

CAN WE EVER LEARN?

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Any observer of the current Covid-19 scene will need no convincing that *Homo sapiens* is far from a perfected species. Insofar as they are known, the basic facts of the virus are necessarily the same any place it reaches. But to judge from the international reaction to what every sensate human recognizes as a crisis, the facts themselves do not appear to be particularly relevant when it comes to determining response. Virtually every nation has responded differently to a threat that is not only entirely indifferent to what people think about it, but that is effectively the same everywhere. Some nations, mainly but not exclusively in Asia, have moved swiftly to put in place rational policies that targeted both the virus itself, and its medical and economic effects. In some others, however, politicians have chosen to bluster, abnegate responsibility, and blame China rather than to listen to the epidemiologists (who are, admittedly, learning on the job).

Possibly even worse, at least as harbingers for the future, are the extreme schizophrenic tendencies some nations are showing in their reactions to the virus. Those bizarre nations include my own, the United States, in which not only individual but official responses are ranging from extreme concern, along with the corresponding willingness to take necessary measures, to flagrant disregard of the threat in the face of peaking infection rates. And while it is bad enough that constructive thinking about how to respond to the virus is distributed only spottily among the individual States, it is downright disastrous to find a concentration of shameless negligence right at the top. All of this makes one worry: not only about the immediate future of one's country, not to mention the world, but about the quality of our species' long-term stewardship of the planet—especially as climates destabilize, with all of the allied economic and demographic sequelae.

So, what is going on? We *Homo sapiens* are wont to vaunt ourselves for our superior powers of reasoning, and our ability to plan rationally. As it happens, the appropriate responses to both the viral and climatic issues are at heart both technological challenges that ought to appeal to the most rational aspects of the unfortunately murky human psyche. What's

more, the knowledge of what we *ought* to do in both cases is clearly out there, if we are willing to listen. However, it turns out we are all too often unwilling to heed expertise or, if we do, to act on it. And while many of us understand there is a problem, many don't, or apparently don't want to. On a recent stroll around southern Manhattan your author found that the streets were crowded, yet far fewer than two-thirds of the passersby were wearing the recommended face masks (he couldn't help wondering how many more might have been worn if mask-wearing had been publicized as a means of protecting the wearer, rather than of protecting others). Of course, that was nothing compared to the 250,000 unmasked and unspaced bikers who (to the horror of most of its 6,000 local residents) had converged on Sturgis, South Dakota the day before, some wearing tee-shirts reading "Screw Covid I Went To Sturgis."

Doubtless an evolutionary psychologist would point to the fact that protective face masks were not an everyday item among Pleistocene hunter-gatherers, and that our obsolete genomes have not yet had time to catch up with the exigencies of the modern world by making us ready to wear them. Clearly much more is here to this ultimately self-destructive behavior than that, and it is maybe illuminated a bit by a look at how we acquired our rather unusual cognitive style.

Assuming that our remote ancestors began their long journey to modernity with a cognitive apparatus roughly equivalent to that of today's already quite sophisticated great apes, the first concrete evidence we have of meaningful cognitive advance comes at some point over around 2.5 million years ago, with the deliberate manufacture of the first stone tools, consisting of small, sharp flakes. This activity required a degree of insight in addition to manual dexterity, and it often involved forethought too, as suitable materials were carried around the landscape. Then about a million years passed before the next conceptual advance, which involved shaping a stone core according to a predetermined template that existed in the maker's mind before knapping began. Further, it was then another million years before the next innovation was made, whereby a core was prepared until a single blow would detach from it a quasi-finished tool with a continuous cutting surface. Clearly, hominids were becoming more sophisticated over the Pleistocene, but the pattern was one of very occasional major innovation rather than of gradual transformation. Brain sizes were also enlarging over this period, and although current hominid systematics are too crude to indicate what exactly was happening, it seems that such enlargement occurred independently in at least three lineages within the genus *Homo*. Accordingly, it seems fair to suggest that, throughout this process, hominids were employing an intuitive cognitive algorithm in which "intelligence," however defined, basically scaled with brain size (Tattersall, 2018).

Throughout this long period, hominids, however intellectually complex (and it does seem that the intuitive algorithm can take you a very long way), were living in the “real” world, to which they directly reacted, albeit in sophisticated ways. What made modern *Homo sapiens* qualitatively different from them (and from all other organisms, as far as we know) was a shift away from the ancestral intuitive cognitive style to the unique symbolic algorithm that we use today. This shift means that, instead of perceiving our environments in a holistic way, we mentally deconstruct those environments (internal and external) into vocabularies of mental symbols. We can then recombine those symbols, according to rules, to come up with new statements about the world—not just as it is, but as it *might* be (see discussion in Tattersall, 2012). As a result, we tend to live for most of the time not in the world as it directly presents itself, but in the versions of the world that we reconstruct in our heads. It is this ability that, for better or for worse, allows Donald Trump and Anthony Fauci to belong to the same species yet to perceive the threat of the virus in such starkly different terms.

Scrutiny of the archaeological record for early evidence of symbolic behaviors reveals that the new way of processing information was very recently acquired. Members of anatomically-recognizable *Homo sapiens* appear not to have displayed such behaviors until well under 100,000 years ago, long after the appearance of the species a hundred thousand years earlier. The most plausible scenario is that the neural wiring necessary to make the mental associations necessary for symbolic thought was acquired in the developmental reorganization that gave rise to *Homo sapiens* as an anatomically distinctive entity, but that the potential of this new neural organization was not realized until it was “discovered” though a behavioral innovation—most likely, the invention of language which, in its reliance on discrete symbols, maps closely onto symbolic thought.

In this scenario (which is supported by the thirteen percent *shrinkage* of average modern human brain volumes since the late Pleistocene; Tattersall, 2018), the appearance of the symbolic thought style that makes us so radically unpredictable was not only *exaptive* (rather than *adaptive*), but very recent; and, even more importantly, it was *emergent*. Clearly, the modern human manner of perceiving and interacting with the world has not been fine-tuned into us by natural selection; moreover, as a species we are not condemned by our biology to be creatures of any specific kind. This gives us our free will, and our agency as individuals, and it also gives us a responsibility for our behaviors. Unfortunately, that responsibility is not part of our biology. Rather, it is conferred on us by circumstances, and it much too easily escapes our awareness.

Because of this lack of specificity, all human behaviors you might care to identify—including those that impinge on our Covid-19 response—show

basically a normal distribution, with most individuals clustered toward the mean, and stragglers at both ends. This suggests that if we want to change any behaviors (for instance, inappropriate responses to the Covid-19 threat), we have to find some way of shifting the mean for each relevant one. Fortunately, it does seem possible to do this (Pinker, 2011; Tattersall & DeSalle, 2018). Thus, one of the features of the emergent human psyche is that it is highly responsive to education (at a young age) and to strong leadership (at more advanced ones). Unfortunately, both areas are ones in which the USA and many other countries have fallen down badly in the wake of the Covid-19 crisis.

In the United States science is too often taught (badly) as an authoritarian system that is in direct competition with religion. The latter is the main source of authoritarian belief in society and is generally inculcated into believers from birth. As a result, until science is properly taught—as an independent empirical system of provisional knowledge—it will remain highly vulnerable to this juxtaposition, and so appeals to science in the face of natural threats will meet resistance. In terms of leadership from the top, the current problems are obvious. A President has enormous powers to sway public opinion (and even public behaviors such as facial mask wearing), and public beliefs likewise often follow visionary legislation (think smoking). Clearly, a leadership more sensitive to the actual complexities of the real world is required if we want to improve our society's response to threats. Fortunately, both history and biology suggest that, with the right leadership—and particularly one which understands that a worldwide crisis demands a worldwide coordinated response—this can be done.

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