

HUMAN CULTURE AS THE FIRST AI

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For me, AI is not about complex software, humanoid robots, Turing Tests, or hopes and fears regarding kind or evil machines. I think the central issue with respect to AI is whether thoughts exist outside minds, and machines aren't the only example of such a possibility. I'm thinking of human culture and other forms of (un-self-aware) collective ideation.

Culture is the earliest sort of intelligence outside our own minds that we humans have created. Like the intelligence in a machine, culture can solve problems. Moreover, like the intelligence in a machine, we create culture, interact with it, are affected by it, and can even be destroyed by it. Culture applies its own logic, has a memory, endures after its makers are gone, can be repurposed in supple ways, and can induce action.

So I oxymorically see culture as a kind of *natural* artificial intelligence. It's artificial because it's manufactured by humans. It's natural in that it's everywhere humans are and comes organically to us. In fact, our biology and our culture are probably deeply intertwined and have coevolved, so that our culture shapes our genes and our genes shape our culture.

Humans aren't the only animals to have culture. Many bird and mammal species evince specific cultures related to communication and tool use—song in birds, say, or sponge use

among dolphins. Some animal species even have pharmacopias. Recent evidence shows how novel cultural forms can be experimentally prompted to take root in species other than our own.

We and other animals evince a kind of thought outside minds in additional ways: Insect and bird groups perform computations by combining the information of many to identify locations of nests or food. One of the humblest organisms on Earth, the amoeboid fungus *Physarum*, can, under proper laboratory conditions, exhibit a kind of intelligence and solve mazes or perform other computational feats.

This natural artificial intelligence can even be experimentally manipulated. A team in Japan has used swarms of soldier crabs to make a simple computer circuit; the team used particular elements of crab behavior to construct a system in the lab in which crabs gave (usually) predictable responses to inputs, and the swarm of crabs was used as a kind of computer, twisting crab behavior for a wholly new purpose. Analogously, Sam Arbesman and I once used a quirk of human behavior to fashion a so-called NOR gate and develop a (ridiculously slow) human computer, in a kind of synthetic sociology. We gave humans computerlike properties, rather than giving computers humanlike properties.

An examination of our relationship to culture can provide insights into what our relationship to machine AI might be like. We have a love/hate relationship with culture. We fear it for its force—as when religious fundamentalism or fascism whips numbers of people into dangerous acts. But we also revere it, because it can do things we cannot do as individuals, like fostering collective action or making life easier by positing assumptions on which we can base our lives. Moreover, we typically take culture for granted, just as we take

the nascent forms of AI for granted and just as we'll likely take advanced forms of AI for granted. Gene/culture coevolution might even provide a model for how we and thinking machines will get along over many centuries—mutually affecting each other and coevolving.

When I think about machines that think, I'm as awestruck by them as I am by culture—and no more or less afraid of AI than of human culture itself.