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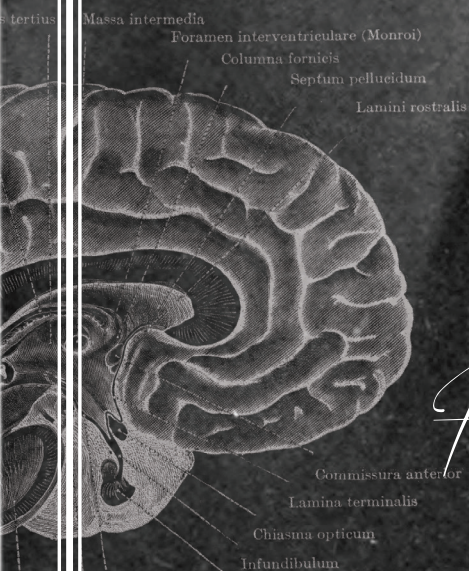
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Hugo Münsterberg

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# NEUROMARKETING: MERE BUNDLES OF MENTAL STATES?

During the dawn of the 20th century, Hugo Muensterberg, the great pioneer of industrial/organizational psychology, purportedly said, “Businessmen will eventually realize that customers are merely bundles of mental states and that the mind is a mechanism that we can affect with the same exactitude with which we control a machine in a factory.”

BY *Ming* HSU, Assistant Professor, Haas School of Business, University of California, Berkeley



## BIO

Ming Hsu is an Assistant Professor in the Haas School of Business at the University of California, Berkeley. Hsu's research aims to understand the behavioral and neural basis of economic and consumer decision-making, including the interdisciplinary research areas of neuro-economics and consumer neuroscience. He uses a variety of models and methods, including non-expected utility theory, behavioral and psychological game theory, lab and field experiments, as well as neuroimaging, neuropsychological, and physiological data.

Despite such optimism, Muensterberg made little progress on understanding these “mere bundles of mental states,” much less controlling them as one would a machine. In the 100 years since, every generation of researchers has presumed that the newest

theories and technologies of the time held the promise of unlocking the black box that is the mind of the consumer—first surveys and focus groups from psychology, then decision sciences, and now neuroscience. At each level, we move away from what people say they will do, to what they do, to what they will do.

Unlike Muensterberg, researchers like myself think of consumers as economic agents, finely tuned through evolution to fulfill their own preferences and desires. This does not mean we go through life optimizing every action we take as in economic textbooks. Rather, our brains have evolved into a wonderful bag of tricks that allows us to navigate our immensely complex environments. Understanding these tricks holds the key to marketers’ understanding of what these wants and desires entail in a much more sophisticated way than traditional marketing research techniques ever could, but also in a way that serves to maximize the value to customers themselves.

## Lessons From Decision and Consumer Neuroscience

Our study of learning in the brain focused on the last two steps of the decision process: what actions people take and how they evaluate the resulting outcome of these decisions. This study,

published in the *Proceedings of the National Academy of Sciences*, resulted in three key findings:

- **Behavior is reinforced and largely subconscious.** The key driving forces behind our choices as consumers are the rewards and punishments that result from our actions. This has been known since the time of Pavlov and Skinner as reinforcement learning. What we have only started to appreciate in the past decade, however, are the neural mechanisms that allow for precise prediction of behavior. Our study, along with those of a number of others, has implicated the role of the neurotransmitter called dopamine and the associated brain structures in the striatum in such learning.
- **Mental models guide behavior.** Unlike many other animals, however, humans have sophisticated cognitive scaffolding that allows us to anticipate and respond to others in a strategic manner. As consumers ourselves, these are the faculties that prevent us from being taken advantage of by others. These types of reasoning depend on more recently evolved brain regions in the prefrontal cortex. Interestingly, as opposed to simply overriding our unconscious impulses, however, our results suggest that lower- and higher-level cognition operate in parallel, together driving choices.
- **Emotions are not the opposite of reason.** There is a tendency to consider emotion as beyond the rational scaffolding of human reason, bubbling over occasionally to take control of our behavior in odd and dramatic ways. It is becoming increasingly clear, however, that emotions carry much more information than we previously believed.

Indeed, the key brain region we implicated in strategic anticipation—the medial prefrontal cortex—has also been shown to be involved in processing of regret, guilt and even moral judgment. This is not as puzzling as it may first appear. Emotions such as regret and guilt depend upon a capacity to sense information (e.g., outcomes and social information) that is not immediately available but must be inferred. As eloquently argued in Damasio’s book *Descartes’ Error*, these emotions form an important source of our capacity to sense and respond to social and strategic information.



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EVALUATION OF  
ALTERNATIVES



PURCHASING  
DECISION



POST-PURCHASE  
EVALUATION