

Get a Grip

Are hands the key to the evolution of human intelligence?

THE HAND

How Its Use Shapes the Brain, Language, and Human Culture.
By Frank R. Wilson.

Illustrated. 397 pp. New York:
Pantheon Books. \$30.

By David Papineau

HOW did we get to be so smart? A few million years ago our ancestors were frolicking in the trees, with no thought for anything but the next banana. Now we can solve differential equations and send men to the moon. Something happened, but what exactly? Nobody is quite sure. Paradoxically, one of the few questions our big brains can't settle is why they became so big.

In "The Hand," Frank R. Wilson urges an arresting answer. For him the key to the evolution of intelligence lies in the peculiarities of the human hand. Without our fancy mitts, he argues, here wouldn't have been any point in growing big brains. This evolutionary thesis, however, is only one of two themes in Wilson's ambitious book. By profession he is the medical director of the Peter F. Ostwald Health Program or Performing Artists at the University of California School of Medicine in San Francisco. He works mainly with musicians who have manual disorders, and his book celebrates the importance of hands to our lives today as well as to the history of our species.

Wilson's two concerns make for an unusual mix. He defends his evolutionary theses with detailed analyses of manual anatomy and careful references to the fossil record. By contrast, his thinking about the role of hands in the modern world is conveyed more by illustration than by argument, through a series of interviews in which people with exceptional manual skills describe their lives. The two kinds of material alternate throughout the book. Together they offer plenty of facts and a number of interesting stories. But Wilson's own claims are sometimes buried beneath the weight of all this writing.

His ideas about evolution are relatively clear. At first sight, it might seem obvious why humans became intelligent. Wasn't intelligence favored by natural selection simply because it enhanced survival and reproduction? But this answer fails to explain why it was worth starting down the pointy-headed path in the first place. Obviously, our big brains have now allowed us to outbreed all competitors and take over the planet. But our hominid ancestors didn't have guns or fertilizers or even spears. So what use did they have for above-average brains? After all, most animals manage to survive and reproduce perfectly well without a big computer in

David Papineau is the Professor of the Philosophy of Science at King's College, London.



DUSAN PETRICIC

their heads. What made our particular ancestral line different?

This is the central conundrum of our evolutionary history, and authorities on the subject have offered various answers over the years. The current favorite is that we grew big brains in order to gossip. Less facetiously, the idea is that hominids with enough brainpower to be interested in the psychology of others had a great advantage once social cooperation became the norm. Another, rather older answer to the evolutionary conundrum is that the bipedal stance we adopted when we left the trees made room for a wide range of flexible behaviors. Wilson accepts that both of these influences played a part. But he insists that neither would have made any difference were it not for the special structure of our hands.

As he tells the story, the groundwork for our hyperintelligence was laid when large apes first started swinging through the trees by their arms. This called for special powers of manual coordination, and those abilities proved very useful once our ancestors came down from the trees. Unlike other animals, they were able to throw stones and fashion complex tools. It was these specific manual powers, Wilson argues, that drove our subsequent cerebral expansion and made us the brain boxes we are today.

Given the conventions of the genre, this is all reasonably convincing. Of course, much of it is perforce speculative, since there is little direct evidence beyond a few fragments of fossilized bone. But this is a problem facing all theorizing in this area, and Wilson's conjecture seems plausible. Perhaps he could be accused of overemphasizing the hand's evolutionary role. But he never denies the importance of other factors, and if something is to take the limelight, the hand seems as good a candidate as any.

The point of Wilson's interviews with contemporaries is less clear-cut. The first few of these, with a juggler, a puppeteer and a rock climber, hint at insights into the neural mechanisms that make the human hand so versatile. But, as the interviews range more widely, through jewelers, hot-rod mechanics, magicians and surgeons, it turns out that Wilson's concerns are more personal than physiological. The people who really interest him have found a calling, often in childhood, and their commitment brings fulfillment to their lives. The rock climber, for instance, was able to pull himself to the top of chests of drawers before he could walk, and by high school, "I would climb the face of a rock without thinking about it at all. I would see a route and would climb it when no one else would even consider climbing it. To me it was just what I wanted to do, a normal, easy thing."

Wilson outlines an educational philosophy inspired by this vision of the fulfilled person. Schools should do less to instill authorized knowledge and more to unleash potential. Many of his interviewees tell how their schooling only hampered their development. Wilson

urges a "child-oriented" approach to education, which starts with the needs and interests of the child. He goes so far as to suggest that "any student who chose spontaneously and voluntarily, on the basis of his or her own inclinations and experience, to become a brain surgeon could probably prepare adequately to enter that career by the age of 20" if provided with the necessary assistance.

It is somewhat surprising to find a student of evolutionary history embracing this view of individual development, for the idea that we all contain the seeds of our own destinies gains no support from evolutionary thinking. Wilson is perfectly aware that there is nothing preordained about the course of any species' evolutionary development. Evolution is a sequence of accidents; its path is as unpredictable as the trajectory of a pinball. Consider the details of Wilson's account of hominid evolution. First apes get larger. Their growth, together with gravity, encourages them to swing by their arms. Then, once they come down from the trees, they find an environment where it is useful to throw stones, which thus furthers an enhanced grip. And so on. Each step is needed in order for human intelligence to emerge, but nothing is guiding this essentially haphazard sequence toward that particular destination. No wonder sophisticated intelligence has developed only once in two billion years of evolution.

WHY, then, does Wilson think individual lives have preordained paths if the destiny of species is so happenstantial? There is no formal inconsistency here; it is theoretically possible that individual genes should channel us along specific lines in the way he suggests, even if nothing similar guides species. Still, it seems unlikely. Surely most human beings are much more like pinballs than railway trains. Maybe some know where they are going from an early age, but most of us are buffeted around by many different influences and opportunities, and are lucky if we can find a niche that fits our adult selves.

In the last third of the book Wilson leaves evolutionary issues behind and concentrates on his exceptional individuals, whose manual skills become increasingly less significant. There is a chapter devoted to a successful San Francisco restaurateur, another to a movement teacher, and eventually we are introduced to a palmist, who turns out to be one among a number of alternative therapists Wilson consults in his practice. I am sure these are all worthy people, and no doubt their particular talents owe little to their formal education. But Wilson did not convince me that it would be wise to design our educational regimen specifically for the self-directed. Most ordinary folk, and perhaps some of Wilson's cases as well, would do better under a system of schooling that maximizes the useful buffets. If you are born without a destiny, you may need some help in finding a path through life. □