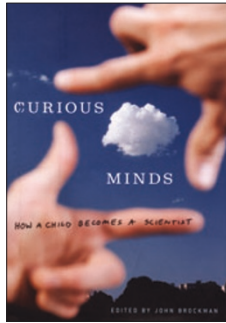


The many roads that lead to science



Curious Minds: How a Child Becomes a Scientist

John Brockman, ed.

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Reviewed by Evelyn Fox Keller

When recently asked why it is that I love reading novels, I thought the answer was obvious: because people's lives are so extraordinarily interesting. I like biographies (and autobiographies too), but face it: novelists are so much better at bringing out what is interesting about their characters' lives than are most biographers, or for that matter, than are most people. Yet, however much pleasure they yield, I would be hard pressed to say what it is I learn from reading novels.

John Brockman's interest is rather more specific—his focus is the early lives of scientists. In *Curious Minds*, he has brought together a collection of short autobiographical essays by a distinguished group of 'third-culture' scientists, identified by Brockman as bridging "the once formidable gap between science and the humanities." His collection is explicitly aimed at answering the question of how these public intellectuals came to their current occupations (and preoccupations). What did Brockman hope for from such a collection? His goal, he tells us, was to provide insight, to motivate and to inspire. I am not sure how motivating and inspiring these essays are, and I am even less certain about what lessons, if any, might be drawn from them, but Brockman has clearly succeeded in his first hope. Here is a collection of stories about people's lives that, rather surprisingly, like a good novel, is rich in insight, and, also like a good novel, is often extremely moving.

My surprise is due precisely to the limitations of conventional scientific biography and autobiography. The essays here are, of course, uneven: some are self-conscious, even bordering on pretentious, some seemed aimed at justifying the author's scientific views, but many, if not most, are remarkably open, unguarded reflections on their early lives, and are generally written with grace and humor. Common denominators are hard to find. Many of the authors come from privileged backgrounds, but not all. Politics and history sometimes play explicit roles, other times not. Illness or solitude mark the experiences of a few. Some have parents who have been overtly ambitious; others tolerant and open; still others neglectful. Taken as a whole, the early lives of these scientists are about as heterogeneous as the early lives of people in general.

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For philosopher-neuroscientist Nicholas Humphrey, science was, as he puts it, "a family affair." His family tree includes Nobel Laureate A. V. Hill ('Grandpa'), John Maynard Keynes (a great-uncle), England's first female industrial chemist (Edith, a great-aunt), John Humphrey, Director of the National Institute for Medical Research (father), and others. Sunday dinner typically included several members of the Royal Society, and Nicholas finds himself wondering if "having been born to be a scientist has not undercut my right to call myself a scientist at all."

Across both the Atlantic Ocean and the social scale, Robert Sapolsky, an orthodox Jewish boy growing up in Brooklyn, relied on the American Museum of Natural History and the Bronx Zoo for his introduction to matters scientific, and his graduation from dinosaurs to apes. "It wasn't just that primates seemed fascinating," he explains, "they seemed comforting in some primal way. It wasn't that I wanted to go off and live with, say, mountain gorillas: I wanted to *be* one." Sapolsky may never have succeeded in becoming a gorilla, but he did become a distinguished primatologist, and today he indulges his first love, together with that of neurology, at Stanford University.

Alison Gopnick, it seems, had the best of all possible worlds. Growing up in a home of passionate intellectual engagement, unencumbered by past histories of achievement, she developed a voracious and fearless appetite for whatever was on offer. The spirit of "genuinely carefree adventure" that she was lucky enough to encounter in 1970s sexuality also characterized her encounters with the arts, philosophy and science. The mature cognitive scientist that emerged from this charmed life reflects well on her good fortune.

The contrast with the solitary early life of artist-computer scientist Jaron Lanier on the Mexican border is painful. His isolation drove him not to science, but inward; he sought solace in the private world of his own imagination. "Mood," he writes, "was my first and most formative friend." In plain but heart-wrenching prose he tells us of his struggles to engage in a world of other humans and their interests, his seduction into technology, and the challenges these new worlds posed to the inner life he had so grown to cherish.

J. Doyne Farmer is a complexity theorist, cut in a mold familiar to us from all the westerns we have seen. He might have been just another rugged, self-sufficient engineer-cowboy were it not for his unlikely encounter with a talented young physicist, thrown by chance into his miniscule town of 7,000. Tim White's story also reads like a great American tale—he grew up on the edge of a forest, in a small town on the crest of the San Bernardino Mountains called 'the Rim of the World' by locals. Both tell of worlds gone by, but their main point—like that of so many of these stories—is of the extraordinary vicissitudes that shaped their early lives.

No recipe for the production of scientific curiosity, determination or originality can be found in the essays collected here. We learn instead of the immensely varied, and immensely interesting, combinations of circumstances that shaped the lives of these distinguished scientists. As Humphrey put it, "Each of us is who we are, and we must each have had *some* sort of childhood." The same of course can be said of all of us, scientist and nonscientist alike. But to articulate such a banality is precisely to point to what it is that makes lives so interesting. By creating a format exposing the rich variety to be found in the formation of scientists, Brockman has produced a compelling piece of literature.