

Abstract

In order to find a convincing position in the 'free will' debate, two sorts of determinism are distinguished. The merits of encompassing determinism, which is determinism as it is usually understood, and individual determinism, which focuses on the agent, are brought to the fore. The existence of encompassing determinism cannot conclusively be proven, but it may be demonstrated, on the basis of individual determinism, that actions come about in a determined way, leaving no room for 'free will'. In order to facilitate the discussion, recent scientific developments in such diverse fields as, e.g., quantum mechanics and neuropsychology are incorporated. Balancing the arguments, I aspire to a consistent and nuanced viewpoint, not eschewing divergent conclusions.

Introduction

The question whether a 'free will'¹ can be said to exist, especially when one considers the implications of determinism, is, by now, a classical one, and has led to many – diverging – answers. In this article, I contribute to the discussion by pointing to a new way to counter some of the difficulties one finds when trying to reach a consistent position. In order to be able to reach conclusions that are consistent with scientific observations, I have incorporated a number of relevant recent developments.

The main problem in the debate seems to be that it is unclear whether processes develop in a determined way and how this is relevant for the existence of a 'free will'. In section 1, I present some difficulties involved with the usual concept of determinism, which I call 'encompassing determinism'. A number of scientific developments, the most important of which is quantum mechanics, have given rise to some doubts with regard to this model. I will evaluate these and their relevance. Subsection 1.2 is focused on the question whether the position of encompassing determinism is tenable. Kant's point of view is both influential and illustrative in a number of respects; accordingly, his position merits special attention. Encompassing determinism, it will be pointed out, cannot be proved or refuted.

This does not, however, mean that a 'free will' is proved to exist. In order to deal with this matter, I present, in section 2, a second concept of determinism, 'individual determinism', in which agents are the focal point of attention. If encompassing determinism should be given up, one may still investigate the individual situations and find out whether these are determined.

To that end, I concentrate on the factors that may be indicated as the influencing or even determining elements for behavior, again seeking the link with current scientific developments. Factors are the things that influence actions if they are present and are even decisive if they are the only elements involved.

This means that there is no use in talking about 'indeterministic factors'.² 'Factor' originally (in

¹ Quotation marks will, apart from instances in other authors' titles and quotes, be used in all occurrences of 'free will' (save one (cf. *infra*, note 37)) in order to indicate the problematical character of this phrase.

² T. O'Connor, *Persons and Causes*, p. 23; cf. p. 37, where Kane's position (in *The Significance of Free Will*) is discussed, whose account is said to posit "[...] a rich, intuitively appealing interplay of factors that are held to jointly constitute a free agent's autonomy and control."

Latin) means 'creator'; factors, then, decide (determine) actions if they are the only elements involved, so that an indeterministic action would have to occur in a (supposedly) factor-free realm. Subsection 2.2 addresses this issue, which is also concretized there to some extent. In order to accommodate both the incompatibilist and the compatibilist perspective, an analysis of the meaning of 'free will' is also required. By integrating these aspects, I finally attempt to reach a consistent and balanced conclusion.

1. Encompassing determinism

1.1. The confrontation with modern science

'Determinism' is often understood as the position that every event is determined to occur as it in fact occurs, or, put differently, as "[...] the thesis that there is at any instant exactly one physically possible future."³ or as "[...] the thesis that there are comprehensive natural laws that entail that there is but one possible path for the world's evolution through time consistent with its total state (characterized by an appropriate set of variables) at any arbitrary time."⁴ This sort of determinism is referred to as 'encompassing determinism' in this article.

There are those, sometimes called hard determinists, who include human actions in this process, indicating that 'free will' is incompatible with this state of affairs. Others, sometimes called libertarians, maintain, as the hard determinists do, that 'free will' is incompatible with determinism, but draw a different conclusion, namely that determinism must for that reason be wrong. That is to say, it may be possible that determinism is the correct view for a number of processes (e.g., in some circumstances the trajectory of a tennis ball being thrown away), but the limits of its explanatory value are encountered once human actions are involved. Human actions, or at least part of them, are rather constituted on the basis of a process that is generated by human beings themselves.

Finally, there is the compatibilists' view; they hold, simply put, that 'free will' and determinism go together; determinism may even be a condition for a 'free will' to be possible at all.⁵ In this section, I will explore the claims of this sort of determinism in the light of some important scientific movements. In the second section, another sort of determinism is discerned, which may prove to be required for a convincing account of determinism and 'free will'.

A great number of arguments have been put forward in order to invalidate any of the above-mentioned positions. It is useful to inquire whether recent scientific developments may contribute to clarifying the issue and whether one of these approaches may thus prove to be the most credible. After all, if one wants to apply the theory to the actual situations one encounters, "[...] the "Existence Question" for free will [...] cannot be finally settled by armchair speculation, but only by future empirical inquiry."⁶

The Newtonian paradigm displayed a relatively straightforward interpretation of physical events; these were considered to be determined to occur as they occurred. The rise of chaos theory and, in particular, quantum mechanics, has led to a number of critical questions, proving it difficult to cling

³ P. van Inwagen, *An Essay on Free Will*, p. 3.

⁴ T. O'Connor, *Persons and Causes*, p. 3.

⁵ These demarcations – hard determinism, libertarianism, and compatibilism – are somewhat simplistic in that they don't cover all possible positions (mine, for example), but for present purposes they suffice as long as they are considered mere convenient aids.

⁶ R. Kane, *The Significance of Free Will*, p. 184.

to determinism on the same scale as before. Quantum mechanics focuses on the micro-level, where the familiar concepts and views cannot be applied. At this level, it is argued, the relevant 'objects' – neutrons and protons, or even (more fundamentally) quarks – do not obey the natural laws acknowledged to be decisive hitherto. The question naturally arose whether the deviations point to an inherently indeterministic system, or can still be interpreted deterministically, albeit that one would not be able to observe the determinism.

The first stance is taken in the Copenhagen Interpretation.⁷ The apparent conflicts with the familiar, macro-oriented, approaches manifest, in this interpretation, a fundamental indeterminism. Some opponents of this view, who take the second stance, appeal to 'hidden variables', pointing to an alleged, underlying, as yet undemonstrated, determinism; they are unable to demonstrate this apparent determinism, but cannot cope with a theory that diverges from this basis. Obviously, such a strategy is not the most compelling one:⁸ electing something simply because the alternative is unattractive is clearly an argument *ad ignorantiam*, especially if that alternative is – at least partly – underpinned.

That doesn't mean that the first option must be the right one. First of all, it is not clear how one might conclude the existence of a 'free will' from the fact that things are undetermined; this just seems to indicate that it is not yet known what will – necessarily – happen. More is needed for a 'free will' to exist, if this is possible at all (which, I think, is doubtful, as I will point out in section 2). After all, if things are fundamentally undetermined, this might still not provide any basis to decide one's actions. Whether or not it is a necessary condition for a 'free will' to exist that things are not determined, it is not a sufficient one. It just demonstrates the presence of more than one option, not that one may oneself decide which of the options is realized. Furthermore, it is important to distinguish determinism from predictability.⁹ One may dub the position that the development of a physical system can be predicted accurately 'epistemic determinism' and point out its shortcomings without this having consequences for physical determinism.¹⁰ This is demonstrated in chaos theory.¹¹

It is, then, conceivable that determinism is the correct view while it is impossible for human beings to observe this; to them, processes may appear chaotic or indeterministic. The Newtonian perspective, dealing with the macro-level, may be consistent with the idea that prediction is – in theory – possible, but the results produced by quantum mechanics and chaos theory make such an outlook difficult.

1.2. The Kantian perspective

Kant, the epistemological part of whose philosophy is embedded in a Newtonian framework,¹² maintains that it can't reasonably be demonstrated that a 'free will' exists. It can both be argued that there is only causality through the laws of nature and that there is, besides such a causality, a

⁷ This should actually be understood as 'Copenhagen Theory' (J. Cushing, *Quantum Mechanics. Historical Contingency and the Copenhagen Hegemony*, p. 224 (note 15)).

⁸ It should not be dismissed forthrightly, either, though, on the mere basis that it is at odds with the views of most present physicists (cf. T. Honderich, *How Free Are You?*, p. 65).

⁹ Cf., e.g., J. Hobbs, 'Chaos and Indeterminism', p. 144.

¹⁰ G. Hunt, 'Determinism, Predictability and Chaos', p. 132.

¹¹ *Ibid.*; M. Stone, 'Chaos, Prediction and Laplacean Determinism', p. 128: "[...] Chaotic systems, even though they are deterministic, are not predictable (they are not *epistemically* deterministic)."

¹² I. Kant, *Kritik der reinen Vernunft*, p. 213 (A 257/B 313).

causality through freedom.¹³ Kant calls the contradiction found by reason an antinomy of pure reason.¹⁴ His approach to nonetheless salvage human freedom can only be understood against the background of his distinction between phenomena and things in themselves (or the thing in itself, or noumenon; Kant uses these wordings interchangeably¹⁵); in his view, on the basis of experience, one can merely acquire understanding insofar as this is realized by space, time, and the twelve categories he discerns, making it impossible for a human being to know anything about things in themselves. It cannot, then, be shown that human beings are free; in fact, on the basis of experience alone one would infer that there is no room for freedom.¹⁶

Man is to be considered to be both an empirical subject and a thing in itself.¹⁷ At the noumenal level, he is considered not to be subjected to the determinism observed at the phenomenal level. Freedom is a transcendental notion,¹⁸ which means that it is not restricted by the laws of nature.¹⁹ It is important to realize that Kant's position, if one should (anachronistically) want to qualify it in terms of the current approaches, is incompatibilistic (libertarian), although a compatibilistic interpretation may seem tempting, as he defends both determinism and a 'free will'. His incompatibilistic viewpoint is clear from the way he describes the contrast in one of the possible positions: "There is no freedom; everything in the world occurs by contrast merely through laws of nature."²⁰ The fact that two levels are at stake also pleads for an incompatibilistic interpretation.

Apparently, determinism and 'free will' are mutually exclusive. Kant's solution suffers from his libertarian outlook. If man is to be regarded as both a – determined – phenomenal being and a noumenal one, can it be maintained that *one* being is concerned? It seems that this being unites two characters, in such a way that the subject should be considered a sort of schizophrenic. One may at least adduce that it is difficult to grasp how an action should be perceived from these two perspectives without arriving at this conclusion. More importantly, however, Kant doesn't clarify how a 'free will' is possible; he merely shifts the problem to a higher level, where it remains unsolved. Of course, Kant doesn't profess to (be able to) provide a conceptually satisfactory answer here, but that doesn't mean that criticism should not be possible.

The greatest merit of Kant's exposition lies in his pointing out the limitations of experience in deciding the issue. Ironically, his search is one for indeterminism in a world which experience shows to be determined while the 'hidden variables' stance in quantum mechanics posits determinism in an observationally undetermined one.

In a similar vein, one may state that "[...] scientific enquiry [...] can never furnish us with a complete account of what it is to be a human being or why a human being acts as he does. It will still be reasonable to investigate the working of the body and, in particular, the brain, and to produce mechanical models of the mind. Only, no mechanical model will be completely adequate,

¹³ I. Kant, *Kritik der reinen Vernunft*, pp. 308-313 (A 444-451/B 472-479).

¹⁴ I. Kant, *Kritik der reinen Vernunft*, p. 282 (A 407/B 434).

¹⁵ This is, incidentally, not inconsistent, since 'unity' and 'plurality' are both categories (I. Kant, *Kritik der reinen Vernunft*, p. 93 (A 80/B 106)), which, being pure concepts of the understanding, don't apply to the thing in itself (or things in themselves) (I. Kant, *Kritik der reinen Vernunft*, p. 207 (A 246/B 303)).

¹⁶ I. Kant, *Kritik der reinen Vernunft*, p. 369 (A 544/B 572); pp. 371, 372 (A 548/B 576).

¹⁷ I. Kant, *Kritik der reinen Vernunft*, pp. 366-377 (A 538-558/B 566-586).

¹⁸ I. Kant, *Kritik der reinen Vernunft*, p. 363 (A 533/B 561); p. 377 (A 558/B 586).

¹⁹ I. Kant, *Kritik der reinen Vernunft*, p. 309 (A 445/B 473); cf. p. 363 (A 533/B 561).

²⁰ I. Kant, *Kritik der reinen Vernunft*, p. 309 (A 445/B 473). The original text reads: "Es ist keine Freiheit, sondern alles in der Welt geschieht lediglich nach Gesetzen der Natur."

nor my explanation in purely physical terms."²¹ This opinion resembles Kant's. Limits with regard to the significance of human existence are drawn, leaving room for a non-scientific explanation of certain aspects. It is not explained what it would mean to be free, so that the room which has been created is not actually used by rendering a positive account.

Can it, then, perhaps be scientifically demonstrated whether a 'free will' is possible? Quantum mechanics (at least in the Copenhagen interpretation) seems to point to indeterminism. As Van Inwagen puts it: "Actual matter, matter that obeys the rules of quantum mechanics, is intrinsically incapable of carrying within itself the perfectly determinate dispositions to future behaviour that strict determinism requires."²² Still, even at present there are relevant deterministic elements one may point out: "The most significant empirical objections to agent-causal libertarianism challenge its capacity to accommodate our best natural scientific theories. [...] [G]iven our scientific understanding of the world, how could there exist anything as fabulous as an agent-causal power?"²³ Both determinism and indeterminism can be argued and backed up with scientific references.

Kant's stance (not the appeal to transcendental freedom but the fact that reason can't decide which line of reasoning is correct) appears appealing in this light. Perhaps it should be concluded – with Schrödinger – that it is impossible to decide whether (encompassing) determinism or indeterminism is the correct view on empirical grounds.²⁴

Only incompatibilism has received attention up to now. For a compatibilist, determinism is not a problem, and even a requisite for a 'free will' to exist, so may this position still be tenable? The pivotal issue, how a 'free will' can exist, is not resolved here, either. Compatibilists need to clarify how a 'free will' may exist, just as this is incumbent on the libertarians. The notion itself is problematical, however; this will receive further attention in section 2 (where the viewpoints of some compatibilists will also be discussed).

Finally, it is necessary to remain critical of quantum mechanics and chaos theory as well as the other theories currently deciding the scientific panorama, particularly with considerations such as Kuhn's²⁵ in mind. The most viable approach would, in my opinion, be a pragmatic one, accepting results that prove to be useful, yet ever prepared to abandon the current theory once a more adequate one is encountered.

The title of this section is 'encompassing determinism'. This has the same meaning as 'determinism' in general (cf. the beginning of subsection 1.1). *This sort* of determinism doesn't seem to be provable or refutable, at least not by me, and I venture to suggest not to be alone in this limitation. In order to do so, one would have to be able to ascertain whether the physical and other processes develop in the same way in (imagined) possible worlds with the same starting position as the present world. Should one have access to a sufficient number of such worlds and observe that they, or at least some of them, develop alternatively, determinism would be refuted; should it be observed, conversely, that they all develop in the same way as the present one, it would be proved (forgoing here the problem of induction). Encompassing determinism will remain an inscrutable doctrine, just as its opposite, indeterminism, as long as this incapacity remains.

²¹ J. Lucas, *The Freedom of the Will*, p. 167.

²² P. van Inwagen, *An Essay on Free Will*, p. 192.

²³ D. Pereboom, *Living Without Free Will*, p. 69.

²⁴ J. Cushing, 'Quantum Mechanics. Historical Contingency and the Copenhagen Hegemony', p. 205.

²⁵ Th. Kuhn, *The Structure of Scientific Revolutions*, pp. 52, 53, 66, 67, 77-91, 111, 162-173.

The question whether the existence of a 'free will' can be consistently maintained cannot, then, be resolved at this level; in other words, encompassing determinism cannot be proved or refuted unless knowledge that (at least at this moment) seems inaccessible becomes available. That doesn't mean that the matter should be disposed of by resorting to a suspension of judgment, or at least not yet, for it is conceivable that another sort of determinism might shed some light on it. This will be inquired in the next section.

2. Individual determinism

2.1. Neuropsychology's import

One may evade the – (as yet) insoluble – question whether encompassing determinism is tenable or not by focusing exclusively on the subject. Rather than speculating on the necessity of physical and other processes in general, one may inquire the way the subjects' actions originate. Recent research in neuropsychology provides some interesting results. Libet investigated subjects' reactions to stimuli in order to assess the role of the unconscious.²⁶ They were asked to flex the wrist whenever they felt like doing it; this should happen spontaneously. Additionally, they had to indicate what the position of the spot on an oscilloscope 'clock' was at the time of moving. It appeared that the voluntary act is preceded by a 'readiness potential': the voluntary, conscious act is actually 'prepared' and decided unconsciously.

This might imply that there remains no room for a 'free will'. This stance seems all the more likely if additional data are discounted in the analysis. Soon et al. write, reacting to Libet's and other findings: "[...] the earliest predictive information is encoded in specific regions of frontopolar and parietal cortex, and not in SMA [(the supplementary motor area)]. This preparatory time period in high-level control regions is considerably longer than that reported previously for motor-related brain regions [...]."²⁷

Libet doesn't endorse the conclusion that a 'free will' is absent. Even though the act (the response) arises on an unconscious basis, so that there is no 'free will' at this stage,²⁸ one may (consciously) rescind the original (attempt to) act: "*Conscious-will could [...] effect the outcome* of the volitional process even though the latter was initiated by unconscious cerebral processes. Conscious-will might block or veto the process, so that no act occurs."²⁹ This veto is subsequently considered to prove the existence of a 'free will': "[...] the conscious veto is a phenomenon that provides an opportunity for free will to act as a *controlling* agent in voluntary action."³⁰

Is the fact that this veto arises consciously sufficient to conclude the presence of a 'free will'? Libet's data, even if one takes the conscious veto into account, leave both options – the existence and the non-existence of a 'free will' – open. Mele's distinction, in interpreting Libet's results, between wanting and desiring,³¹ may be warranted. The following observation, however, is problematical: "Processes have parts, and the various parts of a process may have more and less proximal initiators. A process that is initiated by an unconscious urge may have a subsequent part

²⁶ B. Libet, 'Unconscious cerebral initiative and the role of conscious will in voluntary action', *passim*; 'Do We Have Free Will?', *passim*.

²⁷ C. Soon et al., 'Unconscious determinants of free decisions in the human brain', p. 545.

²⁸ B. Libet, 'Consciousness, Free Action and the Brain', p. 61.

²⁹ B. Libet, 'Do We Have Free Will?', pp. 51, 52.

³⁰ B. Libet, 'Can Conscious Experience Affect Brain Activity?', pp. 25, 26.

³¹ A. Mele, *Free Will and Luck*, p. 31.

that is directly initiated by the conscious formation or acquisition of an intention. "The 'conscious self' – which need not be understood as something mysterious – might more proximally initiate a voluntary act that is less proximally initiated by an unconscious urge."³²

The '(conscious) self' is, I think, a problematical if not, indeed, mysterious notion, but I won't go into that here. For now, it is important to focus on the process. The fact that two initiating processes ensue does complicate the issue, but it is not clear, even if they both exist, how a 'free will' is possible. The same problem is present in Dennett's approach. He says: "[...] our free will, like all our other mental powers, has to be smeared out over time, not measured at instants."³³

Neither Libet himself, nor these or the other interpretations I know decisively prove the existence of a 'free will'. The reason for this is that it isn't clear on what basis the veto, or generally any act that is supposed to be explained by a 'free will', comes to pass, and why something other than a 'free will' should not determine the decision.

At the unconscious level, factors are considered to be decisive for an outcome; at the conscious level, this may be thought to be different, as the agent has (*ceteris paribus*) the freedom to act in more than one way. This was exemplified by the possibility to veto in Libet's study: the subject could perform some act or refrain from it. This freedom is also present in a number of everyday situations, e.g., when one has a limited amount of time at one's disposal and must choose between two activities, such as studying for an exam and doing something else one would rather do.

Still, it can be argued that this freedom is merely freedom of *movement*; nothing more than this is demonstrated. A common sense-approach easily confuses freedom of movement, which is observed, and a 'free will', which isn't. Perhaps, then, what seems to be a 'free will' should be qualified differently. As Wegner puts it: "The real causes of human action are unconscious, so it is not surprising that behavior could often arise [...] without the person's having conscious insight into its causation."³⁴ The reason for this may lie in a sort of wishful thinking: "It may be that the illusion of conscious will is persistent because we honor so deeply what people mean to do that we readily overlook the causal forces that have impinged on them to force their action."³⁵ The finest formulation is perhaps Spinoza's: "People are mistaken in thinking they are free. This opinion consists entirely in this, that they are conscious of their actions, yet unaware of the causes by which they are determined. This, therefore, is their idea of freedom: that they don't know any cause of their actions. For what they say, that human actions depend on the will, are words of which they have no corresponding notion. No one knows, after all, what a will is and how it would move the body; who discuss something else, and devise seats and places for the soul, are wont to give rise to laughter or nausea."³⁶ (Spinoza appears to problematize even the notion of 'will'.)

In this line of thought, there are merely decisive factors; a 'free will' would be a fictitious additional entity. This view is appealing. 'Free will' is, in my opinion, a vague notion. If one should want to

³² A. Mele, *Free Will and Luck*, p. 42.

³³ D. Dennett, *Freedom Evolves*, p. 242.

³⁴ D. Wegner, *The Illusion of Conscious Will*, p. 97.

³⁵ D. Wegner, 'Self is Magic', p. 238.

³⁶ B. Spinoza, *Ethica*, part II, Prop. 35, Scholium (p. 117). The original text reads: "[...] Falluntur homines, quòd se liberos esse putant, [...] quae opinio in hoc solo consistit, quòd suarum actionum sint conscii, & ignari causarum, à quibus determinantur. Haec ergo est eorum libertas idea, quòd suarum actionum nullam cognoscant causam. Nam quòd ajunt, humanas actiones à voluntate pendere, verba sunt, quorum nullam habent ideam. Quid enim voluntas sit, & quomodo moveat corpus, ignorant omnes, qui aliud jactant, & animae sedes, & habitacula fingunt, vel risum, vel nauseam movere solent."

express the freedom (of movement) of the will, i.e., the fact that the will is not necessarily directed at one object rather than another, one might speak of a free will.³⁷ This could only be refuted by an appeal to encompassing determinism, and, as I maintained in section 1, it seems impossible to prove this correct (or wrong). (Besides, if encompassing determinism were proved correct, a 'free will' would *a fortiori* be ruled out, so that the issue would be solved at an earlier stage than the one presently under discussion, rendering a moot point.)

This is, however, not how the notion is usually understood. Irrespective of the many attempts to explain it, it may be that the notion isn't clear or consistent at all; I, for one, am unable to conceive of a more elaborate freedom than freedom of movement (of the will or otherwise). In that case, it is not merely libertarianism that is struck, but compatibilism as well. Compatibilism doesn't suffer from the fact that it would have to explain how a second species of causality, apart from the determined process with which one is familiar, is possible, but its adherents are no less obliged to clarify their use of 'free will' than their fellow proponents of this notion, the libertarians. Even if actions on the basis of a 'free will' are supposed to be understood as part of the necessary process, it must still be clarified how this situation differs from the one defended by hard determinists.

One may also start the inquiry on the basis of the data with which one is familiar. Rather than trying to prove that a 'free will' supervenes apart from the factors that play a part in actions, one may begin at the other side of the spectrum and focus on these factors. The question then arises what their scope is and to what extent their presence may be said to oust that of a 'free will'.

2.2. Factor-determined agents

The benefit of starting with the question to what extent the factors that are present in behavior are decisive is obvious: they can be observed. One doesn't begin to inquire the notion 'free will', which is a contested concept (if it is a concept at all), but starts with elements that can be accounted for. The question which of these have the greatest influence still gives rise to many debates, but at least there is some consensus concerning their presence. Of course, science marches on, and as more knowledge is gathered on the factors, the viewpoints may shift – perhaps even leading to the acknowledgement of as yet undiscovered factors – but that bears no relevance to my inquiry.

Factors are observable (the fact that factors are present can be noticed). The actual factors that influence the behavior of people and other beings, however, are difficult to ascertain. At present, genetics is a successful approach, rendering genes as factors at least partially considered to be the cause of one's actions. I cannot fully assess to what extent this discipline is more convincing in revealing why beings act as they do or are as they are than an alternative – since I cannot look into the future and know whether it will be replaced by an even more aptly constructed (and successful) scientific view – but as it merely serves as a possible concrete approach, this is not crucial.

If genes are decisive for the coming about of an action in that, although one may think one makes a choice independently, it is in fact determined by genes, a 'free will' is excluded. This is a relatively straightforward model. Some deem it *too* straightforward. Dawkins emphasizes the import of environmental causes: "Genetic causes and environmental causes are in principle no different from each other. Some influences of both types may be hard to reverse; others may be

³⁷ I leave the quotation marks behind here as this is a case in which 'free will' (using the quotation marks just now as the notion rather than the object is involved) has a meaning, albeit idiosyncratically, since it merely indicates a freedom of movement.

easy to reverse. Some may be usually hard to reverse but easy if the right agent is applied. The important point is that there is no general reason for expecting genetic influences to be any more irreversible than environmental ones."³⁸ Elsewhere he puts it as follows: "Genes have no monopoly on determinism."³⁹

One may even, as Looren de Jong does, point to relations between genes and environmental influences: "[...] The phenotype is not precoded in the genes; rather, development is a dynamic, interactive process, involving all sorts of top-down and bottom-up causal influences between genes, the whole organism and the environment."⁴⁰ Pinker's argument is similar: "People sometimes fear that if the genes affect the mind at all they must determine it in every detail. That is wrong, for two reasons. The first is that most effects of genes are probabilistic. [...]. The second reason that genes aren't everything is that their effects can vary depending on the environment."⁴¹ (Pinker also deals with the connection between determinism and 'free will',⁴² but this determinism is encompassing determinism as I have defined it.)

There is some merit in these remarks. Still, all these authors do is unnerve the dominant role of genes in the coming about of actions. The environmental elements they mention are not demonstrated not to be factors. If environmental factors are indeed involved, as they argue, the process leading to an action is more intricate than one based on genes alone, but no less determined. If an action is partly based on a genetic input and partly on, e.g., one's education (or, more generally, one's upbringing), there is still only one way to act: the course of action 'dictated' by the union of genes and the education. A 'free will' no more presents itself than in the sole operation of genes.

Factors are supposed to influence behavior; if a 'free will' is present, their influence is limited, but if it is not, they don't merely influence behavior but determine it. In other words, only if a factor-free realm is acknowledged to exist, in which a 'free will' can play its part, can behavior be said to be undetermined. The compatibilists' position is a bit complicated here, since in their view a 'free will' and the factors cover the same course of actions, but even they will have to grant the existence of such a realm in order to back up their claim that a 'free will' exists. In the absence of such recognition, they would in fact be hard determinists.

I started this subsection by saying that factors can at least be observed. This is somewhat misleading, as it is not clear that the elements that are observed can actually be qualified as factors – after all, future findings may prove the current results not to suffice, and, apart from that, there isn't even agreement at present with regard to the question which are the crucial elements. One must be careful and avoid the circle of concluding that the elements that are observed with actual (human) beings are factors on the basis of one's having characterized them thus. Whether elements are factors must be decided on the basis of (scientific) observations. If it has already been concluded that a being is a factor-determined being, this issue is not problematic, since it only pertains to the question *which* factors are decisive.

³⁸ R. Dawkins, *The Extended Phenotype*, p. 13.

³⁹ R. Dawkins, *A Devil's Chaplain*, p. 106. Dawkins confuses predictability and determinism (cf. subsection 1.1) here (*ibid.*), but that is not the issue now.

⁴⁰ H. Looren de Jong, 'Genetic Determinism', p. 632; cf. pp. 627 and 629.

⁴¹ S. Pinker, *The Blank Slate*, pp. 49, 50. (The first reason seems to point to a confusion between determinism and predictability with this author as well.)

⁴² S. Pinker, *The Blank Slate*, pp. 174-185.

As this section does not deal with this issue (the issue *which* factors may be considered decisive), but is rather focused on the question *whether* factors (irrespective of their nature) are decisive, my attention lies elsewhere; the empirical findings were merely presented in order to give concrete examples.

Suppose that factors are entirely decisive for the coming about of an action. The agent's actions can then (tautologically) be said to be factor-determined. The term 'agent' should perhaps not even be maintained for a person, as Priestley argues: "[...] To [the *cause* of the choice] it is that we ascribe the *agency*, or *determining power*."⁴³ I have, however, clung, pragmatically, to the word 'agent' here – as does Priestley himself⁴⁴ – without suggesting that this agent (a person) has any determining power.

At any rate, there would only be – individual – determinism: the agent would not be able to alter the action that is to ensue; at the individual level, at least, the process is a necessary one. The problem is, of course, that the question whether actual agents and agents' actions are factor-determined is an empirical one, which can't be resolved with an a priori analysis. Still, the analysis at least clarifies matters and forces the 'free will'-defender to explicate his position: it is incumbent on him to clarify how a 'free will' would be involved in the coming about of actions *apart from* any factors.

Any room left presents a possibility to argue the existence of a 'free will'. Such a stance would, however, I think, be hard to take. As was pointed out in subsection 2.1, 'free will' is not a clear notion. It merely seems to point to freedom *of movement* of the will to be directed at an object. One cannot, on this basis, conclude the existence of an additional 'freedom' of the will, a second sort of freedom. Consider the example given in subsection 2.1. Someone has an exam in a few days. He can spend his time preparing for it, or be occupied with activities more to his liking than that. Assuming he can guide his actions on the basis of freedom of movement, one might say that his 'free will' is involved in choosing which of these two paths to follow. But on what basis would this occur? It is difficult, if possible at all, to see how a 'free will' would decide an action.

On the other hand, one may point to various factors that may be present: he may have been brought up in such a way that he will act in a disciplined way (or not), or there may be some innate factors (perhaps genes), or a combination of nature/nurture may explain his actions. He may be said to act from a certain character, but that isn't helpful to the 'free will'-defender, as the character is, one may adduce, itself the result of a process shaped by factors (or rather, perhaps, itself a factor, for if a character were merely the *result* of factors, this would still leave the option that a character exhibits 'free will').

It isn't clear, then, how a 'free will' is involved in the coming about of actions. One may object that an argument *ad ignorantiam* is involved here. After all, the fact that the presence of a 'free will' is not demonstrated leaves open the possibility that it should exist. That is correct, but, first, the onus to prove its *existence* is (conversely) on the defenders of the existence of a 'free will', and, second, the semantic doubts that were raised, namely, whether 'free will' has a meaning at all (apart from freedom of movement) strike the issue at the core.

Still, it is important to be nuanced. It is clear that factor-determined agents are not free (except in the sense of freedom of movement), since their actions are determined by factors. This is an a priori given: it follows from the definition of 'factor-determined agent'. The question, however,

⁴³ J. Priestley, *The Doctrine of Philosophical Necessity*, p. 50.

⁴⁴ J. Priestley, *The Doctrine of Philosophical Necessity*, p. 54.

whether actual agents, in particular human beings, are such agents, is an intricate one: "[...] The human organism and human behaviour are such terribly complex things, and so little is known about the details of that terrible complexity (in comparison with what there is to be known), that it is hard to see why anyone should think that what we do know renders a belief that human behaviour is determined reasonable."⁴⁵ This observation is valuable but should, in my opinion, be supplemented by saying that it is hard to see why one should conclude, from this complexity, that (individual) determinism is not the case.

This question cannot be resolved a priori, and perhaps not even a posteriori. I add the latter phrase since 'free will'-defenders have the option, in spite of scientific evidence to the contrary, to claim 'free will' to lie at the root of an action. The apparent impossibility to show this has not stopped them before, and will presumably not be considered a decisive objection in the future.

Conclusion

I have tried to show the consequences of recent scientific developments for the way the question whether a 'free will' can be said to exist should be answered. In section 1, I argued that determinism as it is usually understood, which I dubbed 'encompassing determinism', cannot be demonstrated, but is not falsified by the results produced by quantum mechanics, either. Quantum mechanics and chaos theory limit the possibilities to predict the occurrence of specific events, but that doesn't mean that determinism is absent; it just means that the observer is unable to ascertain it, if it is in fact present. The presence or absence of encompassing determinism can't be demonstrated as one is only acquainted with the processes that occur in the world one knows; possible worlds may be imagined, but merely provide laboratories for the mind, in which actual scientific experiments cannot be conducted.

Section 2 presented an alternative to circumvent this impasse. This consists in suspending judgment whether encompassing determinism is the correct view and focusing on the individual actions. To that end, I have, in subsection 2.1, evaluated Libet's neuropsychological experiments. In my opinion, the research doesn't produce the results needed to support the view that 'free will' plays a part in the actions of human beings. The impressive results obtained in genetics, finally, should not tempt one to conclude that these are (on their own) decisive; after all, environmental factors are also to be taken into consideration, and an even more adequate approach, perhaps partly consistent with genetics, might make its appearance in time.

This means that I cannot with certainty say that human beings have no 'free will'. For me, 'free will' has no meaning, except for the freedom of movement of the will, but I want to be careful and not apply my a priori findings to an empirical domain. In order to restrict myself to that which I can maintain, I have concentrated on a factor-determined being: as long as one acts on the basis of factors alone, 'free will' has no part in the coming about of an action. This does amount to a practically tautological stance, which provides the position its strength and weakness at the same time. It finds its strength in that it is a priori and needs no empirical validation. The weakness consists in the fact that the findings can't straightforwardly be applied to human beings (or even other beings than these). Rather than wildly applying them without the proper basis, I have opted for a careful but solid approach. This doesn't make the article a strictly academic one, though. The starting-point of the factor-determined being may be useful to empirical research in which it is considered whether actual beings have a 'free will' or not.

⁴⁵ P. van Inwagen, *An Essay on Free Will*, p. 198.

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