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Invisible Gorillas, Unfair Casinos & the Action Orientation of Engineers

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One of the tensions in modern intellectual life is between notions of *rationality* on the one hand and the way human beings actually think and behave on the other. The origins of psychotherapy in Freud's celebration of the irrational are well known, but even a discipline that once fixed human rational self-interest at its foundations—economics—now regularly points out ways in which human economic behavior departs from simplified models of rational self-interest under the rubric of *behavioral economics*. A recent addition to this burgeoning literature of the irrational (Chabris & Simons, 2010) goes a step further and suggests that our entire sensory, perceptual, and cognitive apparatus is a web of “illusion.” Although the empirical case for this view is reasonably persuasive, the lack of a unifying framework leaves more questions than answers.

This paper takes the illusions of *The Invisible Gorilla* (hereafter called the “gorilla illusions”) and connects them to the action orientation of engineers. Although the interrelationship is not *prima facie* obvious, the chain of reasoning used to connect these disparate dots has rich explanatory horsepower, which the paper begins to exploit.

The paper starts by surveying the gorilla illusions (Chabris & Simons, 2010): the illusions of attention, memory, knowledge, potential, cause, and confidence. Superficially, these seem to have little in common until one notices that they are all relatively *optimistic* with respect to a human being's capability. That is, each of us has a tendency to overestimate our capability with respect to our actual ability in regard to a number of fundamental perceptual and cognitive functions. This consistent bias is treated by Chabris and Simons as fundamentally flawed—a deceptive misconception of human capability—without rhyme or reason behind it, but the present paper suggests that such optimism can be explained as an evolutionary adaptation if viewed through an appropriate lens.

In their classic text, *How to Gamble if You Must: Inequalities for Stochastic Processes*, Dubins and Savage (1965) discuss the mathematics of gambling in unfair casinos—in settings where the only bets available are less favorable than even odds. Although the stochastic inequalities of the book are beyond the scope of this paper, the pithy conceptual conclusion that, generally speaking, *bold play is optimal* is germane to understanding the optimistic biases apparently built into our perceptual and cognitive apparatus. In particular, this paper suggests that over the course of human evolution—an unfair casino if there ever was one—the illusions of perception and cognition summarized by Chabris and Simons evolved to make human beings *predisposed toward action*. With the odds of evolution stacked against our species, bold action-taking would result in the survival of offspring in greater numbers than actions taken in accord with perceptions and cognition unlaced with the gorilla illusions.

The argument outlined here applies generally to action in the world, but the remainder of the paper considers some of its implications in connection with engineers and engineering in the world. At the level of the gorilla illusions the paper helps us understand the orientation of engineers toward action generally. The connection with Dubins and Savage helps frame bold engineering action in ways that might reasonably go beyond strictly conservative ethical prescriptions such as the precautionary principle. The implications for engineering in the face of concerns for sustainable development are also briefly considered.

References

- Chabris, C. & Simons, D. (2010). *The invisible gorilla: And other ways our intuitions deceive us*. New York: Crown.
- Dubins, L. E., & Savage, L. J. (1976). *Inequalities for stochastic processes: How to gamble if you must*. New York: Dover.