

A guided tour of mind and brain well worth taking

***Our minds, our selves. A brief history of psychology.* Keith Oatley, Princeton University**

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Review by James E Alcock.

Philosophers across the millennia have pondered the enigma of mind while deliberating over the extent to which our experiences of the world correspond to external reality. A little more than a century ago, such contemplations were joined by empirical inquiry as experimental psychology slowly began to distinguish itself from its parent, philosophy. Since that time, psychologists have accumulated a vast body of knowledge about mind and brain, knowledge that might be expected to satisfy the substantial public appetite for information about how the mind works and why people behave as they do.

And yet, in large part the general public remains either uninformed or, worse, misinformed about such matters. The layperson seeking to understand human psychology has faced a difficult choice between, on the one hand, the relatively dry offerings of introductory psychology textbooks with their charts and graphs and seemingly endless presentations of technical details, and, on the other, the unrestrained speculations and untested claims that are ruthlessly peddled in the pop-psychology marketplace.

But now, there is a way out of this Hobson's choice. *Our minds, our selves* provides a much-needed alternative, a comprehensive survey of psychological knowledge grounded in empirical research and presented in a highly readable and engaging manner by a writer endowed with both psychological expertise and literary skill. Keith Oatley, Professor Emeritus of Psychology at the University of Toronto is both a distinguished experimental psychologist and a talented novelist,

and his literary skills lift his presentation to a level above what might easily have been a dull exposition in the hands of a less able writer. His exploration of psychological knowledge is built upon the history of discoveries made through careful research, a history rendered much more fascinating by his short biographical examinations of the discoverers themselves. These vignettes both animate the presentation and help the reader to appreciate the context in which the discoveries were made.

Part One: The book is divided into five parts, the first of which Oatley labels *Significant Ideas*. He presents four such ideas, each in a separate chapter. The first is the idea that our perceptions of the world around us are often distorted, raising the important question of how much our experience of reality actually corresponds to reality itself. He describes how Plato compared our experience of the world to being chained to a bench in a cave and mistaking for reality only the shadows on the wall of people passing back and forth behind us. But it is not just our perceptions of the external world that are distorted, and he describes how, two millennia later, Sigmund Freud argued that our perceptions of our interior world, of our own minds, are equally prone to error because of unconscious motivations and conflicts. And although the speculations of both Plato and Freud fell short of the mark, they helped point the way to modern-day understanding of conscious and non-conscious mental processes.

The second “significant idea” that Oatley addresses involves the correspondence between specific regions of the brain and particular cognitive functions, emotions, and abilities. He begins with the historically important case of Phineas Gage, a railway worker who in 1848 suffered a terrible accident that drove a three-foot long tamping rod through his brain. While he survived and was in many ways able to function normally, significant changes in his personality provided important information about the roles of specific brain regions.

The third “significant idea” relates to evolution and its role in determining our emotional makeup. Oatley traces the psychological study of emotions from the early evolutionary speculations of Charles Darwin through to modern studies. He emphasizes that humans are the most social of all the species and that our emotions serve crucial functions in terms of our interactions with other people.

The last “significant idea” that he addresses is the concept of intelligence and its assessment. Oatley begins by describing the early intelligence testing of Alfred Binet and goes on to outline Jean Piaget’s efforts to understand cognitive development in childhood and adolescence. He then discusses the regrettable subversion of intelligence testing when it was employed to further the interests of racism and eugenics. I have only one minor quibble: I would have liked him to have addressed the difficulties in defining “intelligence,” for it is far from a unitary concept. However, given that this book is bursting with discussion of so many psychological concepts, I can well understand that choices had to be made about what to include and what to leave out.

Of course, one might wonder about why these specific “significant ideas” were chosen over the many other significant ideas that could have been addressed in this first section, but Oatley’s selection makes sense in the context of the book as a whole. The distinction between what we think is reality and what is actually so; the correspondence between activities in various parts of the brain and our thoughts, feelings and behaviour; the evolutionary/biological influences that contribute to our emotional reactions; and the effort to study and measure human intelligence all provide foundations for the material of later chapters.

Part Two. This section, labelled *Learning, Language, Thinking* is focused on how we acquire knowledge of the world around us, how we communicate with others and how we manipulate information inside our heads. The first chapter in this section describes learning that occurs

automatically through associations, and Oatley discusses the contributions of several outstanding researchers in this area, including Russian physiologist Ivan Pavlov who serendipitously discovered basic, “classical” conditioning, psychologist John Watson, who demonstrated that emotional responses such as fear can also be conditioned, and psychologist B.F. Skinner who explored how the likelihood that a particular behaviour will be repeated is strengthened or weakened by its consequences. He also describes how both Watson and Skinner became subjects of considerable public controversy, the former because of an affair that ended his position as a university professor and led him to channel his psychological knowledge into a career in advertising, and the latter because of his advocacy of social engineering, based on the premise that both “mind” and “free will” are wrong-headed concepts that are dangerous for society, and that we should instead strive to shape an environment that offers continuing positive reinforcements for socially desirable behaviours.

Oatley then turns to the discussion of language development, contrasting Skinner’s insistence that language is acquired through simple reinforcement of verbal utterances with Noam Chomsky’s argument that humans readily acquire language because of innate grammatical structures embedded deep within the brain.

Oatley next turns more directly to the concept of mind and to questions about how we think and remember. He outlines the seminal research of psychologist Frederic Bartlett that led to the realization that memories, rather than being the product of some sort of cerebral tape recorder, are constructed at the time of recall on the basis of a few significant details. As a result, the “construction,” the memory, of an event, can change over time depending on the circumstances in which it is elicited. He goes on describe the work of Kenneth Craik, whom he describes as a somewhat tormented genius, brilliant but sadly lonely because of his difficulties in forming

meaningful relationships with other people. Craik introduced the important concept of mental models, arguing that when we think about problems, we first translate them into models that allow us to generate hypotheses and reach some understanding about the world, even in the absence of complete information. Oatley relates the development of these mental models to “theory of mind,” the gradual recognition by children that other people have internal mental processes similar to their own.

This leads to a discussion of artificial intelligence, and the question of whether the concept of “mind” can ever be appropriately applied to machines. This is obviously a very topical subject as we adapt to a new world of virtual reality, “smart” appliances, cloud computing, and robotics. Oatley begins with the work of Alan Turing who led the effort to break the German enigma code during the Second World War, and whose work stimulated modern research into artificial intelligence in its various forms, including computerized neural networks and “deep learning.”

In Part Three, *Mind and Brain*, Oatley takes us further inside our heads, exploring the relationship between our brains and our abilities, feelings, and social relationships. He describes historical efforts to assess personality, beginning with a discussion of phrenology, a 19th-century technique based on examining the bumps in a person’s head that were thought to correspond to various specific regions of the brain. He then turns to mental and psychosomatic illnesses and wisely rejects the belief, still strongly held in some quarters, that depression is caused by an imbalance of chemicals in the brain. He points out that while brain processes are certainly involved, the research evidence shows that depression results not from something being wrong in people’s brains, but rather because something has gone wrong in their lives.

Oatley next addresses the startling discoveries flowing from research employing functional magnetic resonance imaging to observe activity within the brain. His description of how the

brain reacts when we engage with art is particularly fascinating, as is a subsequent discussion of how neural activity relates to empathy and the ability to socialize successfully with others.

Part Four, *Community*, takes the discussion up another level, from consideration of people as individuals to a focus on people living and working together in groups, and in this context, Oatley addresses such important concepts as cooperation, conflict, love, and culture. He begins with Jane Goodall's research into communities of chimpanzees and her finding that, while chimpanzees show affection for others within their community, the hierarchical structure of the community also leads at times to conflict over status. This morphs into a discussion of how at the human level we almost automatically perceive ourselves in terms of in-groups and out-groups, resulting all too often in "us-versus-them" discrimination towards outsiders.

Yet, he points out, cooperation within one's group, and even between groups, is essential for harmonious living, and he reminds the reader that almost everything that is important to us – including love, family, friendship, society – is built upon cooperation. People cooperate in caring for their children, in providing information that they think will be helpful to others, in making good decisions, and in maintaining social structures and norms. However, cooperation requires the ability to understand other people's intentions, and humans are fortunate that such understanding, which involves both perspective taking and theory of mind, is a universal that emerges very early during child development. Language ability is another crucial element in the capacity to share intentions. Lacking the capacity for sharing intentions, nonhuman primates do not collaborate in humanlike ways.

Oatley then extends the theme of cooperation to encompass altruism, and he stresses the importance of children's attachment to their parents for the development of the capacity to love

others and feel for others. Finally, he addresses the role that culture plays in shaping our emotional reactions.

Part Five, *Common Humanity*, the final section, delves into the heady topics of imagination, creativity, consciousness, free will, and morality. Oatley begins by highlighting the importance of children's play for creativity, cooperation, and morality. Such play, he argues, necessitates the use of mental models, and this in turn teaches children how to understand other people's intentions and needs as well as how to coordinate their actions with them. Childhood play is transformed in adulthood into games and sports that continue to require cooperation, coordination, and understanding other people's intentions.

He then describes the importance of imagination and how it is anchored in a number of mental and emotional functions that emerge in the first few years of life. This brings him back to art, which he describes as the externalization of one's thoughts and feelings in a form that can be shared with others. I found particularly thought-provoking his assessment that as result of enabling people to enter the lives and minds of others different from themselves and to feel empathy for them, literary fiction has played a vital role in the promotion of concepts of human rights. Such rights, he argues, can only flourish when people start to think of others as being like them in fundamental ways. Reading fiction stimulates empathy and understanding of others through stimulating the imagination, while nonfiction, to the extent that it does not push one to imagine interacting with others and seeing the world from their point of view, does not seem to have this effect.

Next, Oatley turns to the discussion to the effects of authority and morality, and he considers how the all-too-common cruelty of people in authority has been widely interpreted in the context of both the so-called "obedience" studies carried out by psychologist Stanley Milgram and the

mock prison study of Phillip Zimbardo. Milgram's research has been interpreted as showing that many ordinary citizens will readily follow orders to harm another person, while Zimbardo's simulation involving well-adjusted college students given the role of either guards or prisoners has been taken to show that cruelty and degradation automatically develop when individuals are given excessive power over others. However, rather than taking the results of the studies at face value as has generally been the case, Oatley informs the reader of the methodological criticisms that have been levelled at these studies that render their conclusions unreliable. He cautions that it is more appropriate to view these studies as a form of "theatre" in which participants did not know the script but were led by small steps in the roles that they were unfamiliar with." He makes the very important point that while such studies are often used to offer insight into atrocities carried out by the Nazis, these apparent insights are misleading. There is a wide gap between the context of these studies and that of Nazi Germany where much more than simple obedience was involved, and where many people acted willingly in reprehensible ways in the belief that they were doing the right thing.

Next in this section is a chapter that explores creativity and expertise, and I was intrigued and delighted to find it introduced by a stanza from Samuel Taylor Coleridge's 1816 poem *Kubla Khan*, along with Coleridge's own description of how he came to write the poem. This is but one of many examples of how Oatley bridges the gap between science and literature, vividly enlivening the presentation of psychological research.

The final chapter in this section, entitled *Consciousness and Free Will*, illustrates just how thorny the concept of consciousness is for philosophers and psychologists alike, and free will is, if anything, even more difficult. Oatley addresses the question of whether we are actually in charge of our actions or are merely observers of them, observers who then give ourselves credit for the

actions after the fact. He describes how we strive to find meaning in our lives, and how groups and societies construct shared meanings, whether or not such meanings are justified. Despite the fact that the discussion is certainly interesting and thought-provoking, this is the only chapter in the entire book that left me feeling somewhat unsatisfied. However, I cannot blame Oatley for this, for I have yet to read any treatment of consciousness and free will that has not produced a similar reaction. These are extremely difficult and complex concepts that do not yield easily even to the best of psychological inquiry or literary talent.

In sum, this is a most remarkable book. Although subtitled “A brief history of psychology,” it is much more than history. It provides excellent coverage of a broad range of psychological discovery and contemporary psychological knowledge, from consideration of simple reflexive behaviours to complex social interactions, from psychological knowledge at the level of the neuron to the level of community, and from mechanistic notions of the brain as machine to inquiries into consciousness and free will.

While I am struck by the breadth of coverage, equally impressive is Oatley’s ability to present complex concepts in a manner that makes them readily understandable and fascinating even for readers with little or no background in psychology or science, and he does so without condescension or “dumbing down” his presentation. I am impressed by his fidelity to the empirical facts, and I am delighted he does not shy away from methodological criticism when it is justified, nor, in contrast with the preponderance of psychological literature aimed at the layperson, does he gild the lily with exaggerated interpretations of psychology’s accomplishments.

For many years, there have been calls within the psychological scholarly community to “bring psychology to the people,” to present psychological knowledge in a manner that is both accurate

and readily accessible to those without psychological or scientific training. I can think of no better example of “bringing psychology of the people” than this book. I recommend it to all – to high school students and members of the public curious about mind and behaviour; to psychology undergraduates seeking a comprehensive summary and overview of the vast spectrum of psychological knowledge, and even to psychologists like myself, for it is good to be reminded about what our discipline has accomplished. Oatley’s blending of these accomplishments with history, literature, philosophy, and the personal backgrounds of some of the movers and shakers in the discipline makes this an excellent read for all. It is a book of which not just Oatley but, because of his compelling presentation of what our discipline has accomplished, all psychologists can be rightly proud. [2935 words]

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