a variety of interesting anecdotes and exemplars. The volume's main drawback may be conceptual: the "collective biography" of the Listerians is somewhat overshadowed by the great man himself.

Solveig C. Robinson

Department of English, Pacific Lutheran University, solveig.robinson@plu.edu

---

How Doctors Think.

By Jerome Groopman. Boston: Houghton Mifflin, 2007. Pp. 307. $26.

> *For fallibilism is the doctrine that our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty and of indeterminacy.*
>
> **—C. S. Peirce**

Doctors play an iconic role in modern society. They feature prominently in popular culture, and over the past decades have assumed various personae: the humane and compassionate (think of the avuncular Marcus Welby); the harried and ground down by systems beyond their control (the long-suffering doctors of *ER* and *St. Elsewhere*); and the playful and libidinous (*Grey's Anatomy*). The doctor-as-thinker is not the image that first strikes one's mind, though the most recent television icon, the misanthropic Gregory House, is lauded precisely for his diagnostic acumen and capacity to unravel the most complex cases, rather than for his compassion or concern for patients as persons.

However, the doctor-as-thinker, or interest in how doctors think, seems to be an active area for exploration. In the past two years, two books with identical titles have been published, one by Kathryn Montgomery (2006), a humanities scholar at Northwestern University, and the other—the subject of this review—by Jerome Groopman, a professor at Harvard Medical School and a staff writer for the *New Yorker*.

Groopman's *How Doctors Think* is more accurately a study of when and why doctors sometimes don't think. The book is intended to inform patients of a fact of which they are probably already aware: their doctors are human and will make mistakes, and as a result, patients who partner with their physicians are more likely to get better care. This is not a new idea, but Groopman's spin is novel: doctors are most likely to err when it comes to diagnosis, and patients can lead their physicians to correct conclusions by diverting their doctors away from cognitive traps.

Groopman adopts the language of cognitive psychology when describing the types of errors to which doctors are particularly prone. One such example is the "search satisfaction error," in which a physician who has spotted an abnormality

on a patient's X-ray or in a series of blood tests stops looking for other clues that might suggest another diagnosis. The author arrests his own research into physician cognition before he is really done, in order to emphasize that cognitive psychology offers just one way of thinking about thinking.

In addition to failures of the psyche, Groopman notes that doctors' errors can be traced to failures of the system. Groopman describes how managed care has imposed concerns about cash flow on physicians, thereby taxing their ability to think. Seeing more patients in less time means physicians are more likely to cut corners and produce misdiagnoses. Their ability to analyze can also be impaired—consciously or unconsciously—by the influence of industry on the delivery of health care. Groopman fears that the profession's increasing reliance on evidence-based medicine has turned diagnosis into a statistical game.

According to Groopman, being a good diagnostician requires recognition of the importance of language, mood, ego, and bias. *How Doctors Think* exemplifies Groopman's own ease with words and with his personal history. The writing style is light and free-flowing, and he weaves narrative from his own experiences as an intern, attending physician, and patient together with interviews, analysis, and patient cases to create a highly readable book. However, it occasionally feels too self-referential; this is not autobiography, after all. The last chapter is the most touching. In it, Groopman lauds physicians for understanding that the care of patients—who are as scared, suffering, and imperfect as their doctors—is what medicine is really about.

The epilogue picks up on that theme and reorients the reader to the book's original premise: that patients can partner with their doctors to avoid misdiagnoses. Groopman offers patients three questions that they can ask their health care providers to spur on thinking: (1) what else could it be? (2) is there anything that doesn't fit? and (3) is it possible to have more than one problem? These questions reflect the main cognitive errors Groopman enumerates earlier in the book. Furthermore, they become his medical catechism: the questions summarize his conclusions about the sources of doctors' mistakes, and though the answers may vary, the act of questioning represents the path to diagnostic enlightenment.

Why do doctors err? Groopman's answer is simple: they don't think enough. The solution he offers to physicians is to be more thorough. The portrait he paints of the medical profession is at times worrisome. There certainly are physicians whose attention to detail—and to their patients—is insufficient, but the vast majority of doctors are very good—if not excellent—clinicians, and the vast majority of diagnoses (approximately 90%, by Groopman's own estimates) are correct. That doctors, particularly primary care physicians who treat all manner of disease and every sort of patient, can accurately diagnose so many is a testament to the power of modern medicine and to the thinking of those physicians. How *do* they do it? How *do* they think? This, the question raised by Groopman's title, remains unanswered.

Groopman's book is not intended primarily for clinicians, but for an educated

lay audience. As such, the book does not dwell deeply on the issues raised, which are ultimately philosophical. As noted, it accepts as a given the preeminent role of cognitive psychology as the means of exploring thought in medicine; Groopman does not discuss other modes of thinking relevant to medicine. For those looking for a deeper and more nuanced account of the issues involved in trying to understand clinical judgment, Montgomery's book is the more challenging and rewarding read.

It is worth mentioning the common themes shared by both books: uncertainty, narrative, and time. Osler once wrote that medicine is a science of uncertainty and an art of probability. Uncertainty is ineradicable and irreducible in clinical medicine, and it seems to increase with the complexity of care and the sophistication of interventions. While evidence-based medicine and clinical algorithms are attempts to tame uncertainty, in the view of Groopman and Montgomery, neither are completely successful. What is required is more attention to language. In Groopman's opinion, this requires more attention to patients; in complementary fashion, Montgomery calls for more integration and explicit acknowledgment of narrative into training and clinical care.

Hence, Groopman and Montgomery are anti-House in their fundamental orientation. Caring for patients without engaging in their narratives or refusing to build therapeutic alliances with them is to practice unthinking medicine. However, House does possess a desirable attribute that both Groopman and Montgomery believe essential to more thoughtful medicine: abundant time. Clinicians increasingly have less time to deal with more complex patients, and thus care pathways and algorithms are attractive means of managing the caseloads, even at the cost of acknowledging their imperfections. *Lancet* editor Richard Horton (2000) succinctly summarized this problem:

> The approach we are currently endorsing—accepting that we must inevitably lose the fight for time, revealed by providing ever narrower synoptic summaries or "bottom-lines" of increasingly complex evidence—does not address the more fundamental point—namely the need to provide a temporal space to interpret that information. (p. 3162)

If thinking requires time, and time is precisely what most clinicians do not have, the question becomes not how doctors think, but do they and will they ever think?

Groopman and Montgomery's books, taken together, open up rich horizons of reflection for both practicing and academic clinicians. The books underscore the importance of philosophy to medicine in domains other than bioethics. Yet Groopman refers to epistemology only in passing, and he never addresses the vast literature of neuroscience that is concerned with thought in general, let alone with how doctors do it. James Lock, one of the physicians Groopman interviewed, notes:

> I keep an ongoing tap . . . on how I know what I know. . . . Epistemology, the nature of knowing, is key in my field. What we know is based on only a modest level of understanding. If you carry that truth around with you, you are instantaneously ready to challenge what you think you know the minute you see anything that suggests it might not be right. (p. 134)

Lock's perspective indicates that there may be a philosophy of science specific to clinical medicine that is rooted in pragmatism. Pragmatism takes the contingent, provisional, and defeasible nature of reasoning as its point of departure. This lineage likely dates back to Kant, who wrote in his *Critique of Pure Reason* (1781):

> The physician must do something for a patient in danger, but does not know the nature of his illness. He observes the symptoms and if he can find no more likely alternative, judges it to be a case of phthisis. Now even in his own estimation his belief is contingent only; another observer might perhaps come to a sounder conclusion. Such contingent belief, yet forms the ground for the actual employment of means to certain actions I entitle *pragmatic belief*. (pp. 647–48)

This insight was the likely inspiration for C. S. Peirce and the birth of pragmatism. Pragmatism embraces two key concepts relevant to clinical medicine: fallibilism and abductive inference. Unlike Mongomery, Groopman does not go so far as to embrace fallibilism as inescapable and ineradicable; instead, he leaves the impression that with better awareness of cognitive biases, fallibility can be negated. (Groopman also does not mention abduction as a logic of clinical reasoning, an idea that features prominently in Montgomery.)

A more complete account of how doctors think still awaits us, one that fully explores the themes of cognitive psychology, neuroscience (answering the *quid facti*), and epistemology and logic (answering the *quid juris*). But the more pressing practical concern for physicians is who will lead the advocacy for more time, to at least establish the conditions for more thoughtful medicine.

Michel Shamy and Ross Upshur

Joint Centre for Bioethics, University of Toronto, Ross.Upshur@sunnybrook.ca

References

Horton, R. 2000. Common sense and figures: The rhetoric of validity in medicine. Bradford Hill Memorial Lecture 1999. *Stat Med* 19(23):3149–64.

Kant, I. 1781. *Critique of pure reason*, trans. N. K. Smith. New York: St Martin's Press, 1965.

Montgomery, K. 2006. *How doctors think: Clinical judgment and the practice of medicine*. New York: Oxford Univ. Press.