

Book Reviews

Paul Bloom

Descartes' Baby: How the Science of Child Development Explains What Makes Us Human

New York: Basic Books, 2004, 271 pp., \$26, ISBN 0-465-00783-X (hbk).

Paul Bloom covers a lot of ground in this book, though not quite as much as the subtitle would indicate. He draws upon his background in child development to offer a pithy and engaging introduction to the universal human penchant for mindreading (sometimes called 'theory of mind'). From there, he ventures into the cognitive roots of art, morality, philosophy and religion. The unifying claim which saves the book from miscellany and purports to 'explain what makes us human' is that we are natural-born Cartesian dualists.

Bloom deftly wields a breezy and conversational style much like that of his colleague and adviser Steven Pinker. He has a knack for lively anecdotes, jokes, quotes and metaphors, delivered in language so admirably jargon-free that he could have called this book *Dualism for Dummies*. The book is also provocative, challenging conventional wisdom on a number of points. Not every author would have the nerve to devote a whole chapter to *disgust*, which he calls 'the body and soul emotion', or to link it with social phenomena ranging from slapstick humour to the Holocaust. As an argument concerning the genesis of Cartesian dualism, though, *Descartes' Baby* is disappointing.

Here is the central claim in Bloom's own words:

The premise of this book is that we are dualists who have two ways of looking at the world: in terms of bodies and in terms of souls. A direct consequence of this dualism is the idea that bodies and souls are separate. And from this follow certain notions that we hold dear, including the concepts of self, identity and life after death (p. 191).

Although he refers to it here as a 'premise', Bloom clearly believes that his claim is supported by the evidence he provides, especially by 'the science of child development'. Much of the research presented here will be familiar to many *JCS* readers; concerning 'the concepts of self and identity', for instance, Maria Legerstee's article in *JCS* 5 (5–6) on 'Mental and bodily awareness in infancy' covered similar ground. But neither Legerstee nor anyone else, to my knowledge, has used this material to argue for early-onset Cartesian dualism, or even for a predisposition towards it. Boyer (2001) is strikingly similar to Bloom's book in many ways, from its overall evolutionary psychology approach and general principles even down to specific details; but even Boyer expresses scepticism on several points that Bloom accepts. For instance, Boyer denies the universality of the belief 'that people have a soul that survives after death' (p. 10), and questions the idea that such concepts provide reassurance in the face of mortality (pp. 19–22).

Most of the novelty in Bloom's book, then, lies in its *interpretation* of the evidence. A strong argument for such an interpretation would therefore need to present it as more plausible than competing interpretations. Consider, for example, the possibility that Cartesian dualism is a culturally transmitted conceptual epidemic rather than a genetically transmitted predisposition (a 'biological accident', as Bloom puts it). Is one of these hypotheses more plausible than the other? This is the kind of question that Bloom does not address, so allow me to outline it here and show why I consider that omission significant.

We can begin with the well-established observation that infants distinguish between two kinds of things that they perceive: those which are self-moved or self-motivated, and those which remain inert unless moved by external forces. Babies show greater interest in the former kind, i.e. in bodies with properties variously called *animacy*, *agency*, *intentionality*, *subjectivity* and so on. Exactly which properties are inherent in this *primary dualism* (my term) is not clear, but researchers tend to lump them together rather than trying to tease them apart when presenting the the data on very young children. Legerstee, for instance, says that 'by 5 weeks, infants imitate facial expressions modelled by people and not by inanimate objects simulating these movements'; Bloom suggests that babies 'treat animated objects as beings with psychological states' (p. 18). Clearly this primary perceptual dualism prepares the ground for mindreading and thus for the infant's development as a social being.

The question, then, is how we get from the vaguely defined primary dualism to the specific Cartesian variety. In one scenario, some children pick up the notion of a separate and immaterial soul from the cultural surround, and map it onto one side of the primary dualism, concluding that some bodies are animate or aware *because* they are inhabited by souls. Meanwhile, children with a different cultural background might reach a very different conclusion: that animate and sentient bodies have these properties because they are *alive* and complex in themselves, and not by virtue of a separable soul. These latter children would thus be intuitively prepared for the more elaborate concepts of self-organization and complex adaptive systems, while the former group might be more

inclined toward the theological concepts elaborated by many religions. We might compare these two groups to children who speak different languages, and the 'primary dualism' to what Pinker calls 'the language instinct'. So in this scenario, what is 'native' is not any specific theory of human nature, but a predisposition to learn one.

Bloom rejects this scenario — or rather ignores it, since he does not test it against his 'premise' that Cartesian dualism is innate, but simply presents all of his wide-ranging evidence in the light of that premise. The problem is that most of this evidence could be equally well read as demonstrating the vague primary dualism, or as showing that the specifically Cartesian spin on it has been *learned*; and Bloom makes little or no effort to refute (or even mention) these alternate readings.

On p. 190, Bloom poses a multiple-choice question: 'Do you believe that you are (A) a machine or (B) an immaterial soul? (B) is the aesthetically appealing choice.... Some might wish to answer "all of the above," self-identifying as both a body and a soul. But only a small minority would choose just (A).' Bloom omits the possibility that someone might answer 'none of the above' and self-identify as a *living body* — which would be the natural choice for any biologist. As Mayr puts it:

All biologists are thorough-going 'materialists' in the sense that they recognize no supernatural or immaterial forces, but only such as are physico-chemical. But they do not accept the naive mechanistic explanation of the seventeenth century and disagree with the statement that animals are 'nothing but' machines. Organismic biologists stress the fact that organisms have many characteristics that are without parallel in the world of inanimate objects (Mayr, 1982, p. 52).

Descartes himself apparently subscribed to the 'mechanistic explanation' of animal bodies and ascribed human animacy to a separate soul. It is of course possible that the concept of an immaterial soul really is more intuitive than the concept of an organism, and Cartesian dualism a more natural development than Mayr's dualism of organism vs. inanimate object; but Bloom never actually compares the two. 'The notion that our souls are flesh is pro-

foundly troubling', he says on his final page, but whether the 'trouble' is biologically programmed remains an open question, at least for this reader. For others, this open question may not be troubling enough to interfere with a highly entertaining and informative reading experience.

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References

- Boyer, Pascal (2001), *Religion Explained: The Evolutionary Origins of Religious Thought* (New York: Basic).
 Mayr, Ernst (1982), *The Growth of Biological Thought* (Cambridge, MA: Belknap/Harvard UP).

John Cornwell (ed.)

Explanations: Styles of Explanation in Science

Oxford: OUP, 2004, 237 pp., ISBN 0 19 860778 4

Perhaps, I anticipated, this book may offer new insights into what the explanation of consciousness will be like, when eventually it arrives. Vain hope indeed, though reading was worthwhile. There are twelve quite short but well-written essays, plus an introduction by an editor best known for thoughtful reviews of scientific topics in upmarket Sunday supplements. The other contributors come from a range of disciplines — three philosophers, eight scientists of various types and a publisher of popular science.

They don't use Aristotle's terminology, but agree that descriptions of what are evidently 'efficient causes' are central to good explanations in science. Accounts should be grounded in a valid ontology (says Tian Yu Cao), but may often be for ever open ended because many of the stories have to be told in terms of mathematics that is inherently incomplete (claim both John Barrow and Steven Weinberg). Concepts similar to 'formal causes' can also play a part in valid explanations, according to some. Opinion about 'final causes' (sometimes referred to in this book as 'teleology', though more often making a surreptitious appearance) is sharply divided as they play subsidiary roles in a few descriptions, while being rejected in others as positively misleading. Several writers emphasize that no single type of explanation will do; a range is needed in order to achieve satisfactory understanding of a subject. This applies in physics (William Saslow), chemistry (Peter

Atkins), biology (Steven Rose) and the social sciences (Jack Goody).

Two of the essays were disappointing. Martin Rees airs his concept of 'the multiverse', and claims that it embodies a valid type of scientific explanation. Maybe so. On the other hand, like Freudian theory, it runs the risk of explaining nothing through 'explaining' everything. It seems more of a pre-scientific speculation that may one day get lucky, rather as Democritus' atomism eventually became foundational in chemical understandings. The other disappointment was Colin McGinn's attempt to show that 'the usual kinds of [mind/brain] identity theory are committed to an unacceptably subjective conception of the physical world.' His argument appears to depend on an implicit (and wildly implausible) assumption that the conceptual mind/brain symmetry involved is unbroken.

Perhaps the most thought-provoking account of all was David Hanke's description of how teleological 'explanatory' thinking in his field (plant biology) has impaired understanding and distorted research priorities. An example is the supposition that the 'purpose' of plants is to be green processors of light. As a consequence investigation of mechanisms that are activated by *darkness*, giving rise to the non-green etiolated state, has been largely ignored. How far, one wonders, should Hanke's strictures be extended to other fields? Evolutionary psychology, for example, depends almost entirely on teleological thinking. To what extent, then, can it be regarded as 'scientific'? Jack Goody (an anthropologist) suggests an answer of a sort. In the social sciences, he suggests, there has to be a cycle between 'interpretation' and 'explanation', which may promote the growth of valid scientific understandings.

So what *is* the explanation of consciousness going to look like? One can infer only that description of efficient causes will play a part, but the book does suggest rather more about how the process of reaching understanding may go. Eventually a smallish group will get an insight and say 'Aha! We've got it.' They will then persuade a proportion, though not all, of their peers to share their understanding. However, they will not have the full story. Further understandings will arise in due course, some of them deeper than the original, in a process that has no foreseeable end. Of course Imre

Lakatos (who does not get a single mention by any of the contributors) told us this and more 50 years ago. Nevertheless, the book makes pleasant bed-time reading. And anyone wanting to write about science should read the final essay, Jon Turney's description of how it can be done.

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Melvin A. Goodale & David Milner
Sight Unseen: Exploration of Conscious and Unconscious Vision
 Oxford: Oxford University Press, 2004, 135 pp.,
 ISBN 0-198-51052-7 (hbk)

Martha J. Farah
Visual Agnosia (2nd Ed)
 Cambridge, MA: MIT Press (Bradford Bk), 2004,
 192 pp: ISBN: 0-262-56203-0 (pbk)

Goodale and Milner (henceforth 'G&M') build upon their 1995 *The Visual Brain in Action* (Oxford) in a charming 'Oliver Sacks' style for a wide readership. Farah updates her 1990 MIT book, in a well-written but less casual style. These two important books in visual neuroscience nicely complement each other.

In their 1995 book, G&M adapted Ungerleider and Mishkin's ('U&M') original 1982 two-visual-stream distinction between ventral (*what* is the object?) and dorsal (*where* is the object in the scene?), by maintaining the ventral stream as a system for conscious perception but redefining the dorsal stream as a largely unconscious, 'action' system, which codes the location of objects in relation to one's own body, subserving reach, manipulation or visual fixation. The ventral stream is located in the lower portions of the posterior occipital and basal-lateral temporal lobes, while the dorsal stream is located in the upper portions of the posterior occipital and parietal lobes. It is a pity that in this new book G&M do not mention Jacob and Jeannerod's important point (reviewed recently in *JCS*), that the U&M dorsal stream is processed in the inferior parietal lobule, while their own dorsal stream is processed even more dorsally, in the intraparietal sulcus. These are two very different systems, not just two alternative ways of describing the same system. Perhaps G&M should call theirs the 'dorsal dorsal stream'.

G&M re-present and update the two major case studies that had led to their distinction. Dee

Fletcher has one of the dozen-plus disorders of the ventral stream (this one based on bilateral occipital lesions and called 'visual form agnosia'), being severely impaired in distinguishing, matching or even copying basic forms like circles and squares. The crucial finding, which led to G&M's version of the dorsal/ventral distinction is that Dee has excellent 'vision for action' capabilities. She can walk through difficult terrain even though she cannot see the shapes of the objects around her. G&M report on the impressive set of experimental manipulations they developed for Dee. For example she can accurately post letters in obliquely-oriented mail slots without consciously detecting whether the slot is vertical, horizontal or oblique. Her hand shows accurate adjustments in grasping-size and shape as it approaches objects, adjusting to the real size of an object even when her conscious vision is tricked by an optical size illusion. At the same time, she cannot accurately shape her hand to indicate the orientation of an object she is not reaching toward. They mention several other disorders of the ventral system, suggesting a modularity there based on particular visual features. Some are described later on, in the review of Farah's book.

To show the double dissociation between the two visual streams, G&M report on Ruth Vickers, who has the dorsal impairment 'optic ataxia' — in many ways the reverse disability to Dee's. Ruth is able to see and name objects before her but cannot accurately reach out and grasp them nor post mail in eccentric mail boxes. G&M note a modularity also within their dorsal stream, based on the nature of the actions guided by vision, with slightly different parietal areas involved in setting up different tasks: i.e. pointing, reaching, grasping, quick saccades, smooth pursuit eye movements, whole-body movements. These involve dedicated circuits connecting distinct areas within the intraparietal sulcus to distinct areas within the frontal lobe's premotor strip. They suggest that normal linkage between the ventral and dorsal streams may be based on both streams back-projecting to primary visual areas.

Martha Farah mentions both the U&M and the G&M concepts of the dorsal stream, suggesting that the former may be visual-spatial attention mechanisms and the latter involved in

optic ataxia. She focuses on the variety of disorders in the ventral stream, showing her excellent ability (seen earlier in her work on Mental Imagery) to pore through hundreds of neurological case studies, with their associated brain scans, and to refine traditional definitions of neurological disorders, seeking ‘natural kind’ clusters of disorders. We will look briefly at the ventral disorders that Farah discusses and her suggested anatomical locations.

Farah begins with visual form agnosia, the disorder that G&M’s Dee Fletcher has, showing impairment in determining the form, orientation, and even size of any objects. Farah sees this as impairment in the process of grouping local features, of not being able to convert ‘stuff’ into ‘things’. As we saw with Dee, this tends to be due to damage to both lateral-occipital lobes, often caused by carbon monoxide poisoning.

Farah has helped distinguish between two types of ‘simultanagnosia’ (the inability to recognize more than one object at a time in a complex scene) that have often been conflated — the dorsal and the ventral sub types. Dorsal simultanagnosics cannot consciously see more than one object at a time. This disorder (with bilateral parietal-occipital lesions) led to U&M’s version of dorsal, involving the *where* circuits. Presumably only objects that activate both *what* and *where* circuits together can be consciously seen! Ventral simultanagnosia involves lesions specifically in the left temporal occipital region. These patients can consciously see multiple objects at the same time, but recognize only one at a time. They have a general inability to rapidly encode multiple shapes, showing up mostly in being unable to see long words as a whole (‘pure alexia’), leading to letter-by-letter reading. Deficits in perceptual categorization and orientation processing also occur, involving difficulty in matching 3D objects across shifts of perspectives. This may be a disorder, involving inferior parietal lesions, of the U&M, dorsal type.

An important form of agnosia is associative agnosia (*object*, not *shape*, disorder). Patients can adequately copy objects, but cannot indicate what the objects are — either through naming or pantomiming their functions. This was the ‘ventral’ symptom that suggested the U&M *what/where* distinction. Lesions leading to this can be either left or right (most often bilateral)

occipital-temporal. Superficially related to this is ‘prosopagnosia’, which is the inability to recognize familiar faces despite being able to identify them as faces, name their features or the emotions expressed, and even match which of a range of pictures represent the same person. Many show signs of autonomic emotional responses to familiar faces that they cannot identify consciously. Lesions causing this state may be right sided or bilateral, in basal occipital temporal areas linked to the ‘fusiform face area’. It is distinguishable from the visual form agnosias mentioned earlier.

Topographic agnosia is a deficit in recognition of scenes and landmarks, a visual rather than spatial deficit, also distinct from Dee Fletcher’s condition. Lesions for this are in the right or bilateral basal temporal lobe lingual and parahippocampal gyri (parahippocampal place area), very close to the fusiform gyrus involved in prosopagnosia.

Optic aphasia (or optic anomia) is distinct from the agnosias because one can still pantomime or explain the use of objects that one cannot name, while it is also possible to name the objects if they are perceived through other senses, such as hearing or touch. It involves damage to the left occipital cortex and connections between the two hemispheres in the most posterior portion of the corpus callosum. Farah rejects what seems to me to be the most satisfactory explanation, that this is a disconnection between *visual* semantics — stored knowledge of visual objects like cows and plates — and *verbal* semantics.

Semantic dementia is a progressive loss of semantic memory with preservation of episodic memory and many forms of reasoning. This affects recognition of stimuli in all modalities. It involves, primarily, the left temporal lobe, especially anterior and inferior-lateral portions. More selective are impairments in knowledge of living things, while that of non-living things is preserved (or vice versa), both of which are linked also to left temporal cortex. Such impairments may be limited to the visual modality or broader.

While Farah does a marvelous job of relating various agnosias to disorders in non-memory, perceptual mechanisms, I lean toward the view of many researchers that agnosias represent disconnections between on-line object perception and stored perceptual-memory traces — so

that one sees the cow but cannot figure out what it is. The objects, faces, landmarks, living things, etc., are consciously seen, but one is not conscious of what their representation means!

After nine chapters on such visual disorders, Farah writes a scant seven-page chapter on 'Vision When It Works', in which she states that she would be disappointed 'if the book were read only as a review of clinical syndromes' (p. 155). If that is a real disappointment for her, then her *third* edition should be called 'Visual Gnosia', not 'A-gnosia' and she should give major treatment to how the intact visual system works, in light of the breakdowns of such working. Meanwhile, these are both valuable books.

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Simon Moore and Mike Oaksford (ed.)

Emotional Cognition:

From Brain to Behavior

Philadelphia, PA: John Benjamins (Advances In Consciousness Research 44), 2002, 350 pp., \$65.95, €55.00, ISBN 1588112241 (pbk).

The editors of this volume say they want to address the relations between emotion and cognition through a collection of computational approaches, hoping to inspire more communication between emotion research and cognitive psychology. But the collection is actually broader than that. This is an overall benefit, since the volume meets its stated goal while also providing a valuable overview of some recent thinking about interactions between the two faculties. The collection offers readers a diverse range of papers that review recent research, present new findings, and explore fresh computational models. Because of the complex relationships between notions of cognition, consciousness and the special nature of affective experience, the book is directly relevant to the study of consciousness. The papers are accessible and lively; there is a diversity of terminology that reveals lack of integration between some of the separate traditions of emotion research, but this does not hinder basic comprehension.

There are twelve papers in the volume. The editor's introduction argues that 'the importance of emotional processing in human cognition has yet to penetrate all areas of Cognitive

Psychology'. This lack of interaction between disciplines can partly be addressed through computational models of emotion and of emotion-cognition interaction, since such models can integrate well with existing cognitive psychological perspectives. Most of the authors provide such models.

Three papers discuss learning and memory. Buchanan and Adolph review exciting results on the role of emotion in declarative memory formation, including lesion studies that show clear dissociation between the roles of the hippocampus and amygdala, and lateralization of amygdala function. Next, a paper by Killcross and Blundell discusses theories about the role of reinforcers in emotional learning (as described by traditional learning theory). Current models are inadequate, it is claimed. Finally, Eamon Fulcher describes a connectionist model of evaluative learning that combines features of two leading hypotheses, and explains some of the effects of conscious awareness on such learning.

Four articles describe other interactions of affect with cognitive functions. Fluent perception (fast and easy perceptual processing) seems to cause positive affects, say Piotr Winkielman and colleagues. The authors describe a model that aims to explain this through a connection between metacognitive processing and affective systems. The editors present evidence of the effect of mood on spatial discrimination tasks. A connectionist model of the effect is described, and new data reviewed. F. Ashby and colleagues address the hypothesis that the effects of positive emotion on cognition are a result of increased levels of dopamine in frontal cortical brain regions. A connectionist network can successfully model several of the consequences of affect for creative problem solving, it is claimed. Then Gray and Braver argue for a complex and modular view of cognition, where effects of emotion on cognition can vary depending upon the cognitive capability affected. They describe a connectionist model of modular cognitive units where emotions alter the function of these units and their interactions.

There are several more eclectic papers in the collection. Jesse Prinz offers a programmatic overview of both a neo-Jamesian theory of emotions and a theory of consciousness, and argues that the two integrate to provide a com-

plete computational model of emotional consciousness. Oatley and Johnson-Laird address the Peircean notion of abduction. They claim that the computational intractability of determining a consistent model for a set of potentially inconsistent premises is facilitated by emotions acting as heuristics. Alan Schwartz discusses decision affect theory, which describes how individuals evaluate outcomes in terms of both their evaluation of the actual outcomes and counterfactuals about those outcomes — for example, people may value a gambling win less if they feel they might have won more. Schwartz offers an extension of the theory to describe how such counterfactuals may also be used to evaluate and make choices. He presents evidence that individuals are able to predict their future counterfactual evaluations of various outcomes, making the role of such an effect on choices plausible. To round the book off, there is an extension of decision field theory by Busemeyer and colleagues that can model dynamic changes in values.

This is an excellent collection of papers that addresses many of the most important themes in contemporary emotion research. It should be of interest to philosophers, psychologists, and other researchers concerned with emotion, cognition, and consciousness.

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Johannes Roessler & Naomi Eilan (ed.)

Agency and Self-Awareness: Issues In Philosophy and Psychology
Oxford: Clarendon Press, 2003, 415 pp., £19.99,
ISBN 0199245662 (pbk).

This book contains eighteen research papers, most of them originating from a 1998 workshop held at the University of Warwick under the auspices of the Arts and Humanities Research Board's 'interdisciplinary project on consciousness and self-consciousness'. The model on which the project was based is a fashionable one — link universities and scholars into some sort of network and let them get on with it. That's what journals do, of course, and one may wonder whether books should not attempt something more or different. Maybe, for instance, consciousness studies would benefit from a 'Manhattan project' type of approach in which different people are assigned sub-

problems to deal with in a more structured way. The book goes no further than to distinguish the sub-topics of 'agency' and 'self-awareness' from the overall field.

Though Logical Positivism is long dead, the semantic characterization of key terms remains of great importance. The book is unduly vague in this respect. It seems to promise a deeper understanding of what is meant by terms like 'agent' or 'aware of him/herself', but in practice differences between usages of 'aware' and 'conscious', for example, are indistinct. However, my dictionary suggests that there are real and important differences: 'aware' implies knowledge gained through one's own perceptions, deductions or inductions, while 'conscious' emphasizes the recognition of such knowledge. It is in fact arguable that these meanings should indeed be regarded as different. For instance, a person who is 'linguistically aware' has meta-knowledge of the underlying linguistic skills. If she is 'conscious' of something, she is occupied with whatever it is but is not necessarily fully aware of it in the sense of having meta-knowledge. Dreaming is a process of 'consciousness' of course. The dreamer is 'conscious' of his dream at the time. If he thinks back to it the next morning, he may become aware, also, of what he has dreamt. Linguistic 'awareness' of this sort has had a key role in the theory of learning literacy skills since the 1970s. It is completely ignored in the book, however, which is a serious fault particularly because this theory is well developed and could provide useful pointers for research into awareness in general.

Most papers use a notion of 'intentionality' that derives from Elizabeth Anscombe's seminal work *Intention* (1957). She presupposes that, in normal circumstances, the conscious goal towards which an action is directed is an integral part of that action. The editors discuss 'anarchic hand syndrome' (Dr. Strangelove syndrome) as a pathological example in which action is unaccompanied by Anscombe's sort of intentionality. This seems too strong a concept, however, since intentionality does not necessarily imply awareness or consciousness of anything. A dreamer is not aware of herself at the time (using 'aware' in the sense given in the previous paragraph), even though dreaming is a conscious, intentional process. Life itself is

an intentional process, although we are conscious of only a fraction of our mental and physiological doings. In other words, there are good reasons for supposing that intentionality may be a broader concept than is implied in this book (see Jamsa, 2001).

But enough of criticism! There is much to praise in the book. Its contents are rich and many-faceted. It brings to mind the best traditions of the analytic philosophical school. The writing is in general clear, though some papers do come across as tautologous in places. The editors have evidently worked hard, and themselves contributed the longest paper in the collection (an Introduction that runs to almost 50 pages). One of them (Roessler) also concludes the work with an elegant account of intentional action and self-awareness.

There is not space here to describe every article, but it is worth mentioning a few in particular. Brian O'Shaughnessy develops his (1980) ground-breaking analysis of agency. In the 1980 work, he advocated a dual aspect theory of action — whenever we perform a physical action, an act of the will likewise occurs. The physical act is identical with the voluntary act, he said. This emphasis on will aligns him with classical, German traditions of philosophy. In his new paper, he further explores the role of will in dual aspect theory. An act of will, as manifest in experience, does not in principle differ from any other type of experience, he concludes. He is one of the few contributors who write about the meanings of actions, which are surely implicit in them because, in language, verbs refer to both actions and meanings.

When it comes to dealing with the development of action awareness and self-consciousness, Frye and Zelazo (both developmental psychologists) try to pin down the critical stages in the formation of children's action awareness. Jennifer Hornsby, however, claims that their views are either misleading or fail to take us much further than 'folk psychology'. The latter criticism conflicts, in my view, with her point of departure; namely that 'folk psychological' beliefs frame our scientific and scholarly views, forming the inherent setting for human knowledge.

A real pearl in the collection is Michael Lewis' overview of the development of self-consciousness, which is of exceptional quality and depth. Briefly, his thesis is that the earliest, most primitive, 'intentions' are innate. The development of self-consciousness is due to the emergence of self-representation. Intentions representing the self are related to the idea of 'me', a meta-representation acquired by children at around 18 months. Higher level intentions, here called 'self-schema intentions', emerge from the basis of the subjective world and from the actions and processes that the self performs and/or experiences. This semantics of the self, as described by Lewis, is one of the clearest of which I know.

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References

- Anscombe, E. (1957), *Intention* (Oxford: Basil Blackwell).
 Jamsa T. (2001), 'Jacob von Uexkull's theory of sign and meaning', *Semiotica*, **134** (1/4), pp. 481–551.
 O'Shaughnessy, B. (1980), *The Will* (CUP).