

Freedom in a physical world – a partial taxonomy

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1 Introduction

If I take a free decision, how does this express itself physically? If God acts in this world, how does he do so? The answers to those two questions may be different or the same. Here we sketch a typology of possible answers. Chapter 2 deals with the possibility that there is no freedom; chapter 3 with the possibilities for immanent, synchronic influence; chapter 4 with the possibilities for immanent diachronic influence; et chapter 5 with the possibilities for transcendent influence. The question of our freedom in the presence of an almighty and prescient being will not be addressed here².

1.1 Determinism

The problem with expressing freedom is the observed regularity in our world, which has led to hypotheses of determinism. *Laplacean* determinism merely states that, given a full description of the universe at any point of time, it is possible to compute a full description for any other point of time. More modern versions often assert a stronger version, *additive determinism*³, where the future can be described as “the same as the present, except for these changes”. Let us introduce this notion by giving an example of a simple universe.

For ease of explanation, let us assume a time-discrete particle universe with additive laws. The base law states that a particle at position p at time $t-1$ will be at position p at time t . The law of inertia states that *if the particle was at $p-d$ at time $t-2$, then d is to be added to get its position at time t* . The law of gravity states *if there is a particle with mass m at position q at time $t-1$, then $F(m, p-q)$ is to be added*. And so on.

For a deterministic universe, such laws together with some initial state of the world may fully describe physical reality – the laws will be functions, giving a single output for a single input⁴: *additive determinism*. There may be information loss, though, leading to *semi-determinism*, if there are several possible pasts that would lead to the present, so that time-backward there is no determinism. Instances of Conway’s *Game of Life* are examples of such semi-deterministic universes: games are deterministic in the time-forward direction – every state has precisely one successor – but not in the time-backward direction – several states can have the same successor

If the laws are broader than functions, some input states will allow for more than one output. Law applications where this happens will be called *gaps* or *holes*.

1.2 Randomness

Before we start, a remark is in order. If the laws of the universe do not fully determine the outcome – if the past underspecifies the present – there is *randomness*. An obvious candidate for filling the hole is freedom – instead of the regularity, it is some free decision to which the event can be attributed. We shall look into that option in section 3.2 below; here we are concerned with the notion of *brute randomness*, or *brute facts*. Something happens, and it was neither the regularity encoded in the laws⁵, nor some free decision that is responsible, yet it *does* happen. I must admit that for me this idea is incomprehensible: a negative observation (it cannot be attributed to regularity) is turned into a positive claim, without any further basis. It is not as if all possible attributions have been ruled out, but more like a throwing one’s hands up in despair. Physics is slowly recovering from this where it concerns quantum effects – the Copenhagen interpretation is held by an ever-decreasing fraction of physicists – so why introduce it here? It merely means stopping looking for explanations, not giving one, while explicitly excluding an option not otherwise eliminated – freedom. But given that others seem to judge otherwise, I’ll try to accommodate the option of brute facts in my overview.

In the example universe given above, brute randomness would mean the addition of some brute random functions to the pool – whatever a brute random function would be. Since the output of those functions is

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2 For that question, see my [Two Dozen Compossibles](#).

3 The fact that the combinator is addition is not relevant here – any other associative and commutative combinator that tends to preserve input differences in the output would work also, for instance.

4 With some extra wording, this can be expanded to “deterministic but for brute randomness”, where the main claim is that the information that flows in is *meaningless* – does not encode any intention.

5 I’ll use “laws” as a shorthand for “regularity described by the laws”, or whatever it is that necessitates them.

not under our (or God's) control, they do not materially change the situation: whether some change is due to brute randomness or to some other particle is irrelevant for most of what follows.

So, what are the options for freedom to influence the physical world?

2 No influence

The first option is obvious – that there is no such influence. The world ticks the way it does, and we tick along with it. If we think we are free, that is simply because the laws of the universe happen to have the result that we do think so⁶.

2.1 Hard determinism

One possible reaction is simple acceptance of the purported fact that there is no freedom. It is hard, but we'll just have to swallow it. *Whether* we believe in determinism, and *whether* we swallow the consequence, depends on whether the world makes us do so – where *the world* is meant to encompass the past, the laws of physics, and any brute events.

Van Inwagen has formalised this in his *consequence argument*. That argument is time-asymmetric, which makes it stronger. Not only is it easy to grasp for such time-oriented beings as we are, but it also holds in *semi-deterministic* universes. If our universe turns out to be semi-deterministic (e.g. wave function collapse is real and has no time-reversed counterpart) the argument still holds.

2.2 Immanent compatibilism

Bordering on the hard determinism camp is the immanent compatibilist one⁷. Immanent compatibilism seems a rationally untenable position. Let me take the formulation by Simon Blackburn in his *Think*:⁸

The subject acted freely if she could have done otherwise in the right sense. This means that she would have done otherwise if she had chosen differently *and*, under the impact of other *true and available* thoughts or considerations, she *would* have chosen differently. True and available thoughts and considerations are those that represent her situation accurately, and are ones that she could reasonably be expected to have taken into account.

Even as a stipulation, this seems confused. Expected by whom? Not by an omniscient observer, because there are precise – either deterministic or brute – reasons *why* any consideration was or was not taken into account. In non-deterministic terms she may have been *this* close to actually taking it in account⁹, but some neural threshold was just missed by a hair – as the laws predicted. Or some brute decay of an atom flipped the outcome. No-one with the proper information could reasonably expect her to avoid the decay, or have the laws of physics have a slightly different outcome.

Maybe it is meant as an observer-dependent notion: she was free *in my sight*, but not *in yours*. That would make freedom a property of agent-observer pairs, and a very different notion from what is usually understood by the term, and no valid basis to build an account of responsibility on. Are people more responsible to those who know less about them, and therefore see freedom where better-informed peers don't? And not responsible at all to an omniscient being?

Compatibilism implies *compatibilist fatalism* – whatever I do, and whatever its effects, it is all because it is already fixed that I shall do that and get that outcome. If I lean back and do nothing, it is because I was determined to, and if I act, it is because I likewise determined to (or the result of some brute influence). Maybe part of the causal pathway leading up to my acting or not may consist of my reflecting on fatalism, but then I couldn't *not* have had precisely those reflections, with the outcome they had. If some more primitive fatalism (a belief that whatever I do, the outcome is already fixed) drives me to inaction, it couldn't *not* have done that. If on the contrary it incites me to action, likewise.

Objecting that the immense variety among people shows they are flexible is a non-starter. The fact that half the population has managed to be of the female sex doesn't mean that I have that option, and

6 Since we have the illusion of freedom, if the world is deterministic, our thinking and willing must be linked to our physical state. Otherwise we would not *feel* in control. Therefore it is appropriate to discuss freedom of will in this section too.

7 Immanent compatibilism is normally simply called *compatibilism*, but I add the qualifier to distinguish it from *transcendent* compatibilism, described in section 5.1 below. Geert Keil gives much more thorough refutation of immanent compatibilism in his *Willensfreiheit*, chapter 3.

8 His defining freedom on *acts* may have contributed to his seeming confusion. That the acts happen the way they do *given* the decisions seems uncontroversial, so the question is whether the *decision* is free.

9 Or to *not* taking it into account; obviously the argument works both ways, and likewise in the remainder of this section.

likewise for skin and hair colour, and so on. If people *as a group* are very varied, it merely means that the dice rolled differently for different people, and it doesn't say a thing about any one of them *as an individual*.

2.3 Ought

Whether in hard or in compatibilist shape, any morality has no bearing on behaviour. Our *thoughts* about morality, themselves caused by the laws and brute facts, may do so, of course – again precisely according to those laws and facts. Whether the judge condemns the culprit has been coded into the universe since the big bang (or is the result of brute randomness) – it is cosmological minutiae that serve verdicts.

3 Synchronic immanent options

The second option is that there is an influence, namely that the act influences the world at the time it occurs immanently. So the influence on the world of my free decision happens at the instant I make that decision.

If there is no overall determinism, there are two options:

1. Physics itself is not deterministic.
2. Physics is not the whole story – the universe is *open*.

Both could be true together, in which case either or both routes could be taken to influence the universe.

So how would freedom fit in such a system – without reducing to something non-free? A characteristic of freedom is that free decisions can be *attributed* – they don't just happen, but someone may be responsible for them, and not only at the moment the decision is taken, but also afterward¹⁰. So something appears at the moment of a free decision, an aspect of the decision-maker that is the ground of that decision. Let us call it *agency*¹¹.

Clearly freedom cannot be fully modelled – a full model would amount to a proof of the absence of freedom. Formulas can treat it as a hidden variable, however, and in the following we shall do so.

3.1 The open universe

If the universe is **open**, the rules of physics merely describe what happens if there is no mind influencing the outcome. Minds act as additional random functions in the pool of additive influences, leading to outcomes that are different from what they would have been had those minds given other outputs (specifically – had their output been *zero*).

This is still fully compatible with determinism, namely if minds are determined too. In that case it might even be possible to incorporate the rules for minds into an extended physics, and we are back at full determinism – and wills that are not free.

3.1.1 Conservation laws

We have discovered many conservation laws – how does that rhyme with an open universe? There are again several, more or less likely, options¹².

- Intrusions are local and/or rare enough not to be detected by normal physical experiments. For instance, if intrusions only occur in human brains in certain conditions of normality, it is quite possible that they have never been measured.
- Intrusions occur far from observers, and then influence what needs influencing through normal physical means.
- Intrusions are truly minimal, using chaos-like behaviour to bring about an effect.
- Intrusions average out. Many of our macroscopic laws are statistical effects from a very different microreality, and describe an average behaviour.
- Intrusions consist of information only. John Polkinghorne (XXXX) has described how an influx of information could lead to influence without breaking conservation laws.

¹⁰ These decisions need not be at the level of acting. They may also be higher-level volitions such as in Augustine's model as given in Davenport (2002). My intuition would be to extend this model to an arbitrary number of levels, comparable to the "reflexive tower" of computer science, where an agent can by reflecting on his own behaviour add another level *ad libitum*.

¹¹ I have tried to find a word that doesn't suggest "parts" or "elements" since, as we shall see, agency is uncountable.

¹² These effects could be magnified through chaotic processes – though quantum theory and chaos theory don't match well. God's leeway is limited here: He can act only where the laws allow Him.

- Intrusions may be in the shape of emergent properties, that are underivable from lower-level properties.

3.2 Underdeterminism

In section 1.2 above we already mentioned freedom as an obvious candidate to fill the gap left by under-determining laws. If the laws of physics do not fully describe a situation at time t given the situations at previous times, there is a natural place for freedom left.

If some loci of incompleteness of the known laws reflect a true underlying incompleteness, then physics is indeed underdetermined – its laws will necessarily be non-deterministic, relations, not functions, and our freedom could exist in precisely that underdetermination.

Since those loci are limited – many things *are* fixed by the laws of physics, our freedom would be *residual*: we cannot fully determine what will happen, only have some influence on the system as it is¹³.

If minds can influence the outcome the result will no longer be describable by functions of the kind described under 3 above. Making agency explicit can regain functional laws, by describing the non-agency part of the new state in terms of older states plus the agency in the new state. Adding time t to the inputs allows one to do so, in a way that avoids self-reference¹⁴, because the input only references the agency part of the state at t , and the output only the non-agency part. If agency is left unspecified, the resulting underspecification of the input leads to the known indeterministic laws.

3.2.1 Transcendent agency

If physical laws are truly incomplete, agency might act by “plugging” the holes – but there is another possibility. Instead of agency *filling* the holes left by (physical and mental) laws, agency could *be* the natural state of underdetermination¹⁵. In that case there would *almost* be an answer to the question why there is something rather than nothing.

Transcendently, agency would not be time-bound: free decisions simply *are*. Given that fact, why isn't there nothing? If there were nothing, there would be no laws, let alone laws that there be nothing. So the (non-existent) laws underdetermine, which means that there would be freedom, agency, and there would be a free decision *I am* attributable to that agency¹⁶. Since this is not nothing, we see that the assumption that there be nothing leads to its own negation¹⁷.

By way of examples, we shall now consider two candidates for this underdetermination.

3.2.2 Symmetry breaking

Let's look again at the example of two point particles of equal mass colliding. The laws of motion tell us that impulse and energy will be conserved – but not much more. Taking their centre of gravity as in rest, their combined impulse is zero and their total energy is $m|v|^2$ – both of which are conserved as long as afterwards both particles will have the same speed as before, and still move in opposite directions. Neither value, however, gives any indication as to *which* directions that will be¹⁸.

13 In the case of agent causality, it is the agent at time t that is the cause – not the (transtemporal) agent as such. Agents have temporal extension, and change over time. Realising that is important for understanding how an act of will can be causal at time t .

14 Self-reference would allow trivial laws such as “The state of the world at time t is the state of the world at time t ”, which describes a function (deterministic output given the input).

The formulas treat agency as a hidden variable. I have placed it at t , as that is where it stops being hidden, and to prevent people from mistaking it for a hidden *physical* variable that could be traced back in time (which would remove precisely the freedom it is meant to model). The “freeness” itself of freedom cannot be captured; only its resulting indeterminism can. Agency is *concomitant* with free decisions, but neither the antecedent cause of them nor their effect – vaguely reminiscent of a particle that comes into existence together with its antiparticle.

15 And if that agency would be the sufficient reason for the resulting choice, this would allow a principle of sufficient reason. One way in which this could happen would be to separate *determining* from *sufficient*: the agency would not determine the choice. Other ways would be by taking agency to influence deterministically at the moment of the choice itself (along the lines of section 3.3), or with backwards causality (along the lines of section 3.3.1).

16 The freedom would be transcendent, translating to necessity from our immanent point of view. For more details about this distinction, see my [How to Speak about a Supreme Being](#).

17 This is *almost* a sound argument, but not quite, as if there were truly nothing, the truth that the absence of determination equals freedom would not be either. For an argument why answering the final question requires transcendent mediocrity, see my [Transcendent Mediocrity is the Neutral Position](#).

18 Maybe more realistic might be particles of which a mind could control whether they see each other (and bounce off) or don't (and pass uninfluenced). Given that fields extend indefinitely, would it be possible to switch off influence and switch it on again afterwards at precisely the right moment to conserve the values that need conserving?

Here the initial situation is symmetrical, but the outcome isn't. Whereas the example given is chosen for ease of explanation, and not for realism, *spontaneous symmetry breaking* occurs in many ways in physics. Some forms depend on minimal variations in the initial state, and would fall under section 3.2.3 below, but others are like the example given, reflect true underdetermination of the laws themselves, and lead to gaps that could constitute loci where freedom could have an influence.

3.2.3 Quantum freedom

According to among others the Copenhagen interpretation, quantum theory is necessarily incomplete – Heisenberg's famous uncertainty relation is not merely an epistemic limit, but reflects a genuine absence of physical fact.

A particularly promising interpretation in this context is the Conceptuality one of the theoretical physicist Diederik Aerts (2014). He shows that *concepts* naturally manifest quantum behaviour, such as obeying Heisenberg's uncertainty relation, breaking Bell's equations, entanglement, coherence, and so on. He develops this in a pancognitivist direction, but a transcendent (dreamer) interpretation seems more natural.

If I dream up a story, the world I create will typically be underdetermined. A novel may say there is a small fruit bowl on the table, without specifying the fruit in it. Later on in the story, a character may take an apple, or a banana, or a peach, or any of a huge number of possible fruits out of the bowl – there are many more options than would fit in the bowl.

If in a story, Pat and Sam have a Roman-Catholic wedding, they get entangled. Now Sam becomes an astronaut and goes to Mars, and then we learn that Pat delivers a healthy baby girl. At that point in the story, Pat turns out to be a woman, and because of the entanglement, *at the same instant* Sam turns out to be a man, despite the great distance between the two. The Einstein-Podolski-Rosen experiment in the macro-world, in a fundamentally non-mysterious way.

Within the resulting story, the fruit in the bowl had always been, say, apples, and Pat had always been the woman in the couple, but actually those fact were *created* by what seems a *measurement* process. That is simply the way concepts behave, and the quantum (and, for that matter, relativistic) behaviour of our world can be explained from the hypothesis that ultimately, the world is conceptual in nature.

The greater the detail in which the world has been described, the smaller the places where such under-determination will tend to show up. A novel only very broadly describes its world – we may read about a tree near the house, without having an inkling whether it stands at its right or left, or whether it is an oak or an elm, let alone what number of leaves it has. The world we live in, however, is sensed by us to a much larger degree, leaving less space for such unspecified elements. The quantum level might be where our probing runs against the description level of the world – decisions have to be taken whenever we probe, leading to the typical quantum behaviour of small elements of our world.

So if God is thinking the world, that would explain its quantum behaviour. Measurements correspond to decisions (Aerts 2010), i.e. God deciding what the outcome should be. This would make God *as dealing with the world* temporal – not just in acting, but in actually *deciding* how to act, which seems to have important consequences for omniscience.

3.3 The nature of freedom

Free decisions can be attributed after the fact – we can hold people responsible *precisely* to the extent their decision was free, and we can only hold *the person having taken the decision* accountable, not the person not yet having taken it. So the agency remains, and is absorbed in our selves. In fact, a self, a personal identity, may be nothing more than the total agency of all free decisions taken, and Occam's razor tells us to suppose that until counter-evidence comes along. Yet our self is one – *I* am responsible, not some "bit of agency" in my mind. In that respect agency is more a new property of the self than a new part of it – the property of "having freely chosen thus". It is precisely *the mind with the property of having freely chosen X* to which X can be properly attributed, and that under appropriate circumstances¹⁹ can be responsible for X.

To the extent that our self at time t constrains our freedom, agency only acts within the bounds of mental laws.

¹⁹ One major circumstance is *having someone to respond to*. God might well never be *responsible* for anything, having no higher authority to answer to. Others include reason, understanding the criteria involved in justification, and actually being morally subject to those criteria.

3.3.1 Freedom as the mirror-image of causality

By modelling intentions deterministically in terms of the resulting choices, the full model can be symmetrical and in a way deterministic, with agency the time-wise mirror image of causality.

In that case there are deterministic laws describing the situation at time t in terms of the situation at previous times, and those we call *causal* laws – and there are deterministic laws describing the situation at time t in terms of the situation at subsequent times, and those we call *agency* laws. Causal influence diminishes in forward time due to the influence of agency, and agency influence diminishes in backward time, due to the influence of causes.

The state *after* the moment of the decision then defines the decision, in a fully deterministic way when looking backwards in time: the fact that I am a person having chosen X is what, looking backward, causes me to choose X ²⁰ – but, looking forward, I wasn't a person having chosen X up to the point that I freely did choose X . Causality works from the past to the future, whereas freedom works from the future to the past. This makes causation and freedom mirror-symmetric, the difference being the direction of the time arrow.

To illustrate this, imagine a very simple universe²¹ with physics vaguely reminiscent of ours: a pair of point particles of equal mass coming into existence in a “small bang”, and moving away from their centre of gravity. Over time gravity overcomes this movement, they fall back, and collide elastically. That makes them move away from the centre of gravity again until gravity wins out again, after which they fall back and annihilate upon collision – the “small crunch”.

This elastic collision is underdetermined – impulse and energy are conserved, but that doesn't fix the direction of the rebound. But the particles have free will, and can choose the direction in which to move after the collision. And the crucial bit: the two particles have opposite time arrows – what is past for the one is future for the other and vice versa.

So what happens? Each particle finds itself on an initial course it didn't choose caused by the small bang plus the action of gravity), but on a course of its own choice immediately after the collision – but the free choice of the one particle fixes precisely the determined course of its twin²². Each particle starts out on a determined course, in the presence of a choice for that course (connected to its partner), and the two (the course and the choice) annihilate each other at the collision, freeing option space for the particle to make its own free choice and thereby fix another course. And the fixed initial conditions of the one are the freely-chosen final conditions of the other²³.

If this choice itself is seen as a physical entity, at the collision instant of the particles another collision happens, namely of the choice²⁴ and its outcome (the trajectory). If the particle has sufficient means, it might be able to inspect both the outcome and the choice, and by causal reasoning predict the instant of their collision beforehand. Outcome and choice are like particle and anti-particle, and their collision leads to annihilation and “energy” for a new choice-outcome pair, presentable in a kind of Feynman diagram.

3.3.2 The non-physicality of free will

Any deterministic law leaves no place for freedom. If the universe is open, then free will provides additive influences that cannot be captured in laws. If the universe is underdetermined, then free will acts as a non-modelable input to the laws. In either case, what the free will brings to the equations is something that is neither physically describable, neither sufficiently indicated by pointing out its randomness.

This may merely be a shortcoming of the mathematical approach to physics, or it may point to a genuine qualitative gap between will and space/time/matter.

20 More precisely: to *stop* having chosen X , because the choice itself is also seen backward in time. (This fact is better known in the context of proofs that it is impossible for entities with opposite time arrows to communicate.)

21 For ease of presentation, I'll also conflate the free decision with its execution. In our world the two of course typically come at different points in time.

22 The salient point is easier to see if the universe has *sudden gravity*, as if it were surrounded by a hard wall against which the particles bounce. Then the first bang-to-wall and wall-to-collision routes are causally determined, but identical to the free collision-to-wall and wall-to-crunch routes when seen time-backwards.

23 This does not include the laws themselves, though, but only the conditions to the extent that the laws didn't force them to be. Such a world will still need an explanation for its existence and nature.

24 It is tempting to regard the choice (the fact of having changed from trajectory A to trajectory B) as the time-inverse equivalent of the intention (to change from trajectory B to trajectory A), but that leads to a problem when the will itself is introduced in the model: the intention *appears* at some point in time, but the choice does not *disappear* in the same way. We shall leave that aside, however, as this article is not about freedom of will but about freedom of expression of will.

4 Diachronic immanent options

If we accept that, in McTaggart's terminology, God stands in a B-series relation to the universe, other options open up. God might create²⁵ the world in such a way, that all his decisions are "coded in". And if our consciousness resides in God, it might also be transcendent to this world, and act on it in a comparable way. Fully immanently, this might be modelled by God solving a vast but sparse (i.e. widely underspecified) set of equations that includes equations relating our (and His) decisions to an outworking²⁶.

To us, this would look like determinism - from an A-series point of view the freedom would be in the precise initial state the universe started from²⁷, and these would be cases of *pre-established harmony*. Again we shall enumerate some options.

4.1 The lifeless universe

The state of the non-living part of the universe encodes an enormous amount of information. Any decision we make is likely influenced by a large number of particles from outer space interfering with our brain processes. If the state of outer space were carefully created²⁸ so as to emit precisely those particles that would lead to our thoughts and decisions going the way we freely choose, then no breaking of any fully-determining physical laws would be necessary.

4.2 Deterministic quantum states

Hidden variable interpretations of quantum theory offer an obvious place for coding this information: in those hidden variables. For instance, the pilot wave model of David Bohm supposes a hidden state of the pilot wave of each particle, which might be just so that it leads the particle to behave in the way that corresponds with the free decisions at that moment.

4.3 Physical rules

Our universe started with an exceedingly low entropy - but still an entropy larger than zero. Possibly, what we see as physical *laws* are merely *rules*²⁹ describing the regularity that is the result of this low entropy. In that case, because the entropy is low but not zero, we may expect (rare) deviations from the rules we found - the way *as a rule* water is H₂O, but occasionally has one or even two deuterium atoms. These deviations might bring about the harmony between God's and our free choices on the one hand, and the state of the physical world on the other.

4.4 Non-invariance

An intelligent ant walking along the ribbon around a birthday present might well formulate a "law" that the ribbon always goes straight. This might make her disbelieve any claim about the bow. Yet, the whole *reason* for the ribbon *is* the bow, and only some principle of pervasive mediocrity - a principle that stated not merely that we are at a non-remarkable place in the universe, but that there are no remarkable places in it - could undergird an argument that the bow cannot be there.

Likewise, points of mind-matter interaction could be exceptional, and different from the mediocre measured matter-only behaviour that is actually being studied by physics.

25 I use the present tense to indicate timelessness here.

26 Compare Douglas Hofstadter (1982)'s technique of **Robinsonising** to solve self-referential sentences.

27 Or the state "inherited from the infinite past", in case of a universe without a beginning. This other possibility is implicitly present in the remainder of this chapter wherever we speak of the initial state of the universe.

28 If all of physics is time invariant, such creation is relatively simple. By running the life-centred part of the universe backwards, one can simply let the influencing particles create their own past. A diachronic creator can presumably do this.

29 I make the traditional distinction between laws (which hold always), rules (which tend to hold), and chaos (where no regularity is discernible). So the exception proves the rule, because if there were a law there would be no exception, and if there were chaos there would be nothing to except from. Hence the use of the phrase "as a rule" to indicate the existence of both a regularity and exceptions.

4.5 Chaos

Minute differences in the initial conditions can magnify through chaotic processes, and lead to radically different outcomes. Under the proper conditions, given the ubiquity of chaotic processes this fact could be used to encode the behaviour that ought to happen in the initial state of the universe.

This could be combined with any of the preceding options: particles from outer space bump incipient chaotic processes in the intended direction; quantum events could be magnified that way, or deviations from lawful behaviour, and so on.

5 Transcendent options

Once we fully embrace God's transcendence, the field widens considerably - and mostly in ways we are fundamentally unable to grasp. That doesn't mean they can't be actual, however - limiting our notion of the possible to what is graspable by us merely means adding another handicap to what finiteness entails already.

5.1 Transcendent compatibilism

If God is the solipse at the top of the transcendence hierarchy³⁰, there is nothing to constrain Him. He is the source of whatever fact is true in our world, including the facts of logic, and so on. As such, he can decide what the outcome of applying some law is³¹. We can get a vague inkling of this by looking at stories featuring a deterministic world, e.g. Douglas R. Hofstadter's *Who shoves whom around inside the careenium?* or *What is the meaning of the word "I"*. On the level of the story, the world behaves fully according to the deterministic laws governing it - yet what happens is precisely whatever the author intends to happen.

In the case of a story written by someone on our level, this can only be done by being vague³². Not every movement of every particle is described; if it were the story would either break the laws of its world, or the outcome would not be in the hands of the author. This is because we ourselves are constrained by the laws of our world, including laws of logic that constrain the outcome of the application of laws. God is not so constrained, however, having no world above him: the outcome of a law application is whatever he intends it to be³³.

To us such a transcendent influence would be undetectable. If the laws are deterministic, the actual outcome - the evolution of the world as it actually happens, would seem inevitable to us: if we know the laws we can conclusively show that no other outcome would have been possible. Yet, as seen from God's level, there is total freedom.

If our will is transcendent, "implemented by God", as it were, then our decisions could be free, and the world could reflect those decisions in its evolution according to the deterministic laws it obeys.

And so we see that transcendent compatibilism can provide what immanent compatibilism cannot: *true* (and even complete) freedom in a fully deterministic world. God's freedom would not be residual, but total.

6 Conclusion

We have surveyed a number of options for freedom to affect a physical world. In all cases, the free will itself turned out to be (immanently³⁴) non-physical.

30 See my [Transcendent Mediocrity is the Neutral Position](#) for more on the transcendence hierarchy.

31 This may be what Thomas Aquinas meant, as interpreted in Silva (2014).

32 This vagueness reduces the example to transcendent underdeterminism, akin to the version described in section 3.2.3 above. Such vagueness definitely is one transcendent option, but as this section tries to show it is neither the only, nor the most obvious option, as God has no need for vagueness and underdeterminism to influence the world.

33 This may lead to questions about evil - why doesn't God let the outcome be better? An abstract answer to that would be that, being transcendent, He can also let the current outcome be the best. This would lead into questions about the Euthyphro dilemma (for which also see my [From "Is" to "Ought" in One Easy Step](#)), which are beyond the scope of this paper.

34 A transcendent will might be physical on its own level, but would then still be aphysical on the level of the physical system it acts on.

7 References

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<<A good reference for the reflexive tower.>>