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of Science

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Towards an anthropology of science

SCOTT ATRAN

CHARGÉ DE RECHERCHE

CREA-CNRS

Groupe de Recherche sur la Cognition

Ecole Polytechnique

and

RESEARCH SCIENTIST

Department of Anthropology

University of Michigan



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*For my brother Dean,
and my teacher, Margaret Mead*

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PREFACE

The following pages are intended to resolve a paradox, which a puzzle turned up. The puzzle, I encountered at the start of graduate study in anthropology: most introductory courses and texts began by proclaiming the psychic unity of humankind, only to proceed straight to the study of cultural variations. Having so long combated the ethnocentric view of Western thought as innate or inevitable, anthropologists had largely come to renounce all appeal to nativism as scientifically absurd and ideologically pernicious. But in philosophy, psychology and linguistics the argument over universals of human cognition was being vigorously pursued. A new nativism arose free of those simple-minded presuppositions that most anthropologists had rightly disowned.

For the profit of people – like myself – who were perplexed by the issue of universals, I conceived a debate between Noam Chomsky and Jean Piaget: then (in 1975), as now, their respective outlooks on universals had the most far-reaching implications for the study of cognition (including its biological aspects). The meeting was organized by the Royaumont Center for a Science of Man (see Royaumont Center 1980). As the discussion unfolded I came to think that Chomsky was, in the main, right and Piaget wrong: no logical or empirical grounds supported the claim that the innate and universal foundations of human thinking reduce to an undifferentiated intelligence, which is responsible in the same way for all cognitive operations.

Why, indeed, make the *a priori* assumption that all, or even some, of the interesting (i.e. species-specific) domains of human knowledge and experience are structured alike? It is hardly plausible that the rich and diverse sorts of adult mental competence are induced, learned or constructed by general procedures from the poor and fragmentary experiences of childhood. More likely, there are a variety of fairly well-articulated modes of human thinking – inherently

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differentiated components of human nature acquired over millions of years of biological and cognitive evolution.

Now for the paradox, which Piaget suggested such reasoning leads to. Suppose, in Chomsky's fashion, that each fundamental type of human knowledge arises from a specialized cognitive aptitude; then science, which is patently different from other forms of human knowledge, should also be innately grounded in some special "science-forming faculty." But suppose also that science integrates the various domains of human knowledge, and in ways contingent upon unforeseen insights into the relations between domains. From this latter supposition, it follows that science cannot exist apart from (alongside or prior to) its constituent domains; hence, it cannot constitute a distinct faculty. Intuition underscores the paradox: it is clear that the growth of scientific knowledge, whether in a culture or individual mind, lacks the quasi-automatic character evident in the acquisition of such ordinary forms of knowledge as linguistic competence, spatial appreciation, facial recognition, color perception or the apprehension of living kinds.

But the paradox goes deeper, undermining the distinctiveness of ordinary forms of knowledge as well. If science does truly integrate the various ordinary domains, it therefore obliterates their boundaries and disintegrates their supposedly fixed and special characters. Supposing that the cognitively maturing adult thinks as a would-be scientist, then talk of the mature individual retaining any specialized cognitive faculties no longer seems to make much sense.

The paradox disappears, I believe, when one drops the related presuppositions that science tends to thoroughly integrate the domains of ordinary human knowledge and that cognitive maturation necessarily proceeds in the direction of scientific reasoning. In fact, science scarcely affects ordinary thinking about customary matters, and most adults become highly competent cultural performers without any scientific knowledge. Children, tribal peoples, modern layfolk – even scientists in their nonworking hours – readily partition the ordinary range of human experience according to cognitive domains that are pretty much the same across cultures. By and large, these domains remain structurally stable and are adequate for dealing with the phenomenal world of ordinary human experience.

To illustrate this rather spontaneous and steadfast acquisition of "common sense," I analyze folk knowledge of living kinds. The development of science evinces no such spontaneity and stability. There appears to be no specially constituted "science-forming-faculty," although there may be more general "regulative" principles on rational explanation and intelligibility. Rather, certain sciences seem fitted to specific common-sense domains. This book takes the example of systematics – the science of biological classification – which emerged as an elaboration of universal cognitive schema common to all and only folkbiological taxonomies.

Natural history, like natural philosophy, transcended the bounds of common sense by calling upon various representational techniques that increased the depth and extent of its coverage of the facts. Although by no means restricted to

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this or that domain of common sense, such techniques still had to operate with the materials of this or that domain in mind. The moral: theories and analogies that allow us to speculate beyond common-sense domains must originally be formulated in terms of them, that is, with pointed reference to the cognitive “givens” of our species.

Perhaps the psychological condition that science initially be compatible with common-sense universals imposes insurmountable barriers to some lines of scientific advance. Even so, there would be little cause to lament the role of common sense in the growth and understanding of science. For it is owing to the constraints of common sense that science develops at all and can be made accessible to the children of contemporary Stone Age peoples just as readily as to our own sons and daughters. The present book endeavors to make this obvious.

A good deal of the subject matter integrated into this book was originally scattered in earlier presentations. Part I draws on these sources: “Covert fragmenta and the origins of the botanical family” (*Man*, 18:51–71, 1983), “The nature of folkbotanical life-forms” (*American Anthropologist*, 87:298–315, 1985), “Ordinary constraints on the semantics of living kinds: a commonsense alternative to recent treatments of natural-object terms” (*Mind and Language*, 2:27–63, 1987), “Do natural kind concepts form a natural kind?” (Paper delivered to the second session of the Franco-British Project on “Language, Communication and Cognition”, London, May 1988; “Basic conceptual domains” (*Mind and Language*, 4: 7–16, 1989).) Many of the arguments for Part II initially appeared in “Pre-theoretical aspects of Aristotelian definition and classification of animals: the case for common sense” (*Studies in History and Philosophy of Science*, 16:113–163, 1985).

Part III contains ideas from an article, “Origins of the species and genus concepts: an anthropological perspective” (*Journal of the History of Biology*, 20:195–279, 1987), and from a paper, “The commonsense basis of Buffon’s *Méthode naturelle*” (delivered to the “Colloque International Buffon 88,” Paris – Montbard – Dijon, June 1988). Much of the material in Part IV derives from the following: a series of lectures given to the Department of Social Anthropology, Cambridge University (at the invitation of Jack Goody, winter term, 1984), my course “Culture and Communication” (taught jointly with Dan Sperber at the Ecole des Hautes Etudes en Sciences Sociales in Paris, 1985–1986), and the paper “Whither the new ethnography?” (delivered to the King’s College Research Centre Conference on “Complex Culture Categories,” Cambridge University, March 1988).

I am particularly grateful to Clemens Heller, President of the Maison des Sciences de l’Homme, for the institutional support that carried me through the lean years, when much was in question. Other institutions helped along the way: Columbia University, the Fondation Fyssen, the Fritz Thyssen Stiftung and, especially, the Centre National de la Recherche Scientifique and the National Science Foundation Scholar’s Award Program in the History and Philosophy of Science (Grant No. SES-8507896). Professor Jacques Barrau, of the Museum

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National d'Histoire Naturelle de Paris, kindly offered what proved to be a rewarding and lasting association with the Laboratoire d'Ethnobotanique et d'Ethnozoologie (now the Laboratoire d'Ethnobiologie-Biogéographie). The newly formed Groupe de Recherche sur la Cognition (CREA – CNRS) at the Ecole Polytechnique provided the forum of ideas and technical means for the final realization of this work.

A deep intellectual debt is owed Dan Sperber, whose knowledge and science encouraged my awareness of certain fundamental issues treated here and served to harness some of the wilder hypotheses. I have also profited greatly from critical discussions and correspondences with Alexander Alland, Brent Berlin, Claudine Friedberg, David Hull, Jonathan Hodge, Pierre Jacob, Ernst Mayr, Georges Métaillé, Phillip Sloan and Peter Stevens. Generous years of advice from Lawrence Hirschfeld and the affection bestowed by my family were indispensable to the doggedness and completion of my enterprise. A very special thanks goes to my daughters, Tatiana and Laura, and to my son Emiliano, for much of the joy that animates my life and work.