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2018

Well-Grounded: The Neurobiology of Rational Decisions

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Recommended Citation

Lambert, Kelly. *Well-Grounded: The Neurobiology of Rational Decisions*. New Haven: Yale University Press, 2018.

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WELL- GROUNDED

The Neurobiology of Rational Decisions

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Yale
UNIVERSITY PRESS
New Haven and London

Introduction

IN EIGHTEENTH-CENTURY GREAT BRITAIN, merchants were enthusiastic about a new opportunity to “earn” money. The South Sea Company was created by Parliament in 1711 to facilitate trading among the South Seas and parts of America. The appearance of financial markets during this time represented a new way for the brain to experience a return on investments. Whereas in the past, acquired resources were more closely tied to an investment of personal effort typically involving some form of physical labor, the new financial investments and market schemes seemed to bypass such work. Less work, more money: perfect! After several years the South Sea Company gained an impressive corporate presence, boasting a market capitalization that exceeded 200 million pounds.

Amid the apparent success of the South Sea Company, Archibald Hutcheson, an attentive lawyer and economist, spotted a potential problem, or “bulge,” as he called it. He warned investors that the valuations of the South Sea shares were unrealistic—that their intrinsic value was inflated. It turned out that Archibald was onto something. The irrational mania behind the South Sea Company’s apparent success led to what was later described as an *asset bubble*. The lack of relevant experience of the company’s board of directors was just one of many reasons for the eventual bursting of the bubble in 1720—resulting in the first international market crash.¹

Fast-forward three centuries to the present, and asset bubbles and market crashes remain a threat in the brave new world of finan-

cial markets. In 1996, Alan Greenspan, chair of the Federal Reserve at the time, warned that *irrational exuberance*, similar to that observed in the South Sea crash, was artificially escalating asset values, leading once again to false assumptions about the true intrinsic value of such assets.² This didn't stop the inflated intrinsic value of real estate in the United States that peaked in 2006 and led to the bursting of the housing bubble two years later. It appeared that, in order to avoid bubble assets leading to crashes in the financial market, a close connection between real and perceived asset values had to be maintained.

As a behavioral neuroscientist, I am constantly looking for trends that characterize the ways mammals navigate their complex habitats to survive and thrive in a world filled with endless uncertainties. With so many choices, where do animals invest their time, energy, and resources? In many ways, the keys to our personal survival "markets" are similar to the financial markets. Similar to our desire to achieve maximal financial returns on minimal financial investments, we search for ways to experience maximal emotional highs with minimal emotional investments. Who could argue with such a successful formula? Indeed, such emotional success stories also sometimes appear to be *almost too good to be true* . . .

My own scientific journeys, mostly with clever rats, have emphasized the importance of allowing our neural processing capacity to maintain relevant and meaningful connections with the outside world. If either the brain or the environment strays too far from its natural context, this elegant, complex system gets a little wonky, requiring recalibration to reestablish optimal brain-behavior baselines. If allowed to go unchecked, our brains start to assign inaccurate values to behavior and aspects of the world around us—sometimes with deadly results. Perhaps the most extreme example of such an emotional crash is found in individuals who take psychoactive drugs to achieve emotional highs that nature reserved for reinforcing life's most valuable investments such as eating, sex, social relationships, and personal achievement. When these relevant behaviors are bypassed by taking drugs for shortcuts to euphoria, we lose the ability to assess the true intrinsic value of more natural elements of the world around us and, consequently, artificially inflate the value of drugs. A drug-induced high is irrational exuberance incarnate. Of course, in the case of addiction, the results can be even more devas-

tating than the financial market crashes. In the most unfortunate cases, the distorted valuation assigned to these drugs of choice can completely shut the body down, tragically ending in death. This distortion of reality represents a form of neural propaganda, as incoming information representing the authentic environment that we depend on for our minute-to-minute survival is altered from its original form. Regardless of whether the end result is viewed as positive or negative, the distortion itself is the primary interest of this book.

Thus, when the return on investments in either the financial or the emotional markets seems to be too good to be true, there is a very good chance that this is exactly the case. Ideally, left to our own devices, we self-correct these distortions, or miniature asset bubbles, to recalibrate mismatches between our effort and emotional payoffs. If following a new diet plan doesn't result in actual weight loss, we move on to a different diet or at least stop following the ineffective diet. Thus, it is important that our past experiences accurately inform future experiences. If brain bulges or bubbles lead to distorted realities that impair future decisions, then our well-being, broadly defined, is compromised.

In addition to drug use, another lifestyle context that lends itself to such distortions is that of celebrity. Exorbitant paydays, lavish lifestyles, and unconditional praise from social contacts stray so far from any form of reality that the neural networks begin to get confused about the actual intrinsic value of once highly regarded life assets such as putting in a hard day's work, developing meaningful social relationships, and enjoying Mom's legendary lasagna. Under the spotlight of celebrity, some individuals lose their ability to fine-tune neural responses to respond to new challenges in life, often requiring an intervention of sorts.

Despite celebrities' vulnerability to distortions of reality, the barrage of entertainment "news" featuring the varied lifestyles of the rich and famous suggests that some of these individuals are opting for noncelebrity, reality-based lifestyles. Billionaire businessman Warren Buffett, for example, still lives in the same unpretentious house that he purchased approximately a half-century ago for \$30,000. Shortly after moving her family into the White House, former First Lady Michelle Obama expressed the importance of maintaining a sense of normalcy for her daughters, Malia and Sasha. She announced

to the ninety-five members of the White House residence staff that her daughters were responsible for continuing the chores they had been doing in Chicago—including making their own bed, cleaning their room, and clearing their plates from the table after eating. Michelle Obama emphasized that an understanding of a working household should be a familiar, not foreign, concept to her daughters. “Don’t spoil them, spoil mom!” was her running joke with the staff.³

Such compensatory efforts to maintain realistic connections with one’s environmental context likely provide a dose of prevention against the onset of emerging emotional asset bubbles that may contribute to a host of mental illnesses. Later in this book we will contrast this reality-based approach to celebrity status with Michael Jackson’s approach of enhancing his celebrity brain bubble by building the most unrealistic home and retreat imaginable. He called it “Neverland,” and it was complete with a menagerie of exotic pets including a chimpanzee with the somewhat prophetic name of “Bubbles.”⁴

Regardless of our social status, profession, or geographic location, one of the most certain aspects of life is that it is filled with uncertainties. Even when we are consciously living a grounded, self-recalibrating lifestyle, we encounter an endless stream of choices and decisions. As we make decisions throughout our lives, the choice with the highest payoff is not always clear. Our relevant and meaningful interactions with the world around us, our life backstories, build our response inventories so that we enhance our odds of experiencing those coveted emotional payoffs as opposed to heading toward the emotional crashes. In fact, our impressive brains are nature’s ultimate payoff for effectively interacting with our changing world; new challenges and experiences literally build new neuronal connections. Could it be that our most prized asset, our brain’s ability to draw from real-life experiences and determine optimal decision choices, is compromised by our insatiable desire to find shortcuts to life’s rewards?

Our journey in this book will compare the contemporary societal view of prosperity—obtaining resources with minimal energy investments—to scientific research emphasizing lifestyle practices associated with the richest brain responses. Not unlike the valued stock market index updates, among the brain’s most valued assets are

the ever-changing neural networks, a neural market index of sorts, that constantly update new and relevant information about our surrounding world. If there is indeed a disconnect between societal and neural perspectives of prosperity, how can we generate a more authentic view of prosperity that will maximize optimal returns on our emotional and physical investments? Similar to our quest for sustainable lifestyles to preserve our planet, we should be just as motivated to identify sustainable lifestyles for preserving our sanity—and even happiness. Such lifestyles enable us to understand which responses produce the most desirable immediate and future outcomes. Spoiler alert: to my knowledge there's no way to avoid the occasional encounter with brain bulges or emotional asset bubbles as we progress through life, but, with a little vigilance and a few lifestyle adjustments, we can hedge our bets against future brain bubble bursts and emotional crashes.

In the chapters that follow, influences on our behavioral output will be considered from both expected and unexpected perspectives. Since current neuroscience research has confirmed that the brain is the foundation of our behavioral, cognitive, and emotional responses, a close examination of the brain is necessary for this journey. Although the celebrated philosopher René Descartes contributed valuable information to many scientific areas, his dualistic ideas about the mind and body representing separate independent entities are not embraced by contemporary neuroscientists and informed mental health practitioners today.⁵ Thus, far from a dualistic approach, a discussion of our brain's responses in this book is, in reality, a discussion of our responses in general—no different than looking under the hood of a car to determine how the engine influences its performance on the road.⁶ Meaningful, well-grounded experiences allow our brains to maintain accurate filters to determine optimal life outcomes, ensuring that our highs are based on rational, as opposed to irrational, exuberance. As tempting as living a fairy tale–like affluent existence may be, you will learn that the brain feeds on more grounded life experiences just as the stomach needs real food, and lungs need real air. Although it is fun to stray from reality for brief interludes, the best advice is to simply *Keep It Real!*