Verbum et Ecclesia
ISSN: (Online) 2074-7705, (Print) 1609-9982

Two incompatible images of the material nature of human beings and of being human: Reframing the free will debate

Check for updates

Author:
Pieter F. Craffert[1,2]

Affiliations:
[1]Department of Biblical and Ancient Studies, College of Human Sciences, University of South Africa, Pretoria, South Africa

[2]Department of New Testament, Faculty of Theology and Religion, University of Pretoria, Pretoria, South Africa

Corresponding author:
Pieter Craffert,
pfcraffert@gmail.com

Dates:
Received: 10 Nov. 2025
Accepted: 26 Feb. 2026
Published: 13 Aug. 2026

How to cite this article:
Craffert, P.F., 2026, 'Two incompatible images of the material nature of human beings and of being human: Reframing the free will debate', *Verbum et Ecclesia* 47(1), a3714. https://doi.org/10.4102/ve.v47i1.3714

Copyright:
© 2026. The Author. Licensee: AOSIS.
This work is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) license (https://creativecommons.org/licenses/by/4.0/).

Read online:
Scan this QR code with your smart phone or mobile device to read online.

Recent debates about free will, especially in the neurosciences, have been central to the debate about what it is to be human. Two recent publications, one by Robert Sapolsky and the other by Kevin Mitchell, not only represent distinct views on free will and moral accountability, but they depart from different images of human beings and divergent framings of the puzzle. For Sapolsky, there is no free will and moral accountability because human beings are just biological machines, subject to the deterministic laws of nature that control all physical objects. Based on an evolutionary argument, Mitchell develops an image of living organisms as complex systems that display agency.

Intradisciplinary and/or interdisciplinary implications: This free will debate not only results in distinct images of being human but also departs from divergent images of what a human being is.

Keywords: free will; being human; determinism; living organisms; moral accountability; materialism.

Introduction

Notions about ourselves as human beings are central to how we raise our children, run our schools, organise our societies and structure social policies, and how we treat those who commit crimes, to mention only a few aspects. The puzzle of free will is today considered the ultimate philosophical whack-a-mole because, like no other issue, it highlights one of the most important big questions of life: What is the nature of being human? As Meuleman and Van Vlastuin (2014:2) remark, 'at its core, the issue of free will has to do with the real identity of the human being'.

You decided to have coffee instead of tea this morning. Although belief in free will is not a psychological universal (see Berniûnas et al. 2021), most people (at least in Western cultures) experience a sense of agency or free will – they are in control of their day-to-day actions. Not so, is the verdict of many scientists who nowadays argue that you had no choice; it is all the result of processes in your brain that are determined by everything that precedes that moment of decision. You have no free will!

While the puzzle of free will seeks to answer the question of being human (do humans have free will or not?), it disguises a much deeper issue, namely, the image of the material nature of human beings that enables the different answers to that puzzle. This is clearly illustrated in two books that were published in 2023 in the reawakened scientific surge for solving the puzzle of free will.

Robert Sapolsky, the Stanford (2023:4) primatologist and neuroscientist, published *Determined: The Science of Life Without Free Will*, in which he argues that we 'have no free will at all'. In his view, there can be no free will, and nobody deserves to be praised or blamed. Human beings are biological machines and subject to the same determinism that characterises all of nature: 'The world is deterministic and there's no free will. In this view, if the former is the case, the latter has to be as well' (2023:10). His *scientific* proposal is that being human does not include free will but disguises the fact that this view is deeply dependent on a specific framing of the puzzle and image of what a human being is.

In the same year, Kevin Mitchell, professor of Genetics and Neuroscience at Trinity College Dublin, published *Free Agents: How Evolution Gave Us Free Will*, in which he suggests that as living organisms, human beings do things for reasons. For him, free will is 'an evolved biological

Note: The manuscript is a contribution to the themed collection titled 'Echoes of eco-discourses' under the expert guidance of guest editor Prof. Wessel Bentley.

function that depends on the proper functioning of a distributed set of neural resources' (2023a:282), and there is no scientific evidence showing that humans do not have the capacity for conscious, rational control over their actions. The broad idea of moral responsibility is unaffected by scientific or neuroscientific research, and therefore, people committing crimes remain morally responsible and legally accountable.

Just from the titles of the books, it is obvious that Sapolsky and Mitchell have completely different views on free will and consequently promote different views of human beings. That is not unique because, as will be shown later, opposing views on free will are a general feature of the debate. And at first sight it might seem as if they just represent contradictory views in the existing free will debate. However, as important as their respective views on free will and consequently on being human are, these views fade away in view of the respective images of what human beings are. To put it briefly, opposing views on being human as agents with or without free will are dependent on much deeper images of the material nature of human beings as either biological machines or as living organisms.

The title of this article suggests that our image of being human is different from (and as will become clear, dependent on) images of the material nature of human beings. Put differently, our images of being human with or without free will depend on prior views of the material nature of human beings, biological machines or living organisms.

The commonly understood puzzle of free will

Before comparing the two studies, a few remarks to situate the debate need to be made.

The scientific study of free will is constrained by two features that structure the puzzle, namely, determinism and moral responsibility. The first constraint on the free will debate is evident in that it is generally referred to as the 'free will–determinism debate' (Rakos, Rehfeldt & Killeen 2025:476; and see Berniūnas et al. 2021:1; Nadelhoffer 2011:174). Determinism is taken as the default view, and the main contested questions are not whether we have free will or what free will is but whether free will is compatible with determinism (see Potter, Ellis & Mitchell 2025:1). This is confirmed by the commonly accepted way of demarcating the debate between libertarianism, determinism, and compatibilism, which exist by virtue of being relational regarding determinism.

Determinism holds that given the state of the universe at one time and the laws of nature, only one future is possible, and every event, no matter how small, is rigidly fixed. Materialists believe that everything, including the human psyche, is made of matter. Matter follows the laws of nature, and human beings are matter and therefore subject to the same laws.

Reductionists believe that the behaviour of complex, large-scale systems such as the mind and the brain can be fully explained in terms of the simpler units of which they are composed. Given these beliefs, all the choices we make are predetermined by our history, and so the human experience of free will must be an illusion (see Talmi & Frith 2011:124). Materialism as a determinist theory of matter is married with a reductionism that contains a theory about human beings as merely material objects. This view is aptly summarised by Goff (2023) as our standard scientific view of micro-reductionism:

> What a human being does is ultimately fixed by the fundamental particles making them up, and the behaviour of the fundamental particles making up a given human being is entirely determined by the basic laws of physics. (p. 53)

Compatibilists, of which there are many varieties, are by far the majority view among philosophers (see Nadelhoffer 2011). They want to have their cake and eat it since they are determinists who believe free will is compatible with causal determinism. They believe both that our choices are determined by prior causes and that we are free (see Goff 2023:78).

Libertarians, of whom there is an equal variety of views but much fewer supporters, take it that human beings have free will (see Nadelhoffer 2011:175) and no prior causes determine choices.

The second constraint in this debate is between free will and moral responsibility. Since moral responsibility is so central to our legal systems and ethical sensibilities, it is assumed that free will should be considered from the viewpoint of its impact on these issues. If we have no free will, these institutions are compromised, and it is almost as if scholars are seeking a palatable answer on free will to satisfy this need (see Mitchell 2023a:16–18 for a discussion). But that inhibits the question as to what free will is.

Finally, this article is not about the theological but the scientific debate about free will. What used to be the domain of philosophers and theologians has become a 'scientific' question, and today more physicists and neuroscientists than philosophers claim to solve it. For this reason alone, it is important for theologians to take note of what is going on in the *scientific* study of free will. The remarkable similarity between some neuroscientific views on free will and the theological studies of free will is widely discussed. The similarity between the Calvinistic and the deterministic neuroscientific study of free will is particularly remarkable (see Craffert 2023; Meuleman & Van Vlastuin 2014). But it is important to understand that free will as a characteristic of being human is different from the theological construct that links free will to the human condition in a theological relationship. The importance of this scientific debate about free will has implications for theological anthropology in that it speaks to the underlying question of human nature.

Sapolsky, determinism, and no free will

Sapolsky describes himself as a determinist or 'hard incompatibilist' within the common frame of the free will debate. Since libertarians (or, in his words, 'libertarian incompatibilists' who believe the world is not deterministic and therefore no threat to the notion of free will) are such a 'rarity' (2023:11), his real target is the compatibilists who think that free will can be reconciled with a deterministic world. Every decision is predetermined. In Sapolsky's (2023) own words:

> Despite starting by separating determinism/free will and free will/moral responsibility, I follow the frequent convention of merging them into one. Thus, my stance is that because the world is deterministic, there can't be free will, and thus holding people morally responsible for their actions is not okay (p. 12).

Thus, he fits into the standard way of formulating the puzzle of free will (see Lavazza, 2016), where he seeks to defend a special brand of determinism, claiming that you did not (and could not) decide whether to have coffee or tea this morning. It is also important to note that for him, determinism, free will and moral responsibility are conflated.

Whatever one thinks or does is preceded by something that caused it to happen. Therefore, in order to show that there is free will, his challenge to opponents is that you have to show that some behaviour just happened out of thin air in the sense that what a neuron just did was unaffected by any of the preceding factors (such as the goings-on in the brain, hormone levels, childhoods and foetal environments, and the whole biological and environmental past of a person). Put the other way round, his bar for free will is that one should be able to show that a neuron's actions are completely uninfluenced by all the uncontrollable factors that came before (see Sapolsky 2023:15, 83). This is what Balaquer calls 'Sapolsky freedom' (Balaquer 2025:2; see also Vonasch, Danielson & Mele 2025:1) since it captures his ultimate definition of free will.

However, nobody defines free will in terms of complete isolation from any influence, and since nobody is seeking to argue such a case, it is a red herring. As Riskin asks, why must human behaviour be either deterministic or impervious to any influence? Sapolsky doesn't explain; he takes as given that to show any influence at all is to show a determining influence. There is an important difference between not controlling something and having no effect on it (see Riskin 2025:3).

More important are the features accompanying this view.

Deterministic materialism and biological machines

Sapolsky's *no free will* view is first the product of his materialistic worldview, and his version of philosophical materialism is strongly deterministic. His commitment to materialism includes various forms of reductionism and determinism. This materialism (also referred to as physicalism) is the dominant scientific worldview of our time. The basic building blocks of everything are particles and waves, and it applies equally to human beings.

For him, there is nothing but 'an empty, indifferent universe in which, occasionally, atoms come together temporarily to form things we each call Me' (Sapolsky 2023:386). Thus, in his deterministic world, evolution produced us as 'biological machines' (2023:386) since as human beings 'we are nothing more or less than the cumulative biological and environmental luck, over which we had no control, that has brought us to any moment' (2023:4). The extent of this determinism on images of being human, as he metaphorically describes it, is *turtles all the way down*:

> The person you are is the result of all the interactions between biology and environment that came before. All things out of your control. Each prior influence flows without a break from the effects of the influences before … who we are is the outcome of the prior seconds, minutes, decades, and geological periods before, over which we had no control (p. 46).

The determinism of you as a biological machine excludes free will. Human beings have no free will because we are part of a world that is deterministic. For Sapolsky (2023:15), Laplace provided the canonical claim for all of determinism: 'If you had a superhuman who knew the location of every particle in the universe at this moment, they'd be able to accurately predict every moment in the future'.

The implicit assumption of this position is the well-known scientistic view of materialism that biology can be reduced to physics; living things are merely complex configurations of material components. In this view, living things differ from non-living things only in being more complicated, and all operate according to the same physical laws of linear causation from the smallest particles to the largest whole. What we experience as free will is thus the result of all the small particles making us up.

Sapolsky is not alone in promoting this view on deterministic materialism and free will. Hawking and Mlodinow (2010) mention:

> Though we feel that we can choose what we do, our understanding of the molecular basis of biology shows that biological processes are governed by the laws of physics and chemistry and therefore are as determined as the orbits of the planets. Recent experiments in neuroscience support the view that it is our physical brain, following the known laws of science, that determines our actions, and not some agency that exists outside those laws … It is hard to imagine how free will can operate if our behaviour is determined by physical law, so it seems that we are no more than biological machines and free will is just an illusion. (pp. 31–32).

While deterministic materialism is the dominant scientific view today (see also Carroll 2021:16; Coyne 2019:2), there has

been a constant rejection of it, especially over the last few decades. Unless it is taken as a dogma that is *a priori* true, assuming human beings are biological machines can no longer be taken for granted (see, e.g. Riskin 2016 for a historical overview and rejection of materialism over the last more than 300 years).

The commitment to deterministic materialism not only binds Sapolsky to the free will-determinism framework but also characterises his scientific rhetoric and argumentative style. He presents his book as unmistakably *scientific* because that is what the latest science tells us about free will. His conclusions are presented as the result of reasoned scientific analysis, and he offers his book as a means to achieve a better, more rational and more humane society by changing our beliefs and practices regarding free will. However, on his own admission, no single result or scientific discipline can show there is no free will. Instead, he claims that 'put all the scientific results together, from all the relevant scientific disciplines, and there's no room for free will' (2023:8). Lots of failures somehow add up to a definitive proof, as Riskin (2025:9) asks, 'Is that scientific?'

What is missing from this *scientific* position is as important as what is presented. And that is what Mitchell's view presents as described in the next sections.

No praise and blame

The notion of free will is arguably crucial to individual and social life (see Lavazza 2016:2), and Sapolsky's argument is not only based on a particular view on the material nature of human beings, but it also promotes a specific image of being human. Based on his free will determinism, his view of being human is summarised in the following way (Sapolsky 2023):

> It is the events of one second before to a million years before that determine whether your life and loves unfold next to bubbling streams or machines choking you with sooty smoke. Whether at graduation ceremonies you wear the cap and gown or bag the garbage. Whether the thing you are viewed as deserving is a long life of fulfilment or a long prison sentence (p. 402).

Because of determinism, there is no personal accountability. In his words, 'there can be no such thing as blame, and … punishment as retribution is indefensible' (Sapolsky 2023:6). This impacts everything from childcare and schooling to the criminal justice system.

He proposes a quarantine model (as in cases of medical infections) to control moral transgressors. Due to a lack of free will, he suggests that society should be protected from dangerous individuals (who have no choice) by means of quarantine or isolation (see Sapolsky 2023:349–54).

Before even comparing this to the work of Mitchell, it is worth noting that there is a huge irony in this *scientific* argument against free will. If one cannot decide whether to have tea or coffee and cannot be praised or blamed, how come one writes a book trying to convince people to achieve a better, more rational and more humane society by changing their beliefs and practices regarding free will? As Azadi (2025:5) points out, there is a 'profound contradiction' in that Sapolsky himself 'has somehow transcended the deterministic chains he describes'.

Mitchell and free will (agency) as the capacity of living beings

Mitchell does not defend one of the views on free will within the free will-determinism framework and therefore does not just present an opposing view on free will to that of Sapolsky but an alternative theoretical viewpoint for framing the whole debate. This reframing is based on a rejection of materialist determinism with its inclusive theory of biology, a rejection of the conception of human beings as biological machines, and ultimately an alternative understanding of what is meant by free will. In defining the puzzle of free will, he does not pose the question 'Do we have free will?' but suggests it should start with the questions 'What is *free*?' and 'What is the *we*?' (see Mitchell 2023a:278). Neither of these questions can be answered by departing from either determinism or materialism. In fact, instead of defining them, he departs from a description of 'we' and 'free' in terms of a scientific theory of evolution.

Thus, firstly unlike Sapolsky, he does not depart from the common understanding that describes free will in relation to determinism. Secondly, Mitchell does not subscribe to the materialist reductionism that reduces human beings to meat machines, and thirdly, free will is not instantaneous but a process.

A rejection of determinism and its theoretical tentacles

Mitchell's rejection of determinism is a comprehensive rejection of classical physics with its nested assumptions of determinism, atomism and scientism. Therefore, he does not depart from the standard free will-determinism understanding of the puzzle because he is part of an upcoming cohort of scientists across many disciplines that rejects the dogma of deterministic materialism and its consequent centuries-long negation of biology as a science in its own right (Mitchell 2023a):

> Such a view is the ultimate expression of reductionism, the philosophy that has tacitly held sway in biology for centuries. The implication of reductionism is that biology is not really a science unto itself but is just complicated chemistry, and chemistry is just complicated physics (and psychology is just complicated neuroscience). Causation only flows up, from the interactions at the lowest levels of the system. If we keep digging deeper and deeper, we will reveal the true workings of life; indeed, we will not only explain life – we will explain it away. We will show that living things differ from nonliving things only in being more complicated (p. x).

Today there is a swell of studies in the biological sciences (see, e.g. Kauffman 2019; Noble & Noble 2023) that develop

an alternative theory of biology to that of deterministic materialism.

The argument against determinism is complex and distinguishes different concepts of determinism. Suffice it to say that the conclusion of Mitchell (2018:574) is that 'there is compelling evidence that the universe is in fact not fully deterministic' or, as verbalised in another study, 'The upshot, as many philosophers of free will seem to agree, is that the thesis of universal determinism is highly implausible as a description of our universe' (Potter et al. 2025:10). He finds the determinism defended by Sapolsky 'absurd on its face' (Mitchell 2023a:149) because the hypothetical Laplacian being that could predict every future event and state of the world, including the Cretaceous extinction event, the invention of iPhones, and every single choice and action an individual human will take in their lifetime, 'has no actual basis in physical reality' (Potter et al. 2025:12). Biological processes are not governed by the laws of physics.

He also rejects the idea that everything can be explained by means of its constituting parts or their properties (atomism). The scientistic idea that physics is the ultimate explanation for everything and that living organisms are best explained by the laws of physics instead of by biological explanations completes this picture. The ontology emerging from this is closely connected to his question about what the material nature of a human being is (what is the 'we'?). This he answers with the argument that human beings are organisms and not machines.

An evolutionary view of human beings as living organisms

The image of human beings as biological machines as described in terms of the reductionist material assumptions (Frank, Gleiser & Thompson 2024):

> … leans heavily on problematic versions of reductionism – the idea that complex phenomena can always be exhaustively explained in terms of simpler phenomena – and crude forms of realism – the idea that science provides a literally true account of how reality is in itself apart from our cognitive interactions with it. Its view of objectivity rests on an often unacknowledged metaphysics of a perfectly knowable, definite reality existing 'out there', independent of our minds and actions. (p. xii)

In contrast, Mitchell's understanding of free will is grounded in a description of life from an evolutionary perspective. Prior to the question of free will, Mitchell suggests that we investigate how any organism can be said to do anything. Unlike most things in the universe, like rocks or atoms or planets that don't make choices or do anything at all, living things have some degree of agency and do things. The argument that 'living things differ from nonliving things' contains the seed of Mitchell's alternative framing of the free will debate in that it consists of a theory of matter and life (ontology) as well as a notion of the 'we' (anthropology). In Mitchell's (2023a) words:

> You are not just alive, you are living – that is an activity you are doing, that each of your cells is doing. You are more than the pattern of physical matter that makes up your body right now: you are that pattern persisting through time. (p. 26)

Living organisms do things for reasons as causal agents in their own right. That is their defining characteristic, what sets them apart from the mostly lifeless, passive universe.

Mitchell's apology for free will is based on the prior argument about the material nature of human beings as not just matter that is alive but matter that is living. It is based on a scientific theory of evolution which suggests that from single cells to the most advanced organism, living things are complex dynamic systems. He suggests that from 'the chemistry of rocks and hydrothermal vents – the chemistry of the evolving planet itself – life emerged as systems of interacting molecules, interlocked in dynamic patterns that became self-sustaining' (2023a:19). Thus, the emergence of free will is directly related to the emergence of life. Agency in this view is not some mysterious entity that exists outside the laws of physics but is a constituting feature of complex dynamic living organisms.

Organisms 'cannot be understood as static machines or instantaneous arrangements of matter: instead, they are patterns of interlocking dynamical processes that actively persist through time' (Mitchell 2023a:274) that are regulated by purpose, meaning, and value. The defining property that sets life apart from other types of matter is that 'living things literally incorporate their history into their own physical structure to inform future action' (Mitchell 2023a:23).

Free: The capacity of agency

Living organisms do things for reasons as causal agents in their own right. The *we* are not biological machines but living organisms. Two more features describe this view on free will.

One is that free will defined thus is not instantaneous but has a duration. In other words, free will, like life itself, is not a thing an organism has but a process. Mitchell (2023a) explains:

> Life is not a state; it is a process. You are not just alive, you are living – that is an activity you are doing, that each of your cells is doing. You are more than the pattern of physical matter that makes up your body right now: you are that pattern persisting through time. (p. 26)

Living things, unlike the lifeless universe, try to stay alive, and because of that, things matter to them. The universe 'does not have purpose, but life does' (Mitchell 2023a:42). Nothing matters to rocks and chairs, but things have value for living organisms.

The second feature is that distinct types of causation are at play in living organisms by virtue of their organisation as living organisms. He describes it as spiral causation. In the

deterministic view, all causation is local and synchronous (see Mitchell 2023b:3), while in a living organism, it is seen as diachronic and distributed. Organisms are different from the most complicated machines in that causation is not physical but informational in terms of meaning, value and purpose, which takes place over time (see Mitchell 2023a:21, 62). The concept used to describe this process is *autopoiesis* [self-regulating]. It is the idea of a system that makes itself. The first single-cell organisms were autopoietic in that they were self-reproducing systems able to self-maintain and reproduce, have heritable variation, and be selected (see also Kauffman 2019:6).

Like Sapolsky, Mitchell's view is not only based in an image of the material nature of human beings (living organisms instead of biological machines) but also results in a specific view of what being human entails, 'You are the type of thing that can take action, that can make decisions, that can be a causal force: you are an agent' (Mitchell 2023a:18). Therefore, people are morally responsible and can be held legally accountable. Free will is a feature of being human.

Conclusion

A comparison of the two works reveals much more than the obvious disagreement about free will and about moral responsibility. As important as the puzzle of free will is and coming to terms with the issue of moral responsibility, these fade in importance once it is realised that they are the product of the framing of the puzzle. Mitchell contributes to the reframing of the puzzle of free will away from determinism. His work is part of the development that rejects reductive thinking about biological organisms and embraces the notion of organisms as complex, holistic, integrated systems. In that regard, it resembles other attempts at the ecological understanding of human beings and human life (see, e.g. Craffert 2024 on a similar view about consciousness).

The image of the material nature of human beings as living organisms with agency does not depend on the acceptance or non-acceptance of a dogma about the physical world but seeks to include insights from both evolutionary theory and systems thinking. Free will as the capacity of agency and the processing of meaning, value and purpose is described as a feature of all living things and, therefore, also of being human.

These incommensurable views on free will and moral accountability and thus on being human depart from distinct images of human beings to begin with. Images of being human with or without free will are crucially dependent on views of the material nature of human beings as either meat machines or as living organisms. Thinking about the ontology of human beings precedes reflection about being human and its capacity (or not) for free will.

Acknowledgements

This article is based on a conference paper originally presented at the South African Science and Religion Forum Seminar 2025, held in Pretoria, South Africa, on 17–19 September 2025. The conference paper, titled 'Two images of human beings, two views on free will', was subsequently expanded and revised for this journal publication. This republication is done with permission from the conference organisers.

Competing interests

The author Pieter F. Craffert, declares that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

CRediT authorship contribution

Pieter F. Craffert: Conceptualisation, Formal analysis, Writing – original draft, Writing – review & editing. The author confirms that this work is entirely their own, has reviewed the article, approved the final version for submission and publication, and takes full responsibility for the integrity of its findings.

Ethical considerations

This article followed all ethical standards for research without direct contact with human or animal subjects.

Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability

The author confirms that the data supporting this study and its findings are available within the article and its listed references.

Disclaimer

The views and opinions expressed in this article are those of the author and are the product of professional research. They do not necessarily reflect the official policy or position of any affiliated institution, funder, or agency or that of the publisher. The author is responsible for this article's results, findings, and content.

References

Azadi, P., 2025, *More determined than scientific? Unpacking the fallacies in Sapolsky's case against free will*, Preprints, pp. 1–10.

Balaquer, M., 2025, 'Sapolsky-freedom and libertarian-freedom', *Teorema* 44(1), 1–10. https://doi.org/10.30827/trif.34523

Berniûnas, R., Beinorius, A., Dranseika, V., Silius, V. & Rimkevičius, P., 2021, 'The weirdness of belief in free will', *Consciousness and Cognition* 87(103054), 1–15. https://doi.org/10.1016/j.concog.2020.103054

Carrol, S., 2021, 'Consciousness and the law of physics', *Journal of Consciousness Studies* 28(9–10), 16–31. https://doi.org/10.53765/20512201.28.9.016

Coyne, J.A., 2019, 'Why we shouldn't bet on having free will: A reply to William Edwards', *Quilette*, 17 July, pp. 1–12.

Craffert, P.F., 2023, 'Your brain makes you do it: A critical reflection on the Libetian Denial of free will', *Religion & Theology* 30(1&2), 124–153. https://doi.org/10.1163/15743012-bja10053

Craffert, P.F., 2024, *The fabric(ation) of consciousness: A neuro-ecological perspective*, Aosis, Cape Town.

Frank, A., Gleiser, M. & Thompson, E., 2024, *The blind spot: Why science cannot ignore human experience*, MIT press, Cambridge, MA.

Goff, P., 2023, *Why? The purpose of the universe*, Oxford University Press, Oxford.

Hawking, S. & Mlodinow, L., 2010, *The grand design*, Bantam, London.

Kauffman, S.A., 2019, *A world beyond physics: The emergence and evolution of life*, Oxford University Press, Oxford.

Lavazza, A., 2016, 'Free will and neuroscience: From explaining freedom away to new ways of operationalizing and measuring it', *Frontiers in Human Neuroscience* 10(262), 1–17. https://doi.org/10.3389/fnhum.2016.00262

Meuleman, A. & Van Vlastuin, W., 2014, 'Calvin and Swaab: A comparison with respect to free will', *In die Skriflig* 48(1), 1–6. https://doi.org/10.4102/ids.v48i1.1763

Mitchell, K.J., 2018, 'Does neuroscience leave room for free will?', *Trends in Neurosciences* 41(9), 573–576. https://doi.org/10.1016/j.tins.2018.05.008

Mitchell, K.J., 2023a, *Free agents: How evolution gave us free will*, Princeton University Press, Princeton, NJ.

Mitchell, K.J., 2023b, 'Rise of the agents', *Dialectical Systems*, 03 October, pp. 1–7.

Nadelhoffer, T., 2011, 'The threat of the shrinking agency and free will disillusionment', in W. Sinnott-Armstrong & L. Nadel (eds.), *Conscious will and responsibility*, pp. 173–188, Oxford University Press, Oxford.

Noble, R. & Noble, D., 2023, *Understanding living systems*, Cambridge University Press, Cambridge.

Potter, H.D., Ellis, G.F. & Mitchell, K.J., 2025, 'Reframing the free will debate: The universe is not deterministic', *ArXiv 2503.19672*, 1–39.

Rakos, R.F., Rehfeldt, R.A. & Killeen, P.R., 2025, 'The free will: Determinism debate in contemporary science and society (or: Why Are You Reading This Article?)', *Perspectives on Behavior Science* 48, 475–497. https://doi.org/10.1007/s40614-025-00447-3

Riskin, J., 2016, *The restless clock: A history of the centuries-long argument over what makes living things tick*, University of Chicago Press, Chicago, IL.

Riskin, J., 2025, 'Turtles all the way up', *The New York Review of Books*, 13 February, pp. 1–12.

Sapolsky, R.M., 2023, *Determined: The science of life without free will*, Vintage.

Talmi, D. & Frith, C.D., 2011, 'Neurosciences, free will, and responsibility', in W. Sinnott-Armstrong & L. Nadel (eds.), *Conscious will and responsibility*, pp. 124–133, Oxford University Press, Oxford.

Vonasch, A., Danielson, S. & Mele, A., 2025, 'What does "Free Will" mean?', *Teorema* 44(1), 1–5. https://doi.org/10.30827/trif.34353