



To arrive at the edge of the world's knowledge, seek out the most complex and sophisticated minds, put them in a room together, and have them ask each other the questions they are asking themselves.

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Printed On Wed January 11th 2023



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Learning And Culture

Any first-hand experience of how scientific institutions actually operate drives home an excruciating realization: Science progresses more slowly by orders of magnitude than it could or should. Our species could have science at the speed of thought—science at the speed of inference. But too often we run into Planck's demographic limit on the speed of science—funeral by funeral, with each tock of advancement clocked to the half-century tick of gatekeepers' professional lifespans.

In contrast, the natural clock rate of science at the speed of thought is the flash rate at which individual minds, voluntarily woven into mutually invigorating communities by intense curiosity, can draw and share sequences of strong inferences from data. Indeed, Planck was a giddy optimist, because scientists—like other humans—form coalitional group identities where adherence to group-celebrating beliefs (e.g., we have it basically right) are strongly moralized.

So, the choice is frequently between being "moral" or thinking clearly. Because the bearers of reigning orthodoxies educate and self-select their next generation replacements, mistakes not only propagate down generations, but can grow to Grand Canyon sizes. When this happens, data sets become embedded so deeply into a matrix of mistaken interpretations (as in the human sciences) that they can no longer be seen independently of their obscuring frameworks. So the sociological speed of science can end up being slower even than Planck's glacial demographic speed.

Worst of all, the flow of discoveries and better theories through institutional choke points is clogged by ideas that are so muddled that they are—in Paul Dirac's telling phrase—not even wrong. Two of the worst offenders are learning, and its partner in crime, culture, a pair of deeply established, infectiously misleading, yet (seemingly) self-evidently true theories.

What alternative to them could there be except an easily falsified, robotic genetic determinism?

Yet countless obviously true scientific beliefs have had to be discarded—a stationary earth, (absolute) space, the solidity of objects, no action at a distance, etc. Like these others, learning and culture seem so compelling because they map closely to automatic, built-in features of how our minds evolved to interpret the world (e.g., learning is a built-in concept in the theory of mind system). But learning and culture are not scientific explanations for anything. Instead, they are phenomena that themselves require explanation.

All "learning" operationally means is that something about the organism's interaction with the environment caused a change in the information states of the brain, by mechanisms unexplained. All "culture" means is that some information states in one person's brain somehow cause, by mechanisms unexplained, "similar" information states to be reconstructed in another's brain. The assumption is that because supposed instances of "culture" (or equally, "learning") are referred to with the same name, they are the same kind of thing. Instead, each masks an enormous array of thoroughly dissimilar things. Attempting to construct a science built around culture (or learning) as a unitary concept is as misguided as attempting to develop a robust science of white things (egg shells, clouds, O-type stars, Pat Boone, human scleras, bones, first generation MacBooks, dandelion sap, lilies...).

Consider buildings and the things that allow them to influence each other: roads, power lines, water lines, sewage lines, mail, roads, phone landlines, sound, wireless phone service, cable, insect vectors, cats, rodents, termites, dog to dog barking, fire spread, odors, line of sight communication with neighbors, cars and delivery trucks, trash service, door to door salesmen, heating oil delivery, and so on. A science whose core concept was building-to-building influence ("building-culture") would be largely gibberish, just as our "science" of culture as person to person influence has turned out to be.

Culture is the functional equivalent of protoplasm, the supposed (and "observed") substance that by mechanisms unknown carried out vital processes. Now we recognize that protoplasm was magician's misdirection—a black box placeholder for ignorance, eclipsing the bilipid layers, ribosomes, Golgi bodies, proteasomes, mitochondria, centrosomes, cilia, vesicles, spliceosomes, vacuoles, microtubules, lamellipodia, cisternae, etc. that were actually carrying out cellular processes.

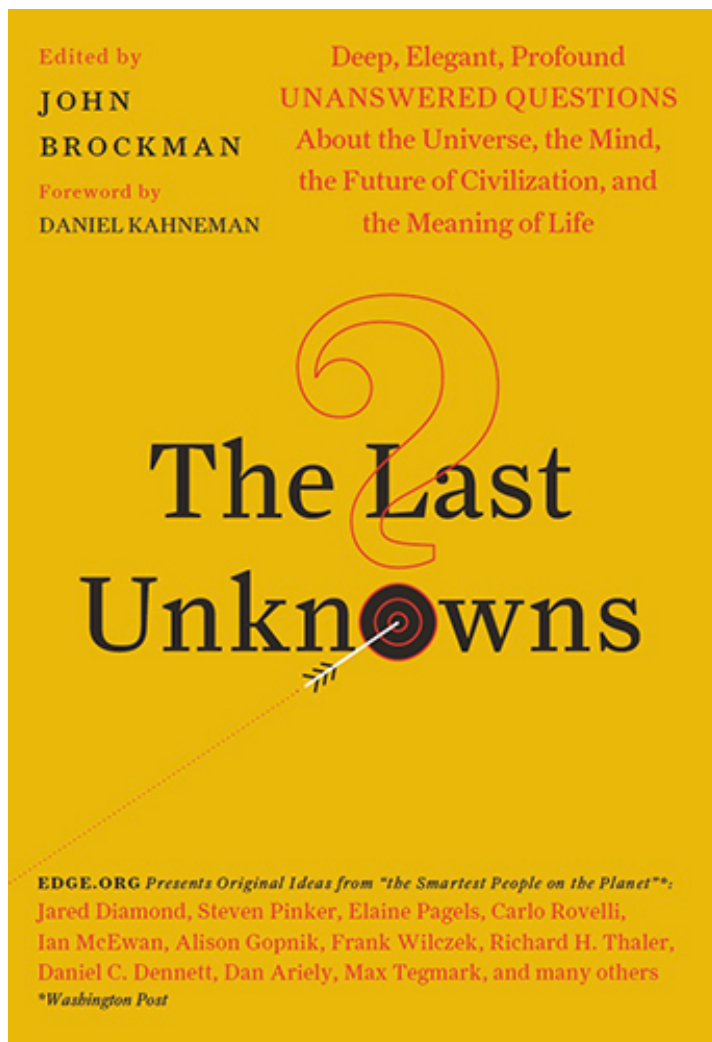
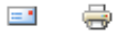
Like protoplasm, culture and learning are black boxes, imputed with impossible properties, and masquerading as explanations. They need to be replaced with maps of the diverse cognitive and motivational "organelles" (neural programs) that actually do the work now attributed to learning and culture. They are the La Brea tar pits of the social and behavioral science. After a century of wrong turns, our scientific vehicles continue to sink ever deeper into these tar pits, and yet we celebrate because these conceptual tars have poured in to fill all explanatory gaps in the human sciences. They unfalsifiably "solve" all apparent problems by stickily obscuring the actual causal specificity that in each case needs to be discovered and mapped.

We over-attribute our mental content to culture, because the sole supposed alternative is genes. Instead, evolved, self-extracting AI-like expert systems, in interaction with environmental inputs, neurally develop to populate our minds with immense, subtle bodies of content, only some of which are sourced from others. Rather than humans as passive receptacles haplessly filled by "culture", these self-extracting systems make humans active agents robustly building their worlds. Some neural programs, in order to better carry out their particular functions, evolved to supplement their own self-generated content with low-cost, useful information drawn from others ("culture").

But like buildings, humans are linked with many causally distinct pathways built to perform distinct functions. Each brain is bristling with many independent "tubes" that propagate many distinct kinds of stuff to and from a diversity of brain mechanisms in others. So there is fear-of-snakes culture (living "inside" the snake phobia system), grammar culture (living "inside" the language acquisition device), food-preference culture, group identity culture, disgust culture, sharing culture, aggression culture, etc.

Radically different kinds of "culture" live inside distinct computational habitats—that is, habitats built out of different evolved mental programs, and their combinations. What really ties humans together is an encompassing meta-culture—our species' universal cognitive and emotion programs, and the implicit (and hence invisible) universally shared world of meaning they give rise to. Because the adaptive logics of these evolved neural programs can now be mapped, the prospect of a rigorous natural science of humans is open to us. If we could pension off learning and culture, that would remove two obstacles to the human sciences advancing at the speed of thought.

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