

# The Reconciliation of Determinism and Free Will

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## Abstract

The philosophical world has long attempted to reconcile determinism with the notion of free will. Everything we have observed above the sub-atomic level appears to operate in a strictly causal relationship with other objects. This appears to indicate that all events are completely causally determined. On the other hand, we each clearly sense that we are more than mere causal automatons. We make choices, and we exercise free will, and these choices affect our future. Thus, the notions of determinism and free will are at odds. This paper will thoroughly reconcile those two notions.

## 1 Freedom and Determinism

There are three types of events that are commonly considered to determine the change of things from one moment to the next, as follows:

1. mechanistic cause and effect amongst non-living things
2. (free) decisions and actions made by sentient, living beings
3. random events

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This commonplace notion of change can be shown to be incorrect, and the ramifications of the truth are far-reaching and very significant.

*Determinism* is the view that all events are entirely determined by some prior state of the universe and the subsequent interaction of all things where all things operate and interact by a fixed set of natural laws.

For a moment, let's divide things into two categories. The first category will include all non-living things such as cars, rocks, the ocean, etc.. The second category will include living things such as people, trees, cats, bacteria, etc..

## 1.1 Non-living Things

Most people would agree that non-living things function in a deterministic, cause-and-effect manner. For example, a rock will sit in a given spot until something moves it. Furthermore, the amount the rock moves is exactly proportionate to the force that is imparted to it by the external object along with the properties of the rock itself.

There are two factors that determine what changes an object undergoes. The first factor is its *physical makeup*, and the second is the *external forces* it experiences or the environment external to it that impinges upon it.

Nature has laws, and things within nature operate in conformance with those laws. When a paper is dropped from a tall building, it seems to flutter randomly to the ground. However, the reality is that there is nothing random about it at all. At any given moment in time the movement of the paper is determined by the various forces acting upon it such as gravity and the affects of the wind on the shape of the paper. It is theoretically possible, therefore, to calculate the movement of the paper if one knew all the relevant factors. If a similar paper were dropped under the exact same circumstances, it too would fall with the exact same path.

This idea about how non-living things operate isn't restricted to single events such as the falling paper. All non-living things interact under the same laws of nature. Therefore, given

the fact that what has already happened in the past is fixed and unchanging, if the universe consisted of only non-living things, then it is easy to see how all future events necessarily arise from a given prior state and the deterministic, cause and effect interaction in the prior state. This means that every event is nothing more than a logical, unavoidable consequence of some prior state of things and the laws of nature.

## 1.2 Non-living Universe

Imagine a universe made up of only non-living things, a universe like ours except that it only contained non-living things such as rocks, planets, beaches, etc.. This universe would operate totally deterministically. This means that everything that happens within that universe would entirely depend on the interaction of the objects within that universe as determined by the laws of nature (or laws within that universe). There would be no other factors affecting or determining the changes that occur within that universe. Once begun, the entire path of all objects over time, within that universe, would be entirely set in stone.

## 1.3 Random Events

The notion of random events is one tool used by those attempting to counter the notion of determinism. The following should be kept in mind:

1. Many of the most noted physicists (including Albert Einstein) flat out deny any random elements within the Universe. A close reading of Stephen Hawking (the most noted physicist alive today) also indicates a possible lack of any real randomness.
2. Even if randomness is granted that still wouldn't grant the common notion of freedom or free will.

In "A Brief History of Time" by Stephen Hawking, he states "But maybe that is our mistake: maybe there are no particle positions and velocities, but only waves. It is just that we try to fit the waves to our preconceived ideas of positions and velocities. The resulting mismatch

is the cause of the apparent unpredictability”.<sup>1</sup> Although the notion of random events at the sub-atomic level is a generally accepted principal, a notion in doubt by the greatest physicist of our time, and, in fact, still does not provide us with true free will in any sense.<sup>2</sup>

## 1.4 Living Things

The question now is: What is the difference between living and non-living things? Given what we understand about non-living things, and since the only substantial (with regard to free will) difference between our previous non-living universe and the real one we live in is that our universe contains living things such as people, trees, cats, and bacteria, then by understanding living things we can fully understand our universe.

Let us think about a single-celled organism. Does that organism have any sort of freedom disconnected from the biological cause-and-effect operations it undergoes in response to its own molecular makeup and the environment it is in? Is there something meaningful going on that lies outside the laws of nature? If there is, no one has observed it.

Let’s think about a single brain cell (or neuron) within a person’s brain. A neuron produces an output entirely based on two factors. The first is its internal makeup, and the second is its external environment or stimulus. There are no other factors. Additionally, all the (biochemical) operations within the cell are determined by biochemical laws, or more generally, the laws of nature. The complexity of the neuron’s response is due entirely to the complexity of the neuron itself and nothing more.

Now, as you take several neurons working together, the complexity of the internal construction of them raises considerably. However, regardless of how complex they get, you still have objects that operate according to the laws of nature. As you increase the number of cells you get increasing and increasing complexity able to take on ever increasingly complex internal states but you never get something that operates outside the laws of nature.

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<sup>1</sup>1988, Chapter 11, 7th paragraph

<sup>2</sup>I will show in a future article that neither causation nor randomness exist in a true sense, and that this will explain the source of the natural laws.

While higher levels of life such as humans may be so complex that their operation is impossible to predict or fully understand by us, nevertheless at every level the organism still remains completely subject to the cause-and-effect laws of nature. More complex organisms take on increasingly complex internal states and exhibit increasingly complex behaviors but they still remain entirely subject to the laws of nature. Given this, it is clear that while we may not be able to fully calculate a person's state (including mental things such as their decisions and subsequent behaviors), nevertheless they all boil down to a physical thing operating according to the laws of nature.

Given that everything we do and think down to the molecular level and beyond is subject to, controlled by, dictated by, and limited by the laws of nature, while we may be constructed in a very significantly more complex way than inanimate objects, all of our behaviors are ultimately just as much in stone.

## **1.5 Hard Determinism**

All things are determined by their prior state and unfold over time according to the laws of nature. More complex things unfold in more complex ways but they are still set in stone. Given the facts that the past is set in stone, and the laws of nature are set in stone, that necessarily means that the future is likewise set in stone. All things that occur could not be otherwise. Nothing veers from this set-in-stone path.

The ideas presented so far are called hard determinism. This includes the existence, form, and position of everything that exists at any moment. It also includes every thought, emotion, desire, and volition.

Nothing in the remainder of this article should be taken to soften this position in any way.

Ultimately, as shown by everything we can observe, there is no freedom (in the sense that things could be different than they are) whatsoever.

## 2 State Machines

To clarify, for purposes herein, a *thing* is defined as a somewhat arbitrary, but nevertheless agreed upon, grouping of matter or waves that are in close proximity and typically move, roughly, together. For example, if you and I were talking about someone we know named John Smith, there would be no confusion over whether we mean John Smith or the building we are currently occupying. What the ‘thing’ is is agreed upon between us. Likewise, if we were talking about John’s nose, there would be no confusion over his nose or his eye. We are in agreement about the what the ‘thing’ is that we are talking about.

Each individual thing at any particular moment in time has an actual *state* ( $S_{t1}$ ). The *state* of a thing is defined as the sum total of all of the qualities or attributes that can be predicated of the thing; such as its weight, its size, its shape, its temperature, its movement, the parts it is composed of, their qualities, and the relations among those parts; all particulars that make up the individual thing at that particular moment in time.

Each thing at any given moment in time has an actual external environment that it resides in. This environment includes all things external to the thing such as the ambient temperature, gravity, pressure from things touching it, etc.. The environment the thing has includes many elements, some of which impinge or have some affect on the thing. The portion of the external environment that impinges on a thing or affects it in any way will be referred to as the thing’s *causes*. A things causes vary from moment to moment. The causes a thing experiences at a particular moment in time is referred to as  $C_t$ .

Things change state from moment to moment in time ( $S_{t1} \rightarrow S_{t2}$ ) based on only two factors; the thing’s initial state ( $S_{t1}$ ), and the thing’s causes at the initial moment in time ( $C_{t1}$ ). Therefore  $S_{t1} + C_{t1} + \text{time} = S_{t2}$ .

A *state machine* is a thing that has a state that can changes over time. All things are state machines.

For example, a falling leaf at a particular moment in time has a state that includes its location, its shape, its mass as it is distributed, a speed that it is falling at, and so on. The

leaf at that same moment in time has causes that includes the surrounding air that may be moving, gravity, and so on. Due to deterministic laws, the state of the leaf from one moment to the next is entirely a product of its initial state and its causes.

Likewise a man has a particular state at a particular moment in time including all the molecules in his body, their relationship and bio-electrical properties, the location and momentum of all the parts of his body, temperature, and so on. His state also includes the bio-electrical states in his brain that are perceived by the man as thoughts. The man at a particular moment in time also experiences causes. These causes may include things such as gravity, ambient temperature, sound, a certain bodily momentum, and so on. Due entirely to deterministic laws, the man will go from one state to the next over time based on nothing more than his initial state and his causes. Since his state includes the state of his mind, this change in state necessarily includes what the man thinks over time. There are no thoughts the man has that were not based on the prior state of his entire body (including his brain) and his prior causes.

### 3 Freedom

As described in the previous section, each state of a particular thing is completely determined by the thing's prior state and its prior causes. So, there are two factors that wholly determine a thing's future state; its prior state, and its prior causes.

There is a very interesting thing about the equation given by  $S_{t1} + C_{t1} + \text{time} = S_{t2}$ . While *time* is a relatively fixed term; one particular moment to the next particular moment, the relative contributory affect  $S_{t1}$  and  $C_{t1}$  have on the change the thing undergoes ( $S_{t1} \rightarrow S_{t2}$ ), can vary wildly. In other words, sometimes  $C_{t1}$  is only a small contributory factor in the change a thing undergoes, and sometimes it is a very large contributory factor. For example imagine a very large rock that has a faint breeze running across it. In this case, the breeze has little affect on the rock's state. Alternatively, imagine a leaf on the ground and a very

large wind. The wind would have a large affect on the leaf's state.

Now, imagine a train running at high speed. A raindrop (cause) would have little affect on the train. The train's own internal state would be a much larger factor in the determination of its future state than the raindrop. Also, imagine a paper in a blast furnace. That cause would be quite overwhelming to the paper.

So, as we can see, the initial state of a thing and its causes at that moment can each have varying strengths, or be varying contributory factors, in determining the future state of the thing. Sometimes a future state of a thing can be entirely explained by its prior state such that the causes at the initial moment, had it been present or not, had no contributory affect on the future state of the thing. On the other hand, sometimes the causes have a huge affect on the change a thing undergoes as in the example involving the blast furnace. Often the initial state of a thing and its causes at that moment share contributory value in the change of the thing.

While nothing is free in the sense that it could be otherwise, I will use the word *free* (or *freedom*) in a special sense. Likewise, all things are at all times completely controlled or compelled by their state (a product of nothing more than all of their prior causes), their causes, and the laws of nature, I will use the term *compelled* in a special sense. A thing is *free* to the extent that the thing's current state is the determining contributory factor in its change of state rather than its current causes. A thing is *compelled* to the extent that the causes are the determining contributory factor in the change of a thing rather than its state.

## 4 Man

Man is a state machine and nothing more. The thing that differentiates a rock from a cat, and a cat from a man, is nothing more than their relative complexity. As a thing acquires greater complexity, it acquires the ability to take on a greater number of states. The interaction among the parts of a thing is greater when there is greater complexity. Of



course, this complexity must be of a certain sort. The thing must be able to represent and change states in meaningful ways with their environment. Man has the greatest ability to do this compared to all the other things on the earth.

When a person is presented with a choice of chocolate or vanilla ice cream, his internal state is the major determining factor in his future state; his flavor decision. Since he is not compelled by his environment to make a particular choice, he is free to choose the flavor he desires (based on his current internal state). He is free only in the sense that his internal state at that time was the determining factor in his decision. He wasn't compelled by external causes.

Keep in mind that although his decision was made mostly by internal conditions, those internal conditions were:

1. entirely a product of his prior causes; and
2. every aspect of his internal state is utterly subject to the laws of nature; and
3. given his same state and the same choice he would always make the same selection.

Alternatively, when a person is struck by an oncoming train, the train is the determining factor in his future state. The man's degree of freedom is dependent on the degree he is compelled by his causes rather than by his internal state.

## 5 Time

We have been looking at a moment in time and seeing what determines the changes a thing undergoes. Again, this is applicable to a single moment in time. If one were to expand the moment into a larger block of time; let's say an hour; you may find that something in the person's environment forty five minutes ago had an affect that is now determining his current (apparently free) state change. Actually, this is not surprising. According to the laws of hard determinism, as we take larger and larger periods of time ultimately all of our

actions can be explained by our prior causes without exception. The state a thing has at any given moment is always entirely a product of its prior causes. So, as can be seen, freedom only exists when you put blinders on. A thing only seems free when you look at its current state and ignore all of its prior causes.

We experience freedom because we are conscious of our current state and causes, but ignorant of all of the prior causes that gave us our current state. Being ignorant of all of the prior causes that gave rise to our current state, we sense our current state as being who we are at that moment. Thus, we feel free to the extent that our internal states (us as individuals) determine our future states rather than being compelled by the environment. We feel uncompelled by our prior causes because we are largely unaware of them.

## 6 Responsibility and Punishment

Bad acts are performed by people. Sometimes these acts are largely compelled by causes at the moment. When this occurs, there is no disagreement, the person performing the act is not responsible and no punishment is necessary. Other times the person's internal state at the time was the motivating force behind the act. When this occurs, appeal to the person's prior causes is absurd. Prior causes always fully explain the event.

Whenever anything undesirable is produced by a state machine, one must affect the state machine with causes such that it is altered to no longer produce the undesirable state or action. In terms of an automobile one repairs or replaces the bad part.

A person is a state machine. When a person produces an undesirable state or action it is to the benefit of the community to affect the person with causes designed to affect the person so that they will be altered to no longer enter the undesirable state. This environment may take the form of punishment, education, or many other possibilities. The thing to keep in mind is that people are emotional state machines, and as such, the emotional environment can almost always be a critical factor on people's state. In other words, the corrective causes

we use to correct another person would not be done dispassionately.

## 7 Conclusion

That hard determinism is true there is no doubt. Freedom, in the sense that we could have chosen differently, utterly does not exist. All things that have occurred in the past are set in stone, and all things that are to occur are already set in stone too. There is no freedom in the metaphysical sense.

Our current state at any moment is always the product of all of our prior causes. We have a mind that perceives our current state and our current causes without full knowledge of all of the prior causes that gave us our current state. Our current state (at any given moment) drives us, when unimpeded by causes, to a new state. This is an unimpeded expression of the individual's state. This is experienced by the individual as a sort of perceptual freedom. To the extent an individual is compelled into a following state they experience a perceptual lack of freedom.

Are the views presented in this paper those of a compatibilist or an incompatibilist? It depends on how you define freedom. There is no real freedom in the sense that anything could be different than it is. There is also no metaphysical freedom. All action, will, thought can be entirely explained by prior causes. On the other hand, at a given moment in time, we do exercise and experience freedom in the sense that our internal states at a particular point in time, sometimes determines our future states rather than being controlled by external causes *currently* impinging upon us. In this way, we perceive freedom, and this freedom operates totally within a deterministic framework clearly and without conflict.

This paper has shown how we perceive freedom, and how we exercise a limited form of freedom in an utterly hard deterministic framework without compromises of any sort.