# The Jacob Marschak Interdisciplinary Colloquium on Mathematics in the Behavioral Sciences at UCLA

Young Research Library Conference Room 11360 | May 14, 2015 at 3-4:30 pm




## The Interface Theory of Perception

Speaker: Donald Hoffman, Professor of Cognitive Science, Computer Science, and Philosophy at UC Irvine | Host: Hakwan Lau, Associate Professor of Psychology, UCLA

If I have a visual experience that I describe as a red tomato a meter away, I am inclined to believe that there is in fact a red tomato a meter away, and that it will continue to exist even if I close my eyes or even if I cease to exist. In short, I'm inclined to believe that my perceptions are, in the normal case, *veridical*—that they accurately represent some aspects of the objective environment. But is my belief supported by our best science? In particular: *Does evolution by natural selection favor veridical perceptions*? Many scientists and philosophers of perception claim that it does. But this claim, though it is influential and accords with our intuitions, has not been adequately tested. In this talk I formalize several notions of veridical perception—and an exhaustive set of alternative notions of perception—as precisely defined perceptual strategies. To determine which perceptual strategies are in fact favored by natural selection, I consider evolutionary games in which perceptual strategies compete, and genetic algorithms in which perceptual strategies evolve. They reveal that veridical perceptions of all types are generically driven to extinction by non-veridical strategies that are tuned to fitness rather than to objective reality. Thus evolution by natural selection does not, in general, favor veridical perceptions. Perception is not like a window on reality; it is like a windows interface on your laptop. I discuss the implications of this finding for one of the most puzzling unsolved problems in science: the relationship between brain activity and conscious experiences.

Don Hoffman is a cognitive scientist and author of more than 90 scientific papers and three books, including *Visual Intelligence: How We Create What We See* (2000). He received his BA from UCLA in Quantitative Psychology and his Ph.D. from MIT in Computational Psychology. He joined the faculty of UC Irvine in 1983. He received a Distinguished Scientific Award of the American Psychological Association for early career research into visual perception, the Troland Research Award of the US National Academy of Sciences.