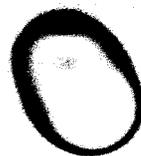


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Two Brains Better Than One

Human: The Science Behind What Makes Us Unique
by Michael S. Gazzaniga. Ecco, an Imprint of HarperCollins, 2008.

HAROLD FROMM

His head he raised—there was in sight,
It caught his eye, he saw it plain—
Upon the house-top, glittering bright,
A broad and gilded vane.

Then did the boy his tongue unlock,
And eased his mind with this reply:
“At Kilve there was no weather-cock;
And that’s the reason why.

—Wordsworth, from “Anecdote for Fathers” (1798)

Michael Gazzaniga has what it takes to be persuasive. He is a professor of psychology and the director of UC-Santa Barbara’s SAGE Center for the Study of Mind, and has authored half a dozen books about the brain. Familiar as much of his material may be to *TER*’s readers, what is old acquires a new freshness in his retelling, and what is new triggers frequent “Aha’s!” As a demonstration of his intellectual acuity and wide-ranging scholarship, *Human: The Science Behind What Makes Us Unique* is splendid. As a “book” it can be perplexing. During my progress through its 390 pages of text, I would alternate between “This is wonderful!” and “This is chaotic!”

Gazzaniga’s extremely demotic voice and rhetoric can achieve spot-on clarity but can also lure him into obscurity. His prose recalls the vivacious multimedia style, saturated with pop culture, that we have come to know in Steven Pinker, David Barash, and other philosophers and scientists who write for a broad audience, but Gazzaniga goes a few measures beyond even these. He makes many references to transient TV programs, rock combos, and grade B movies, while his prose rings with echoes of the lingo of media stars and pundits. But the media-shy reader may sometimes be thrown by locutions such as *dweeb*, *Caddyshack*, *beamer*, *perp*, Rita Rudner, Steve Martin, and puppies (as in “Those puppies are important!”). If not obscure, they can become cumulatively grating. The most disorderly sections of the book are overstuffed with this trendiness to the point at which one sometimes feels the need for a late-night TV comedian

to stand by and read the sentences aloud with the correct intonation. Since some of the more madcap allusions are part of Gazzaniga's considerable charm, one can only hope that though intelligible today they will still be "objective correlatives" (to borrow from T.S. Eliot) tomorrow.

Gazzaniga's theme is the primate brain and its evolution over millions of years from within a matrix of sociality. "Are human brains unique?" a chapter heading asks, and "Would a chimp make a good date?" asks another, comparing our endowments with those of our nearest kin. Beyond our larger brain size, Gazzaniga points to bipedality, opposable thumbs, our unique larynx, the mirror neuron system ("in humans . . . much more extensive than in monkeys" [32]), our uses of art, and many other features elaborated upon in dedicated chapters. In his overview of evolutionary psychology he provides a summary starting from Darwin, passing through selfish genes, and moving on to the recent ups and downs of group selection, about which he prefers not to take a stand. He tells us about Richard Wrangham's claims regarding the role of cooked food in expanding the mental faculties of *Homo sapiens*, provides a discussion of Robin Dunbar's contention that human gossip is our own socialized version of chimp grooming, and is largely supportive of the notion of specialized modules for human skills, which he fleshes out at considerable length. But a hundred pages later he can nevertheless write, "The modular crowd recognizes that not all mental activities can be explained by modules. At some point along the processing route, the input from the modules needs to be synthesized, spliced together, and packaged—or ignored, suppressed, and inhibited" (284). Dogmatic he's not.

Because Gazzaniga has hands-on knowledge, even the most familiar material avoids coming off as merely a rerun of Pinker or Dennett. At Cal Tech, he worked as a brain-mind specialist under Nobel recipient Roger Sperry. Not surprisingly, then, he gives an extensive account of the conflict between the unconscious emotional mind and the conscious, late-developing, analytical, so-called rational, mind. His experiences at Memorial Sloan-Kettering Hospital in New York confronted him with actual patients suffering from brain lesions and other damages, and (in extremis) the effects of surgical severing of the connection between right and left brains, a last resort to relieve incurable epilepsy.

Unlike Oliver Sacks, who often seems more taken with the weirdness of mental disabilities than with their etiologies, Gazzaniga connects his own bizarre medical anecdotes fairly tightly to the hands-on lessons he learned about precise physical areas of the brain under duress.

This experience with split-brain patients opens several doors to an understanding of the quirks of consciousness: "We have verified that the left hemisphere is specialized for language, speech, and intelligent behavior, while the right is specialized for such tasks as recognizing upright faces, focusing attention, and making perceptual distinctions" (291). Realizing that "this tendency to generate explanations and hypotheses—to interpret—lies within the left hemisphere" (296), he understands this left brain to be a "know it all," which he nicknames The Interpreter. Moreover, "The advantage of having such a dual system is obvious. The right hemisphere maintains an accurate [sensory and experiential] record of events, leaving the left hemisphere free to elaborate and make inferences about the material presented" (296). In one of the funniest and most indelible moments of the book, Gazzaniga reports on a woman who had come from Freeport, Maine to his New York City office suffering from reduplicative paramnesia, an instance of "hemineglect" (a loss of awareness of sensory events and actions related to the side of the body opposite to a brain lesion), which sometimes produces "the delusional belief that a place has been duplicated" (299) in a second place or simply moved thereto. When interviewed by Gazzaniga at Sloan-Kettering, the patient resisted his description of her location. "Well, that is fine," she remarks, "but I know I am in my house in Freeport, Maine." He replies, "'Well, if you are in Freeport and in your house, how come there are elevators outside the door here?' The grand lady peered at me and calmly responded, 'Doctor, do you know how much it cost me to have those put in?'" (299–300).

This vignette sheds startling light on our preposterous claims in daily life to justify the motivations our inscrutable synapses generate. Nor is it necessary for us to have our brains cut apart to perform in this way, since when intact the two halves may work in tandem but not necessarily in harmony. Our readiness to invent phony explanations for unreliable truth-claims produced by irrational needs of which we have no awareness at all (see Tim Wilson's *Strang-*

ers to Ourselves) should make us think twice about the idiocies uttered daily. This proclivity may well have contributed to survival. It is in any case universal. Professor types and politicians, alas, have been awarded no evolutionary exemptions. As I write this now, the often magisterial Freeman Dyson is getting comeuppance for his recent justifications of nonsensical remarks against global warming.¹ Are any of us proof against similar takeovers by untrustworthy "Interpreters"?

This now well-established picture of our "two brains" was presciently dramatized two hundred years before today's neuroscience in a poem by Wordsworth that impressed me powerfully during my undergraduate days. When the young son in "Anecdote for Fathers" is harassed by his father as to whether he liked Kilve or Liswyn Farm better, he chooses Kilve, though he is unable to explain why. But when he continues to be bugged by this insistent adult who wants *rational reasons*, the boy solves the problem by taking a cue from the weather vane that just happened to catch his eye. Here indeed are the Freeport lady's elevators long before their time, except that this time the boy "knows" what he is doing! (You want rubbish? I'll give you rubbish!) Emerson says the Romantic Imagination looks to idiots, babes, and savages because of their continuing nourishment directly from the teats of Nature (to use his terms), not yet "rationalized" by social constructions. Today neuroscience gets around rationalizations by using brain-damaged patients and preverbal children for cognitive research.

In the final section of this well-stocked book, "Who Needs Flesh?" Gazzaniga considers the claims of artificial intelligence in general and the writings of Ray Kurzweil in particular. Although he agrees about the benefits of digital prosthetics based on computer chips—cochlear implants and artificial retinas, for instance—he becomes increasingly skeptical about Kurzweil's more grandiose techno-prophets. "Learn French, Japanese, Farsi? No problem, just download it. Do advanced calculus? Download it. Increase your memory? Sure, just get another five-terabyte chip implanted" (347), he writes with irony. But many pages later, he gets down to the real nitty-gritty: "Kurzweil leaves out something rather major. He ignores the fact that the brain is hooked up to a biological body" (362). Gazzaniga gives more credence to the conclusions of Jeff Hawkins,

inventor of the Palm Pilot: "The brain doesn't 'compute' the answers to problems; it retrieves the answers from memory" (367), Hawkins has written. And memory, Gazzaniga himself concludes close to the end of the book, is based on "experience," something that computers don't have. In sum, "To behave as a human, you need to experience life as a human biological entity" (370). This is a conclusion that strikes me as powerful but that seems to have driven the philosopher David Chalmers over the edge. Chalmers' exceedingly fluffy book, *The Conscious Mind: In Search of a Fundamental Theory*, came to the extravagant conclusion that "experience" is so crucial that it has to be considered a cosmic reality on a par with mass, charge, and space time! More work on this question is badly needed.

The usefulness of Gazzaniga's offbeat and frequently piquant tour of the unique human animal has been sadly compromised by poor documentation.² Still, the fact remains that this genial book has a good deal of expertise to offer.

REFERENCE

Dawidoff, Nicholas. [Freeman Dyson] "The Civil Heretic," *New York Times Magazine*, March 25, 2009. <http://www.nytimes.com/2009/03/29/magazine/29Dyson-t.html?_r=1&scp=1&q=Dawidoff%20Freeman%20Dyson&st=cse>

NOTES

1. "Chat rooms, Web threads, editors' letter boxes and Dyson's own e-mail queue resonate with a thermal current of invective. . . . There is the suspicion that, at age 85, a great scientist of the 20th century is no longer just far out, he is far gone—out of his beautiful mind" (Dawidoff)

2. Although there are perhaps a few hundred bibliographic endnotes, there is no actual bibliography, and the index to the book as a whole is subject only (with no proper names). Sometimes page numbers of sources are missing in an endnote or suddenly, instead of an endnote, there will be a bibliographic footnote at the bottom of the page of text. Although I could not inspect more than a few endnotes for accuracy, it was disheartening to come across "Pancept, J." for "Panksepp" and to find "Merlin Donald" referred to in the body of the text (on a second mention) as "Merlin" (385) when Gazzaniga clearly intends "Donald."