

## MIND AND SUPERMIND: REVIEW OF JOURNEY OF THE MIND

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BOOK UNDER REVIEW: Ogi Ogas and Sai Gaddam: *Journey of the Mind: How Thinking Emerged from Chaos*. New York: W.W. Norton & Company, 2022. 415 pages.

Of all the delusions that beset the human mind, the most dangerous and persistent is that each of us freely generates our beliefs according to our own judgment. Back when the basic social unit was the tribe, we knew better. When you identify with your tribe before even yourself, you understand that culture, not reason, determines your worldview. In their book, *Journey of the Mind*, neuroscientists Ogi Ogas and Sai Gaddam inadvertently demonstrate – especially when they veer into politics – that this dictum applies to scientists as much as the rest of us.

This is not to deny the many insights packed into this compelling and even exhilarating investigation into the evolution of mentality up to and beyond the level of the individual human mind. The defining characteristic of the mind, as the authors point out, is purpose. No equation of physics can predict the trajectory of even the simplest organism. Rather than forced to go in a particular direction, a living thing can decide what to do on the basis of what it wants, from acquiring food to avoiding danger. The simplest conceivable mind consists of a sensor and a "doer." Ogas and Gaddam call this setup a molecule mind. While the molecules themselves have no mental properties, their interaction enables the

single-cell body to operate with purpose.

A microbe can identify a source of light or food and activate its flagellum so as to approach it. It has the choice of randomly tumbling so as to feed on whatever is around it or engaging in directed motion to find better feeding conditions. Every dilemma ever faced by every sentient being can be traced back to the original Great Question: should I stay or should I go?

For a microbe, the answer depends strictly on sensory inputs. No need to ponder. Life got a lot more complicated with the emergence of the neuron. Whereas molecules constitute the “thinking elements” of a microbe, neurons – each of which is a self-contained molecule mind – constitute the elements of the evolved mind. By stringing up a network of neurons, a roundworm can evaluate sensory inputs, mulling over factors such as temperature, salinity, moisture, odor, texture and vibration before making a decision. The roundworm doesn't just sense but perceives, that is, identifies patterns in sensory inputs.

The insect goes one step further by not only perceiving patterns but integrating them into a representation. This is the beginning of the modular mind. A fly, for instance, has a module for each sensory mode such as vision or odor, with each module combining sensory and pattern-crunching neurons. Integrating the outputs of all its modules generates an idea or representation of what the fly encounters.

Anything that sleeps, including insects, is conscious upon awakening. But if consciousness is to mean something more than just sensory awareness, its true dawn is the advent of vertebrates. Fish demonstrate true consciousness with their amazing ability to see what's not there. To avoid being fooled by camouflaged prey, the mind of a predatory fish must be able to fill in the missing pieces of a partially blocked image, whether the obstruction is in the sea or the fish's retina. Because its image of the world is processed and modified, the fish doesn't see exactly what's in front of it, and this opens the door to optical illusions. The key point is that the fish isn't conscious of the raw image on its retina. Consciousness is like a spectator at a play. It knows only what the unconscious mind stages for it. By itself the visual module is unconscious, likewise for the module that organizes actions like darting about or feeding. Consciousness is founded on the buzz of inter-module communication.

The questions a reporter asks – what, where, when, how, why – are exactly

what define the modules of the mind. As the "what" module constructs a detailed description of a thing or event, the "where" and "when" modules provide context. The "why" module, a development of the primate mind, sorts out the meaning and therefore involves emotion. As the modules do the footwork, the individual consciously sets a goal and decides on a course of action. The "how" module then executes the decision.

But the evolution of the mind from molecular to neuronal to modular doesn't stop with the individual. Like birds merging into an "intermind dynamic" via birdsong, each human mind is a building block of a language-mediated "supermind." What distinguishes language from chirping is symbolic meaning. The world outside is recreated within as symbol, and this mental recapitulation of the world is generated collectively. Culture, say the authors, is a form of thinking common to many minds. In this case the thinking elements are us. Stories, songs, histories and recipes all record innovations or observations made by individuals that later became shared wisdom. "Through language, a supermind can build a collective 'brain' that can survive the death of its people-neurons."

Not merely a passive expression of human consciousness, culture has the power to shape thought and behavior. The concept of supermind represents the active component of culture and the pressure we feel to conform. Like Freud's superego – the mechanism by which parental instructions and commands become internalized as the child matures – supermind is the tendency of cultural norms to implant themselves in the psyche. The psychologist Merlin Donald refers to this as cultural programming. So seamless is the programming that the individual can easily mistake it for independent judgment.

Supermind can encourage us to be more rational or productive or – because it lacks personal judgment and intelligence – can make us abandon reason in favor of a senseless belief system. Conforming to cultural imperatives can mean treating each other with respect and kindness or blaming calamities on witches and burning them at the stake.

Yet Ogas and Gaddam assign not only the power of reason but even consciousness itself to supermind. Intense media attention, for instance, triggered the national supermind to become conscious of the police murder of George Floyd. The culturally imposed bias for materialist philosophy seems to have

caused the authors to apply to supermind every element of human mentality. "If we believe that mental dynamics are physical dynamics, then any sufficiently advanced supermind is fully capable of perceiving, knowing, feeling, acting – and speaking." If the mind is nothing more than the interactions of molecules, neurons and modules, how are the interactions of people any different? By this logic whatever properties belong to the individual mind must also exist in supermind.

What the authors mean by "physical" is Newtonian mechanics, thermodynamics, etc. The problem here is that we've known for nearly a century now that classical physics is merely approximate. The fundamental theory of matter is quantum, and quantum mechanics could hardly be more at odds with its predecessor. In classical physics researchers examine the world directly. If you want to know the trajectory of an object, you measure its location at different moments. Simple! But when the object in question is an atom, everything changes. An atom typically exists in a state of potentiality. Only if something happens to it – for instance, a collision with another atom – does it have a particular location at a particular time. Otherwise the only way to gain knowledge of the atom is to compute its potential states by way of a mathematical device called the wave function, so named because it solves an equation just like a classical wave equation except that it makes use of imaginary numbers. Whereas a classical wave takes place in a fluid medium, the only medium of this newfangled wave is pure possibility.

Wavy imaginary potentiality? Seriously, this is physics? The new picture of reality is so bizarre that most physicists, following the example of Niels Bohr, don't even try to find the meaning of quantum mechanics. So long as researchers can go on making their calculations and measurements, the true nature of matter simply doesn't *matter*.

But there's a simple resolution to the problem of reality in quantum mechanics, a resolution originally proposed by Werner Heisenberg in 1958: potentiality is real. To say that a particular event takes place, like a pair of atoms colliding, is simply to say that the fundamental reality of ghostly potentiality gives way – just for an instant – to the emergent reality of tangible actuality. When the moment passes, the atoms return to their usual "wave" state of potentiality.

The implication of Heisenberg's proposal is that the moment-to-moment time of sensory experience is only an emergent approximation of the fundamental time

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of continuous potentiality, a present that never passes but remains always on the cusp of actualizing. What's funny is that this is exactly the time we experience internally throughout our lives and refer to as *consciousness*. We can always contemplate possible actions, but sooner or later a conflict forces us to actualize one of those potentials at a precise and fleeting moment. This is what nature is doing all the time except that when nature does it, it's called existence.

Alas, Heisenberg's conjecture about the reality of potentiality died on the vine. Except for a few renegade theorists such as Henry Stapp and Ruth Kastner, no one has followed up on it. Perhaps scientists have refused to take it seriously because it places nature in the driver's seat. If potentiality is just a different kind of reality, a sort of twilight zone between the actual and the imaginary, then nature has a mind of its own. Quantum mechanics is the most successful theory in the history of science because when physicists make predictions on the basis of the wave function, they're just mimicking what nature is already doing. Nature itself computes potential outcomes of events on the basis of the probability wave that physicists merely represent with their mathematical function. Nature, in other words, is the original thinker. Our capacity for thought is nothing more than an evolutionary elaboration on nature's computation.

Only in the *culture* of physics is any of this problematic. Traditionally scientists regarded nature as a feminine principle and therefore passive. Scientists, i.e. men, made calculations while nature dutifully obeyed the outcomes. Now to find that nature continually molds all of tangible reality in accord with *her* calculations is beyond the pale. You mean we've been her plaything all along instead of the other way around? It can't be!

Ogas and Gaddam make much of the fact that the mind is holistic, but they don't seem to know what that means. If holism is just the dynamic interaction of parts, as they claim, then even a machine is holistic. What makes an organism holistic is that the parts *express* the whole. Rather than emerge from the dynamics of its cells, the embryo initially takes shape as a whole and literally fleshes out as its cells take on specialized roles. Likewise, as demonstrated in the phenomenon of quantum entanglement, a multi-particle system is determined at the level of the whole, that is, the probability wave.

A mind is holistic in the same sense of a quantum system. In both cases computations (thoughts) are carried out in a continuous state of potentiality

(consciousness) until a discontinuous event triggers a definitive outcome (behavior). How has this parallel been neglected for so long?

Perhaps it's a cultural bias, specifically the belief that classical physics is fundamental any time we're dealing with phenomena beyond the atomic scale. Yet it's only by accident that the probabilistic signature of the wave function washes out with scale. Thanks to laboratory experiments we know that extremely low temperatures or high pressures can preserve the wave state indefinitely at visible scale. So the question is whether nature has an organic method of resurrecting the probability wave at the large scale.

Ogas and Gaddam highlight the curious resemblance of minds and hurricanes. Both types of system are processes rather than static objects. Like a mind, a hurricane is a self-organized system, meaning that no physical principle sculpted it or mechanically forced it into being. Rather than the shape of the hurricane following from the properties of the atoms comprising it, the motions of the atoms are determined by the way the hurricane as a whole channels energy. Believe it or not, the hurricane has a purpose, not to destroy all in its path but simply to eliminate the temperature difference between the warm surface of the ocean and the upper atmosphere. When that gradient is eliminated, the hurricane disappears. As famously illustrated in the extreme case of a vacuum, nature abhors local differentials and seeks to destroy them, that is, to restore evenness and harmony.

Perhaps the sudden emergence of a hurricane is the result of nature computing the most efficient means of eliminating the odious temperature gradient between ocean and sky. The organism also seeks to destroy gradients, for instance the difference between how much oxygen or water or food it needs and how much it currently has. If there's a gap, the organism calculates how best to channel energy flow so as to meet its needs. In the end, whether quantum, atmospheric or biological, it all boils down to nature's computation. Though ordinarily inapplicable in the macroscopic, quantum waviness seems to reinstate via energy flow.

Since the fundamental reality is more like thought than matter, why assume the mind is really just the workings of the brain? Given our predilection for imagination and symbolic representation, how can we equate ourselves to mere stuff? Though it makes no sense, the materialist view of mentality is culturally

ingrained and therefore enforced by supermind.

It must be noted, however, that consciousness is the most matter-dependent aspect of the mind. As the authors themselves painstakingly demonstrate, consciousness evolved to its human degree of refinement over eons of evolution. Only in the context of the right kind of embodiment does ongoing potentiality amount to consciousness. Lacking its own brain, supermind has no more capacity than a hurricane for self-reflection or reason.

If supermind is the imperative to adopt cultural norms – and taboo is its power to instill fear and shame in anyone who defies them – then the complete absence of any discussion of nature as the original thinker and man as mere imitator can be chalked up to supermind. We can't break out of old patterns of thought when our own mental offspring makes us feel like we're crazy if we take an alternative point of view.

Ogas and Gaddam are well aware that the influence of supermind isn't always benign. The persistence of slavery in the US South, fueled by ingrained racism, is an obvious example. But the authors unknowingly promote another form of bigotry, this one directed at Slavs and best known for its Russophobic variant. Even after its forerunner lost the Cold War, "modern Russia," say the authors, "remains an uncowed and cunning adversary of the American supermind." They go so far as to analogize the US with a primate while implying that Russia, like the antebellum South, is a lower life form, "and it's always possible for a viper or a spider or even an amoeba to take down a primate."

When Russian troops began amassing at the Ukrainian border, the dominant media in the West portrayed the reaction in Washington as shock and horror. Are the Russians really going to invade Ukraine? Why would they do such a terrible thing? Don't they know Ukraine has a sovereign right to join NATO?

Though NATO was ostensibly formed to counter a hypothetical Soviet invasion of western Europe, after the 1991 collapse of the Soviet Union, NATO not only failed to dissolve but expanded eastward, revealing its true purpose as US power projection in Europe. The 1999 bombing of Yugoslavia, which violated international law, removed any doubt that NATO is offensive, not defensive. Subsequent attacks on Libya and Afghanistan revealed it as a repeat offender. Add to the mix the illegal 2003 US-UK invasion of Iraq and it's clear that the West has a pervasive pattern of criminality and violence. This is why NATO's

drive to expand all the way to Russia's 1400-mile border with Ukraine has triggered fierce resistance.

But most Americans can't comprehend that Russians feel threatened by NATO incursion. Under the spell of supermind, we see ourselves as "the good guys," bearers of freedom and prosperity, a light unto all nations. Given our innate goodness, why would anyone feel the need to defend against us? By this view the only conceivable reason for Putin's war against Ukraine is to recreate the Russian Empire. But if that were the case, why did he wait until NATO had spent years training and arming the Ukrainian military? Ukraine decisively turned to the West – and became a hostile power on Russia's doorstep – following a US-backed coup in 2014. If Putin just wanted to grab some land and resources, why not invade back then, when Ukraine was still weak, unless the actual reason for invading was in response to NATO's militarization of a newly hostile country? There's no logic to the Western reaction to the war, only the illogic of supermind.

Caught between a taunting bully and a domestic constituency that expected him to take a stand, Putin ordered troops to the border and demanded negotiations. What he wanted was protection of persecuted Russian-speaking people in the Donbas region of eastern Ukraine and a guarantee that NATO would back off and give Russia some breathing room. That Biden refused to negotiate despite knowing perfectly well the likely Russian response indicates that he welcomed the invasion. And why wouldn't he? Aside from locking Putin into an Afghanistan-like quagmire, the invasion gave Biden an excuse to slap sanctions on Russia and confiscate \$300 billion of its foreign reserves, thereby weakening it as a rival to US power. The bloody consequences of this war ultimately stem from US refusal to recognize the legitimate security concerns of a demonized enemy.

Putin had been warning NATO leaders since 2008 that adding Ukraine to the alliance was unacceptable, a red line that must not be crossed. By dramatically stepping up the flow of weaponry into Ukraine, Biden ensured that Putin would feel maximally humiliated if he failed to take action. The US preyed on his human frailty, his sense of shame – of failed manhood – if he didn't take a stand. How could he fail to act in response to NATO military exercises within miles of his border and intensified shelling by the Ukrainian government of its own Russian-speaking citizens? By systematically exploiting Putin's all-too-



human need for respect, the West revealed its inhuman core.

Empathizing with the designated villain means exposing yourself to the contagion of taboo. If you take on Putin's point of view, you're as bad as he is. The only legitimate perspective is ours. This of course is clinical narcissism, an unusual condition in individuals but entirely predictable in supermind, which has no consciousness and therefore no capacity for compassion or self-evaluation. Malignant narcissism explains the absence of empathy, the coldhearted manipulation of Ukraine in the service of US power projection, the unwillingness to negotiate due to expectations of automatic compliance, the megalomaniacal delusion of endless global dominance. We don't acknowledge our criminality because we think we're so great and special and indispensable that the rules don't apply to US. Freud's term for the narcissist was the "exception." By branding itself the exceptional nation, the US unknowingly broadcasts to the world its collective pathology.

Only against a clinical backdrop could Americans and Europeans sincerely believe that fueling the continued destruction of Ukraine with ever more guns and tanks and missiles and cluster bombs is just a heartfelt show of support for its sovereignty.

Supermind is at work when you feel the power of the herd arising diabolically from within as if it's your own judgment telling you to ignore all facts and reason and "get with the program." What makes its power so insidious is that the culture into which we're linguistically embedded is ordinarily benign. The same force that justifies lethal power projection also tells us, as individuals, to respect each other's boundaries. The only way to disentangle the bad from the good, to throw out the cult but keep the culture, is to expose this blind force of nature – the latest elaboration of wave computation – to the light of consciousness.