

Dennett, Daniel. *Intuition Pumps and Other Tools for Thinking*.
New York: W. V. Norton and Company, 2013.

In *Intuition Pumps and Other Tools for Thinking*, Daniel Dennett offers seventy-seven different analogies, metaphors, thought experiments, terms, and concepts designed to build support for his conclusions regarding content and meaning, evolutionary theory, the relationship between computers and minds, the nature of consciousness, and free will. While many of these are drawn from Dennett's earlier works, there is also a significant amount of new or revised content, and the book's unique format often helps to provide a new context for existing examples.

Early on, Dennett cites Richard Feynman's *Surely You're Joking, Mr. Feynman!* as an inspiration,¹ and the book has a number of autobiographical elements, most notably detailed recollections of Dennett's arguments with Stephen Jay Gould, Jerry Fodor, Noam Chomsky, John Searle, Thomas Nagel, and others over the past fifty years. As Dennett himself notes, however, his purpose is not so much autobiography as *persuasion*, in order to get the reader to "think about these topics *my way*" (p. 5). In this respect, the book is somewhat reminiscent of Karl Popper's *Unended Quest*, which, like *Intuition Pumps*,² blends elements of intellectual autobiography with personal reflections on philosophical methodology and its appropriate relationship to the sciences. Like Popper (who himself features as an opponent of Dennett in an early, humorous anecdote), Dennett's presentation of the historical arguments with which he has been involved clearly reflects his own conclusions, and it seems likely that his opponents would disagree with some of his descriptions. However, Dennett's concern for understanding his opponents' arguments is clearly discernible throughout the book, and his commitment to writing in a manner understandable by non-specialists is, in general, commendable.

In the introduction, Dennett introduces the central concept of "intuition pumps," which are thought experiments "designed to provoke a heart-felt, table-thumping intuition—'Yes, of course it has to be so!'—about whatever thesis is being defended" (p. 6). Dennett originally introduced this notion in his criticism of Searle's well-known "Chinese Room argument." He now classifies thought experiments such as this as "boom crutches" that "only seem to aid in understanding but that actually spread darkness and confusion

¹ Richard Phillips Feynman, *"Surely You're Joking, Mr. Feynman!": Adventures of a Curious Character* (New York: W. W. Norton & Company, 1985).

² Karl R. Popper, *Unended Quest: An Intellectual Autobiography* (Chicago, IL: Open Court, 1976).

instead of light” (p. 14). Dennett also offers a brief defense of the central role that intuition and metaphor often play in philosophy. He argues that, unlike in the sciences, the sorts of problems that philosophers attempt to solve often have no “fixed points” or “axioms” that might serve to anchor more precise and rigorous methodologies.

Dennett’s reflections on philosophical methodology continue into Chapter 2, “A Dozen General Thinking Tools,” where he argues that the history of philosophy is “in large part the history of very smart people making very tempting mistakes” (p. 20), and that one major reason for studying this history is to avoid making the *same* mistakes. In an argument that is again reminiscent of Popper, he goes on to argue that we learn far more from aiming high and learning from our “grand mistakes” (p. 23) than we do from restricting our ambition in a misguided attempt to avoid them. Dennett also offers brief discussions of such topics as *reductio ad absurdum* arguments, Ockham’s Razor, false disjunctions, the suppression of evidence, and the importance of charity in interpreting philosophical arguments. Major concepts introduced include “Goulding” (a class of fallacious reasoning named after Dennett’s aforementioned frequent interlocutor Gould) and “deepities,” or statements that gain their seeming profundity by equivocating between interpretations on which they are trivially true and those on which they are obviously false.

Dennett begins Chapter 3 by offering a number of brief vignettes aimed at undermining the Language of Thought Hypothesis (LoTH). These stories aim to “pump intuitions” in favor of both “holism of the mental”—the impossibility of having “just one belief” (p. 67)—and for the possibility of “sorta” beliefs that meet some, but not all, criteria classically associated with beliefs. Later, Dennett defends the central role that the “sorta” operator plays in his own thinking, suggesting that philosophical opposition to this by-degrees way of thinking is often motivated by the (mistaken) view that “nothing counts as an approximation of any mental phenomenon; it’s all or nothing” (p. 97).

Chapter 3 also sees Dennett introduce a number of his best-known concepts from previous books. He describes “folk psychology” as a talent that we all have for predicting and explaining the behavior of so-called “intentional systems,” including both other humans and selected non-humans (such as animals or computer programs). An intentional system is, in turn, simply a system that can usefully be approached using the “intentional stance,” which involves acting *as if* the system in question were a rational agent with certain beliefs, desires, and intentions (p. 79). Finally, Dennett’s “homuncular functionalism” contends that we can account for the capacities of highly complex intentional systems (such as human persons), by breaking them down into simpler sub-personal systems, each of which can itself often be modeled using the intentional stance (as a somewhat simpler and stupider agent). This “cascade of homunculi” (p. 91) ends only when we reach systems simple enough to be understood without use of the intentional stance.

In Chapter 4, “An Interlude About Computers,” Dennett introduces a number of concepts borrowed from computer science—such as “Turing machine,” “register machine,” “virtual machine,” and “algorithms”—to provide concrete examples of how simple (and non-intentional) systems can, when built up the right way, be used to accomplish cognitive tasks of almost indefinite complexity. For Dennett, the relevance of this to debates over mind is clear: “you *know* that if you succeed in getting a computer program to model some phenomenon, there are no causes at work in the model other than the causes that are composed of all the arithmetical operations” (p. 131).

Dennett returns to the issue of intentionality in Chapter 5, “More Tools about Meaning.” Along the way, he introduces a number of new intuition pumps, and also discusses such philosophical “classics” as Twin Earth, Swampman, and Quinean radical indeterminacy. An early target is the LoTH-associated concept of “original intentionality,” according to which artifacts (such as tools, machines, and computers) are limited to a sort of derivative meaning inherited from the “intrinsic” intentionality of their human creators. Dennett goes on to argue that brains ought to be conceived of as rule-following “syntactic engines” that approximate idealized, meaning-tracking “semantic engines.” He closes the chapter with an ingenious thought experiment concerning two connected computers—two “syntactic systems” designed to mirror the same “semantic system” (p. 193)—which he uses to argue for the necessity of the intentional stance in our efforts to explain and predict real-world systems.

Chapter 6 turns to the question of evolution. Dennett begins by introducing the Borges-inspired “The Library of Mendel,” which includes every possible DNA sequence, and “design space,” which includes all possible designs (including both living beings and artifacts). He then distinguishes between two different ways of how that life might “move” through design space. Where “skyhooks” consist of miraculous “leaps” that cannot be accounted for by the process of evolution via natural selection, “cranes” are naturally evolved subprocesses that allow a local “speeding up” of the process of natural selection. Intelligent Design’s appeal to the intentions of a creator, on Dennett’s account, would be an example of a skyhook; by contrast, the emergence of things such as the eukaryotic cell and sexual reproduction count as paradigmatic cranes.

Whereas many popular writers on evolution have been wary of talking about the “design” of living beings, Dennett shows no such compunction. On his account, the evolutionary process (which can itself be approached with the intentional stance) has designed organisms in accordance with “free-floating rationales,” or the “reasons tracked by evolution” (p. 234). While these “reasons” are not internally “represented” by either the evolutionary process or by the organisms themselves, Dennett argues (via the example of gazelles’ “stotting”) that they are nevertheless crucial to offering successful evolutionary explanations. He ends the chapter with brief arguments highlighting the continuity between living organisms and the artifacts they create, the importance of random “noise” within the

evolutionary process and the limitations this places on modeling, and on the problems with identifying genes with DNA sequences.

In Chapters 7 and 8, Dennett tackles the contentious problems of consciousness and free will, respectively. Here, he considers in detail some of the intuition pumps from the philosophical literature that might seem to cut against his naturalistic explanations of these phenomena. These include philosophical zombies, the Chinese Room argument mentioned above, and Mary the color scientist, among others. In each of these cases, Dennett “turns the knobs” on the thought experiments, and purports to show that the seemingly stable intuitions they generate are in fact highly dependent on the particular manner in which the case has been described. With a more careful and complete examination of these cases, Dennett suggests, the apparent inescapability of their conclusions is nowhere near as evident as their authors had originally contended.

In order to counteract the appeal of these purported “boom crutches,” Dennett offers a few thought experiments of his own—including “The Curse of the Cauliflower” (p. 296), “The Tuned Deck” (p. 310), and “Rock, Paper, and Scissors” (p. 370)—that are intended to diminish the intuitive appeal of such notions as qualia, libertarian free will, or absolute responsibility for one’s actions. In their place, Dennett argues for the adoption of “heterophenomenology” as a methodology for studying the “subjective” experience of consciousness and for embracing compatibilism with respect to free will. As Dennett grants, his brief arguments are unlikely to convince his most committed opponents, but he argues that they do show that the thought experiments offered by these opponents are ill-suited to play the definitive role in philosophical argumentation that they are sometimes thought to. With respect to David Chalmers (a defender of zombies), he thus notes,

I cannot prove that there is no Hard Problem [of consciousness], and Chalmers cannot prove that there is one. He has one potent intuition going for him, and if it generated some striking new predictions, or promised to explain something otherwise baffling, we might join him in trying to construct a new theory of consciousness around it, but it stands alone, hard to deny but otherwise theoretically inert. (p. 316)

Later, he suggests something similar concerning a thought experiment concerning free will, writing that “I’m not claiming that my variations prove that people are or can be responsible in spite of being determined; I am just claiming that this particular intuition pump is not at all to be trusted since the (available, permissible) knob settings are interfering so much with our judgments” (p. 405).

Dennett ends *Intuition Pumps* with a few brief chapters in which he reflects on the practice of philosophy as a whole, and gives his suggestions for improving it. He offers particular praise for the history of philosophy and the philosophy of science—even seeing a place for the intuition-laden methodology of analytic metaphysics—so long as these are reconceived as

tools for the auto-anthropological exploration of folk beliefs (and of the “manifest image”) rather than as privileged methods for investigating the ultimate nature of reality. Finally, he warns aspiring philosophers against getting caught up in meaningless research, suggesting a rule of thumb for how to do this: make sure that one can adequately explain the importance of what one is studying to people *outside* of academic philosophy.

By its very design, *Intuition Pumps* has an exceptionally wide scope for a philosophy book; it offers a good overview of Dennett’s many contributions to a variety of ongoing debates, ranging from intentionality to evolutionary biology to free will. However, Dennett’s earlier works have covered much of this same ground in much greater detail. Because of this, it would be unfair to evaluate the cogency of his positions merely in the light of the thought experiments offered here, which are often formulated for novice audiences. With this in mind, I’ll spend the remainder of the review considering *Intuition Pump*’s contributions to recent debates over philosophical methodology.

Over the past twenty years, there has been considerable debate over the appropriate status of the role of intuition within philosophical argument. Dennett offers a mixed verdict. While he argues that intuition pumps can be irreplaceable tools for introducing concepts and clarifying difficult-to-formulate problems and questions, he firmly resists the idea that the intuitions “pumped” by popular philosophical thought experiments have the sort of striking, anti-naturalist conclusions about mind, evolution, or free will that his opponents have sometimes claimed. This is not to say that Dennett thinks that philosophers should mindlessly accept scientists’ claims about the connotations of their theories. Indeed, many of the hypotheses Dennett targets—that Darwinian evolution is incompatible with living beings showing design, that folk psychology might be eliminated by advancing science, and that contemporary neuroscience shows the impossibility of free will—have themselves often been defended by prominent scientists.

While Dennett does not provide a comprehensive discussion of the role of intuitions within philosophical argumentation, he offers several suggestions. First, in his discussion of zombies, Dennett expresses disagreement with the Cartesian notion of “conceivability” as a “kind of direct and episodic act, *glomming without bothering to picture*” (p. 289). In contrast to René Descartes, who argued that conception was a mental act *independent* of imagination, Dennett argues that we cannot *really* conceive of something unless we can imagine it. However, imagination is difficult; the fact that we cannot readily conceive of a certain theory (e.g., DNA, string theory) being true is not, by itself, an argument that it might not be true, anyway. As Dennett says, “Conceiving of something new is hard work, not just a matter of framing some idea in your mind, giving it a quick once-over and then endorsing it. What is inconceivable to us now may prove to be obviously conceivable when we’ve done some more work on it” (p. 430).

Second, Dennett suggests that philosophers have paid too little attention to how their favorite thought experiments work and what the effects

might be if subtle changes (“turning the knobs”) were made to them. For example, Dennett’s criticisms of Searle’s Chinese Room argument contends that if the thought experiment were changed to incorporate more accurately the details that distinguish normal “minds” (such as learning new things, applying these theories to new cases, making use of past knowledge, etc.), the contention that this system understood Chinese would not be so implausible. He contends something similar concerning zombies, Mary, and attacks on compatibilism: in each case, a careful (and fully transparent) manipulation of the details shows that the intuitions generated are not nearly as stable as they may initially seem.

Finally, there is Dennett’s idea that these intuitions, at least in many cases, can be seen as telling us something important about the manifest image. One major task of philosophy, on this picture, is to show how our pre-scientific concepts of folk psychology, moral responsibility, and so on can be reconciled with the emerging scientific image of the world. Dennett, unlike many others, has confidence that such a task is both possible and worthwhile. For example, he strongly resists arguments (such as those from some defenders of qualia) to have found something that can never be addressed by scientific methods; conversely, he also criticizes arguments that science has disproved free will.

While I’ve focused here on *Intuition Pumps*’ claims about intuitions and philosophical methodology, there are a number of other aspects of the book worth briefly remarking on. First is Dennett’s repeated emphasis on the importance of being able to explain key philosophical concepts to interested non-specialists, and his corresponding choice to focus on brief thought experiments and concise vignettes over lengthy, rigorous argument. While this works well in the context of a book such as this, if interpreted too strictly, it also risks inhibiting serious engagement with those among Dennett’s opponents who (by virtue of defending complex and often counterintuitive conclusions) cannot easily accommodate this methodological rule. Second, and closely related to this, there is Dennett’s idea that we ought to prefer making grand mistakes to the careful, methodical correction of extant philosophical concepts and arguments. Again, while Dennett clearly recognizes the limited scope of this claim, this conception of philosophy arguably risks understating the contributions made by the many academic philosophers who, like their colleagues in other disciplines, spend much of their day-to-day work on highly local and specialized problems, the full import of which they may not always be able to explain fully.

These few reservations aside, *Intuition Pumps* serves as an excellent introduction both to Dennett’s work and to the sorts of philosophical and scientific debates to which he has contributed for the past five decades. It also provides a valuable contribution to the ongoing debate over philosophical methodology and how this relates to the sciences. Finally, Dennett is, as always, an excellent and provocative writer, who shows almost encyclopedic knowledge of both the philosophical terrain and the relevant science. This importance of these traits cannot be understated, especially in a time when

academic philosophy has been challenged to explain its continuing relevance to “real world” problems.

Brendan Shea
Rochester Community and Technical College,
and Minnesota Center for Philosophy of Science

