

Essay

## The Weight of the World

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### Abstract

In this essay I am starting my analysis with the concept of free will and its problematic nature. This leads to questions concerning the relationship of mind and matter and more specifically the qualia problem. Because those topics approach the limits of logic and causality I am then illustrating how logic and causality are closely related to time and space by explaining the spatial and temporal aspects of induction and deduction. It is shown thereby that space and time are parts of one spacetime system. I am describing the characteristics of such a system, which evoke connotations of Zeno's paradoxes. His thought experiment of Achilles and the tortoise is then used to suggest the conclusion that the union of space and time is necessary to avoid the problem of pacing out an infinite number of zero-dimensional points. Outside of this spacetime system the laws of logic and causality can't apply anymore.

**Keywords:** Free will, logic, causality, Zeno, spacetime,

### 1.

When we talk about free will, we usually take this idea for granted. But neither freedom, nor will are unproblematic notions. For example, is my will always free? And if not, is the criterion for the lack of freedom that I'm not deciding consciously? Which would bring up the next question: What does it mean to "decide consciously"? A conscious thought seems to have been called by us, so to speak, whereas an unconscious one exists without a feeling of action. Thoughts can emerge from nothing and then be accompanied and continued by reflections and possibly lead to actions, which may be connected somehow to the original thought, but how exactly and why remains in the dark. Nonetheless, in the end something is believed to arise, which enforces a responsibility on the individual. But an action is just an executed thought. How is it, then, supposed to have a different nature than a thought that seems to come out of nothing? Why should it be relevant for the liability if I can ascribe my decision to a conscious process? What does this mysterious consciousness change? Or, to formulate this problem simply: What's the difference between flipping a coin and deliberately choosing heads or tails?

It would seem that a difference lies in the feeling which accompanies the act. In a random selection, I don't know what the result will be beforehand. In a deliberate selection, however, I don't know it either before I actually make my choice. When I'm deciding to want something, I

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already want it. I'm not the master of my thoughts and actions: I *am* these thoughts and actions. I'm responsible for my thoughts and actions in a similar way like a storm is responsible for the damage it causes. The features of the storm may have caused the damage, but it doesn't seem very reasonable to say that the storm acted freely to do that.

How can I be responsible for the fact that I am me? And even if I would be responsible for that, I would also have to bear the blame for that responsibility too, et cetera – ad infinitum. In the end, I would be responsible for the whole universe. As Atlas had to carry the entire cosmos, so the weight of the world would rest on the shoulders of every person.

That wouldn't be the case if my soul were completely free, like some thinkers argue. Then, however, I wouldn't be responsible for anything at all; my soul would depend on nothing and thus be of absolute contingency.<sup>1</sup>After all, there are only two options: My Self is accidental or my Self is determined. Are you in one case more free than in the other?

At least we experience ourselves as free beings. At the end of the seventies, Benjamin Libet conducted the famous experiment that was named after him and the results of which were confirmed again and again. He wanted to determine how much time passes between the conscious decision to do something, the activation of the corresponding area in the brain, and the actual movement. Surprisingly, he discovered that the willful decision for an action started clearly after the appearance of the associated neuronal processes. This result has been replicated in the last few decades by different scientists in various experimental designs several times.

In addition, there have been numerous studies where brain areas were stimulated directly and the patients subsequently reported the will to raise their arm. If the electrical impulse was strong enough, they actually performed the movement.

It has also been reported that a woman began to laugh every time a certain section of her cortex was stimulated. And when she was asked what was so funny, she always could give a reason for it, which was, of course, invented by her retrospectively (e.g. "You look funny.").She was nonetheless profoundly convinced that this was the cause for her amusement.

The cases of split-brain patients show a similar pattern. Such people underwent an operation in which the connection between both halves of the brain was severed to prevent particularly severe epileptic seizures. Experiments showed that when you presented pictures to these patients in a way so that only one half of the brain could perceive them, they could only verbally describe

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<sup>1</sup>That means my thoughts and actions would manifest themselves in a completely detached way. It would be like Michel Houellebecq put it so memorably in *H. P. Lovecraft: Against the World, Against Life*: "And human actions are as free and as stripped of meaning as the unfettered movement of the elementary particles."

what was depicted if the speech center was in this particular hemisphere. When you showed the pictures to the other half of the brain, the subjects claimed that they couldn't see any picture at all. With the option to point at a similar picture right in front of them, though, they responded immediately. If you asked them, then, what the reason was, again only the half of the brain responsible for speech-which reportedly couldn't see a thing- was able to answer. The results were fantasy stories, the truth of which, however, was never doubted by the patients.

## 2.

So we never really know why we're doing something. This is because of the same reason why we can't elaborate the causes for anything -if there are causes for events at all. We just construct explanations for which we assume there is no need for further justification. Ludwig Wittgenstein put it in the *Tractatus* under 6.371 and 6.372 the following way:

“At the basis of the whole modern view of the world lies the illusion that the so-called laws of nature are the explanations of natural phenomena. So people stop short at natural laws as at something unassailable, as did the ancients at God and Fate.”

The models of science are merely abstract representations of encountered phenomena. They make predictions, but they're not asking about the essence of what is described.<sup>2</sup>

In the same way, everyday thinking stops at the will without wasting a single thought on how I can want what I want.

How does something get into my head? How can the vivid picture of the world which suffuses me in every moment, develop from electrical and chemical signals in my nerves? How can this lump of matter in my skull create my sensory experience and my will, which reveal themselves with such immediate lucidity?

When certain neurons become active, I see the color red. But if I deduce from this that the brain activity is identical with my perception, I could in the same way postulate that the light waves, which meet my eye, are identical with the impulses in my nerves. Where is my sensation of red? Maybe where my will is located as well? Maybe in my soul? But how would my body communicate with my soul then? Are they possibly both mental in nature?<sup>3</sup>

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<sup>2</sup> Science can tell you that frozen water expands because the structure of the forming ice crystals makes the material less dense, but why the water atoms below 0 degrees Celsius order in a certain way and not in another is left out and maybe even has to be left out by science.

<sup>3</sup> That would be the solution to the mind-body problem which idealism proposes. It can lead to panpsychism where all that we call matter has the fundamental aspects of the mind.

In any case, there has to be something fundamentally wrong with the reductionistic idea of the conditions of the world. Could the foundation of every strong emergence elude the rationally accessible? After all, logic and causality have their limitations. From in themselves massless particles (according to the standard model of particle physics), arises our material world, and out of nothing quanta are created, completely detached from space and time.<sup>4</sup>

Logic and causality need space and time, though. This can be illustrated using the principles of inductive and deductive logic.

Inductive logic is the reasoning of events that are yet unknown to me from experience, whereas deductive logic is the reasoning of implicit events. Thus, inductive reasoning deals with causality. For example: “The sun has risen every day so far. Will it rise tomorrow?” or “It’s cold in my apartment. Is it cold outside?”. Deductive reasoning is logic in a stricter sense. It’s not postulating causal relationships, but relationships of identity. Deductive would be: “The sun has risen every day so far. Did it rise yesterday?” or “It’s cold in my apartment. Is it cold in my kitchen?”. You can see there the equivalency of space and time.

You can think of this equivalency in more general terms like this:

Spacetime is a four-dimensional system, consisting of three space dimensions and one time dimension. A point in space manifests itself as a one-dimensional line (the three space dimensions were subtracted) and a point in time as a three-dimensional body (the one time dimension was subtracted). A point in space at a certain time is a zero-dimensional point (the four spacetime dimensions were subtracted). To move in space, I also have to move in time, since it takes time to cover a distance. Similarly, I have to move in space to move in time, because time is the same as motion. If I were to stay frozen at one spot, no time would pass for me. At any given point in spacetime, all four spacetime dimensions were subtracted. Which means that this point is not bound to the laws of the four-dimensional world. That could explain why it seems impossible to unify quantum mechanics with the theory of general relativity.

A one-dimensional line can move in one-dimensional space, as long as it happens in a linear way (for a rotation you already need two dimensions). That doesn’t apply to zero-dimensional points though. They can’t move around in zero-dimensional “space”. There is not enough room for one-dimensional time, so to speak.

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<sup>4</sup> In gauge theory undividable particles have to be massless and only gain their mass through the Higgs mechanism. They are also assumed to be Dirac zero point particles. The creation of particles from nothing is called quantum fluctuation.

Difference<sup>5</sup> in space is the nature of space. If one point in space were identical to all points in space, it would logically mean that only this one point exists. Like I mentioned above, that would reduce spacetime to a one-dimensional line of time. Time without difference, on the other hand, would be without what we call change or movement and spacetime would therefore be congealed to the described motionless three-dimensional body. Thus difference in space manifests itself as different points in space at one point in time and difference in time manifests itself as different points in time at one point in space. The fourth dimension gives three-dimensional space its dynamics. Imagine a zero-dimensional point on a two-dimensional square; when the point is moving, time is “stacking up” squares on top, building a three-dimensional tower with the path of the point running through it as a vertical one-dimensional line. The same happens with our three-dimensional world when time is changing it (just in a four-dimensional “tower”).

The mystery of that is that there have to be dimensionless points, which makeup spacetime. Zeno of Elea already showed the problem of this reasoning in the fifth century B.C. with his paradoxes, like the story of Achilles and the tortoise:

In a race between the fast Achilles and the slow tortoise, the tortoise gets a head start. When Achilles tries to catch up with it, he can make up for the head start, but in the time he needs for that, the tortoise gains a new lead. When he makes up for this one, the same happens again. No matter how often he makes up for it, the tortoise always has time to cover another distance. This means he can never catch up with it.

In the millennia since this thought experiment was formulated, some of the greatest thinkers of mankind have pondered over the question why the described scenario doesn't occur in our world. The invention of analysis did never, like often claimed, solve the paradox. It was just decided to ignore its inconsistency. From a “tendency” of Achilles to pass the tortoise, suddenly the actual occurrence of this event was deduced. The fact that a problem was solved mathematically doesn't mean that it was also solved philosophically. In mathematics you work with axioms and you can, indeed, define problems away.<sup>6</sup>

The main question, however, persists: How can you pace an infinite number of distances out? If spacetime only consisted of an infinite number of unextended points of space, theoretically nothing could move at all, because there would always be one more point to overcome before the movement could start. And if it would consist of an infinite number of unextended points of

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<sup>5</sup> In the way Kant put it in *Critique of Pure Reason*: “Thus, in the case of two drops of water, we may make complete abstraction of all internal difference (quality and quantity), and, the fact that they are intuited at the same time in different places, is sufficient to justify us in holding them to be numerically different.”

<sup>6</sup> One example would be the axiom of infinity, which aims at circumventing that the infinity of the natural numbers is not logically deducible. Another one would be the axiom of regularity, which prevents the existence of circular sequences of sets and secures that there can't be a set that contains itself.

time, the same would be the case, because the change would be infinitely small. Only the unity of space and time overcomes this obstacle by creating a correspondence of the distance you cover with the time that passes. There can't be any zero-dimensional objects in this union anymore. Although space itself and time itself is made up out of zero-dimensional points, you can only get to a zero-dimensional point if you leave spacetime (i.e. subtract all four dimensions of spacetime). Or to put it differently: Nothingness can only lie outside of all existence. And yet it comes out of nothing. It seems to be true: the whole is more than the sum of its parts.<sup>7</sup>

It is also often overlooked that this whole of our four-dimensional spacetime could have at least one "dimension" which is dimensionless. Like a two-dimensional surface has a zero-dimensional thickness and a one-dimensional line has a zero-dimensional diameter. This zeroth dimension is independent of space and time.

When the conditions of spacetime are violated, which means that you leave the union of space and time, then logic and causality are abandoned too. Objects could exist without anything causing them. If, for example, somebody traveled back into the past with a time machine and gave the future inventor of the time machine the construction manual for it, then the idea for the time machine would have come out of nothing.

### 3.

Perhaps everything mystical (the world, life, will, etc.) is of this kind.

In myths and religions it is often said that in the beginning there was chaos and from this chaos order emerged. But it didn't emerge in a way that chaos caused order. That can't be, because there is no cause-effect relationship in chaos (otherwise, it wouldn't be chaotic in its strongest sense). Instead, it is said to have been created by a deity. And the deity created it by its existence. In the Bible, this is put into words this way: "In the beginning was the Word [Logos], and the Word was with God, and the Word was God."

The will arises out of the void like an island in the black sea.

I have to conclude that my free will is not explainable by logic and causality. To make meaningful statements, I need logic and causality though. There wouldn't be any right or wrong otherwise. In the end, what I can say about the world and me in it is just a paradox: The world is incomplete. There is no set of all sets. The box, which would contain everything, would have to contain itself. Thus "everything" can't exist. If nothing is everything, then everything is nothing. If there is no whole, there are no parts. Everything flows.<sup>8</sup> And now we've come full circle: I am nothing. I am not inside this world: The unobservable observer..

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<sup>7</sup>As Aristotle pointed famously out.

<sup>8</sup>Another profound thought by an ancient Greek philosopher: Heraclitus.

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