

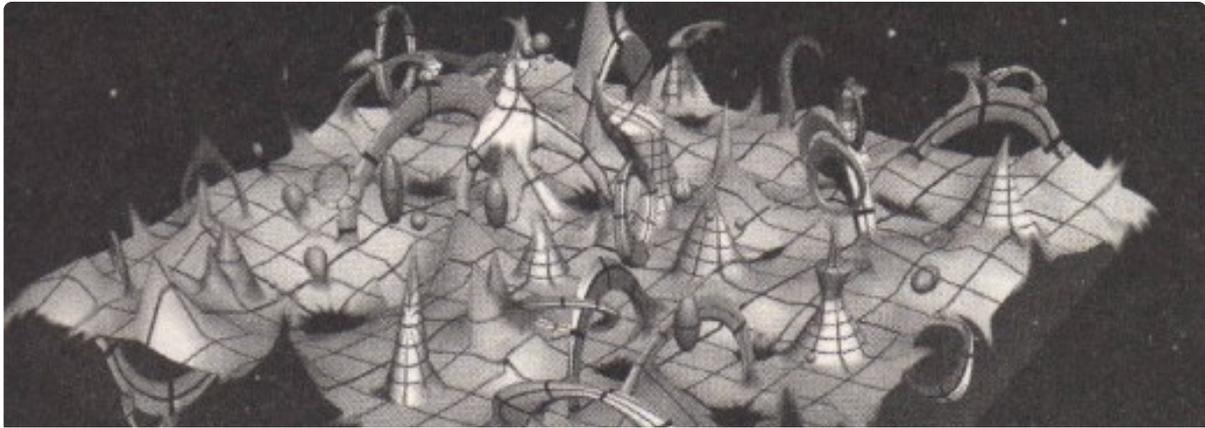
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## Free Will

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## "Old" Free Will

I like two books on free will: Tor Norretranders' 1991 "The User Illusion," and Sam Harris' 2012 "Free Will." These authors show that free will has no objective definition, and it is the lack of definition on which their arguments rest. They do not know of the definition that I present here, and that changes everything.

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**"How can we be "free" as conscious agents if everything that we consciously intend is caused by events in our brain that we do not intend and of which we are entirely unaware?"**

**Sam Harris, Free Will**

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With the advent of quantum and chaos theory physics has made progress in modeling free will. The first step to understanding free will versus determinism is to appreciate that neither hold up under scrutiny. Free will cannot be measured or defined, and deterministic systems only exist in theory and approximation. Let me recast them in terms of the particle versus the wave.

## Particle and Wave

In the realm of physics the true particle, by which I mean a fundamental particle, cannot have anything like free will because it knows nothing about anything outside itself. The particle carries all its own properties. No change is possible until the particle comes in contact with something. Should it spontaneously decay, then it is not a fundamental particle. For a particle to be a particle it must be complete and separate unto itself. This goes for anything that we conceive of as separate and self-contained: if there is no change then there are no choices.

In contrast the wave, by which I mean the connection of all the parts, is a representation of everything around it. You can't say where the wave "is," or where the information that the wave carries "is" because it is an extended thing, at least up to the boundaries of its world. Where the particle makes no choices because it undergoes no change, the wave makes all choices because its form connects it to every source of every change it ever experienced.

Here's what we've got so far. The particle description of things as indivisible and self-contained offers no choices. The wave description of the inseparable whole reflects all choices and all of their effects. How has our thinking developed in the field of these two possibilities? Which of these views of the world have we adopted for ourselves?

## Ego

Well, the wave description forbids the independence that we reserve for ourselves. The "I" cannot exist as separate in a holistic wavelike world view. The only place such holism appears is in after death descriptions of cosmic unity. Granted we do often talk about our interconnection, and I think this is important, but we do not conceive of our connectedness as something that substantiates our notion of free will.



Our egos are like particles and language itself is all about boundaries. Like particles, we define ourselves as separate and, in doing so, condemn ourselves to isolation. Choice, in so far as there is any, only arises through interaction but that does not make it "free." This is just the same with particles in physics.

Physics says that neither the particle nor the wave are exact descriptions. Each applies as an approximation suited to different cases. Both must be corrected to include essential details. Physics says that choices arise through the creation of structure. Structure arises as the result of a flow of energy through the system or, if you prefer, the flow of information through the system. Energy flow creates instabilities, and new information leads to new configurations. In a word, structure comes out of chaos.

Is there free will in chaos? No, but there is choice in the way that structures develop. The connection I see between free will and structure lies in memory. Actually, it lies in the absence of memory that arises through chaos.

## Emergent Structures

Things proceed deterministically when laws govern everything that will happen, and where there exists a full memory of everything that has happened. Things proceed chaotically when laws govern everything that will happen, but there is an absence of memory of everything that has happened. I don't just mean that somebody forgot to write something down, I mean that some parts of history are erased and cannot be recovered. Necessary details about the past are swallowed by the noise that is everywhere around us and, ultimately, in the vacuum itself.

Through this process structures develop whose histories have unknown and unknowable elements. This is the essential point: information is lost, and because it is lost the future cannot be predicted even in theory. We live in a deterministic universe whose future cannot be exactly determined.



Where is the free will? The free will lies in the birth of new entities, new structure of any kind, whose future is not determined from the past. These structures -- and I'm talking generally here: a "structure" could be a situation in which you face a choice -- change according to information that comes from within themselves and their connection to the world beyond. To put this into human terms: you change according to information that comes from within yourself and your connection with the world around you.

You may object that this is not the kind of “free will” that some outside spirit exerts upon the material world. That is true: it is not that kind of external awareness; it is not a “will” that is unconstrained. Rather, it is an internal awareness whose actions are circumscribed by physical law and constrained by the situation at hand.

This is also clearly not determinism in the usual sense because, as I've emphasized, once the history has been lost, the future cannot be determined. And it's not just indeterminate in practice, it is indeterminate in theory because the system itself has lost the information needed to predict how things will go.

## Where People Change

Get back to the psychologists. Where is any of this useful? It's useful in finding out how people change.

It says if you want to direct change -- whether you're doing it yourself or acting in support of someone else -- then focus on situations that are not governed by the history of events. Speak to that part of yourself that is not predisposed. Before anything can be spoken to, it must exist, and what needs to exist is a sense of something larger than what exists before, a sense of possibility beyond preconception.

Where are new possibilities found? Not in the logical mind, that's for sure. Where then? I think the place where real change starts must be in the subconscious. What do you think?



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