

# Popper and Free Will

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Determinism seems incompatible with free will. However, even indeterminism seems incompatible with free will, since it seems to make free actions random. Popper contends that free agents are not bound by physical laws, even indeterministic ones, and that undetermined actions are not random if they are influenced by abstract entities. I argue that Popper could strengthen his account by drawing upon his theories of propensities and of limited rationality; but that even then his account would not fully explain why free actions are not random. I offer a solution to this problem which draws on Hornsby's analysis of action. I then borrow an idea of Kant about self-consciousness to distinguish free agents from sub-human animals. I make a brief evaluation of Popper's contribution.

*Keywords:* free will, free decision, determinism, indeterminism, intentional action, propensity, self-consciousness

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## 1. Introduction

If determinism is true, then our actions are consequences of the laws of nature in combination with a state of the world in a period before we were born; and this seems incompatible with our acting freely and being morally responsible for our conduct. Hobbes (1962, 204–205), Hume (1975, 95, 99) and many others offer accounts of free action which are compatible with determinism, by distinguishing free actions as those determined by the agent's wants or choices or character. Kant describes this approach as “a wretched subterfuge” and “petty word-jugglery” which reduces human freedom to “the freedom of a turnspit” (1898, 89–91). Popper dismisses it as “largely verbal” and “quite futile” (1982a, xx).

In the eighteenth and nineteenth centuries, when Newtonian mechanics was the model of scientific knowledge, the salient aspect of the problem of

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free will seemed, to many people, to be how to reconcile free will with determinism. But quantum mechanics, the leading physical theory since the earlier part of the twentieth century, appears to be indeterministic. However, if free actions are undetermined, they seem to be random, and actions that happen by chance or accidentally or by luck are outside of the agent's control:

*In proportion as an act of volition starts of itself without cause it is exactly, so far as the freedom of the individual is concerned, as if it had been thrown into his mind from without—'suggested' to him—by a freakish demon [...] it is just as if his legs should suddenly spring up and carry him off where he did not prefer to go. (Hobart 1998, 346)*

Further:

if other people's actions cannot be in any degree predicted, the foresight required for rational action becomes impossible [...] If we really believed that other people's actions did not have causes, we could never try to influence other people's actions; for such influence can only result if we know, more or less, what causes will produce the actions we desire. (Russell 1994, section IV)

The salient aspect of the problem of free will now seems, to many, to be how to reconcile free will with indeterminism. This was so for Popper, who declared that indeterminism is not enough (1982a, 113–130).

In section 2, I outline, criticise and develop Popper's contribution to the problem of free will and I show how it can answer Russell's objection. In section 3, I augment Popper's solution by showing that Hobart's objection rests on confusion. In section 4, I briefly point out the merits of this account compared to accounts in terms of indeterministic causation. In section 5, I consider the problem of distinguishing free agents from sub-human agents and I offer and defend a solution. I conclude the discussion and evaluate Popper's contribution in section 6.

## 2. Popper on Free Will

Popper says very little directly about the problem of free will. In his sustained argument for indeterminism (1982a), he does not discuss free will in the body of the work, though he says that human freedom and free will were the problems that stood behind it (1982a, xix). And when, in the first addendum (1982a, 113–130), he addresses the matter of freedom, he avoids discussing free will and moral responsibility for fear of being sidetracked into moral philosophy or verbal disputes, so he focuses instead on the freedom to create works of art or explanatory theories. Similarly, in his (Popper 1973) he is concerned with rationality and human freedom, but most of his examples

of freedom are instances of creativity. In his (Popper 1987) and in (Popper and Eccles 1977) he does comment directly upon free will, but only briefly.

Popper is a body-mind dualist. He does not think that the mind is a substance separate from the body, but he does think that mental or psychological properties or aspects of people are distinct from physical ones (1973, 231 footnote 43, 252; 1987, 149). However, the body-mind problem seems to be independent of the free-will problem. Popper's dualistic approach to the free-will problem can be translated into a physicalistic one, by identifying mental events, states or processes with physical ones, but only if free agency remains as a feature of the physical world: some physical events would be undetermined acts with intrinsic representational content. I mention this in passing. For ease of exposition, the rest of this paper will assume property-dualism.

We need not consider Popper's arguments against determinism, since our concern is understanding free will. Popper contends that physical indeterminism, though necessary, is not sufficient for free will. A further requirement is that physical events are open to influence from mental events (Popper 1982a, 126–127; Popper and Eccles 1977, 540). Compton (1935) suggested that our minds may be able to influence or select for occurrence some otherwise undetermined microphysical events which are then amplified by our central nervous system, thereby operating a cascade of relays or master-switches which ultimately effect muscular contractions and thus bodily motions. Popper made two objections to this type of view. The first was that such models suggest that all our decisions are either snap-decisions or composed of snap-decisions, merely a matter of chance rather than the upshot of a process of deliberation (Popper 1973, 227–228, 232–234; Popper 1982a, 126). However, he later recognised that this objection is mistaken, for it assumes that the decisions, or volitions, are the undetermined microphysical events, whereas they should rather be understood to be the *selection* from some repertoire of random physical events, and the act of selection need not itself be random (Popper 1987, 147; Popper and Eccles 1977, 540–541). The second objection is that indeterministic laws are probabilistic and thereby specify the frequencies of types of microphysical (or other) events. If on an occasion we select for occurrence one type of event from among a range of types, each with a probability value between 0 and 1, nevertheless, in a sufficiently long sequence of repeats of that type of occasion, the *frequency* with which we could select each of the possible alternative types of event would be fixed. This gives a too restrictive conception of the *scope* of our free will: the free agent should be able to interfere with indeterministic physical laws (Popper 1973, 233; Popper 1982a, 130; Popper and Eccles 1977, 542).

Science is familiar with such external interference with physical laws.

For example, Newton did not show electricity, magnetism or optics to be mechanical, and Maxwell's failure to reduce electricity and magnetism to Newtonian mechanics left mechanical processes open to interference by non-mechanical, electromagnetic processes, in violation of the mechanical laws; and electrical processes are similarly open to interference from nuclear forces (Popper 1982a, 38, 124–127, 130; Popper and Eccles 1977, 542). If we accept an evolutionary account of the emergence of mind, we may expect that mental attributes give a creature a reproductive advantage and thus that mental processes or events are capable of influencing the creature's behaviour. Thus, pain may have evolved as a warning, prompting the organism to change its behaviour. And imagining alternative actions and their possible results, along with anticipations of pain or pleasure, may enable an organism to avoid dangers. In humans, the evolution of language permits us to detach ourselves from our hypotheses, so while new ideas or proposals may occur to us randomly, we can assess them critically and make a selection by a process of elimination, thus enabling us to let our conjectures die in our stead. So, physical laws should be open to interference from mental events, such as emotions, thoughts, expectations and decisions (Popper 1987, 145–152; Popper and Eccles 1977, 72–74, 540–542).

Yet, indeterminism and the openness of physical laws to mental interference are still not enough. For, the acts of selection between alternative possibilities are psychological events which are either determined or undetermined. If they are determined, we have no free will. But if they are undetermined, they seem to be random events and thus also incompatible with free will (Popper and Eccles 1977, 540). Popper says: “what we want to understand is not only how we may act *unpredictably and in a chancelike fashion*, but how we can act *deliberately and rationally*” (Popper 1982a, 126). His proposed solution to this problem is to postulate the “plastic control” of our decisions and actions by World 3, which includes such abstract things as theories, propositions, aims, proposals and arguments (Popper 1973, 226–234; Popper 1982a, 114–123). But this proposed solution never really gets to grips with the problem.

First, Popper insists that some free actions or decisions are undertaken without deliberation and some may be capricious. We sometimes take snap decisions or actions; for example, a driver or pilot in an emergency situation might not have enough time to deliberate (Popper 1973, 228). And even when we do have time to deliberate, we still have the choice about whether to do so: an irrationalist who shuns argument may freely decide to make unreasoned, capricious, decisions (Popper 1966, 230–231). (We can note that Popper's use of the term ‘rational’ for deliberated actions or decisions is understandable but unfortunate: the driver or pilot in an emergency situation

who does not deliberate about what to do because he lacks the time is not being irrational.) However, if it is the influence of World 3 that distinguishes decisions or actions from merely random occurrences, then undeliberated or capricious decisions or actions will be random. But if they are random they seem to be outside of the agent's control, in which case they are not free actions or decisions and the agent cannot be held responsible for them.

Second, Popper's account of deliberated actions or decisions is open to the same objection. For, the influence of World 3 cannot *determine* our decisions or actions, on pain of giving up free will; but if it leaves them *undetermined* they seem to be random occurrences. Popper says (1982a, 128):

[mere indeterminism] makes human creativity a matter of sheer chance. No doubt there is an element of chance in it [...] [But] So far as the creation of music can be explained, it has to be explained at least partly in terms of the influence of other music (which also stimulates the creativity of the musician); and, most important, in terms of the inner structure, the internal laws and restrictions, which play such a role in music and in all other World 3 phenomena—laws and restrictions whose absorption (and whose occasional defiance) are immensely important for the musician's creativity.

So, what the composer will do once he has started on a composition is guided, but not determined, by World 3, which means that the details are undetermined (Popper 1973, 220–222; Popper 1982a, 22–24). Further, the composer *freely* subordinates his freedom to the structural restrictions of World 3 (Popper 1982a, 128), so it is undetermined whether he will do so:

the control is far from one-sided [...] [I]f we submit to our theories, then we do so freely, after deliberation; that is, after the critical discussion of alternatives, and after freely choosing between the competing theories, in the light of that critical discussion. (Popper 1973, 241)

In this way, says Popper, we can

explain how freedom is not just chance but, rather, the result of a subtle interplay between something almost random or haphazard, and something like a restrictive or selective control—such as an aim or a standard—though certainly not a cast-iron control. (Popper 1973, 231–232)

However, the freedom that Popper allows for is always of a chance-like nature. The guidance, the “plastic control”, comes from World 3. But the free agent is *not determined* to follow the guidance and, if he does follow it, he is *not determined* in selecting the details of its application, and it is *not determined* whether or how he decides to modify it. This means that *in exactly the same circumstances*, he might have done differently in all these respects, so

it seems a matter of chance that he acts or decides the way he does. In Popper's view, it is *deliberated*, not free, action or decision that involves a subtle interplay between chance and control; but even with regard to deliberated action or decision, it is freedom that is the chance element. But this leaves the crucial problem of making sense of free will unsolved. For we have still not answered Hobart's objection: if free actions, and free decisions, including rational ones, are a matter of chance, how can they be free? And we have still not answered Russell's objection: if free actions were a matter of chance, how could we manage social interactions?

Popper has further resources on which he can draw in order to answer at least Russell's objection, namely, his propensity metaphysics combined with his theory of limited rationality. Popper propounded his propensity theory as an alternative to the Copenhagen interpretation of quantum mechanics, which he regarded as muddled (Popper 1982b, 46–86); but he developed it into a “metaphysical research programme” (Popper 1982b, 159–211). On this view, the world is indeterministic, with an open future, though it presents a largely deterministic appearance from our limited point of view, which is why *prima-facie* deterministic theories can be used by us for prediction with reasonable success (Popper 1982b, 178–179). The world contains a range of real propensities, which are analogous to forces inherent in situations; and probability values are measures of the strength of these propensities (Popper 1982a, 93–95). For example, if we toss a homogeneous and symmetrical coin, allowing it to fall on a hard, level surface, we have a 0.5 chance of getting heads. The coin has a propensity, of probability value 0.5, to show heads *in this particular situation*. In a different situation the same coin would have a weaker propensity to show heads; for example, if it falls on to muddy ground, in which case there is a significant chance that it will land on its edge and stand upright, showing neither heads nor tails. One situation counts as the same as another provided all the factors in it that bear on the possible outcomes are the same. If the same situation is repeated a sufficiently large number of times, the frequency with which heads occurs will be close to the probability value that measures the strength of the propensity. But the propensity exists in the single case. An objectively indeterminate situation is one in which the probability value of the propensity, relative to all the relevant factors in that situation that bear on the possible outcomes, is greater than 0 but less than 1 (Popper 1983, 358–360). Thus, the probabilities in question are probabilities relative to the total present state of the universe (Miller 1994, 182–190).

A superposition of propensities occurs when we have a situation which generates a range of competing propensities, the probability values of which sum to 1, and each of these propensities is such that, if it is realised, it will

generate another situation with its own range of competing propensities. This kind of probabilistic dependence is illustrated by the superposition of wave amplitudes in quantum mechanics (Popper 1982b, 83). But let us consider a more humdrum example in which, for simplicity, each range of competing propensities will be limited to two complementary ones (the sum of their probability values being 1). When a student enters a university, this raises the probability of his sitting his finals and consequently lowers that of his not sitting his finals (the complementary propensity). It also raises the probability of his answering the questions in the final exams and reduces the strength of the complementary propensity. And it raises the probability of his obtaining a degree, and reduces the probability of his not doing so. When the student sits his finals, he realises the propensity to sit his finals, and this new situation increases the probability of his answering the questions and of his obtaining a degree. When he answers the examination questions, this again increases the probability of his obtaining a degree; and when he obtains a degree, he is in a new situation with new possibilities (Popper 1982b, 159–160).

We can invoke a superposition of propensities in explaining free will. In free action, the agent selects one from a range of alternative possible physical events, each with a probability value between 0 and 1. But the mental act of selection was itself one among a range of alternative possibilities, each of which had a probability value between 0 and 1 just before the act of selection occurred. Once an act of selection occurs, the probability values of the alternative physical events are altered. Popper comes close to saying this himself. He says it is

as if certain inherent propensities superimposed themselves [...] upon certain other physical propensities of a more chance-like or equiprobabilistic character, thereby giving extra weight to certain possibilities: they impose, as it were, a systematic bias upon them. This seems to be the way in which so many improbable things happen in biological contexts. What we can now clearly see is that this kind of thing [...] already plays a role, in a rudimentary way, in classical physics (loaded dies, osmotic pressure, resonance); and we can therefore form an intuitive idea of how it may fit into our physical world, and yet transcend it, by superimposing upon it a hierarchy of purposes—a hierarchy of systematic and increasingly purposeful biases. (Popper 1982b, 210)

For example, in the situation in which I am placed, there is a vast range of motions of my body that are possible, some of which are more probable than others. I begin thinking about what to do. I have a great range of possible decisions, but the aims, options for action, theories, arguments and evaluations that I consider will make some of these possible decisions far

more probable than others; and the decision I take will alter the probability values of the possible motions of my body. This spells out what the “plastic control” of World 3 amounts to: it makes some decisions and some actions more probable than others. As my deliberation proceeds, I eliminate some options; and each time I eliminate an option, I change the probability values of my possible decisions and thereby alter the probability values of my possible bodily motions. My eventual decision has a probability value of less than 1 just before I make it, so it is a free decision. But after I reach my decision, there is still no possible bodily motion of mine that has a probability value of 1. For example, if my problem concerns how to cut back my expenditure, I may conclude that the best way of doing that is to cancel a subscription, so my eventual decision may be to telephone the relevant organisation now to cancel that subscription. But the probability of my hand moving now in such a way as to dial the organisation’s number is less than 1, since I might not act on the decision and, even if I do, I might misdial.

Undeliberated and capricious actions or decisions can similarly be conceived as the realisation of propensities. We can also note that people often act or decide in habitual ways. Habits are also propensities; but they do not determine habitual behaviour, since a free agent may act against habit.

Thus, whenever someone acts or decides freely he is realising a real propensity which has a probability value between 0 and 1 just before he acts or decides. As the probabilities measure objective features of the situations, they generally permit a form of predictability that is good enough for practical purposes: a large enough number of repetitions of a situation with a given probability distribution of options would tend to exhibit the agent realising each option with a frequency approximating its probability value.

We noted earlier that we conceive the scope of our free will to permit our interference with the working of physical laws, including statistical laws: we assume that we are not *ruled* by our propensities; we can act to change them. This may be done by initiating a critical review of our habits, past decisions, aims, values or theories about how the world works; or it may be done by over-indulging and thus strengthening a habit; or it may be done by just trying something different, perhaps experimentally with a view to appraising the results, or perhaps just on a whim with no intention to appraise anything. Of course, if an agent were changing all of his propensities to act all of the time, he would be entirely unpredictable. But it is not possible for an agent to do such a thing. Whenever we try something new, we can do so only against a background of inherited and learned ways of behaving that we take for granted for the time being (Popper 1994, 134–139). Our existing propensities to act are our default mode of operation. We are free to change any of them; but we cannot change them all at the same time. Our default



mode, including new modes that settle into default, is what makes us more or less predictable. Thus, Russell's objection is answered: we can manage our social affairs tolerably well because we know, more or less, what people are likely to do in typical situations, even though they do not always do what is most likely, and even though, over time, they may alter the likelihood of their realising particular options in particular situations.

I have explained this account of free will in terms of Popper's propensity theory of probabilities, but some theorists may prefer a frequency interpretation. However, it is essential to the account that the probabilities are construed objectively (ontologically) rather than subjectively (epistemically): free actions have an objective probability value between 0 and 1 just before they occur. Deterministic laws can be viewed as those special cases of probabilistic laws in which a situation (or event) gives an event the probability value of 1. Popper speaks of causation only in these limiting cases (Popper 1983, 288–289; Popper 1990, 20). Reichenbach (1956) and many others, weaken the notion of causality to include cases in which a situation (or event) increases the probability of an event without giving that event a probability value of 1. In our discussion it is essential to distinguish these two types of causation; so, to avoid confusion, I will not speak of causes at all, saying instead that one thing either *determines* or *influences* another depending upon whether it raises the probability of that other to 1 or to less than 1. As we have seen, the probability value of a propensity for a particular event or action to occur at a particular future time will change as that time approaches, depending on all the changes over time that bear upon whether that event or action will occur. Thus, an event may be undetermined in the sense that there was a *past* time at which it had an objective probability value between 0 and 1, and yet be determined to occur *now* in the sense that its current probability value is 1. We can say that such an event is *determined* to occur by a situation that was itself *undetermined*. This will be important in connection with the discussion of indeterministic causation in section 4.

But we have still not answered Hobart's objection. If our free actions and free decisions realise propensities with a probability value of less than 1 just before they occur, it is still a matter of chance whether they occur and they thus seem outside of the agent's control.

### 3. Control and Chance

A free action is one that is done intentionally. If I reach for a plate and accidentally knock over a glass containing wine, I do not spill the wine freely, of my own free will, and I may disclaim moral responsibility for the action, provided I was not negligent. Unintentional actions are not free actions because they are done by chance, by accident or by luck. However, determinists do

not deny the existence of unintentional actions: they accept that an action's being *done by chance* does not imply that it was an *objective matter of chance*. So, perhaps an action's being an objective matter of chance does not imply that it is done by chance. If so, then an undetermined action may be free so long as it is intentional. I will explain why this is so, though I can do so only briefly, as a full discussion requires a separate paper.

An agent performs an *action* only if his body moves. But the action is not identical to that bodily motion. For example, the motion of a person's finger could happen because something knocks against it, in which case the person has not performed an action. An agent performs the action of *moving* his finger if and only if a volition of his brings about the *motion* of his finger. A volition is a *mental act* with representational content: it represents the aims the agent seeks to achieve in performing it. For example, it may be a volition to move his finger. Every action is a particular occurrence which has many properties: it is a token of many different types. Further, every action *is* a volition. Suppose that the agent moves his finger and thereby unwittingly squashes a tiny insect that he did not know was there. He performs one volition which exemplifies the volition-type of *volition to move his finger* and the two action-types of *moving his finger* and of *squashing the insect*. But the volition became an action only by bringing about the finger motion (thereby exemplifying an action-type). A volition which fails to bring about any bodily motion, as in cases of paralysis, never acquires a property necessary to become an action. Thus while all actions are volitions, not all volitions are actions. Compare: all mothers are women, but not all women are mothers; to become a mother a woman must produce a child (to become an action, a volition must bring about a bodily motion). A volition is an intentional action with respect to a specific action-type only if its exemplification of that action-type realises some of the aims of the agent that are represented in the volition's content. For example, if the agent moves his finger intentionally then an act of volition of his both represented his aim of moving his finger and brought about the motion of his finger. But his volition is an unintentional action as exemplifying the action-type of squashing an insect, if squashing an insect was not part of the aims represented in the volition. Usually in action there is a complex goal structure in which the agent's moving of his body is represented as a means to other ends. For example, I may aim to illuminate the room by turning on the light, by flipping the switch, by moving my finger. If I succeed in the way I aimed to, my volition is an intentional action as exemplifying each of those action-types (see (Hornsby 1980) for detailed discussion).

A volition that brought about an event need not have determined it: so long as the event occurred, a volition which raised its probability of occur-

rence to a value smaller than 1 is sufficient for action and even for intentional action. For example, suppose there is a fault in my telephone so that when I dial a number there is always a small chance that I will be put through to a different number. Despite this chance of failure, if I dial a friend's number and manage to get through to that friend, I telephone her intentionally (Mele 2001, 38). Thus my action of telephoning her was an objective matter of chance; but it was not done by chance. However, the chance here is that the volition might not bring about the event that the agent aims to bring about in performing the volition. Can the action still be intentional and under the agent's control if the volition is itself an objective matter of chance?

When I move my finger intentionally, my action is identical to a volition which exemplifies the volition-type of a *volition to move my finger*. With respect to its exemplification of that volition-type, the volition is neither an intentional nor an unintentional action, since the volition-type is not an action-type (the volition may exemplify it without bringing about a bodily motion). As exemplifying that volition-type, therefore, the volition cannot be done by chance in the way that an unintentional action is. But nor can it be under the agent's control in the way that an intentional action is. However, if a volition is to engender a free or intentional action, one that is under the agent's control, it must itself be under the agent's control. And if, just before it is performed, it is an objective matter of chance that it occurs, it *seems* to be a random event which is outside of the agent's control.

However, at this level, the chance objection seems easy to rebut. Let us admit that a mere event that happens by chance is outside of the agent's control. But a volition is not a mere event that just occurs in the agent, of which he is a passive recipient: it is an *act* of the agent, something he actively does. A volition that is an objective matter of chance is not just a *random event* that *happens by chance*; it is an *act* of the agent that is under his immediate control. Thus, Hobart's talk (see section 1) of "an act of volition [which] starts of itself without cause" is confused: an act of volition does not simply start "of itself", for it is essentially *an act of the agent*. This is not to say that the agent brings about his volition: to do that he would need to perform a volition that brings it about, which leads to an infinite regress. Rather, the agent simply *acts*: he simply exercises his volition, through which he aims to bring about another event (or constellation of events).

So far in this section, I have spoken of volitions (all actions are volitions). But a free decision is also a mental act of the agent, so its being objectively a matter of chance does not entail that it is done by chance or that it is a mere chance event. But decisions should not be confused with volitions. I may decide to perform a specific type of action but then not even attempt to perform it: there will be no action without a volition. Philosophers have

been reluctant to speak of volitions out of fear of infinite regress: if action requires a *prior* volition which is itself an act, does the volition require a prior volition? Our *identification* of actions with volitions prevents this regress from getting started (Hornsby 1980, 46–65). But we might seem vulnerable to another kind of regress. A volition selects one from a set of alternative bodily motions. But the volition, being free, is itself only one of a number of alternative possible volitions. Must there, then, be a prior act of selection of the volition? But if that prior act of selection is not determined, it must also be one of a set of alternative possibilities from which a selection is to be made; and so on ad infinitum.

However, it is not the case that an act of volition requires a prior act of selection. The agent is presented with possible alternative bodily motions to bring about. In an act of volition his selection of one of the alternatives *is* his attempt to bring it about (his volition). The agent need never consider which act of volition to perform: it is sufficient that he attempt to bring about one of the alternative bodily motions he is considering. Of course, he *may* consider alternative acts of volition if, for instance, he has been reading a paper on free will. However, if he then comes to a decision (a different type of act of selection) about which volition to perform, this does not settle the matter of which volition he will perform, since he need not implement the decision (though the decision may increase the probability that he performs the volition decided upon). A *prior* act of selection is therefore neither necessary nor sufficient for an act of volition.

The bodily motions that an agent selects by means of his volitions are gross bodily motions, such as the motion of his finger: they are not microphysical events (of which the agent may be quite ignorant). But the volition will, presumably, bring about the motion of the finger by, in the first instance, bringing about a change in the brain, which then brings about a cascade of other events that produce the finger motion. I offer no hypothesis for how this process works or which microphysical events are involved.

#### 4. Contrast with Indeterministic Causation

It should help to clarify this account of free will if we briefly show its superiority to accounts in terms of indeterministic causation. The leading contemporary advocate of such an account is Kane, who offers a highly complex theory only the core elements of which need be noted here.

Kane considers an agent who, torn between motivations to perform conflicting actions, makes an effort of will to act in one way rather than the other. Drawing an analogy with the indeterminacy of the position or momentum of a microphysical particle on the Copenhagen interpretation of quantum theory (Kane 1996, 128), Kane suggests that the effort of will is of indetermi-

nate strength; but once its indeterminacy is resolved, it determines one of the alternative actions. The action which occurred was therefore *proximately* determined by the outcome of the effort of will but, since that outcome was undetermined, the action was *ultimately* undetermined. Such ultimately undetermined actions Kane calls “self-forming actions”, because they contribute to forming the agent’s character (Kane 1996, 74). He then says that a free action is either a self-forming action or an action which is determined by character traits which were themselves determined, at least in part, by prior self-forming actions (Kane 1996, 35).

I will here raise just three objections. *First*, most of our actions that we take to be free involve no motivational conflict or effort of will. In the morning, when I hear the alarm, I get up, take a shower, dress, make some coffee, and so on, without having to think twice about doing any of these actions. On Kane’s view, any of these actions can be free only in the sense that, although it was determined by character and circumstances, the history of its determination will eventually disclose a self-forming action. Yet it seems to me that, *just before* I performed each of these actions, I could have done something else: I could have had a lie-in, or a bath instead of a shower, or skipped the coffee. Moreover, I may have acted in these alternative ways without suffering internal conflict requiring an effort of will. *Second*, even Kane’s self-forming actions are determined by an effort of will. Each is undetermined only in the sense that there was some indeterminacy in the prior effort of will. But once that indeterminacy was resolved, the action had a probability value of 1, so the agent could not act otherwise. The action is not free. *Third*, as Kane’s self-forming actions are determined just before they occur, the agent does not have ultimate control of them; and as they are determined by something that is undetermined, it is a matter of luck which way the agent acts. In contrast, on my view, it is *the agent* who resolves an effort of will by an *act* of decision or an *act* of volition that is undetermined just before it occurs.

It might be protested that the indeterministic process is itself an activity of the agent, and the fact that its outcome is undetermined does not take away the agent’s responsibility for it, any more than the glitch in my telephone (see above) takes away my responsibility for telephoning my friend if I manage to get through to her (Kane 2007, 31–33). But this leads to a regress. I was responsible for telephoning my friend because my volition to telephone her influenced, though it did not determine, the event of my getting through to her. If I am to be responsible in the same way for the outcome of the indeterministic effort of will, then the result of the process must be influenced, though not determined, by a volition to bring it about. But how does this anterior volition come about? On Kane’s view, if I am to be responsible for

it, it must be determined by an indeterministic process that is an activity of the agent; but this will require a further prior volition for which the same question arises.

The second and third objections, if not also the first, apply also to other accounts of free will in terms of indeterministic causation, which locate the indeterminism in different determining factors of supposedly free actions, whether the agent's weighting of reasons (Nozick 1981, 294–316) or his process of deliberation (Ekstrom 2000) or the subset of his beliefs that happen to figure in his deliberation (Mele 1995, 211–236).

### 5. Sub-Human Agents

Although the objections of Hobart and Russell have been answered, there seems to be a further objection to overcome before we have an acceptable account of free action. There seem to be cases of intentional action which, even if they are objectively a matter of chance just before they occur, are not free. Consider a rat which presses a lever to get some food. Its action realises its aim and its pressing on the lever was presumably brought about by its volition. So the rat seems to be acting intentionally. For all we know, its volition might have had a probability value between 0 and 1 just before it occurred. But we would be disinclined to ascribe free will to the rat. It might be suggested that the actions of rats obey indeterministic laws, so rats have only very limited scope for free will. But it is the ascription of *any* scope for free will to the rat that seems objectionable. Besides, if mental properties confer a reproductive advantage, then we would expect that the rat *can* act in ways that alter its prior propensities. If so, I think we would still be reluctant to ascribe to rodents the ability to act freely. Something further seems required.

This is a large topic for which there are potentially many solutions. Here I have space only to offer one solution and defend it against objections. Adapting Kant's "synthetic unity of apperception" (Kant 1933, B131–133), I suggest that what is missing is the possibility of self-conscious awareness: it must be *possible* for the "I will" to accompany each of my free actions. When an agent acts intentionally he is sometimes self-consciously aware of doing so, as I am sometimes conscious that I am intentionally drinking my morning glass of orange juice. But many of our actions are done on "automatic pilot". I may be aware that I drank the juice only because I see the recently used glass. I performed the action without being self-consciously aware that I was doing it (perhaps my mind was on some tasks to be performed later that day). A different example would be someone who is driving a car while talking to his passenger: the actions he performs in driving the car are done below the level of his self-conscious awareness, which is occupied with the

conversation; yet each action he does is *intended* to get him and his passenger to their destination safely while showing due courtesy to pedestrians and other drivers. However, such actions count as free (if undetermined just before they occur) because the agent could, by directing his attention to them, have been self-consciously aware of doing them intentionally.

It might be objected that recent scientific studies have indicated that some of the higher animals, including dolphins and chimpanzees, are capable of self-consciousness, so if their intentional actions are undetermined, they will act freely on the account given. However, on the account given, free action requires not just self-consciousness in general but the capacity for self-consciousness of intentional actions as intentional. And the account predicts that, to the extent that we think that we must ascribe self-consciousness of intentional actions to some of the higher animals, to the same extent we will think that we must ascribe free will to them, if those intentional actions are undetermined just before they are performed. This prediction seems plausible. This suggests that there will be no clear dividing line between free actions and unfree actions, even though there may be clear instances of each. But this is what we should expect if the theory of evolution is true.

Another objection may be that many of the intentional actions that we perform are such that, if we try to attend to them while we perform them, we become unable to do them. For example, a man playing a tune on a piano makes various finger movements intentionally, but if he were to try to become self-consciously aware of these movements, he might be unable to play the tune. For such intentional actions, then, it is not possible for the “I will” to accompany them, which would make them unfree on the account given.

There seem to be three responses to this objection. The first is to bite the bullet and accept that such actions are not free; but that seems ad hoc. The second is to point out that in the case of such actions we are, in principle, able to turn our self-conscious attention to them immediately after we have completed them (Popper and Eccles 1977, 107). Thus, an action is free only if it is one of which the agent can be self-consciously aware of doing intentionally either at the time *or in recollection*. The third response is to point out that the pianist is capable of being aware, first personally, that he is intentionally playing a particular tune; and, since the finger movements are constituents of the action of playing the tune, they too count as free if his action of playing the tune does. Thus, an action is free only if it is one, *or part of one*, of which the agent can be self-consciously aware of doing intentionally. Either the second or the third response seems a natural, and thus non-ad hoc, modification to the account.

I do not claim that our self-conscious awareness of our intentional action, when it occurs, is incorrigible. We can always be mistaken. Further, I offer no account of this capacity, the conditions of it, or the routes to it, for example, introspection, proprioception or Anscombe's (1957) "practical knowledge". What matters for the account of free action is the *fact* that we have this capacity for self-conscious awareness of our intentional actions as intentional. This enables us to distinguish free actions from possible intentional actions of sub-human agents that are objective matters of chance just before they occur; it might also contribute to explanations of the unfree nature of some psychopathological actions, such as Freudian slips.

## 6. Conclusion

If all our actions are determined we are neither free nor responsible; yet if our actions are undetermined they may seem to be outside of our control and unpredictable, making us neither free nor responsible. Popper makes a number of contributions to the problem of understanding free will, including:

- physical indeterminism is insufficient for free will, since the latter implies that mental events can influence physical events;
- evolutionary theory suggests, and our ordinary conception of the scope of free will implies, that the free agent can interfere with the working of physical laws, including indeterministic laws;
- the problem of free action is not reducible to the problem of deliberated action;
- a probabilistic interpretation of indeterminism shows how free actions can be both strictly unpredictable and yet predictable enough for practical management of social interactions (thus answering Russell's objection);
- and this remains so even though a free agent can act to alter his propensities, because such alterations can be made only piecemeal.

But Popper's discussions exhibit a couple of lacunae:

- he does not solve the problem of how actions that are objectively a matter of chance can be free and responsible (Hobart's objection);
- he does not consider how free actions may be distinguished from undetermined intentional actions of sub-human agents.



Hobart's objection can be rebutted by making two distinctions, between an action's being done by chance and its being an objective matter of chance, and between an act and a mere event. Free actions are objective matters of chance, but they are not done by chance and they do not happen by chance: as intentional actions of the agent, they are under his control. A further condition on an action's being free seems to be that it must be such that the agent could become self-consciously aware of it as his intentional action. This distinguishes free actions from possible undetermined intentional actions of sub-human agents; and it may perhaps help to explain why some pathological actions are unfree.

My aim has been to make sense of free will and to explain Popper's contribution. I have not claimed to show that we do act freely. It might be that none of us is ever a free agent (Popper 1982a, 1). For example, physical determinism could turn out to be true, or we might all be victims of a super-hypnotist who controls our actions and has rendered us unable to detect our unfreedom.

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