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# The Behavioral and Brain Sciences

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## The codes of man and beasts

David Premack, *University of Pennsylvania*

Exposing the chimpanzee to language training appears to enhance the animal's ability to perform some kinds of tasks but not others. The abilities that are enhanced involve abstract judgment, as in analogical reasoning, matching proportions of physically unlike exemplars, and completing incomplete (external) representations of action. The abilities that do not improve concern the location of items in space and the inferences one might make in attempting to obtain them. Representing items in space and making inferences about them could be done with an imaginal code, but representing relations and judging the relations between them, as in analogies, requires a more abstract code. Language training cannot instill such an abstract code, but for species that have the code to start with, it may enhance the animal's ability to use it.

*With Commentary from* Anderson JR, Bennett J, Bickerton D, Block N, Danto AC, Haber RN, Hulse SH, Karmiloff-Smith A, Miller GA, Millward R, Olton DS, Roitblat HL, Zentall TR, and others.

## The impending demise of the icon

Ralph Norman Haber, *University of Illinois at Chicago*

The notion of an icon as a brief storage of information persisting after stimulus termination cannot possibly be useful in any typical visual task. This argument is documented by an analysis of normal perceptual tasks and by a review of experimental evidence on temporal integration, saccadic suppression, masking, and the photoreceptor basis of visual persistence.

*With Commentary from* Boynton RM, Breitmeyer BG, Coltheart M, Di Lollo V, Goldberg ME, Johansson G, Julesz B, Klatzky RL, Neisser U, Sperling G, Vassilev A & Penchev A, and others.

## Human inbreeding avoidance: Culture in nature

Pierre L. van den Berghe, *University of Washington*

Much clinical and ethnographic evidence suggests that humans, like many other organisms, avoid close inbreeding, and that the mechanism for inbreeding avoidance is negative imprinting toward intimate associates in early childhood (ages 2 to 6). There is also evidence that human populations maintain some degree of inbreeding. Like other social animals, humans seem to maintain an optimal balance between outbreeding (because of the fitness cost of inbreeding depression) and inbreeding (because of the benefits of nepotism). An interactive model of "culture in nature" is presented, in which culture is seen as coevolving with genes to produce the maximization of individual inclusive fitness.

*With Commentary from* Bateson P, Bittles AH, Daly M & Wilson M, Dawkins R, Lamb ME & Charnov EL, Livingstone FB, Lumsden CJ, Melotti U, Tiger L, Wilson EO, and others.

## Précis of Knowledge and the flow of information

Fred I. Dretske, *University of Wisconsin*

A theory of information is developed in which a signal's informational content is defined as an objective commodity, something whose existence is independent of the interpretative efforts of intelligence. Cognitive processes are then characterized in terms of the way they encode, process, and utilize the information made available to them by the sensory systems. Philosophical problems about the nature of belief, the possibility of knowledge, the direct objects of perception, and the role of conscious experience are discussed from this unified, information-theoretic standpoint.

*With Commentary from* Alston WP, Armstrong DM, Barwise J, Ginet C, Haber RN, Harman G, Kyburg HE, Levi I, Rundle B, Sayre KM, Sosa E, Suppes P, and others.

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