In reading this book, one has the sense that we are in the midst of- or perhaps have already undergone – another paradigm shift in the study of concepts. An earlier shift occurred in the 1970s, when it became widely believed that ordinary language concepts are neither arbitrary nor classically defined. This more recent shift involves the claim that similarity alone is insufficient to characterize the structure of concepts. Rather, concepts are inextricably linked to implicit theories.

This enormously thought-provoking volume comes out of a symposium held at Emory University in 1984. The core of the book consists of nine position papers by prominent researchers in cognitive science. Five concern adult concepts; four concern the development of concepts in children. These papers achieve a balance between first-rate empirical work (reported in some detail) and discussion of important theoretical issues. They are framed by a useful introduction (by Neisser) and discussion (by philosopher Robert McCauley) that highlight the book’s recurring themes. There is much here (both empirically and theoretically) to intrigue and provoke those interested in concepts and conceptual development. Moreover, there is an unusual degree of coherence that stems from concerns with common issues.

In the preface, Neisser suggests that there is a consensus in recent thinking about concepts – ‘a set of assumptions broad enough to make sense to cognitive scientists of many different theoretical orientations, and still so new that it has not yet appeared in textbooks’. These assumptions are the following: (a) Categories are defined in terms of theories or cognitive models, not similarity alone; (b) nonetheless, perceptual similarity is important, ‘especially early in development and especially for “basic-level” categories’; (c) distinctions must be drawn among the categorization process, category typicality, and meaning; (d) language is critical in the establishment of categories. I shall consider each theme as it is articulated in the book.

Theories versus Similarity

It is observed repeatedly that concepts are embedded in theories and that an approach to concepts that ignores the role of theories is at best inadequate, at worst misguided (see chapters by Neisser, Medin and Wattenmaker, Lakoff, Keil). Medin and Wattenmaker make this point most directly by posing a critical question that, oddly, is often ignored: ‘Why do we have the
categories we have and not others?’ [p. 25]. They suggest that similarity alone cannot provide an answer, since

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directly perceptual account of categorization’ [p. 292]. Actually, the data presented in this volume provide ample reason for skepticism. For example, Mervis describes how, by 22 months, her son was using theory-based information (identity of parents) rather than physical appearance to decide the category membership of baby animals. Keil, in a series of fascinating experiments, finds that children rely on ontological status rather than outward appearance in classifying natural kinds. Fivush shows that 1-year-old children form functional categories (e.g., grouping together a comb, toothbrush, and soap) that cannot be accounted for in terms of feature-based analyses. And Markman reports that children as young as 3 years classify taxonomically (i.e., like adults) when the task involves language. The developmental differences that emerge may result from children’s falling back on similarity as a default option, at times when they lack the relevant theory [Gelman, 1988]. Presumably adults would do likewise. This default behavior should not be construed as evidence for broad differences between the concepts of children and adults.

Categorization Process, Typicality, and Meaning

To what extent are categories general, abstract, and unified structures? Barsalou argues that concepts more sensibly may be viewed as ‘temporary constructs in working memory that are tailored to current situations’ [p. 120]. Brooks presents a similar argument, claiming that people often rely on close analogies to specific prior events (though he allows for the existence of more centralized models as well). The empirical support for these views is substantial and carefully reasoned. Another attractive fea-

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ture of this position is that it goes beyond viewing categories as static entities, thus potentially accounting more realistically for developmental change. However, there is a problem with taking this view to an extreme— we would therefore ignore whatever it is that holds concepts together (as McCauley points out). Perhaps language helps unify disparate makeshift constructs into more lasting structures.

Given these processing issues, a related concern is what ‘counts’ as the core representational phenomena. Previously, many researchers assumed that categories are represented in terms of similarity to a prototype, or best example(s). Yet, as Keil points out, prototypes are ‘surprisingly atheoretical’. Are prototypes the heart of conceptual structure, are they wholly peripheral, or do they reflect concepts in some indirect manner? Lakoff provides a brilliant discussion of the issue in a chapter summarizing sections of his book Women, Fire, and Dangerous Things [1986]. In a set of compelling plausibility arguments, he claims that ‘Prototype effects are real, but superficial’ [p. 66]. Typicality judgments can arise from any one of a number of different cognitive structures. What really does the work are the cognitive models that give rise to prototype effects. Lakoff is explicit about how this would work, with select examples, although there is little direct empirical support for the argument.

Role of Language

The chapters by Mervis and by Markman deal most directly with the role of language, taking up contrasting positions. At the most general level, at issue is whether language can effect changes in the child’s conceptual system. Mervis argues that young children use the same categorization principles as older children and adults. In this regard, she stresses the importance of the child’s own cognitive structures. Category evolution is thus not just a function of adult naming; at times children attend to different attributes than the adult. Mervis suggests that language input becomes increasingly important as children grow older (though ironically the role of language is ignored in the chapters in this book that concern adult concepts).

Markman summarizes her important and widely cited studies with Hutchinson showing that the presence of a category label induces taxonomic classification in children. She goes on to propose that children also honor a principle of mutual exclusivity, in which no two category terms can refer to the same object. Thus, for Markman, language has a distinct role in organizing thought: ‘Young children may create concepts to fit new words, guided by abstract constraints on word meaning’ [p. 267]. In contrast, Mervis suggests that mutual exclusivity demands metacognitive awareness and that children will not allow words to contrast when they fail to grasp the conceptual basis of a linguistic distinction.

This debate promises to be constructive, if we distinguish passive acceptance of linguistic input from active hypotheses about language. Mervis is surely correct in saying that language does not simply stamp impressions on the young child’s mind. However, as Markman has clearly shown, language can be important as filtered through the child’s expectations. Language is not just an external means of structuring concepts. Children form active hypotheses about the meanings of the words they hear, hypotheses that pre-

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sumably are sensitive to cognitive and contextual—as well as linguistic—constraints.

In sum, this important volume raises a rich and uncommonly coherent set of issues that will fascinate those interested in concepts. Ironically, one of the book’s major conclusions is that the study of concepts is increasingly the study of constructs other than concepts (implicit theories,
idealized cognitive models, processing of close analogies). Yet, in several respects the present claims are promissory. We learn that theories need to be constrained, but the constraints have yet to be specified. We are told that prototypes reflect idealized cognitive models, but these models are not yet empirically validated. Neisser optimistically asserts that ‘the study of cognitive development is an integral part of the study of cognition itself. Although I certainly agree, we have not seen enough explicit links between the two in this volume. Perhaps by clarifying the current issues and potential pitfalls, this book takes us to where we now can expect future work to make further headway on these central issues.

References

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Hans Furth
Knowledge as Desire: An Essay on Freud and Piaget
Reviewed by E. Schmid-Kitsikis
This book fulfills the promise of its title by focusing on the question of the possible links between knowledge and emotional activity in relation to the development and mental functioning of the individual, instead of taking the more facile approach of a theoretical comparison between two models. In one way, this book is a further step along the path of Furth’s epistemological interests: the human capacity to develop substitute means of communication. Furth’s [1966] work on the cognitive development of profoundly deaf children and adolescents with little mastery of language (spoken, written or sign) prefigured the theme of the present book. In that work, he dealt with the source of developmental possibilities of theoretical knowledge. In Furth’s view, the origin of this knowledge (which, like all kinds of knowledge, even the most objective, springs from a personal motivation of the type ‘I-want-my-object’) is to be situated in the transitional period between the development of the ob-ject-of-actions and that of the object-of-knowledge, when the latter makes it possible for symbolic representation to become available and comprehensible.
Furth’s book thus focuses on the formation of symbols and their meaning for human activity via a possible integration of the theoretical systems of Piaget and Freud; its aim is to provide the outline of an as yet unformed theory of the links between knowledge and emotion. The book proposes a twofold approach to the problem. In the first place, knowledge and symbol formation are considered from the points of view of genetic psychology and psychoanalysis; divergences and convergences are discussed in light of Piaget’s and Freud’s conceptions of the fundamental constructions of human activity, i.e., of the object and its relations with the subject who constructs it, and of the different types of symbols the subject elaborates in order to meet the conditions created by representational activity, by fantasy and by language. Chapter 2 presents Piaget’s conceptions of object formation in a detailed critical way, and chapter 3 does the same for Freud’s conceptions of the formation of dreams and of the unconscious. These two chapters constitute the basis for chapter 4: a discussion of the fundamental libidinal links of human symbolic activity, made possible mainly by the functioning of assimilatory and ac-commodatory mechanisms. This discussion leads to a reflection on the Piagetian point of view concerning human activity and its relation to the duality of the Freudian life and death drives. Furth raises the pertinent question of the existence of such a duality in Piaget’s theory by introducing the notion of a duality between creativity and mental death through an excess of conservation on the one hand, and between an open mental system and a closed one through an excess of organi-zation on the other. In the course of this discussion, Furth is led to rectify the all too widely accepted notion that in Piaget’s theory accommodation is the source of human creative production, as if creativity meant learning by imitation.

In a second approach (chapters 5-7) to the problem of the possible links between knowledge and emotion, Furth concentrates on the individual’s need to develop a symbolic universe by using sexual energy, rational activities and social environmental conditions. In the light of examples taken from art, philosophy, biology and human ethology, Furth pursues his examination of Piaget’s constructivist model in relation to the demands of society and the necessity for the individual to develop logical thought so that the process of humanization can take place successfully. Furth emphasizes that when Piaget identifies knowledge with logical structure the latter does not mean formal propositional logic but the structure necessary for all coordinations of actions, sensori-motor activity included. At the sensorimotor level, knowledge is action-knowledge; later, it is object-knowledge, when separation of the object from the actual action has taken place. At this point, symbol formation becomes possible. Instead of criticizing Piaget on account of an apparent restriction to logic in his theory of knowledge, Furth asserts that it is precisely the equation of knowledge and logical structure that opens up the theory to allow its integration with socioemotional elements. As Furth (p. 165) puts it: ‘Kant said that he had to limit science in order to make room for faith. So, it seems to me, Piaget limited knowledge to logical structuring and thereby made room for the relative freedom and the driving emotions that are present in all human knowledge.’

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Throughout this book, a central position is occupied by symbolic functioning, considered as the source of the multiple achievements of human mental activity. Like Furth, I also think that analysis of the development and functioning of symbolism will allow us to understand the processes that integrate rational and emotional activity. To combine knowledge and emotions
into a ‘whole picture’, Furth analyzes the work of two great thinkers of our time. Yet there is a
lack of clarity on the following point: Does his analysis concern Freud’s and Piaget’s own
conceptions or the various prolongations of their theories as they exist today? If the former, then
I think that a misunderstanding should be cleared up. Furth seems to imply that Freud, like
Piaget, adopted a developmental point of view, but this is not the case. It is not possible to put
into direct correspondence the facts and interpretations of Piaget, who took the study of the
origins of psychological activity in the infant as the point of departure for the elaboration of his
theory, with the facts and interpretations of Freud, who extrapolates from regressions of adults
during psychoanalysis. (The case of little Hans does not, in my view, suffice to argue a
developmental perspective on Freud’s part.)
To give better support to his enterprise, Furth could have appealed to data provided by the so-
called developmental psychoanalysts such as Spitz, Freud, Klein and, more recently, Winnicott,
Mahler and Meltzer. Consideration of their work could have made a twofold contribution. On the
one hand, it would have allowed a more detailed discussion of the genesis and development of
symbolization processes (Freud was mainly interested in the nature of symbolization products)
and, on the other hand, it would have shown the interest these psychoana-
lysts, though not Freud, share with Piaget in how psychic and mental phenomena function and
not only why they come to be created.
This last remark concerns what seems to me a most important point, that of the conditions for the
elaboration of objectival and symbolic activity in the two theories. Since Freud, the study of the
mechanisms responsible for this elaboration has been enriched and deepened by his successors.
Though Furth insists on the importance of the assim-ilatory and accommodatory mechanisms
described by Piaget, he does not really discuss the equally important projection, introjec-tion and
splitting of psychoanalytic theory (to mention only these three). As I have argued previously
[1987], to establish a theory of the links between knowledge and emotion, it is necessary to
consider two related dynamic processes. One process concerns the vection or the finality of the
drive whose mechanisms are projection and introjection. The other, closely related to the first,
concerns the transformation of the contents of the internal and external world of the subject; the
transformation process sometimes leads to new knowledge, and its mechanisms are assimilation
and accommodation. To relate these mechanisms could lead us even further to an understanding
of all human activity from a twofold perspective: emotionally alive and conceptually controlled.
Furth’s excellent exposition and thoughtful interpretation of the theories of the two masters
opens up a further debate along the lines I have sketched above and constitutes doubtlessly an
eloquent counterargument against what he calls the ‘potentially catastrophic split between
knowledge and desire’ accepted by many psychologists and philosophers of our time.

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In the period following the death of great scholars it is usual to have some reassessment of their life’s work. In the case of Piaget this process has not been as evident as one might have expected. Perhaps this is due to the fact that there was a continual criticism of his ideas both within and outside Geneva from the early 1960s onwards. It may also be that the sheer quantity of his output over 60-odd years, with its often dense prose and idiosyncratically formulated theoretical concepts, has simply defeated any inclination to review the work as a whole. It is therefore of great interest to read Sugarman’s book, which examines in detail arguments spanning several basic texts. She has attempted her own re-evaluation of the work largely on its own terms and without much reference to the many published criticisms. Indeed, she takes Piaget’s empirical claims to be accurate and rather attempts to work within these limits to establish the coherence or otherwise of the conceptual framework presented.

The book is concerned primarily with six of Piaget’s works: The child’s conception of the world (1926), The language and thought of the child (1923), The moral judgement of the child (1932), The child’s conception of number (1941), Origins of intelligence (1936) and The construction of reality in the child (1937). The choice is dictated both by their inclusion of significant amounts of empirical data, in contrast to the more exclusively theoretical works of the later period, and because ‘... each deals with a basic psychological question, for example the development of “objectivity”, the nature of morality, or the origins of intelligence’ [p. 3]. Sugarman believes that the fundamental problems she identifies in her discussions are not overcome in later works and the concentration on these titles is thus sufficient for her purposes. The book devotes a chapter to examination of each, although the two infancy books are treated as a unit. Each chapter contains an opening ‘reconstruction’ consisting of a brief precis of the questions Piaget asked, the method he followed, and the data presented. Sugarman’s critique follows. Finally, there is a chapter treating aspects of the later work and a demonstration of its shortcomings stemming, in part, from a reliance on the validity of the work that had gone before.

Although some of Sugarman’s criticism relate primarily to claims about the specific content domains (morality, number, etc.), the central thrust comes from a rigorous attack on the very nature of Piaget’s method of constructing theoretical arguments across the whole range of his work. Some criticisms concern inconsistent terminology, e.g., use of the term ‘egocentrism’. Some relate to vague or ambiguous characterisations of process, e.g., whether the child is distinguishing between external/internal or material/mental or whether awareness precedes or is caused by differentiation of action in infancy. Yet others have to do with the ways that Piaget makes ontological assumptions from behavioural observation, e.g., relating increasing elaboration of infant activity to a greater knowledge of the world or describing game playing in terms of moral concepts. And, perhaps most damning, she sees Piaget as being engaged in a sleight of hand,
either adding developmental acquisitions in an ad hoc way or making adjustments to the mechanisms to produce the necessary changes (e.g., as with the functional invariants to achieve stage transitions in infancy).

Throughout the book these arguments are deployed to substantiate two theses. One is that there is ‘... simply no account of mind in Piaget... mind is replaced by a quite striking reification of the child’s thought’ [p. 2]. What this implies here is that Piaget does not distinguish, or distinguish clearly enough, between the case in which an agent is responsible for the clarification of its own thought and one in which the ideas ‘take on a life of their own’, describable in space-time terms as if they were somatic entities [p. 47]. This links to the second, central thesis that Piaget fails to provide an account of developmental mechanisms. We can, for example, take the use of differentiation as a model of structural change. The analysis offered here shows this to be potentially an unwarranted imposition on otherwise explicable developments. Thus, the 7-year-old’s ability to draw the distinction between purposive and imparted movement can be described as more differentiated than that of a 4-year-old. However, to invoke a process of structural differentiation as being causally implicated may be unnecessary and could equally be accounted for by specific acquisitions of new knowledge that enable new kinds of inference or classification.

Piaget’s use of differentiation as a central mechanism is, of course, consistent with his attempt to deploy models of biological growth in explaining intelligence. Unsurprisingly, Sugarman also takes issue with this strategy, rejecting the value of connecting organic and intellectual growth in the way that Piaget did. She unequivocally concludes, ‘The connection to biology will not... help to explain intelligence or its development’ [p. 230]. Here the argument centres on the problem of describing continuity and what Sugarman takes to be, throughout Piaget’s work, an overly smooth account of the transition between forms without any convincing account of how this is achieved. Implicit in the identification of early child competence, or, indeed, the lack thereof, is the idea of continuous transformation into corresponding adult forms. What is objected to here is, in some sense, the neatness of this process and its characterisation as linear progress. Sugarman suggests that development is a lot messier (‘convoluted’) than this and that we believe too readily the neatly packaged stories we tell about this process. But this argument, as she indicates, applies not just to Piaget and not just to theory construction. Many people who would regard themselves as radically opposed to Piaget will get a rude shock to discover that they are deemed to commit fundamental errors simply by accepting that his taxonomy of conceptual development is the correct one. As a corollary, there is a methodological con- sequence that concerns the preconceptions that we bring to observation of children’s cognitive structures. Should we be looking for simplified versions of adult conceptual structure or should we look for a more contingent and perhaps radically different kind of organisation? For many people it would seem that Piaget had attempted to define the child in his or her own terms, but Sugarman believes that his work did not deliver in this respect, whatever the promise.

This, then, is a book with arguments at many levels, and it will repay several readings. It is work of great scholarship with much more in it than this review can touch upon. But where does it leave our assessment of Piaget? A central aim of the book is to deny any strong claim that Piaget produced a valid description of developing mental processes. If one accepts Sugarman’s arguments, and I find them generally persuasive, there is little that one can take directly from the
original in this respect. However, it is widely known that Piaget never considered himself to be primarily a psychologist, at least in the sense that say Claparède might have done, and that the concerns of genetic epistemology were not the identification of ‘real’ mental growth in individual children, hence the sujet épistémique (epistemic subject). Thus, he may be considered as asking the epistemological question ‘How is knowledge possible?’, rather than a psychological one for which he sought empirical validation in his own way. We could, then, argue about how far his account should be assessed as a description of ‘real’ mental life with the concomitant claim that the value of the work, even for developmental psychology, may be to read it in a different way. However, I have little doubt that Sugarman would consider this to be a first-class example of hand-waving, for her argument is that it is essential to consider how things ‘make sense’ from the point of view of the child, and this must, I take it, mean the individual child. Quite how we would achieve this is not identified but surely must be related to the absence of any adequately personalised account of motivation in Piaget’s work. Making sense of the ‘making sense’ argument would seem to involve taking on board a criticism of Piaget that is implicit rather than explicit in the book.

A more specific comment concerns the distinction between the infancy work and the studies on older children. As Mounoud [1981] has noted, the methodology that Piaget adopted for the infancy research was markedly different from that of his studies with older children. This view finds no echo here, although I think that it does qualify some of Sugarman’s conclusions about Piaget’s programme. However, my concern is really to try to salvage something from Piaget’s view that it is valuable to look for continuity between organic and intellectual life, within the infancy period at least. One response to Sugarman’s criticisms about going beyond descriptive analogy to an identification of common transformational mechanisms is that Piaget may have been working from a wrong model of growth. The differentiation and transformation couple are derived from a tradition of embryological analysis. These concepts are uneasily fused in Piaget’s work with ideas taken from macro-evolutionary theory which, despite later references to modern Neo-Darwinism, are essentially nineteenth century in their formulation. Yet, more modern accounts of the evolutionary process show it to be messy and opportunistic. In this respect, it is not dissimilar to the view Sugarman seems, at times, to propound for intellectual development even if it does not of course suggest how we would make specific arguments for continuity. I think Piaget’s questions about infancy – Where can structure come from? How does it turn outwards? How do we relate structure to function? and so on – are correct ones and still not answered. That his proffered mechanisms do not do the job of answering them does not necessarily invalidate the search for common, abstract, developmental mechanisms in organic and intellectual life.

The book, as already indicated, sets out to examine Piaget’s work largely on its own terms and without much reference to contemporary discussion. Despite this (or perhaps because of it?) it does have important implications for current work. One example is the field of cognitive science. That field’s insistence on precise specification of mechanism and an abhorrence of emergent properties that come unaccountably from nowhere has something in common with some of Sugarman’s views. It is not, however, a develop-mentally oriented discipline and indeed is perhaps not yet capable of taking such a perspective. In that respect, this book provides a
stringent guide to what is required of an adequate, developmental approach. As for other potential readers, I am not sure how far I accept the claim that ‘no prior knowledge of Piaget is necessary’ [p. 4]. Perhaps it isn’t, but it would certainly be highly desirable. Certainly this is not a book for the beginning undergraduate but one of extraordinary value for any serious student of developmental psychology. It is also a model of how to do and to present a rigorous analysis of primary texts. Simply learning some of these lessons makes it required reading.

Reference

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