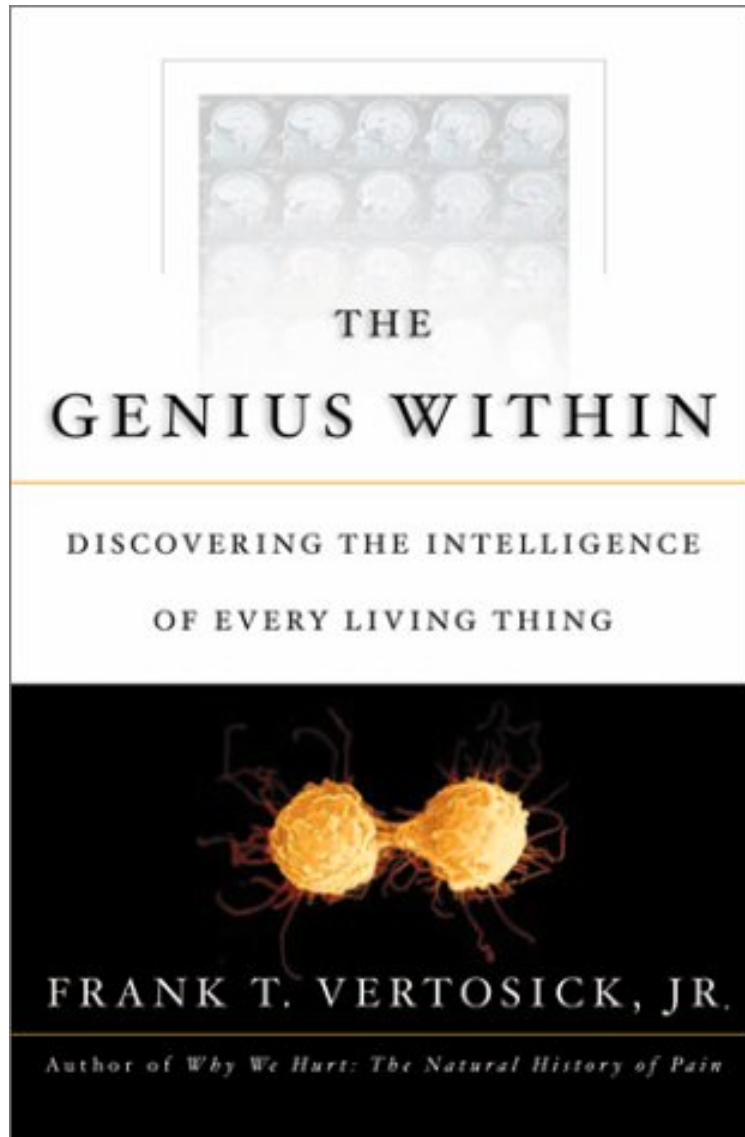


(Read and download) The Genius Within: Discovering the Intelligence of Every Living Thing

# The Genius Within: Discovering the Intelligence of Every Living Thing

*Dr. Frank T. Vertosick Jr.*

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**Dr. Frank T. Vertosick Jr. : The Genius Within: Discovering the Intelligence of Every Living Thing** before purchasing it in order to gage whether or not it would be worth my time, and all praised The Genius Within: Discovering the Intelligence of Every Living Thing:

9 of 12 people found the following review helpful. Good but boring at timesBy RPMThis is a relatively good book to

read. However, the promise that the author makes in not being technical is only partially true. First, he concentrates too much on the medical explanation that, at times, are not entirely relevant. Second, his analogies are silly at times particularly when the concept is already well understood without the analogy. One has to know that the number of analogies given is not directly proportional to how clear the concept will become to the reader. But as I said, this is a good book and if you can live by the parts of the book that are irrelevant you may learn something new about the concept of intelligence and how intelligence can be observed in seemingly "dumb" things.

0 of 1 people found the following review helpful. Two Stars By RStubbs I did not like the way any of the story lines.

9 of 9 people found the following review helpful. An intelligent look at life By C. Allore "The Genius Within" is a must read for the non-specialist interested in science. It is a thought provoking work; very speculative, but grounded in mainstream scientific fact and theory. I thoroughly enjoyed reading it...twice. It's a bit technical at times, so some familiarity with the science involved is recommended. Also, if you happen to be more interested in "intelligent" animal behavior as such, rather than in its biochemical, microbiological and systemic underpinnings, you may want to look elsewhere. In this book, the author explores the notion the "networks" underlie the phenomenon we call life, and that life is synonymous with the information processing - intelligence - they architect. We tend to think of intelligence as a unique feature of brains, our conscious ones in particular (he calls this "brain chauvinism"), but he contends that all life is intelligent, or at least as "intelligent as it needs to be", and sets out to prove it. In simplest terms, he defines intelligence as the ability to solve problems related to survival. This seems to run counter to mainstream evolutionary theory, where the survival of species is basically a matter of, well, "dumb luck". But the author views intelligence as a collective phenomenon firmly embedded within this framework; as an "emergent behavior" of large groups of highly interactive biological entities (including sub-cellular enzymes) otherwise engaged in a contingency-driven, random struggle for survival. The architecture that endows such groups with "emergent properties" is called, for want of a better word, a "network" by the author. The details of what the author means by a "network" is closely argued and beyond the scope of this review. In general, a biological "network" is a large collection of "selfish", randomly interacting entities whose components are capable of two or more relatively stable, but reversible, states (more active/less active, faster/slower, stronger/weaker), and whose components can variously enhance or impede each other's status over time, resulting in a collective "energy landscape" patterned by forces impinging on the network. The former allows for basic information storage (the biological equivalent of zeros and ones), and the latter for collective information storage (pattern recognition/memory) concerning the environment, allowing the collective to respond to environmental stimuli in, ultimately, a manner conducive to its survival. Overall, the architecture of a "network" harnesses the random, contingent interactions of its constituents into the directed or, as the author would claim, intelligent actions we associate with life at every level of biological organization. The author spends much of the book "fleshing out" these and other abstractions, particularly with respects to interacting aggregates composed of things such as cellular enzymes, bacteria and somatic cells, what he calls "party networks" as opposed to "hard wired networks", though he does give ample attention to the latter (he is, after all, a brain surgeon). To assess intelligence from the "outside in", he employs a modified version of the Turing Test throughout these forays. Without making any assumptions about them based on what they are or how they're organized, he queries each system with a problem, and waits for a response. He queries an infectious bacterial species with a new antibiotic and, within months, it develops immunity. He queries the human immune system with the aforementioned bacteria and, within weeks, it develops an effective resistance. In these and other instances, he argues for an "intelligent" response from each based on their participation in network architecture, no more or less effective for the overall survival of its hosts than the quickened responses of "hard wired" brains. I gave this book a five-star rating, and with good reason, but I'm not entirely in agreement with its conclusions. Although "networking" is arguably a characteristic of all living systems, it seems somewhat disingenuous to define intelligence as the ability to solve problems regardless of the time frame involved. Given enough time and numbers, "dumb luck" will achieve results that appear intelligent, and so will tempt teleological interpretations. Mainstream evolutionists have long had to contend with our compulsion to put a "forger" between the hammers of chance and the anvil of necessity. Like them, I suspect the author's hypothesis, however plausible, is just another in a series of attempts to inject Vitalism into biology, "networks" here replacing the less than scientific musings of an earlier age. But then again, maybe I'm just a "brain chauvinist".

Can bacteria be as smart as we are? Can ants think? And fish? Yes, says Frank Vertosick, a neurosurgeon who combats our elitism about intelligence in this brilliant book. A gifted writer and author of the widely praised *Why We Hurt*, Vertosick shows us that intelligence--the ability to react to the outside world, to change behavior, and survive--can be found wherever life exists. He demonstrates the keen intelligence of our immune system, how lowly bacteria mutate and outwit antibiotics, and how canny cancer cells elude our natural defenses. A fascinating journey through worlds of unknown science and an unsettling argument against our valuing of brain intelligence above all else, *The Genius Within* tells a fascinating scientific story, one that could shake our ethical foundation to its core.

.com If we're so smart, why are we still at the mercy of treacherous microorganisms? *The Genius Within: Discovering*

the Intelligence of Every Living Thing asks readers to let go of brain worship and look at the incredible problem-solving skills of viruses, ants, and other lowly creatures. Neurosurgeon Frank T. Vertosick Jr. seems an unlikely candidate to write a book celebrating noncerebral intelligence, but his knowledge helps him draw comparisons that others might miss. The fast-moving genetic intelligence of bacteria and immune systems might not match the precision of digital computers, but they have devised arms races much more complex--and deadly--than our comparatively paltry efforts. Vertosick's grasp of what it means to behave intelligently comes through clearly, even if he is as stumped as anyone trying to define the I word. Exploring parallels between neural networks, insect colonies, and our own brains, he finds common ground and shows that, as far as evolution is concerned, we're not so bright. It's not all bad, though: we're very good at what we do, and Vertosick hopes that we can learn to use our intelligence more wisely. --Rob Lightner

From Library Journal

All life is intelligent, according to neurosurgeon Vertosick: "To be alive, one must think." A practicing neurosurgeon, Vertosick maintains that intelligence the ability to store experience and to use it to solve future problems is an emergent property of groups. Thus, bacteria, the immune system, and enzymes can be as smart as the human brain. All of these entities operate within networks that communicate and adapt to change in true Darwinian fashion. He further believes that this network paradigm of problem-solving originated at the cellular level. Unfortunately, some of his ideas, which he admits are highly speculative, seem merely an exercise in semantics. He completely avoids the issue of consciousness, which he dismisses as "irrelevant to his argument." At times, he seems unnecessarily provocative, labeling those who would disagree with him as "brain chauvinists" and arrogantly rejecting nonclinical biologists as lacking in the proper perspective. On the plus side, Vertosick, who also wrote *Why We Hurt*, is a skillful writer who makes frequent, effective use of analogies. His engaging descriptions of biological, chemical, and physical processes will appeal to a wide readership. Appropriate for public and academic libraries. Laurie Bartolini, Illinois State Lib., Springfield

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From Booklist

In this informed but plainly speculative work, the surgeon-author of the well-received *Why We Hurt* (2000) asserts that biology on the molecular and cellular scales is intelligent. That this opinion is unorthodox is evident in Vertosick's regular asides to skeptics or, as he refers to them, "brain chauvinists." Vertosick's argument rests on two supports: a detailed description of chemical "learning" by bacteria, the human immune system, and enzymes; and a view that these structures behave as networks. A telling weakness to this argument is Vertosick's admission that "[his] belief that network architecture underlies all living systems . . . can't be proven to everyone's satisfaction with the available evidence." Yet his strength is the clarity and energy with which he explains the remarkable adaptability of, for example, bacteria in evolving strains resistant to penicillin--though he would call it "genetic learning" rather than plain old evolution. Even if they don't subscribe to Vertosick's thesis, readers will find much to learn and delight in here. Gilbert Taylor

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