The Psychology of Chess. Fernand Gobet. London and New York: Routledge, 2019, 126 pages, $10.69 paperback.

Reviewed by Neil Charness, Florida State University

This slim volume provides an informative and entertaining look at the psychology of chess from someone who is uniquely positioned to comment from the point of view of both a researcher and a high caliber player. Fernand Gobet has had a long, highly successful career as a researcher studying expertise in chess, among other topics. He also reached the International Master (IM) level as a chess player before apparently deciding that studying chess as an academic would be a better career path than trying to become a professional player. The research community is indeed grateful for that choice. Gobet has had the benefit of rubbing shoulders not only with some of the world's top chess players, but also with a Nobel-prize winning scientist, Herbert Simon, who was instrumental in initiating the modern experimental study of chess expertise with his colleague William Chase. Gobet has also collaborated with one of the early, towering giants of chess research, Adriaan de Groot, a Dutch psychologist whose doctoral dissertation written during World War II on *Thought and Choice in Chess* (1946/1978) helped uncover some of the primary phenomena about chess search processes and chess perception that are still being elaborated on by today's researchers. Gobet's insights into both research and practice have generated a very readable account of the psychological processes underlying expertise in chess.

The book is intended for a broad audience. Primary targets are early scholars, such as undergraduate students, who may be interested in seeing principles of cognitive psychology applied to understanding the underpinnings of chess expertise. An obvious next group is chess players looking to be better informed about potential ways to improve their own performance. Last, but not least, are the general readers who simply enjoy learning about research puzzles concerning expert performance, a field popularized by authors such as Malcolm Gladwell with his best-selling book *Outliers: The Story of Success* (2008), and others such as Ericsson

Correspondence concerning this review should be addressed to Dr. Neil Charness, Psychology Department, Florida State University, 1107 West Call Street, Tallahassee, Florida 32306. Email: charness@psy.fsu.edu

and Pool with their book *Peak: Secrets from the New Science of Expertise* (2016). Thus, the book is quite accessible, in line with the goals of the "Psychology of Everything" series.

The book should also be an excellent primer for researchers who want to delve into this specific area of chess expertise. As a former active researcher in the field, I was able to learn a few new things too, and the book is written in a very comprehensible style for those with no research background, no small accomplishment for a writer whose native language was not English. The attempt to address practical issues for those wanting to improve their own chess play will be appreciated by many players. Bottom line: sadly, there doesn't seem to be any quick road to mastery, as others such as K. Ander Ericsson have also argued. Even for those willing to entertain the notion of chess talent, a still poorly defined construct, it appears that significant amounts of hard work honing one's knowledge about the game are going to be necessary to move into the upper echelons. A virtue of this book is in pointing out the great individual differences in "deliberate practice" needed to reach various performance levels.

There is obviously a lot more research required to understand the mechanisms underlying such individual differences. Perhaps the book will inspire the next generation of researchers to track down those mechanisms, including understanding brain mechanisms now within the grasp of neuroscience approaches such as fMRI and EEG recording of brain processes. See, for instance, the recent book by Merim Bilalić on the *Neuroscience of Expertise* (2017).

The book is divided into eleven succinct chapters. The opening chapter traces out a brief history about chess and chess research, then the author moves into the classic work by De Groot, by Chase and Simon, and by others, including Gobet's own work, that gave rise to chunking and template theories about the knowledge structures required for expert performance. Gobet next examines search processes central to choosing moves to play, scrutinizes the role of practice, examines gender differences in expertise, the role of intuition, and what processes underlie chess understanding by human and non-human players (e.g., chess-playing programs such as Alpha Zero). Processes underlying errors (bad moves) are reviewed next.

Little formal research has been conducted on failures to choose the best move, errors, and Gobet's chapter ("Errare Humanum Est") outlines a variety of mechanisms that might be implicated including working memory overload, automatisms, emotional factors, and fatigue. For emotion, he notes his own case at a tournament of having a Grandmaster norm within his grasp, feeling the pressure of becoming the first Swiss player to do so, losing the thread of the position, and then losing the game. I suspect that some of the work on obsessive and intrusive thoughts unrelated to the task at hand, conducted on those with depression and anxiety disorders, may offer a window into understanding emotion-driven chess errors. When excited about and considering that enticing possible norm,

you may have less working memory capacity (and time) to search and evaluate move sequences systematically.

Gobet then moves to the topic of strategies for play and training practices where much less formal research is available to buttress advice. He turns next to research evaluating whether there are broader benefits to playing chess, the topic of transfer of skill, where evidence is weak or absent. Numerous claims have been made that training children to play chess may lead to positive educational benefits, though some of the early work in educational psychology by Thorndike (1924) suggested that narrow transfer, not broad transfer, was to be expected. That is, first training children in Greek and Latin as a form of general "mental discipline" would not be expected to accelerate skill acquisition in arithmetic or reading. The book progresses to the topic of potential costs of playing chess, such as mental health costs. Gobet wraps up (endgame) discussing why chess is a model domain, a "drosophila," for examining issues of bounded rationality, the topic that earned one of his mentors, Herbert Simon, a Nobel prize.

For those with newly whetted appetites after reading this book, more in-depth coverage of the psychology of expert performance can be found in some of Gobet's other books on *Understanding Expertise: A Multidisciplinary Approach* (2016), and *Moves in Mind: The Psychology of Board Games* (2004), and in Ericsson, Hoffman, Kozbelt, and Williams' *Cambridge Handbook of Expertise and Expert Performance* (second edition, 2018). In summary, I can highly recommend *The Psychology of Chess* as a very entertaining primer suitable for a broad audience.

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