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5 WENDT'S CHALLENGE TO SOCIAL SCIENCE:
 QUANTUM PHYSICS, CONSCIOUSNESS, AND
 10 SOCIETY

15 ABSTRACT: Alexander Wendt's Quantum Mind and Social Science challenges
 social scientists to replace contemporary understandings of the individual and
 society with concepts better suited to quantum reality. This would mean replacing
 reductionist materialism with notions of consciousness as probabilistic, not strictly
 20 determined; and substituting, for individualistic models of society, new ones that
 acknowledged our connectedness to each other "at a distance," i.e., without
 mediation by mechanisms modeled on Newtonian physics. His challenge is
 welcome, for in both respects, Wendt have us replace ways of thinking that have
 long been inadequate to empirical reality.

25 Keywords: atomism; consciousness; determinism; holism; materialism; self-interest; subject-object
 distinction; quantum social science; Alexander Wendt.


30 In *Quantum Mind and Social Science: Unifying Physical and Social Ontology*
 (Cambridge University Press, 2015), Alexander Wendt ~~wants~~ to use a
 theory that no one understands to unravel a puzzle that very few
 people have ever considered and solve a problem that most social scientists
 will deny exists.

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Modern States (Sweden, Japan, and the United States) (Cambridge, 2010).

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And it's very much worth the read.

In this review essay I will take on each of these issues, but in reverse order.

40 First, we'll start with the problem that few acknowledge: that modern social science is based on an antiquated understanding of physics. Next, we'll explore the puzzle that few social scientists really consider: consciousness. Lastly, I will do my best to examine Wendt's proposition that quantum theory helps us solve the puzzle, and thus provide a more elegant theory through which we can understand social life and institutions. While I can't say that I fully understand this theory (just as 45 Wendt does not say that he fully understands it), it does strike me that the basic logic of this argument might also help us understand how and why history is connected to culture.

50 *The Faulty Foundations of Social Science*

~~Alexander~~ Wendt believes that the very foundations of modern social science are based on a faulty understanding of what makes people tick. As a consequence, our theories about social organization, human motivation, and political institutions are wrong. 55

Wendt begins his book with the perhaps uncontroversial point that modern social science, particularly economics and political science, have increasingly taken the view that social action is purely a product of material forces and incentives. In this view, the human mind is essentially 60 a sophisticated computer and nothing more. He shows, quite convincingly, that these assumptions are based on a highly antiquated vision of physics. Without denying the obvious truths of classical "Newtonian" physics, Wendt points out that modern physics (by which he means physics of at least the last 50 years) now fundamentally accepts a quite different understanding of the basis of physical reality. 65

By now most social scientists are well aware of the behavioral research program that grew out of social psychology and eventually moved into economics and finally political science. Indeed, a huge body of social science literature has been produced in recent years demonstrating that 70 human beings are not as "rational" as our older models predict (Ariely 2008; Fischbacher, Gächter, and Fehr 2001; Gintis, Bowles, Boyd, and Fehr 2006; Henrich et al. 2001; Kahneman 2011; McDermott 2004; Smith 2008), and that our decision making is often deeply influenced by our desire^f to be part of a group far more than earlier models

assumed. Moreover, the empirical work also demonstrates that most people are strongly motivated by equity concerns and principles of fairness and are often even willing to sacrifice their own self-interest if this can help others (Andrighetto et al. 2016; Axelrod 1997; Boyd and Richerson 2005).

In other words, once scientists began actually investigating how real people behaved, we discovered that the foundational models of much of modern social science were simply wrong.

Wendt's thesis is that these models are wrong not simply because they misunderstand some of the motivations behind human action, but because they fail to understand how we are connected to one another and what makes social life possible. We are not connected simply by self-interest, he suggests; instead we are "entangled" at a quantum level.

Wendt wants to use the quantum theory to explain social realities that our current "Newtonian" social science also cannot explain. "If classical social science is in fact founded upon a mistake, then far from reinventing the wheel the quantum social ontology would give our wheels the right ground on which to roll" (35).

According to Wendt, the traditional scientific model, essentially built on Newtonian foundations, assumes at least six basic (flawed) principles, each of which impoverishes our understanding of human society.

1) *Materialism*. Perhaps the most basic principle of modern (Newtonian) social science is that reality is composed exclusively of matter. Matter can be extraordinarily tiny but it is physical. Things that cannot be measured, seen, or observed are not real and therefore cannot be part of our science. The problem with this basic assumption, Wendt observes, is that if we take materialism seriously there can be no such thing as human consciousness—or at the very least, consciousness cannot be a part of what we study, or offer an explanation for the outcomes that we seek to explain. (I will return to this point in the discussion below.)

2) *Atomism*. Current social science assumes that while material objects may be reducible to smaller ones, and while objects often interact with one another, all objects are "separable." Indeed, the purpose of much of our science is to separate out the individual effects of specific objects or variables. The most obvious case of this is our desire to understand the "micro-foundations" of social action based on "methodological individualism." The problem with this assumption, for Wendt and many others, is that ~~human~~ motivation and action is not always (maybe never) "separable" from others. Most of us are willing to recognize,

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when we are not trying to be social scientists, that humans are connected to one another in ways that are deeper and more fundamental than each of us trying to maximize our *autonomous* utilities.

110 3) *Determinism*. In classical social science, our desire to be "scientific" has led us to believe in determinism. Though we rarely articulate it out loud, this ontological commitment means that what happens is completely fixed and that our models cannot accept any inherent randomness. Perhaps this is because we believe that the gold standard of social science theory is "falsifiability." The problem with this is not that the world is completely random, or that errors in measurement can lead us down the wrong path. Instead, determinism forces us (1) to exclude both the very real phenomenon of "emergence," in which totally new phenomena can emerge from the (sometimes random) association of previously unassociated things or phenomena; and (2) to deny the existence of free will (or at least argue that it doesn't matter). If the world is truly deterministic, then everything—including you reading these words on this page—~~were~~ determined in the original algorithm of the Big Bang.

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120 4) *Mechanism*. In the classical view, all causation is mechanical and local. There can be no gainsaying that social science is increasingly committed to understanding "causal mechanisms." But since we see the world as material, such mechanisms are always thought of as something analogous to billiard balls. X bounces off Z and *causes* Y. This notion of causality precludes what Wendt calls "mentality" or genuine mental causation. Even "Ideas" must somehow be material. Consider how we envision the workings of the human mind: For most of us, at least, the brain is a complex computer with "synapses" triggering each ~~and~~ other. Ideas, thoughts, memories are, in this view, some kind of complex set of billiard balls bouncing off one another and ultimately producing the "thing"—the idea, the thought, or even the preference.

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135 5) *Space and Time*. Most social scientists think of space and time as fixed and absolute. If we've watched enough Star Trek we may have heard of the "space-time continuum," but for our purposes we think of ~~both~~ space and time as being discrete and separate. Wendt thinks this is problematic for social science because modern physics accepts the reality that space is "granular" and that time is relative.

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140 I must admit that I have some difficulty fully grasping the implications of this point, but I faithfully report it here nonetheless. Wendt's argument is summarized as follows: "The one thing that seems to be clear, however, is that the classical idea that objects and processes exist 'in' space and time is

now dead, and that space and time should instead be seen as phenomena that somehow 'emerge' from relationships" (66).

145 6) *The Subject-Object Distinction*. Most social scientists have a sense that we have to be careful to not influence the data or object of our scientific interest through our actions. Indeed, many formal or statistically oriented social scientists are skeptical of historical and anthropological studies precisely because interpretivists cannot truly separate the observer (and her biases) from the object of study. Non-interpretivists take it for granted that we should make every effort to separate the observer from the
150 observed. But according to quantum theory this is impossible. This is not just because the act of observing a phenomenon can redirect the size, structure, or shape of that phenomenon (in the mechanisms sense), but because the real world is made up of probabilities, not fixed objects and motions, and therefore we cannot *not* affect something that we
155 observe.

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The Puzzle Few Consider

160 What is consciousness? This is what Wendt calls "the hard problem." Perhaps this is why few of us worry about it. As the multiple critiques of classical social-science ontology noted above have already indicated, Wendt thinks that human society is not reducible to a collection of atoms, chemicals, and physical forces. There is something about us (but not necessarily just us) that is more than the simple bouncing-around of
165 material forces in the giant algorithm of life. Instead he is convinced (and so am I) that human intentionality, will, and ideas matter.

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I doubt that there are many reading this text that would object to this statement. But if we agree that humans are consciousness and this matters for understanding our world and our choices—what is it? Consciousness is
170 clearly not material, so what can it be?

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Wendt uses the terms consciousness and experience interchangeably and offers a thought experiment originally put forward by Frank Jackson to explain Consider a person, "Mary," who lived her entire life in a black-and-white room. Mary therefore has never seen any colors in her
175 life. But she's also a neuro-physiologist who knows everything that can be known scientifically about light, vision, and color. One day Mary is freed from her black-and-white prison and for the first time in her life she can see colors. The question is: Has she learned anything new? For most of us the answer is obvious: of course, because she has now

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180 "seen" or, more accurately, "experienced" color. Surely color can be explained in scientific terms, but experiencing it is quite a different thing from knowing what light wavelengths it may be made of. Mary now knows what the color red is "like." Wendt quotes David Chalmers (1996, 101) on the hard problem of consciousness: "Even if we know every last detail about the physics of the universe. ~~||~~ That information will not lead us to postulate the reality of conscious experience."

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185 But so what? Does consciousness matter? Do we need to understand consciousness in order to understand social life? Does conscious experience give us any leverage in explaining social behavior and/or political institutions? I certainly think so. Indeed, if human beings were simply calculating machines we would not be able to explain the emergence of social life at all. Perhaps we could explain how most people are likely to behave given a set of institutional and social rules and relationships, but how would we explain how we built these institutions in the first place?

195 If we take Wendt's critique of classical social science seriously, then we are forced to admit that he has more than a small point. If we assume that the brain is a classical material object, then why is this object conscious? Though philosophers, psychologists and neuroscientists alike have spent lifetimes trying to understand this puzzle, Wendt tells us that essentially no progress has been made. Though most of us would not go this far, some materialists conclude that consciousness must be an illusion because it is inconsistent with classical materialist science.

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200 Just because ~~classical Newtonian physical model of human mind fails to explain what is certainly its most obvious feature,~~ consciousness, does not mean that we should conclude that consciousness does not exist or that it

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is irrelevant

205 ~~doesn't matter~~ for human behavior. This reviewer is in complete agreement that models ~~that~~ depict human beings as machines that somehow calculate their interests and act upon these calculations ~~is~~ deeply flawed. But the point here is to understand why they are flawed. They are not

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flawed because our brains are incapable of making complex calculations, or ~~that~~ we have multiple motivations, or ~~that~~ we have limited capacities.

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210 Rather, a purely mechanical model of human action misses our ability to be self-aware. Moreover, we move, act and think together *not* simply to get more for ourselves, but because of our interconnectedness. Individuals will go to extraordinary lengths to help, aid, or protect those they are connected to. Some will even jump on a live hand grenade to save those around them. Why? Because we are social creatures. We are not simply

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connected to each other because we each get more for ourselves out of these connections; we are connected to each other by our history and our experience. We are ⁱⁿ Wendt's words, "entangled." Which brings us to quantum theory as an alternative to Newtonian physics.

215 Quantum theory was originally created in order to explain physical realities that Newtonian physics simply could not explain. More than 100 years ago, a small number of physicists began to question some of the basic assumptions and principles of Newtonian physics. There were too many anomalies that classical physics could no longer explain. 220 Instead of seeing reality as purely physical and material (in the billiard-ball sense), they began to argue that there was a set of physical principles, quite different from Newtonian principles, which also shape reality. They called these forces quantum mechanics.

225 Though physicists have difficulty explaining—and perhaps even understanding—this quantum world, almost no one doubts that it exists. Mountains of experiments have been conducted over the past century or so that demonstrate these forces in action. Wendt's book is largely an attempt at explaining the basics of quantum theory to the non-physicist, with the hope that if we have a better understanding of 230 some of the basic principles of this theory, then we are likely to see the implications for social science. The book, then, consists of a series of discussions and explanations that are both fascinating and important for building Wendt's broader argument. Such concepts as decoherence, physicalism, emergence, indeterminism, uncertainty, the wave-particle 235 duality, locality, superposition, and panpsychism are particularly interesting but lie outside the scope of this short essay.

For our purposes, I will instead focus on three concepts that strike me as having the most obvious relevance for understanding human social behavior. They are holism, entanglement, and the "collapse of wave functions."

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Holism

245 Whereas in classical physics and social science, everything can and should be broken down to its individual parts or units, in the quantum world the whole is greater than the sum of its parts. This is not a metaphysical statement or metaphor; it is actually true. Wendt uses the example of language. Surely, it might seem, you can break down language to a system of symbols and rules. But this method of analysis will necessarily misunderstand a great deal.

250 Similarly, while it might seem that we can break society down to individual interests—so that, as Margaret Thatcher famously announced, “There is no such thing as society”—in Wendt’s quantum-inspired view, society is a real thing and our connections to one another are not simply aggregations of our self-interest. If we study individuals acting and behaving ~~as autonomous~~ independently, we can neither understand the true dimensions of human motivation nor understand the macro. While Wendt’s holistic perspective does not deny that the units matter, it denies their perfect autonomy. If we want to understand societies, then, 255 we must also study how society shapes the individual and how that interaction itself shapes the whole.

Entanglement

260 Many non-physicists may have heard of experiments in advanced physics that have demonstrated that photons and other subatomic particles can affect one another across huge distances in space (and probably across time, but I’ll ignore this point now). At a rather basic level, entanglement implies that physical things are connected to one another in rather mysterious ways. This is what Albert Einstein called “spooky action at a distance.” In the quantum world, reality is fundamentally non-local. There is some kind of force or connection that is (in a sense, at least) above/underneath/surrounding the physical reality that we can see, touch, or slam our heads into, a force that binds our physical reality together. “And,” Wendt 270 says, “since what goes for photons goes for other particles, and since all particles in the universe have at some time or another been entangled, the upshot is that everything in reality is correlated.” Perhaps a reason that the whole is greater than the sum of its parts is entanglement.

275 Wendt tells us that no one really understands *why* these forces work the way they do. But clearly our thought processes are not solely governed by the physical and material facts and mechanisms with which most of us are familiar.

Is It a Wave, or Is It a Particle?

280 One of the earliest and strangest ideas underlying quantum theory in physics is the idea that photons and other particles can also be “waves.” Through the famous “Double Slit” experiment, scientists have shown that in fact, the item of interest (wave or particle) is actually neither,

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 "holistic"

but instead is what they call a "potentiality." In classical physics something must be either on or off, one or zero, a wave or a particle. But in quantum physics (or the quantum world) the "thing" is only a probability until it is observed.

285 With these building blocks, Wendt constructs "quantum consciousness theory." Its two precepts are that the human mind and society itself are quantum mechanisms.

I noted above that the billiard-ball image of the human brain is not just inadequate, it is wrong. No one knows how the brain actually works, but we certainly know that the brain does not operate in any kind of linear or Bayesian fashion in which synapses fire, invoking other synapses to fire, and thus somehow building an idea, thought, or memory. Quantum consciousness theory hypothesizes that neurons in the brain are entangled in something like the way that photons may be connected in space. Thus, a thought or a memory is not an incredibly fast billiard game in play, but is the product of billions of neurons interacting with one another in a quantum way. A memory or thought is, in short, much like the "wave collapse" observed in particle physics. The thought, idea, memory is created when the potentialities in the brain collapse into a single actuality.

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300 The hypothesis relating entanglement to society is more difficult for even the sympathetic reader to grasp fully. Wendt argues that we (and possibly everything else) are connected to one another "at a distance." This is why, he suggests, people feel connected, why they bond together, and why they are virtually always found together. We need, want to be with, and are connected to each other not for instrumental reasons, but for more basic physical reasons. Society is not the product of an instrumental action designed to further autonomous interests; but is instead at the core of our being.

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We do not need to accept the ideas or arguments presented in this book any more than a farmer needs to know why the sun rises each morning or why weather in December is different from the weather in July. Probably the farmer can do quite well believing that ghosts bring about these natural changes. And the farmer can be very good at farming. But if we want to know why the sun rises or the seasons change, we need to look deeper.

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Similarly, with scarcely a thought about free will, consciousness, or even history, social scientists can surely continue to measure voting patterns, explore how those with power exert their influence, and examine how institutions structure incentives. But if they are willing to challenge their beliefs about the fundamental bases of social life or explain why humans build social institutions in the first place, this book will certainly offer them some fascinating food for thought. But then again, they might be more comfortable believing in ghosts.

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