The Unique Animal. Don D. Davis. New York: Prytaneum Press, 1981, 336 pages, $25.00.

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Although it is a truism of the scientific method that more may be learned from error than confusion, the irony of this fact becomes especially clear when "confusion" takes the form of a reductionist proof. In *The Unique Animal*, Don D. Davis presents a testable theory which differentiates between human intelligence and the intelligence of all other animals.

The central thesis of this book is that the human capacity to learn is superior to that of all other animals not merely in degree, but in kind. Davis begins by reviewing and illustrating past issues concerning "man's" uniqueness—"tool using and making," "abstraction," "humour," and various types of "language," to name a few. By process of elimination, he concurs with a presently prevailing theory that the ability to create arbitrary symbols "is a genuine difference of kind," setting "us apart from the rest of the animal kingdom" (p. 64).

But this is only part of the picture. The capacity to symbolize is inextricably related to another human capacity, and this relationship, hitherto unrecognized, has an empirical basis which is clearly demonstrable. Davis argues that human intelligence demonstrates this dual capacity: the ability to symbolize and to hypothesize. These "are actually two aspects of the same underlying ability," designated, for lack of a better term, as "imagination" (p. 214). The ability to symbolize is evident in human language and "representational art." Mr. Davis asserts that the written symbol of language has a separate origin from the spoken symbol, having "its roots in two-dimensional art," or the pictogram (p. 59). Thus, these forms of expression are closely connected. The ability to hypothesize is evident in society's development of magic, religion, and science. Magical and religious hypotheses are not testable and therefore not falsifiable. Unlike magical hypotheses, religious hypotheses posit the existence of powerful, unseen beings. Similarly, scientific hypotheses posit the existence of unseen entities. But unlike those of either magic or religion, scientific hypotheses *are testable* and therefore falsifiable. Thus, these forms of knowledge share a common empirical nature.

How are the abilities to symbolize and to hypothesize related? The relation becomes explicitly clear as Davis defines each:

Symbolize:	to decide to assign a relationship between two dissimilar and previously non-contiguous events.
Hypothesize:	to propose a relationship or connection between two or more non-contiguous events. (p. 214)

He goes on to explain that "symbolizing and hypothesizing are two sides of the same coin, they both involve proposing a relationship between non-contiguous events" (p. 214). The spatial-temporal equivocation implicit in these definitions requires explanation. Davis devotes a chapter to "contiguity," but sums up here as follows: "There

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is a very basic similarity between deciding that a particular word and a particular object are related to each other (i.e., symbolizing) and proposing that two events separated by time have a connection (i.e., hypothesizing)" (p. 214).

Here lies the crux of Davis's theory—its empirical basis. He defines a "non-contiguous," or "separated relationship," as "a connection between any two or more events separated by 60 seconds or more" (p. 98). The exact number of seconds, of course, is not important. Davis documents issues of "primary" and "secondary" learning using the model of positive reinforcement, and concludes that scientists agree concerning the maximum interval (30 seconds) for contiguous (primary) learning among all animals. He gives an extended illustration of how Semmelweis discovered the cause of childbed fever as proof of the human capacity for non-contiguous learning.

This bare summary of theory does not do justice to other informative aspects of Davis's study, his thorough and systematic examination of vast fields of knowledge: levels of learning among animals, plausible speculations about "pre-historical science," the relation between hypothesis and "social norms," and more. The veracity of many of his conclusions—based as they are on past and current knowledge in anthropology, archeology, linguistics, and psychology—would seem to be strong indeed. His proposed theory attempts to provide a hypothesis which is both testable and falsifiable. Granted his facts and working defintions, the demonstrable proof of Davis's theory on its own terms may never be contested.

Yet after all is said and shown, the unique human ability to learn from "separated events" (as defined) would seem to be a finding that is reductionistic in a very weak sense—and most dependent upon reified terms which conjure up semantic equivocations and hover on the brink of absurdity. Mr. Davis speaks of "intervals." During an interval of less than 60 seconds, "events" remain "contiguous," or *touching*. After 60 seconds, they are "separated by time."Davis's theory is based upon conclusive experiments in which intervals are not "marked" by "extraneous events" (pp. 87-88). May such "intervals" be said to have duration? The idea of events touching or not touching in time suggests that an interval with a shorter duration may have some sort of mooring effect, and one with a longer duration a drifting effect, on what are contrived to be pertinent "events." In any case, a differentiation between contiguity and non-contiguity which depends upon the length of an "unmarked" interval suggests that a duration, without "interference," changes somehow from contiguous to non-contiguous at some point (i.e., 60 seconds). To speak of a continuous duration is redundant; a noncontinuous duration would seem to be a contradiction in terms. None of this sophistry would come to mind were it not for Davis's assertion that a "true hypothesis" occurs only after seemingly related events are separated by more than 60 seconds, and that this human ability makes our intelligence different *in kind* from that of other animals. Just how a quantitative measure of duration translates at a certain point into a difference of kind rather than degree is a topic Mr. Davis does not broach.

Though Davis makes a point of treating magical and religious hypotheses fairly, in terms of the empirical nature which they share with those of science, and his clarification of this point is lucid, as are many points of clarification throughout his book, he makes some tacit assumptions which are significant to note: he asserts that religious (i.e., spiritual hypotheses) are not falsifiable, but he assumes that such things as spiritual forces cannot really exist unless their influence is predictable. He asserts that the function of magical, religious, and scientific hypotheses, alike, is to relieve human anxiety in the face of natural forces and to exert some degree of

controlling influence over those forces, but he assumes that the laws of nature are ultimately those of cause and effect. He asserts that an objective point of view is attainable if we do not confound "cognition" and "behavior" in our study of human intelligence, but he assumes that the perceiver does not alter the perceived—except in ways that are consciously manipulative. In sum, Davis is so rooted in a rationalistic empiricism that he wishes to conceive only of a world of findings and correlations; he has no use for creative forces which may produce their own correspondences.

Ironically it is through an unwitting manner of style that Davis demonstrates the capacity of human intelligence to act in correspondence with a world of its own making. His habit of repeating assertions and reiterating what he has previously established becomes tedious in many places. Such a forceful strategy of clarity and coherence might be effective in a lecture hall but is exceedingly tiresome on the page. It is when Davis senses that his verbal momentum must roll over barriers of considerable resistance that his engagement with reified language becomes markedly obsessive. His book may not be peculiar for this reason; it simply needs editing. On the other hand, even a great concern for clarity may not account for excessive over-writing. Davis's style in *The Unique Animal* suggests that to be human is not merely to possess langauage—but to be possessed by language.