an ensemble of cultural practices, that is, the material, discursive, cognitive, and institutional practices of reading and writing which integrate us into a literate tradition. Its influence on the child is not primarily through the child's acquisition of reading and writing skills, but through the child's immersion in a cultural symbol system, what Brockmeier refers to as the “symbolic space of literacy.” Growing up in a culture of literacy turns language in upon itself so that it becomes an object of metalinguistic reflection. Brockmeier argues that this effect is due to the whole symbolic space of literacy in which different elements overlap and interrelate, although he acknowledges that these elements might be separately explored, as is apparent in the next three chapters.

A number of factors listed by Brockmeier as influencing metalinguistic awareness are elaborated by Rita Watson in Chapter 5: orthographies, bilingualism, and the material practices and technologies of writing. Watson examines the influence of literacy on the idea of words as constituents of language, whose meanings can be separately spelt out in definitions. She argues that the development of the concept of word is independent of a particular type of script (e.g., alphabetic) and provides two pieces of evidence from pre-classical texts that support the “orthography-neutral” claim. She suggests that the concept of word may have arisen as a result of translating from one language to another. Following Olson (1994), Watson claims that the orthography in a sense gives rise to a theory of the language it represents, and argues that this applies equally to non-alphabetic orthographies. Thus, the conception of “word” emerged with other conceptions of language as a consequence of the use of orthographies. She argues, however, that awareness of words as meaning-bearing units, that can be defined, came later, with the demands of interpretation.

Poetic features of language are another dimension highlighted by Brockmeier (Chapter 4) as contributing to metalinguistic consciousness. Joan Peskin develops this idea in Chapter 6, arguing that the language of poetry draws attention to itself. Poetry is both text and art, and thus the interpretation of poetry requires attention to both rhetorical and aesthetic form. She reports a study comparing experts and novices reading difficult period poetry and suggests that poetic discourse heightens readers' awareness of rhetorical form. In searching for a poem's meaning, even the novices attended not just to the semantic content but also to authorial intention, that is, rhetorical form. However, when the poem's meaning became completely obscure, the novices worked harder at their attempt to interpret it but still focused on rhetorical form, whereas the experts switched their attention to the poem's aes-

thetic or artistic form, that is, how the components of the poem effect and amplify the meaning. Peskin argues that expertise leads to a heightened awareness of poetry as textual art, and pursues the educational implications of focusing on how form gives rise to meaning.

Expertise in the interpretation of text is also the topic of Chapter 7, where Anne McKeough elaborates a further dimension highlighted by Brockmeier (Chapter 4) as contributing to metalinguistic consciousness, that of story-telling and narrative practices. Her chapter also echoes Feldman (Chapter 2) and Vinden (Chapter 3) as McKeough considers how individuals gradually become enculturated into interpretive communities as they take up literacy practices. Based on Olson's (1988a, 1994, 1996) discussions of oral and literate traditions, she compares skilled literate adults' ability to compose, to recall, and to interpret stories with that of adults who are only just acquiring literate skills, and she analyses adolescents' developing skills in story production. She shows that higher levels of literacy are associated with the use of a set of literary conventions that can be thought of as canons institutionalized in the person of editors and teachers who insist that they be used by all those who claim membership in certain interpretive communities.

Gordon Wells (Chapter 8) moves beyond a focus on meaning making in written language to examine the broad scope of ways in which meanings can be expressed. His discussion ranges widely, considering the biological bases and cultural origins of the various modes of representation that mediate understanding. He shows that, both phylogenetically and ontogenetically, action is the earliest to emerge and writing and other visuographic modes the latest. However, in most educational institutions there is a strong bias toward writing and the modes of knowing associated with technical written genres which, although valuable in itself, tends to exclude the other modes and so risks restricting the human potential for meaning making. Wells argues that, in a world in which communication is becoming progressively more multi-modal, it is important for students to learn to exploit all the modes of representation as tools for thinking and problem solving. Drawing on observations from elementary school classrooms, he shows the advantages to be gained from organizing curricular units to exploit the complementarity of the different modes of representing and knowing.

### *Representation, language, and theory of mind*

Wells' chapter provides a bridge to the second section of the volume, where the focus is on the development of representations and more particularly, on the development of children's understanding of representation, that is to say, their metarepresentational abilities or their theory of mind. Wells speculates that "metaknowing" activities, that is, reflection on the various modes of knowing that he describes – action, language, writing, etc. – facilitate the transition from one mode of knowing to the next. A related idea is developed by Philip David Zelazo in Chapter 9. He describes a theory of representational understanding and use that draws on the hermeneutics of Paul Ricoeur and the genetic epistemology of James

Mark Baldwin. On this view, representations are intrinsically imitative but involve productive imitation not simple copying. *Pace* Olson (1993), Zelazo argues that representing occurs in infancy, but he agrees with Olson that then there are qualitative age-related changes in children's representational abilities. On Zelazo's view, increasingly complex representations are produced as the contents of consciousness are fed back into consciousness. The production and interpretation of these representations leads to reflection on them and to a conceptual understanding of representation.

Robin Campbell (Chapter 10) argues that children's understanding of representation is partly dependent on what representations are considered, and in particular, how different types of representation differ in terms of their content. He describes the ways in which beliefs and desires are said to differ, and goes on to discuss some possible ways of distinguishing beliefs from desires in terms of their typical contents, arguing that this has been ignored or, at least, that its importance has been underestimated. He relates some of the distinctions discussed to studies of children's understanding of belief and desire, justifying his claim that it is important to consider desires from the point of view of content.

Children's understanding of belief, desire, and intention allow them, among other things, to understand lying – when a speaker says something he or she does not believe, with the intention of deceiving the hearer. In Chapter 11, Kang Lee uses a speech act theory approach to provide an account of the development of children's knowledge about lying. This approach links back to issues raised in the first section of the volume. The interpretation of any speech act, that is the uptake of the speaker's communicative intent, depends on the conventions governing the speech act – conventions that are shared by the interpretive community. Lee considers children's understanding of both the intentions and the conventions that characterize lying. He compares the development of Canadian and Chinese children's concept of lying and their moral judgments of it, showing how children come to take account of the speaker's intentions and beliefs and of the social function that a false statement serves in a specific cultural context.

In Chapter 12, Deepthi Kamawar and Bruce Homer, two of David Olson's most recent doctoral students, discuss aspects of children's understanding of belief and writing. Although belief and writing might seem to be quite unrelated concepts, Kamawar and Homer argue that they are linked because understanding in both cases requires metarepresentational ability. Kamawar's work focuses on the referential opacity of belief. Understanding opacity, Kamawar shows, is more difficult than understanding false belief, because to understand opacity the child has to be able to deal appropriately with partial knowledge. But like false belief tasks, opacity tasks require an understanding of the representational nature of belief, that is, they require metarepresentational ability. Writing, by its very nature, is metarepresentational; it is a representational system that is used to represent another representational system, that is, language. Homer examines the ways in which the metarepresentational nature of writing affects children's literacy acquisition, and subsequently, their conception of language.

Children's metarepresentational abilities are also the focus of Chapter 13. Here, Josef Perner discusses the strong correlations found between children's understanding of false belief and their understanding of synonyms (Doherty & Perner, 1998). The original explanation for this finding was that both require metarepresentation – in the false belief task the child has to think of beliefs as representations, monitoring content and reference, and in the synonyms task the child has to think of words as representations, monitoring form and meaning. However, more recent work has shown similar correlations with new tasks requiring children to say something different about an object, as in the synonyms task, but the new tasks use sortals, such as superordinate-basic terms, and form/meaning monitoring is not required. The use of different sortals requires an understanding of perspective because it involves two different ways of looking at the same reality, as do the false belief and synonyms problems. Thus, the ability to represent two different perspectives explains children's performance on all of the tasks. Perner argues that the hypothesis of a perspectival understanding of mind is more comprehensive than the hypothesis of a representational understanding of mind. None the less, both understandings are tightly linked and probably develop at the same time.

In Chapter 14, Thomas Keenan discusses the computational resources that metarepresentation requires. He examines the relation of domain general developments in working memory, language competence, and inhibitory control, to the development of false belief understanding, and argues that, in line with Olson's (1989, 1993) theory, there is increasing evidence that the growth of working memory capacity allows children to construct representations of false belief. Keenan acknowledges that although the working memory hypothesis may help explain why the changes in performance come when they do, the hypothesis does not explain what brings about the change. He suggests that a comprehensive account of theory-of-mind development needs to consider the role played by social and linguistic interaction – issues picked up in the final two chapters.

In Chapter 15, Ted Ruffman moves beyond a focus on metarepresentation and false belief understanding to consider theory-of-mind development more broadly as the development of general social understanding. He argues that tasks which employ behavioral measures of theory of mind are likely to be central to real-world social abilities, indeed, more central than tasks which tap explicit theoretical knowledge. He shows that in a false belief task, eye gaze towards the correct location precedes correct verbal answers and is indicative of unconscious social knowledge, which becomes increasingly theoretical, explicit, and verbally mediated as children's metarepresentational abilities develop. He has found that children with autism do not show appropriate eye gaze on tasks of social understanding, even when they can show correct performance on explicit verbal measures. He argues that autistic children's key deficit may be in implicitly grasping social insights rather than in explicit theorizing, and that general language ability may not correlate with core social insights, but rather with explicit theoretical understanding.

In the final chapter (Astington, Chapter 16) I draw on many conversations and arguments that I have had with David Olson regarding the role of language in the

development of children's metarepresentational abilities, or their theory of mind. Olson's position is that the acquisition of metacognitive language is central to the development of a theory of mind, whereas I argue that language promotes children's theory-of-mind development because of their increasing general linguistic abilities, not because of specific vocabulary items. I review the literature supporting these two positions, and present some data of my own. I conclude that language and metalanguage are both involved in theory-of-mind development in western children. Language is a biological universal that underlies metarepresentational ability by allowing for representation of a false belief, for example, in contradistinction to the perceptual representation of the actual situation in the world. Metalanguage provides children with our culture's way of explicating this distinction.

In the Afterword to the volume, Angela Hildyard and Nancy Torrance, Olson's longtime colleagues and collaborators, reflect on what he has given to his students, his colleagues, and to the field. They say that one thing he gave to students was the urge to look, and to look again, at a problem or a piece of data, not only in fine detail but always as part of the larger picture. The chapters collected in this volume stand in testament to this assertion. The ideas discussed, the research findings described, the new directions proposed, form a richly detailed collection, that together create a broad view. The authors take complementary externalist and internalist perspectives on minds in the making, showing the role of culture and language in the construction of the mind, and also showing how the mind constructs itself during the course of cognitive growth. Each author acknowledges a debt to David Olson and we hope that, in Zelazo's (Chapter 9) words, this collection serves as partial requital.

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