

FREEDOM AND CONTROL: ON THE MODALITY OF FREE WILL

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1. TWO PRINCIPLES OF LIBERTARIANISM

A libertarian about free will typically holds at least one of the following two principles (see e.g., Kane 1996, though these are our formulations).

The Principle of Alternate Possibilities (AP): I could have acted otherwise.

Generally: for any free agent x , and action A performed by x in circumstances C at time t , then there was another action A' , where $A \neq A'$, such that x could have performed A' at t instead of A .

The Principle of Ultimate Authorship (UA): I am the ultimate author of my own actions.

Generally: for any agent x , free action A is performed by x in virtue of x being the author of A (where authorship is defined in terms of causal responsibility, for instance).

In broad terms, we feel that we need AP to have the possibility of freedom and we need UA in order to have control. Perhaps free will requires both. Both principles seem to be threatened by determinism, however. There are many variants of determinism, but a common worry concerns the type of determinism that is tightly linked to causation and laws of nature. One such is what Popper (1982, p. xx) refers to as Laplacian determinism, inspired by Laplace's famous suggestion that all events are in principle predictable for an omniscient Being with complete knowledge about the total state of the universe and its laws (Laplace 1819/1951, p. 4). Given a set of initial conditions and the laws of nature, only one future is possible on this view. Other definitions are more explicit on causation and necessity. For example, we might take determinism to entail that every state or event is causally necessitated by preceding states or events (Watson 1982, p. 2) or that any event is determined just in case there are conditions whose joint occurrence is sufficient for the occurrence of that event (Kane 1996, p. 8). This, though not only this, is what makes the existence of free will a problem.

Given such causal understandings of determinism, there is a temptation for libertarians to argue that our actions, including our decisions, are uncaused – chancy, random, probabilistic and so on – and therefore not determined, or they are entirely self-determined. Neither option is attractive. A

libertarian account of free will that is premised on agents being able to step outside of the regular causal nexus – presumably breaking the laws of nature as they do so – is in deep trouble from the get go. To say that the free agent's actions are entirely self-determined, for instance, is to suggest that they can somehow isolate themselves from the natural causal processes going on around them, screened-off from the dictates of ordinary laws of motion. We take this view to be undesirable.

In this paper, we argue that the libertarian can have both AP and UA without requiring that agents step outside of the causal laws. The plausibility of this depends, however, upon an examination of the modality of causation, concerning which there have been significant recent developments. Using the framework of causal dispositionalism (Mumford and Anjum 2011), we argue that a correct understanding of the dispositional modality within causation shows that determinism is conceptually and ontologically detached from causation. We can then make sense of an event that is caused but without being thereby determined. The agent can have both AP and UA while being causally connected with the rest of nature. The causal dispositionalist thus supplies a variety of libertarianism worth having.

2. THE PROBLEM OF MODAL DUALISM

Our first task is to explain the bearing of modality on the free will debate. We contend that if we have at our disposal only the two modal values that have received most attention in metaphysics – necessity and possibility as traditionally conceived – then problems are raised in relation to AP and UA. The restriction of modality to these two values is a position called modal dualism (Anjum, Lie and Mumford 2013). Although it has been prevalent in metaphysics, it was not always so. Kant, for instance, had three modal values in his table of categories, including also existence (Kant 1781/1965, section III, §6) and we will see that Aquinas had a view of natural modality close to the one we support. But within contemporary metaphysics we have largely been offered a straight choice between necessity and pure contingency.

That it is hampered by a tacit acceptance of modal dualism is why we conceive of free will as a modal problem. The reason is that those two options suggest one could have either principle AP or AU but not both in respect of the same action or decision. Putting it in terms of the first person, necessity and possibility present the following dilemma for libertarianism:

Not-AP: if my actions are necessitated, then *they couldn't have been otherwise*, and I seem to have no genuine choice (so no *Alternate Possibilities*).

Not-UA: if my actions are merely contingent, then *I seem to have no control over them*, so I have no genuine choice (so no *Ultimate Authorship*).

The Not-AP problem is perhaps best known. If a decision or action was necessitated, where we take decision to be a kind of action by the agent, then it could not have been otherwise. There was only one possible outcome. This threatens the libertarian idea that there is a choice to be made between options. It would turn out that there were no alternatives and the subjective appearance of choosing would be explained away by an error theory.

Now there are of course ways in which the gravity of Not-AP could be resisted. An actual-sequence compatibilist about free will tries to argue that free will is compatible with determinism precisely because free will does not require a commitment to AP (see Frankfurt 1969, for example). This is not to deny that there could be other forms of compatibilism that through various means retain AP (see for instance Vihvelin 2013). Our purpose here is not, however, to discuss the merits of these kinds of compatibilism but, rather, to show how without the hindrance of modal dualism, AP can be retained at the same time as UA. And it is AP that seems most directly under threat from necessity.

Suppose we reject necessity in favor of a world of contingency, then. There is perhaps an even bigger threat to free will here. If contingency is understood as pure possibility, then it means that anything could follow anything. Thus, if we try to avoid the threat of Not-AP by introducing indeterminism into the world, we begin to lose authorship of our actions. If a decision were made because of a random event occurring in the agent's brain, for instance, it is hard to see how that agent could then have responsibility for that decision. Similarly, if a bodily movement occurs due to a matter of chance – a spasm, for instance – then it is not genuinely an action and thus the person is not an agent with respect to that movement. And the pure contingency of modal dualism seems indeed to give us nothing to avoid this consequence. If it is a matter of contingency what follows our decisions, then anything that is possible might do so. That is not what we want in order to maintain control or authorship over our actions.

Compatibilism has almost entirely been concerned with reconciling free will and determinism. But Not-UA shows us that there is perhaps an even bigger task for libertarians of reconciling free will and indeterminism, a task tackled most recently by Kane 2014. To show merely that determinism is false is not enough to gain us our freedom. To think so would be to assume that there were only three options in the free will debate: determinism, libertarianism and compatibilism. But there is a fourth, which is perhaps the least appetizing of all, where determinism is false but there is no free will either. An entirely chancy or even random world – let us call it a stochastic world – might have neither free will nor determinism so let us call this unpalatable fourth option stochasticism. There is thus another kind of compatibilist: one who thinks that free will is compatible with indeterminism. So while indeterminism could mean pure contingency, we argue that the indeterminism that is compatible with free will shouldn't be as much as that. It should be a denial of determinism – that all events are necessitated – but should not be a world of pure contingency. It will require some work to show this type of compatibilism to be true: work that starts with a rejection of modal dualism.

We may sum up the libertarian's dilemma of modal dualism this way: necessity means that only one outcome can follow an earlier occurrence, contingency means that any outcome can follow. Neither seems to get you free will. With necessity one might be able to retain UA but one does so at the expense of AP. And with contingency, one gets AP but does so at the cost of losing UA. We need to

rethink the modal assumption that landed the libertarian in this position. Are worlds of pure necessity and pure contingency the only options?

3. CAUSAL DISPOSITIONALISM

The framework within which we challenge modal dualism is the recently developed causal dispositionalism in Mumford and Anjum (2011). This theory offers an account of causation in terms of the mutual manifestations of real dispositions or powers but it offers no application of the theory to the free will problem. Powers, on this account, are taken to be the truthmakers of causal claims. Now a solution to the free will problem may well be best articulated within an account of the causal powers of agents (see e.g., O'Connor 2000; Lowe 2012; Steward 2012; Groff 2013, ch. 5 and Vihvelin 2004/2013, 2013) but our aim in this paper is to focus only on one part of that solution, which existing authors have tended to miss or handle in other ways. The key commitment of causal dispositionalism is the idea that causation should be taken to include essentially what we call the dispositional modality. This is a *sui generis* modality, reducible to neither necessity nor pure contingency but to be found in all natural causal processes. Arguably, such an idea of modality could originate from our bodily experiences as causal agents (Mumford and Anjum 2011, ch. 9).

Our job here is not to scrutinize that argument, nor to consider how seriously committed we should be to an ontology of real causal powers. Rather, we aim to show how a libertarian could subscribe to the dispositional modality of causation and thereby retain both AP and UA.

To make way for the dispositional modality we need first to accept the distinction between causal production and causal necessitation. A tacit assumption of the debate is that causal production entails causal necessitation such that merely admitting prior causes of action is to already concede that they are necessitated. This can be found in many articulations of determinism (for instance Watson 1982, p. 2), which suggest that merely being caught up in causation is already enough to undermine our freedom. We argue, on the contrary, that one can admit prior causes of decisions and actions without thereby admitting necessity. What might lead one to think otherwise is the thought that the necessitation of an effect by a cause is the only way causal production can work; but it is not. Instead, a cause can be thought of as something that tends toward an effect of a certain kind and often succeeds in producing it without there ever being any necessity that it would do so (Mumford and Anjum 2011, ch. 3). We offer a brief summary of the position we call causal dispositionalism, since this is the metaphysical basis for our argument concerning free will.

The causal dispositionalist argues for the separation of causal production and necessitation by drawing attention to the possibility of a particular variety of interference that applies to all natural causal processes (Mumford and Anjum 2011, ch. 3.4). It is taken as a datum that causes can be prevented from doing their work of bringing about a certain effect. A cue ball heading toward another billiard ball can be stopped from striking it through an intervention, for instance, or a bacterium can be stopped from making someone ill if they take an antibiotic. And even if an effect cannot be prevented entirely, there are other cases where it can be interfered with so that it occurs only partially. The sun might heat a room, for instance, but will do so to a lesser degree if a window is open to allow a draft.

A key distinction is made between those forms of interference that are subtractive and those that are additive for it is only the latter kind that gives us an argument against causal necessitarianism: the view that causes produce their effects by necessitating them. Subtractive interference is where something that tends toward an effect is removed. Simply put, we can prevent an effect by removing one of its causes, such as when someone quits smoking as a way to mitigate against a risk of cancer. While it may be significant in itself that we can prevent effects by removing their causes – it may make sense to do this in medicine, for instance – it is the existence of additive interference that most interests us.

An additive interferer is one that leaves all other causes in place but adds a counteracting one. In abstract terms, one could have causes a , b , c and d that alone might be capable of producing an effect e , but when a further causal factor i is added, e is thereby not produced. This shows that a , b , c , and d , even in the absence of i , do not necessitate e – even if they succeed in producing it – because it remains the case that had i been present, e might not have occurred.

As necessity is traditionally understood, if A necessitates B, then whenever we have A we will have B. A would be a sufficient condition for B. There are instances where this is the case in logic, for instance, and perhaps even some in nature. If one believes that salt is sodium chloride, then following the necessity of identity one should take it that whenever there is salt there is sodium chloride. Nothing one could add can stop it being so and identity thus admits monotonic reasoning. In the case of causation, however, it is clear that one could add to a cause, leaving everything else in place as before, and thereby preventing the effect. Therefore, one should conclude that causes do not produce their effects by necessitating them in the way necessitation is usually understood philosophically.

The statement so far has been made in abstract terms but it is easy to supply a concrete example that illustrates the difference between subtractive and additive interference. Effects are depicted as being produced by various causal factors working together and sometimes against each other. Thus one might think of the causation involved in the production of a result in a tug-of-war contest. Two teams of five players might be tugging on a rope, for instance, with the aim of pulling the other team over. In the actual case, let us assume that team A wins the contest, dragging team B over some marked finishing point. Team A certainly have produced this outcome, through their combined efforts against those of B. But did their actions necessitate this outcome?

There are two other contrary-to-fact possibilities to consider. In the first, a member of team A gets lured away from the contest and team B now wins because of their advantage. This would be a case of subtractive interference against A's victory. But in the second contrary-to-fact case, A keeps the same members that produce their actual victory but now team B gets an extra muscular member who is able to tip the balance in their favor. This would be a case of additive interference. It shows that even in the case where A succeeded in producing victory, it was not a matter of necessity that they did so because something could have been added that prevented it. We argue that this is true of causation generally and that the non-monotonicity of causal reasoning reflects it. Thus, we might agree that if this match is struck, it will light but not that if this match is struck in a gale, it will light.

This is only a part of the case against causal necessitarianism. There is more argument to be had (see Mumford and Anjum 2011: ch. 3 and Mumford and Anjum forthcoming a). Our interest here,

however, is in the application of this view to the free will debate and we can see one important result already. Causation itself is not enough to secure determinism because it does not bring along necessity. Therefore, a libertarian does not have to escape the world's regular web of causation in order to gain their freedom. On the contrary, the agent needs causation in order to be free, through retention of Ultimate Authorship, as we will go on to show.

This is not to say that causation couldn't be combined with a further thesis that involved a commitment to determinism. But, as Anscombe (1971, p. 135) argued some time ago, such determinism is not contained within the notion of cause itself. It would be supplementary. Where determinism is taken to be causal determinism, however – meaning that causation is the vehicle by which determinism does its work – the causal dispositionalist rules it to be false.

There is still more that we need before we have shown the libertarian the way out of their dilemma, however. If causal production does not occur through necessitation, how does it occur? This is where the positive account of the dispositional modality helps, to which we now turn.

4. THE DISPOSITIONAL MODALITY

In causal dispositionalism, causation involves neither necessity nor pure contingency but something in between. Aquinas had argued this some time ago (see Geach 1961, p. 101), following Aristotle (*Metaphysics* VI, §2). A cause tends toward an effect where such a tendency means that the effect is more than a mere possibility among many others but where it always falls some way short of a necessity. If we return to our tug-of-war example, we can see that each team-member is exercising a causal power that is disposing toward an effect of a certain kind: pulling the opposition. We have already seen the argument for why this does not necessitate such an outcome. But we can also see how there is a closer connection between the exercise of this power and the effect in question than there is between it and all other events that are merely possible.

Hence, with a world of pure contingency, one that is lacking in any real causal connections, an event of one kind could be followed by an event of any other kind. When a rope is pulled, there is a mere possibility of it heating up, evaporating, or turning into a snake. This is just to reapply Hume's famous view that in a world of pure contingency, as Hume thinks ours is, anything can follow anything (Hume 1748/2007, VII, ii, p. 55). Hume concedes of course that our world contains regularities, which form the basis of our habits of inductive inference, but he takes these also to be merely contingent: fortuitous accidents, perhaps.

An alternative to the Humean view is that the regularity of our world, such as it is, is produced by the natural tendencies of kinds of thing (e.g., Bhaskar 1975; Harré and Madden 1975, Ellis 2001). Struck matches tend to light, salt tends to dissolve in water, thrown stones tend to break windows, and so on, where this means more than a report of frequency of occurrence. Under causal dispositionalism, the tendency is a real causal power or propensity that a particular has in virtue of its properties.

The dispositional modality adds something to this debate, however. Because such causes only tend toward their outcomes, there may be cases where they fail to produce them, precisely because of the sorts of interference we have outlined. In that case, in the real world as opposed to the finite

abstract models of physics, we find that even where two factors are causally related they produce a less-than-constant conjunction. Matches tend to light when struck but not all of them do, given that such a causal transaction is subject to outside interference. Hume is often criticized on the ground that constant conjunction is not sufficient for causation, since there could be accidental correlations; but with the dispositional modality of causation we see that constant conjunction is not even necessary for causation.

What is important, however, is that there is ample space for causation between necessity and pure contingency. This is the space of the dispositional modality. A power aims toward a certain type of preferred outcome, which would be its manifestation. It is directed toward some outcomes and not others. We are grasping at metaphors here; we have no choice but to do so. The dispositional modality is *sui generis* so cannot be reduced to something else or truthfully defined without circularity. It is, however, known directly by every causal agent who can feel resistance to their own actions or resists the actions of other agents upon them. It may nevertheless be informative to say that the outcomes to which a power disposes are a subset of all those that are merely possible. The power has an intimate relationship toward those possibilities within the subset – they are the ones toward which it disposes – which it does not have to those outside. We have suggested that powers can act as a selection function (Mumford and Anjum 2011, ch. 8), tending toward some types of manifestation rather than others.

A possible misunderstanding of the dispositional modality would be to equate it with probabilistic causation. Certainly one might be able to use the reality of probabilistic causation against the possibility of determinism and one might be able to argue for it along similar lines to those above. Anscombe's argument, for instance, is designed to show that there is a coherent notion of probabilistic causation and that determinism cannot therefore be part of the notion of cause. And just as probabilities can come in degrees, so too the dispositional modality admits of scalarity. A drinking glass and a car windscreen are both be fragile but the former more so than the latter. Thus, the tendencies in question can be greater or lesser. A disposition can be strong or relatively weak. Can we then explain the dispositional modality entirely in terms of probabilities?

There are, we suggest, no prospects for a reduction of the *sui generis* dispositional modality to the notion of probability. The primary reason for this is that the dispositional modality is itself required to explain probabilistic causes: in particular, how a probabilistic cause tends – and no more than tends – toward a certain distribution of events over a series of outcomes. We know, for instance, that a probabilistic power toward an outcome is logically consistent with any distribution over a finite sequence of trials. Consider a coin's disposition to land heads or tails with equal chance (it doesn't matter that this might not be an irreducibly probabilistic disposition). This clearly does not necessitate a 50:50 distribution of heads and tails in any finite sequence of trials. But the disposition has a more intimate relation to that distribution of results than to any other. And although any outcome is possible, the disposition involves a tendency to that outcome: indeed a tendency toward a 50:50 distribution of heads and tails as the number of trials tends to infinity.

Dispositional modality is, we maintain, the more fundamental notion and one that could not be spelled out merely in terms of probabilities. Rather than pursue this issue any further, however, we return instead to our main task. This is to show that in accepting the dispositional modality, the

libertarian is free to hold both AP and UA; something that could not be done if restricted to the resources of modal dualism.

5. FREE WILL AND EMPOWERMENT

We have rejected causal determinism on the grounds that causal production is not the same as causal necessitation but we have also accepted that this alone does not secure free will. However, we do now have what we need in order complete our immediate task, the reconciliation of AP and UA.

AP is relatively easy to secure within a causal dispositionalist framework. Once causal necessitarianism is rejected, then alternate possibilities become entirely ubiquitous, applying in any case of causation and not just in those that are the exercise of an agent's powers. By the arguments already provided, we can see that where C causes E , there is always an alternate possibility of not- E , even if C , where C is accompanied by an additive interferer I . Thus where a suitably empowered agent exercises their own causal powers, no outcome is necessitated by them; but nor do the causes acting upon the agent necessitate their effects. AP thus does not require that agents hold a different kind of causation in their hands, nor that they have to step outside the laws of nature to be free. Causation in general is consistent with alternate possibilities, since no causal set-up offers only one possible effect. Any power can be overcome by counteracting powers, including those of the agent. Hence, in a situation of peer pressure an agent may feel inclined to join in a cruel act inflicted upon one individual by a group. But the peer pressure does not necessitate doing so, even if it is strong, so may be overcome by an agent who has sufficient resolve to resist it.

The above example might seem to rationalize the discussion too much. Perhaps the concern of determinism is that supposedly free agents are just puppets of microphysical interactions, where physically everything is fixed by the past even before one reaches the level of conscious deliberation, and those deliberations are apparent only. One cannot step to the left, for example, if past physical states determine that one will step to the right.

The dispositional modality applies even in these cases, however, thus it cannot be through necessity that any physical effect occur. With the addition of interferers, alternate possibilities are secured. Of course, the objector might say that this is a cheat and that, given the total state of the universe as a whole, which may well be a very large but closed system, there is no possible additional interferer. This too can be resisted (see Mumford and Anjum 2011, ch. 3.10). But apart from that, as Popper (1982) notes, if only one event is not necessitated – say there is a single instance of an irreducibly chancy event (as many think is the case in quantum physics) – determinism is false. Indeterminism is a very weak hypothesis and ought to be taken as true by default (Popper 1982, pp. 27-28). The assumption that the same initial conditions must always produce exactly the same outcome further down the line is an extremely strong one that we would need very good reasons to believe. This is not a conclusive argument but it shows that the libertarian is not unreasonable to accept that there are always alternate possibilities.

We have AP, therefore. Arguably, however, the ubiquity of AP shows that it alone is not what free will consists in, which is why the libertarian also needs UA. Causal dispositionalism can give us UA. If an agent has a power to F, and succeeds in performing F through exercise of this power, then the agent has ultimate authorship of F even if those actions did not produce F by necessitating it.

Let us consider Austin's golfer (Austin 1956, p. 218n), for instance, who uses his abilities to knock a ball toward the hole, trying his hardest. Applying the dispositional modality, we can understand this as the agent performing an action that tends in some greater or lesser degree toward the production of an outcome of a certain sort: the ball dropping into the hole. In virtue of the agent exercising that power, where he succeeds in sinking the shot it is quite right that he retains ultimate authorship. He tried his best. He controlled himself as well as he could. And it worked. We do not take proper ownership of a power to be entirely straightforward matter, given the possibility of brainwashing and other power implantation cases. But we do think an account can be given of what it is for an exercised power to be genuinely an agent's own (Mumford and Anjum forthcoming b). Such authorship is not undermined by the truths of AP, even though they tell us that no one has complete control over every factor that can influence an outcome. It is indeed the case that the ball might not have sunk had a gust of wind come along just as it neared the hole, or a squirrel could have jumped on the ball, or a twig might have deflected it. These alternate possibilities are all real. But given that the golfer tried – he exercised a power that disposed toward that outcome, and indeed succeeded – it is wholly right that he be considered the ultimate author of it.

What if someone claimed the opposite? Suppose someone's defense at trial was that they were not the ultimate author of a murder because, while they cut the brakes on the victim's car, there could have been sand spilled on the road that safely slowed the car down. The latter is a real possibility, but its existence does not remove the murderer's authorship if they deliberately tried to kill the victim by cutting their brakes. The absence of necessity alone does not then release one from ultimate authorship as long as there is the dispositional modality at work instead of pure contingency.

In exercising our causal powers, we exercise our free agency. But this is not to deny that there are many cases that jeopardize our freedom. The mere existence of alternate possibilities does not do so, but other cases do. One notable feature of the dispositionalist account, mentioned above, was the scalarity of causation because powers can come in degrees. And a valuable upshot for the free will debate is that freedom itself can come in degrees. It is not simply an all or nothing matter. Thus, the more empowered an agent is, the more freedom they gain. Someone who has a power to speak French is free to do so, for instance: a freedom that a non-French speaker lacks. The other side of that is how our freedom can be undermined and eroded. An advertiser might try to shape our desires and play on our insecurities, for instance, or an oppressor might try to restrict our thinking by manipulating the media. But these interfering factors themselves contain the dispositional modality. They too can be overcome, if the agent has a strong enough will power to overcome the effect of advertising, for instance.

Again a distinction can be made between subtractive and additive interferers for our power of free will. When someone restricts our freedom through imposing physical force, political constraint or psychological pressure, this is additive interference. Any such interference can in principle be

counteracted if there are sufficient powers tending in the opposite way. If those constraints are removed, one is again free to act according to one's desires. But perhaps the biggest threat to our free will comes from subtractive interference. Losing a power means that we cannot act on it, thus we lose part of our freedom. For free will the relevant powers will be primarily our mental powers. Suppose one's powers of rational deliberation are removed by lobotomy. One has thereby lost free will, on the assumption that it requires rational deliberation.

6. RECONCILIATION

By assuming a framework of causal dispositionalism, including a dispositional modality sitting between necessity and pure possibility, we have assisted the libertarian in securing both AP and UA: principles dear to their defense of free will. These two principles, which are threatened by a restriction to the limited resources of modal dualism, can be reconciled by viewing agents as suitably empowered: bearing powers that tend toward their outcomes when exercised. More needs to be added to explain exactly which powers an agent must bear if they are to have free will. While that must be developed elsewhere, we have at the very least shown that, with the right understanding of causation, AP and UA can be held together.

As the dispositional modality stops short of necessity, there is always an alternate possibility when a causal power is exercised. Any outcome can in principle be counteracted by powers outside or within the agent. Since a power has a distinct tendency toward a particular outcome when exercised, an agent has ultimate authorship of outcomes toward which they have aimed and succeeded. It will be recalled that AP was threatened by a world of necessity and UA was threatened by a world of pure contingency. A world of powers is neither and thus provides a metaphysical basis highly conducive to the libertarian's needs: one in which the agent can have both freedom and control.

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