

BOOK REVIEW

Cognitive Foundations of Natural History: Towards an Anthropology of Science. Scott Atran. Cambridge: Cambridge University Press, 1990. Pp. xii, 360. \$39.50 (hardcover). ISBN 0-521-372-92-3.

Many people view folk taxonomy as something apart from and essentially different from the supposedly more rational scientific nomenclature. They fail to realize the close historical and semantic relationship between the two, ignoring the fact that scientific taxonomy represents an extension and codification of European folk taxonomy. In this book, Scott Atran traces in great detail the historical and philosophical origins of taxonomic nomenclature, from traditional folk taxonomy through Aristotle and Linnaeus to the nineteenth century biologists who established the familiar present-day system. The author concentrates on the semantic criteria used in taxonomic decision-making at each step along the way. He discusses how traditional overt and covert European folk taxonomy gave rise to many contemporary biological concepts. Some of the ideas have been published elsewhere previously (Atran 1983, 1985a, 1985b, 1987a, 1987b, 1989), but others are presented for the first time in this book.

Atran's work has profound implications both for ethnotaxonomic studies and for modern systematics. In discussing folk taxonomy he challenges the framework which has guided the study of ethnotaxonomy for over 20 years. Berlin et al. (1966, 1968, 1973) postulated that folk taxonomies tend to be organized hierarchically, much in the same manner as scientific taxonomy, with the chief categories being unique beginner, life form, folk genus, folk species, and folk variety. Atran criticizes this viewpoint from several perspectives. First, he maintains that folk taxonomy is not strictly hierarchical, since many folk genera cut across life form boundaries. Indeed, such basic English folk groupings as pines, oaks, willows, maples, alders, dogwoods, yews, and junipers have both shrubby and arboreal members. This, maintains Atran, is the basis for the modern botanical system which continues to utilize life form categories as important descriptive terms while recognizing that they are not phyletic taxa. Many families such as grasses, palms, umbelliferates, and orchids are readily recognizable to nonbotanists. Some have common names, while others represent covert categories, recognized by people as distinct but unnamed groups.

Atran also lumps together the folk generic and folk specific categories into the "generic-specieme." He maintains that most members of this category are monolexemic, and that most binomial folk taxa represent either compound names, attempts to broaden a localized folk taxonomy to include novel items, or folk varieties with a very limited number of sharply contrasting descriptors such as "black" and "white." Significant expansions of folk binomials occur when large numbers of exotic species are added to a preexisting system, e.g., during the invasion of English-speaking peoples into North America. Other allegedly "common" names arise artificially when biologists deliberately coin such names for all the species of a large geographic region. Some of these are mere translations of scientific binomials (e.g., Richardson's hymenoxys for *Hymenoxys richardsonii*; Hitchcock and Cronquist 1973). True folk taxonomies are designed primarily for use within a restricted geographic area.

Recognizing the folk taxonomic origins of modern taxonomy helps explain several controversies in the history of modern systematics. Our species concept is rooted in the common perception of the permanent separateness of different kinds of organisms. With further study scientists have discovered difficulties with the original concept, such as hybridization, apomyxis, introgression, polyploidy, and evolutionary changes within a given species through time. At each turn, scientists have attempted to redefine the species concept to fit these new situations, mostly in the direction of retaining the status quo as nearly as possible. For example, many plants which are capable of reproducing in the laboratory but which for one reason or another do not regularly do so in nature are usually regarded as separate taxonomic species. On the other hand, groups which are incapable of cross-breeding because of polyploidy or asexual reproduction are frequently regarded as a single taxonomic species when these are morphologically indistinguishable even though they may meet most strict criteria for biological species. Both of these examples illustrate the attempts of scientists to perpetuate the traditional system founded on the idea of reproductively isolated, morphologically distinguishable entities.

Attempts by members of the systematics community to move too far from folk

taxonomy, either at the species level or higher up, often meet with fierce opposition from other systematists. Attempts to split or lump readily recognizable taxa are (justly or unjustly) resisted, e.g., Dahlgren et al.'s (1985) splitting of the Liliaceae and Orchidaceae into several separate families. Attempts to modify or abolish paraphyletic taxa such as fish and reptiles (Laferrière 1989) meet strong resistance, especially when such taxa reflect long-standing folk taxonomy at the life form level.

The point here is not that folk taxonomy should be either followed blindly or totally ignored in modern systematics. Scientific taxonomy differs from folk taxonomy in several respects. It is strictly hierarchical, it aims to include all species on the planet, and it attempts to avoid polyphyletic taxa (opinion is divided as to whether it should avoid paraphyletic ones as well). The rules on priority, typification, and publication of descriptions are designed to ensure stability and enhance universality of usage. However, the scientific system shares with folk taxonomy the general purpose of helping people categorize information and render the vast diversity of the natural world more manageable. In general it therefore seems preferable to maintain official recognition of folk taxa in formal taxonomy provided, of course, that the more rigorous standards of modern systematics are followed.

Atran's book is rather thickly and abstrusely written. The reader must frequently go searching for main points which should have been stated more clearly and succinctly. This is definitely not a book for skimming or speed-reading. Nevertheless, the ideas expressed are provocative and represent a significant contribution to the study of ethnotaxonomy.

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