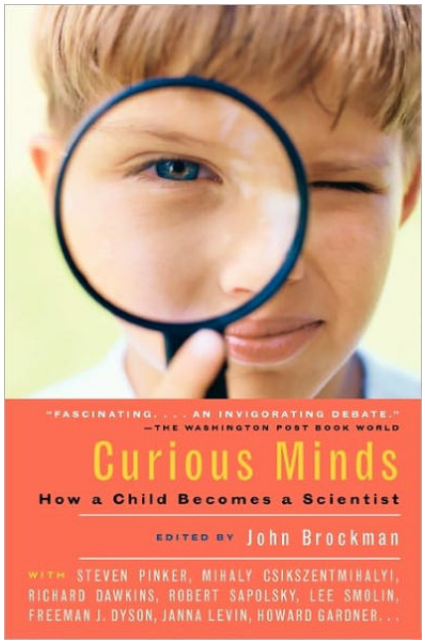
CURIOUS MINDS: HOW A CHILD BECOMES A SCIENTIST
Edited By John Brockman



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Patterns and the Participant Observer

Mary Catherine Bateson

An only child, both parents scientists.

There, already, is half the story. In large families, children create their own worlds and find amusement and stimulation in each other. If you are an only child, you spend a great deal of time listening to what the grown-ups are interested in, getting the flavor early for lack of something more immediately appealing, especially if you are encouraged to ask about whatever you don't understand. It also makes a difference if your parents are colleagues. In many households, the children of my generation heard little conversation about work and ideas, because so often the father was engaged in work to which his wife had no access. Scientists left their work in the lab or the office, rarely bringing it into the private sphere. Neither of my parents—the anthropologists Gregory Bateson and Margaret Mead—made much division between their professional and personal lives. Theories and observations filled the conversations I listened to at breakfast, lunch, and dinner. When my father was away, and after my parents separated, the same pattern continued with whatever colleagues and friends came visiting. Breakfast, lunch, and dinner.

When I was growing up, it was supposed to be fairly clear that boys modeled themselves on their fathers and girls modeled themselves on their mothers, but following the same-sex pattern often involved competition and rebellion, especially for boys, and limited the options available to girls. I had the still unusual experience of growing up in an egalitarian household, in which my two parents were strikingly different and both available as models, with no gender rules determining the choice. In fact, one of the things my mother drew from her field experience to implement in my upbringing was the notion that children need close contact with a number of adults who can serve as alternative models for life choices, ranging from business to the arts and from science to homemaking. Not that this was an entirely representative spectrum, however: I grew up convinced that the normal course of things was to go to graduate school, and that most people wrote books. I always replied, when asked the standard question, that I was going to be a scientist when I grew up—not an anthropologist, but a scientist—and given a choice of courses or activities, I went for science and math.

Both my parents had come to anthropology from other fields, Margaret from psychology and Gregory from biology. Both were involved in the efforts of that era to promote interdisciplinary thinking. They were members of the postwar Macy Conferences on cybernetics, searching for models connecting the human sciences to other sciences and to engineering, and they were involved with new ways of forging cooperation under the rubrics of behavioral science or human relations or new fields like child development. Once, when I asked my mother what kind of scientist I might end up being, she suggested—rashly, because I teased her about it for years—that I might become an embryologist or a crystallographer. I believe now that what she meant was not that I

would be interested in embryos or crystals but that I would be interested in thinking about pattern in a fairly abstract way. She was not commenting on the what of science but on the *how*, and not so much the *how* of investigation and experiment as the *how* of intellectual analysis. “Pattern” was an important word in our household, and the ability to observe and describe patterns was key, but for Margaret the patterns of human behavior were primary, so her answer was, I believe, an indication that she felt I was intellectually more similar to my father than to herself.

In fact, I didn’t realize until I was in my teens that my father was concerned with human behavior. His idea of what to do with me echoed his own childhood activities as the youngest of three brothers. His father was a distinguished geneticist who played a key role in the acceptance of Mendel’s work and in fact coined the word “genetics.” When I think of Gregory, I think of studying tide pools, collecting beetles, constructing an aquarium, and taking and developing photographs together, but also of logical puzzles and problem solving. He explained Mendelian ratios and diagrammed the different kinds of electrical circuits as we searched for dead Christmas tree bulbs in old-fashioned strings wired in series. His rare letters to me over the years contained little of events or feelings. Instead, they were full of diagrams: the legs of beetles, bubblenests built by fish, the emergence of buds on plants. I would later approach all of mathematics and physical science, and eventually linguistics, in terms of his kind of thinking, taking pleasure in the analysis of pattern and organization.

Gregory shifted the what of his work fairly frequently: ritual in New Guinea, child-rearing in Bali, schizophrenia, family structure, alcoholism, dolphin communications, octopuses. He was an observer and theoretician rather than an experimentalist, focusing on patterns of thought and communication and their possible distortions, devising ways of capturing and comparing naturally occurring behavior. When Gregory set out to photograph a Balinese cockfight, he left out the most photogenic part, the dramatic savagery of the birds in combat, and focused on the identification of the handlers with their birds, as shown by their hands moving in reflection. Later he became a pioneer in the analysis of interactions among family members in filmed and recorded psychiatric sessions.

By the time I was seven, Gregory had moved out, first to Staten Island and then to California. Our visits were spent on natural history field trips. The goal was to see and, if possible, to photograph animals. He was quick at catching snakes or reaching up under the bark of a dead tree and finding a bat. On camping trips in the Sierras, we dragged lures made of bacon and fish along trails in the forest and then sat up most of the night in his car to see what creatures would show up, with a trip wire for the flash camera. We sat in blinds on the foggy California coast to photograph water birds. Because these activities involved a fair amount of patient waiting, he would explain bits of biology to me—like how amoebas divide—or offer me classical paradoxes and mathematical puzzles to wrestle with.

He spoke about insects or plants as well, but like any child who does better at thinking about seals and whales than about plankton I paid the most attention to the vertebrates,

for children focus best on what moves in front of them and what they can identify with. The basic problem in teaching ecology is that the patterns to be understood (and protected) include much that is slow or invisible: carbon and nitrogen cycles, currents of water and air, the microscopic life in the soil. Gregory introduced me to ecology by helping me set up an aquarium, which required thinking about plants and wastes, about the effects of sunlight and the natural maintenance of clear water. Most people today filter and aerate their aquariums artificially, which increases the number of fish that can be kept in a limited space and bypasses the need for living plants. (Often the plants are plastic.) What most tropical fish fanciers treasure is the beauty of exotic species, vividly flickering or floating dreamily through the water; what interested Gregory was the organization, the pattern, and that was what he spoke about. The challenge he posed was the cybernetic one of maintaining the aquarium in balance, with my own role as one of many interacting factors in its ecology, and the deeper challenge of empathy with such a system.

My mother had a different agenda—to cultivate my appreciation of the variety and potential of human life. She made a sustained effort to expose me to cultural differences: different races, different religious services, visitors from all over the world where she or her colleagues had done research—like meeting the first troop of Balinese dancers to come to New York City or Native American performers in Madison Square Garden's annual rodeo. Most of Margaret's pre-war research had been on child-rearing patterns in the six South Pacific cultures she had studied, so she was intensely aware of what was happening in my development and among my peers. Our conversations trained me in the habit of reflecting on experience. In effect, she taught me to be a participant observer of my own life, looking for patterns and for the ways in which meaning was changed by context. She taught me to notice how the rules differed in different households I visited, how to adapt to them, and how to think about and understand the puzzling reactions of adults. Not everyone was upset by profanity, for instance, but some were, and she taught me the importance of controlling my own use of words and understanding different contexts so they would not slip out inappropriately. I remember once in a household where I visited often that I had gotten into a shouting argument (part of the style of that household) in which I called the mother a "witch," without great effect. Then, in a moment of clarity and curiosity, it occurred to me that a tiny, basically arbitrary linguistic change might make a difference in the interaction, so I quite deliberately and experimentally called her a "bitch"—and the roof blew off! Fascinating! I had no name for what I had discovered, until my freshman year of college when I encountered the basics of phonology.

Margaret frequently put things in ethical terms. An understanding of behavioral patterns and systems of meaning was important in building better relationships and effective communication. A friend who sometimes looked after me had lost her peripheral vision due to a brain tumor, which made walking in the city with small children particularly nerve-wracking, so my mother explained the nature of her partial blindness to me, pointing out that it was unfair to exploit it. There were refugee children in my school, struggling to learn English and adapt to a new country, who were likely to be teased and

to react with blows when words failed them, so we discussed what they might be going through and possible strategies to reach out to them.

From her I learned to think of adults not just as authorities and/or resources but as individuals responding out of their own backgrounds and personalities. As a six-year-old, I cut my foot walking barefoot and my companion asked if I wanted to return home or go on to the household of Lawrence Frank, a social scientist, where I was equally at home. I made my decision: “Daddy knows about nature, but Uncle Larry is better with wounds.”

Participant observation is the most basic methodology of the cultural anthropologist. It depends on the ability to perceive patterns while still carrying on with daily life. My father was a highly selective observer, generally careless about keeping records, while my mother was greedy for detail. Unlike most ethnographers, she regarded the notes of what she had seen and heard in the field, carefully typed up and contextualized, as the most important product of her work, for a book is the ethnographer’s interpretation, while the notes and photographs are the closest later generations can come to primary data, the nearest equivalent in anthropology to experimental replication. They had very different styles of participation as well. My father’s ethical sense had to do with recognizing and respecting patterns of organization, attempting to change them only with great reluctance and only when something had clearly gone wrong. My mother was much more of an activist. Her proposals for change were always based on observation and comparison, however, and she was scornful of political agendas derived from ideology rather than observation. By example, and by the questions she asked about my experiences and commitments, it was she who taught me the lifelong habit of participant observation that has made me a social scientist and writer.

My favorite anecdote of what it meant to be an observer of my own life as well as a participant occurred in second or third grade, when my mother volunteered me for a “play date” with a boy my age who was getting into difficulties at school. She warned me on the way over that he was hard to get along with and that his parents were worried. Afterward, she asked me how things had gone, and I asked her to wait until we got home so I could dictate to her a description of the problems I had encountered, “so if any other child ever has to play with him they’ll know what to expect.” I was already used to the idea that observation followed by reflection would be valuable not only to me but to other people. When I recall my contributions to my parents’ thinking, it strikes me that my father especially valued the way I asked questions that challenged him to clarify some theoretical concept he was struggling with, while my mother asked me the questions, valuing what I could tell her about the various worlds I moved in.

In 1956, when I was sixteen, I went with my mother to Israel, where she was lecturing on the assimilation of immigrants and consulting with authorities. The basic premise was a shared Jewish identity, although the immigrants varied widely in cultural backgrounds, in beliefs, and even in physical types. It was on that trip to Israel that I discovered the what of my curiosity, matching it to the how I had learned from my parents. I was fed up with my high school, disdainful of the American teenage lifestyle,

and loud in my complaints about superficiality and conformity—all of which, I imagine now, must have been an annoyance to my mother, a teenage version of the ideological alienation she found so tiresome. After two weeks in Israel, I proposed staying on, learning Hebrew, entering school to prepare for the national matriculation examinations, and applying to college from there—and my mother agreed. What had gripped me was finding a group of people filled with idealism and excitement about building a new country. The result was that I became a participant observer, struggling to understand an unfamiliar culture, not unlike an ethnographer.

There are plenty of fair, blue-eyed Jews, but not many are named Mary Catherine. As a gentile teenager throwing herself passionately into learning the language—going at it gangbusters and improving every day—I was anomalous and exotic, and the people I met responded with warmth to my curiosity. I had questions about everything from the socialist youth movements to the ingredients of lunchtime sandwiches, and above all the specifically Jewish portions of the school curriculum—Hebrew literature, Jewish history, and the Bible. I was captured by the chance to do what I had been prepared to do by all the emphasis on cultural diversity and attention to patterns in my growing up.

Learning Hebrew was hugely exciting intellectually and led me into Arabic (which is similar to Hebrew but more so), Middle Eastern studies, and linguistics. Young people were once taught Latin “to teach them to think,” but the Semitic languages teach a different style of thinking from Latin, one that may encourage an awareness of process and relationship separate from particular things or persons. Families of words are built by combining roots (sets of consonants, unpronounceable by themselves) and patterns (consisting of vowels and affixes) so that, for example, a root with the general meaning of “joining” is brought to life in words for acts like “fastening,” “uniting,” and “adhering,” and for “friend,” “society,” “alliance,” “composition,” “notebook,” and more, each connected both to the root and to the kind of process or relationship expressed by a given pattern. Roots and patterns interlock neatly, like the fingers of a pair of clasped hands. It’s like plugging specific values of x, y, and z into a formula that expresses a particular process or relationship; no wonder Arabic speakers invented algebra!

Semitic grammars are also reminiscent of cybernetics as I encountered it in my parents’ work, an analytical system in which organizational (pattern) similarities can be traced from context to context, so that an ecosystem like a forest can be compared to a university or a nation—or an aquarium. Learning Hebrew was exciting to me in the same way as hearing about Mendelian ratios and called for similar intellectual skills, but it was exciting in another way as well. A new language allows you to think new thoughts. As I learned Hebrew I became convinced that I was not only learning a different way of viewing the world but learning the flexibility to vary my way of viewing the world, to move from concept to concept.

Nevertheless, I would not have become fascinated by Hebrew without the human context, and my year in Israel turned me away from the natural to the social sciences. A decade after my adolescent sense of revelation, with a doctoral degree in linguistics and Middle Eastern studies, I realized that linguistics in the Chomskian era was moving

toward the study of pure pattern, and that without the human contact it was not what I wanted to study. I would redefine myself as a cultural anthropologist—in a return toward my parents' profession. My father had known almost no linguistics, but I had learned from him how to think about pattern; my mother had known almost nothing about the Middle East, but I had learned from her how to engage with others reflectively, a participant and an observer at the same time. That began the story of my adult work.

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Excerpted from *Curious Minds: How a Child Becomes a Scientist* by John Brockman, Vintage Books, 2004