

## Physical Libertarianism: Redeeming the Illusion of Free Will Back into Reality

Ashkan Farhadi MD, MS, FACP, FACG<sup>1,2</sup>

### Abstract

The notion of free will seems so intuitive to us that it would be hard, even impossible, to imagine that we live in a world without ever exerting any willpower. This view of reality is not only hindrance to inspiration, it poses a serious threat to our moral and social responsibilities. Nonetheless, many scientific and philosophical schools of thought such as determinism purport free will as a mere illusion. As an attempt to rescue free will put forward by libertarianism, compatibilism or physical indeterminism that either exempts our mind from the universal rules of cause and effect by offering our minds a metaphysical status or substitute free will with random will rooted in the laws of quantum mechanics. This manuscript offers an alternative perspective under a new paradigm of consciousness called physical libertarianism that explicates true free will through the unwavering laws of cause and effect. Based on this paradigm, consciousness is the result of interaction of awareness and decision-making process. By applying awareness to the process of decision-making awareness-based choice selection or true free will is conceived. In return, by assigning the power of decision making to the process of awareness discretionary selection of information for attention or intentional attention is emerged. Through integration of these two mental functions, an independent entity called “I” is formed that differentiates natural intelligence from artificial intelligence. While determinism can aptly describe the world of inanimate objects and artificial intelligence, because of “I,” determinism has no jurisdiction over the realm of natural intelligence.

**Keywords:** Consciousness, awareness, free will, decision-making, attention, self-awareness

---

<sup>1</sup> Memorial Care Foundation.

<sup>2</sup> University of California, Irvine. Department of medicine.

Correspondence email: [farhadiashkan@gmail.com](mailto:farhadiashkan@gmail.com)

### **Free Will and its challenges with current philosophical ideologies**

Free will is a loaded word with multitude of dimensions based on the context of the subject but is essential part of social and individual life (Kane, 2005 ). Will power generally means one's ability to act purely on one's discretion (Lavazza, 2016). The agent must not only be able to make a decision but also be able to choose otherwise, makes the choice based on one form of rationale and remains the ultimate source of responsibility for the choosing (Kane, 1999).

Based on a deterministic perspective, everything happens as a result of prior events, suggesting that all living creatures are nothing but cogs in the wheel of life. In another words. the unwavering tenets of cause and effect do not leave any room for the loose cannon of free will (Ayer, 1954), suggesting that the agency that we all believe we have is just an illusion.

Compatibilism counters this unflattering view of life by purporting that determinism is not contradictory to the existence of free will, as it applies a form of indeterminism to free will to keep it clear from the purview of determinism. The indeterminism offered by compatibilist either rooted in the complexity of the processes by which free will operates though desires, beliefs and values (Balaguer, 2019). Alternatively, this perspective resort to scientific indeterminism rooted in the laws of quantum mechanics (Mackie, 2018).

On the other hand, libertarians take a different approach and claim that free will is implicitly ensured by the limited applicability of the rules of cause and effect in our world. Hence, selected types of libertarianism purport that free will could be considered as a *de novo* process that, by its definition, requires no cause or preconditions. Other libertarians, either opt for adopting the indeterminism as the leeway room to maintain will power or believe that willpower enjoys a metaphysical privilege that spares it from the physical laws of causality.

This manuscript proposes a novel alternative to these perspectives namely physical libertarianism to ensure the existence of a true free will in the context of universal rules of causality without resorting to a metaphysical mind or a random will. This new perspective will be elaborated in greater details after briefly summarizing the opposing views on existence free will.

## **Free Will Skeptics**

### ***Impossibilism***

Supporters of impossibilism claim that the existence of free will is impossible, regardless of one's views on the validity of determinism. In other words, free will cannot manifest either physically or metaphysically. For example, if we believe in physicalism, we accept that every event has its cause, rendering free will impossible. Conversely, if we deny the postulates of physicalism and support the existence of a metaphysical realm, only god-like entities (but not mortal beings) would have the luxury of exercising free will (Strawson, 1994).

### ***Epiphenomenalism***

Epiphenomenalists believe in the duality of body and mind, whereby all physical processes in our body (including the nervous system) are governed by our mind. Even though this school of thought predates the Cartesian era, it reached its peak in this period. According to its supporters, as mind is immaterial, it cannot interfere with the physical realm and cannot be considered a cause for any processes in the physical brain (Duignan, 2017). In other words, as free will is nothing but an epiphenomenon, it can never result in decisions formed using physical brain structures. Consequently, by accepting this presupposition, the need to prove the existence of free will is rendered superfluous, since free will cannot interact with brain processes.

Epiphenomenalists argue that these claims, while not rooted in determinism, simply echo its recurring theme that free will is nothing but an illusion. Support for epiphenomenalism surged

considerably after the publication of the Libet's experiment (Libet et al., 1983), especially among neuroscientists, as it offered a means of explaining the decision-making process in general, and free will in particular, are nothing but an epiphenomenon of a decision that is made in our unconscious mind.

### ***Destiny***

Whether the belief in destiny is part of a broader ideology or a simple superstition, many individuals assume that some events in our lives are unavoidable. Based on this perspective, there is a hidden power shaping our future in the form of destiny. In that context, it is worth describing the key doctrines related to the role of destiny in our lives.

**Fate.** The proponents of fate believe that certain events must happen regardless of our desires, intentions or actions. Based on the 2015 U.S. poll, majority of Americans believe in fate (Harper, 2015), but the degree to which it plays a role in everyday life varies among individuals. Although many associate fate with religious beliefs, this concept has mystical roots in many cultures that predate any religion. Stoic Greeks were avid believers in fate and thought that everything that is supposed to happen would happen one way or another. Similar views are promoted in Indian culture, where it is thought that the events of our lives have already scribed magically on baby's forehead by an angel just after birth. In another word, our future lives are set in motion at the time of our birth. In that respect, fatalism seems to mirror hard determinism.

However, fatalism does not support the necessity of logic or causality, which is the foundation of determinism (Solomon, 2003). Rather, in fatalism, all events are part of some inconceivable masterplan that would unravel itself at certain junctions in our lives without the need for a physical or logical cause. Besides, naturalism and determinism have a forward view of the events, while fatalism primarily focuses on the past. These perspectives also differ with respect to the selectiveness of the events. While fatalism posits that the major events of our lives

are predetermined, it still allows us to be in charge of trivial events. Conversely, according to determinism, even the most trivial action must happen exactly the way it is supposed to happen.

Even though fatalism can be equated to the will of a supernatural being or predestiny, the proponents of fatalism focus on the events without paying much attention to a metaphysical director behind the scenes. Therefore, it is not surprising that fatalism does not equate to believe in God or to follow any particular religion. In addition, those that believe in fatalism are seldom preoccupied with the idea of afterlife as their eternal destination, which is a dominant theme of predestiny.

In that sense, fatalism could be considered a superstition, but is extremely popular in most societies (Maercker et al., 2019). In particular, individuals experiencing difficult times are prone to accepting this idea since fatalism offers a tremendous sense of consolation following a loss or catastrophe (Yen, 2012). It also implies that all events in our life are aimed at our betterment and are associated with a higher meaning. Therefore, as those events are tailored for us with the highest level of sophistication, and we may not be able to grasp their meaning at the time of their occurrence, we will eventually realize their importance in making our lives better, as they give meaning to even the most devastating events in our lives under the premise that “everything happens for a reason.”

**Predestiny.** Predestiny or predestination could be considered a religious translation of fatalism. Yet, although this school of thought shares many features with fatalism, it departs from it by shining the spotlight on the role of a metaphysical director, rather than focusing on the events. According to this view, God is the ultimate reason and the orchestrator of all events, including our afterlife. Based on this perspective, owing to His omniscience, God has the foreknowledge of all our actions and their outcomes, removing the element of both individual control and chance. Some of us might find these arguments comforting since it relieves us of any

responsibility for our actions while it raises a very important question regarding our morality and our code of conduct which turns us to puppets while the master pulling the strings of our lives (Pike, 1965)

Even though, predestination could be considered as an inevitable consequence of God's omniscient power, most religious teachings reject the concept of predestiny—at least formally—to rescue the very notion of salvation and redemption. To this end, the God's omniscience in everyday life gets the interpretation of contemporaneous omni-subjectivity. In this scheme, God does not interfere with our free will, but merely knows our decisions at the exact time when we make them. Nonetheless, the paradox of coexistence of God's will and our free will and the suggested solution to this enigma is beyond the scope of the present discussion.

**Karma.** Karma is another form of belief that certain events would happen to us irrespective of our desire or effort. According to the findings yielded by Statista (2019) survey conducted in the U.S., almost 84% of Americans believe in karma to some extent while 31% are strong believers. Karma concurs with fatalism and predestination that “the things happen for a reason,” while prompting its supporters to believe that there is a meaning behind each event beyond our limited comprehension. Therefore, the notion of karma presupposes a wise and just universal system that is more powerful than anyone's desire, will, and power is working in a mystical way throughout the universe to restore justice and keep our lives in balance. Like other predestination philosophy, Karma is not proponent of causality and helps the believers to cope with adversity and submit to the events that would be otherwise hard to accept. Like predestination, karma extends its reach beyond our earthly existence. However, unlike predestination which promises afterlife, karma conveys the promise of rebirth.

Yet, karma is distinct from fate and predestiny since its implication permeates beyond an individual and operates at the level of society. Moreover, while fate and predestiny eliminate our

control over the events of our lives, karma could be altered based on our deeds. Besides, neither fate nor predestiny are based on justice (at least not in this world), while karma pledges to restore justice in this world.

Even though fate, predestination, and karma do not take a definitive stance against the existence of free will, or force us to take a particular path in life, a mere belief in inevitable destiny undermines our confidence in the exercise of willpower and renders free will irrelevant.

### ***Buddhism***

Since Buddhism is an ideology rather than religion, it is not surprising that the understanding of free will departs from those perspective accepted in most major religions where a clash between human will power and an omnipotent and omnipotent God seems inevitable. Nonetheless, Buddhism denies the existence of free will for a completely different reason. According to Buddhist teachings, since self is nothing but momentary thoughts and fleeting emotions, it cannot be the origin of an intention, a decision, or any physical action. Thus, free will is nothing but an extension of the illusion of self, delving into illusion of control. These illusions are various presentations of craving that we need to quell if we intend to reach to the path of illumination. Even though, Buddhism is the underpin of moral responsibilities, the interconnection of Buddhism and karma undermines the commitments of Buddhism to the moral responsibilities for our actions (Caruso, 2020).

### ***Hard Determinism***

Determinism is a form of belief that nothing happens by chance and a causal chain of events can be traced to the beginning of time and will continue to the end of time in a predetermined manner. The idea of hard determinism first emerged in ancient Greece around 5th century BC by Democritus who was one of atomist philosophers (Duignan, 2021). Determinism flourished in 18th century by Laplace who was one of the pioneers of physical determinism. Fast

forward to the present time, determinism, and in particular causal determinism, continues to be the dominant view, especially in science (Hofer, 2016).

### **The Consequences of the Lack of Free Will**

The belief in free will is natural and intuitive to humans. Almost all laws, rules, and norms are founded upon the presupposition of moral and personal responsibility for our actions and is deeply embedded in the concept of free will. Therefore, it is inevitable to ponder on what would have happened to our lives if we believed that free will was nothing but a tempting illusion and individuals were not deemed responsible for their actions? This movement gained its momentum by the interpreting the findings of Libet's study (1983) and later on Bear and Bloom study (2016) as evidence to show our decisions are made at the unconscious level, whereas our conscious mind deceives us into believing that we had agency in the selection process. The defenders of these studies believe that our minds build a delusion of control in a desperate attempt to hold on to control.

### **Pessimistic Views on the Lack of Free Will**

As most intellectuals are in the camp of skeptics of free will, it is worth exploring what would have happened if the skepticism of free will grows beyond intellectuals and concurs the majority of the people's mind. The pessimistic prediction of the world without free will, portrays a complete meltdown of humanity and morality, as nothing would have any meaning without a promise of reward or punishment. One of the pioneers of this pessimistic perspective was Saul Smilansky (2005) who was a hard determinist and did not believe in free will, but was a strong proponent of not publicizing this perspective. He thought that, if people accepted absence of free will and realized that this absolved them from any moral responsibility for their actions, they would lose their sense of self-worth. Indeed, these arguments are supported by psychological experiments conducted by Vohs and Schooler (2008).

### **Neutral Views on the Lack of Free Will**

Not all skeptics share the pessimistic prediction of the future of humanity in the absence of free will, as some believe that, since the idea of free will is deeply rooted in our minds, we cannot give up this notion even if free will is proven to be an illusion. This argument is supported by ample evidence indicating that even avid advocates of absence of free will have maintained their morality. The main proponent of this neutral perspective is David Hume who believed that, as our sense of morality is deeply entrenched in us, it could not be easily swayed by the idea of determinism (Russell, 2021). This simple paradox was shown in his survey that even those who considered themselves as determinist, tend to believe that people are still morally responsible for their actions.

### **Optimistic Views on the Lack of Free Will**

Some of the proponents of the absence of free will hold optimistic view of the impact of this notion on humanity, as they argue that this would eliminate anger, guilt, and resentment which would be replaced by love, gratitude, and forgiveness as was forecasted by Pereboom (Soraj, 2015).

### **Do our Views on Free Will Really Matter?**

While the pessimistic forecast for humanity without free will is the most logical one, the limited evidence we have at our disposal does not support this outcome. As Paul Edwards aptly observed, “the world is after all wonderful: we can be determinists and yet go on punishing our enemies and our children, and we can go on blaming ourselves, all without a bad intellectual conscience” (Smart, 1961). Maybe David Hume was right to argue that the deep-rooted illusion of free will serves as our moral compass and help us to avoid cognitive dissonance of feeling uncomfortable holding two contradicting thoughts (Festinger, 1957). Alternatively, we could

compartmentalize the particular notion that stands paradoxical with our intuition and can interrupt our mental function.

Even, if we apply the concept of compartmentalization to the idea of lack of free will, it would still be hard to imagine that, in the absence of free will, humanity would continue to function in an orderly and morally responsible manner let alone to imagine that it would advance our humanity and moral behavior as it was predicted by Pereboom heartwarming forecast. considering, it is hard to conceive that absence of free will would eliminate only negative emotions, such as anger, resentment, or guilt, since emotions tend to come in dyads. If there was no resentment and hate, love would be devalued, and if there was no guilt, there would be no reason to be proud of anything. In fact, it is more likely that lack of free will would eliminate not only the negative but also the positive emotions and it is doubtful that this forfeiture of emotions could be conducive to grater morality and humanity.

## **Free Will Believers**

### ***Indeterminism or Random Will***

At the first glance, indeterminism takes a direct stance against determinism and counters all its postulates. However, indeterminism could have several meanings based on the context and the field of discussion. In philosophy, indeterminism is typically a stance against determinism in a quest to give credence to the notion of free will by proposing that not every cause would result in a predictable outcome. In another words, indeterminism purports that the future is not physically determined and is open to different outcome (Belnap, Perloff, Xu, 2001). In this regard, some has considered scientific indeterminism (soft determinism) as their major argument in denying determinism. Others deny determinism based on a non-physical or metaphysical nature of some events including our willpower (which will be discussed under the non-causal and agent-causal libertarianism subtitle, respectively later in the manuscript). We may trace

back the earliest scientific indeterminism to ancient Greek philosophers who were known as Stoics around 4th century BC. They were also atomists and maintained the belief that everything in life happens for a reason, but also believed that events that occur at the atomic level create a degree of uncertainty, due to random and unpredictable swirl of atom (Long, 1999). This notion could be considered a historic foundation of quantum mechanics. Based on this explanation, most events are simply probabilistic, and randomness is an inherent natural propensity of the events. This concept posits that a single cause may result in different outcomes each of which has a probability of occurrence. The same can be applied to the decision-making process, whereby identical external causes and internal brain conditions would produce different decisions. The extension of this argument is presented by William James who believed that all of our decisions are based on a random selection (chance) amid already determined options (choice) (Doyle, 2010).

By assigning a degree of freedom to our willpower, scientific indeterminism creates an elbow room for our will power and eliminates some of the deterministic restraints (Dennett, 1984). The main obstacle to accepting scientific indeterminism as a confirmation of the existence of free will stems from the fact that ascribing randomness to our choice selection process does not offer us a control over our decisions (Kane, 1999). Even, William James saw this as stealing the name of freedom to mask the underlying determinism and named it "quagmire of evasion" over a century ago (Doyle, 2010).

Similarly, many scientists view scientific indeterminism as a provisional argument until our better understanding of the exact nature and factors involved in any phenomenon, as aptly surmised by Einstein's claim "God does not play dice" (Stone, 2013).

### ***Compatibilism***

By definition, compatibilists believe in determinism as the ground rule and their argument entertains the idea that free will is compatible with determinism (McKenna, 2021). The classical compatibilism argument is based on a retrograde proof of free will and argues that if an agent does something, it is what an agent truly wanted to do and since the action is done, there had been no impediment, and this translates into agent's will power even if the agent's decision was causally determined (Chisholm, 1966; Ginet, 2008; Hobbes, 1997). The main question remains whether agent who made the decision was able to do otherwise. In fact, only the option to do otherwise poses the moral responsibility associated with the decision for any action (O'Conner, 1993). Some compatibilists think causal determinism would not undermine our freedom to do otherwise (Berofsky 1987, Campbell, 1997, Vihvelin, 2013) while others argue that, although determinism restricts the freedom to do otherwise, it does not absolve the agent from the ultimate moral responsibility (Fischer, 1982; Wallace, 1994). Yet, another group of compatibilists argue that neither the freedom to do otherwise nor the resulting moral responsibility are necessary criteria for free will (Dennett, 1984; Frankfurt, 1969; Watson, 1975).

The modern compatibilism argument is based on the key role of determinism in the setting of the constraints that are instrumental components of all decision-making processes (Dennett, 1984; Frankfurt, 1969). These constraints could sum up in agent's belief and desires and could be the reason for an action but does not necessitate the action. In Frankfurt's hierarchical model of will, desires are prioritized in a mesh-like structure that produces a decision in a hierarchical system of will. This hierarchical system of will follows causal determinism, while also allowing the agent to make a choice based on the priority that he/she assigns to all presented choices. In that respect, Frankfurt's hierarchical model of will is indistinguishable from the hierarchical mesh of desires proposed by Nozick (1981) as a form of agent-causal libertarianism, as elaborated later in the manuscript. Whichever nomenclature we

choose, we are left with the question of how agents break the chain of deterministic properties of their beliefs and desires and assign discretionary priorities or weight to the choices that will be selected based on those assignment. In other words. How an individual can transform an objective perspective of information stored in their brains into a discretionary subjective perspective that facilitates making a choice. This is indeed a conundrum denoted by Shariff et al. (2008) as the hard problem of free will that resembles many aspects of the hard problem of consciousness. The common argument of modern compatibilism is typically based upon scientific indeterminism in the name of soft determinism as another attempt to bridge the concepts of determinism and free will (Mackie, 2018).

Nevertheless, compatibilists share many beliefs with determinists and libertarians, since their aim is to align these two fundamentally distinct ideologies, thereby attracting considerable criticism from both sides of the aisle. From a hard determinist's point of view, adding factors and layers of complexity to the decision-making process is a futile philosophical attempt to hide the inevitable necessity of causality and cannot free up the willpower from the chain of cause and effect. From a libertarian's point of view, compatibilism is determinism in disguise and is a way of negating the value of human liberty and morality.

### ***Libertarianism***

Again, there is a great area of overlap between libertarianism and scientific indeterminism (Clarke R, Capes J, Swenson P, 2021). In general, libertarianism is the belief that we can make all our decisions with complete freedom. However, as there is no consensus on how this freedom of choice is made possible, several branches of libertarianism have emerged, each offering a distinct perspective on free will, namely non-causal, event-causal, and agent-causal libertarianism.

**Non-causal Libertarianism.** Based on this perspective, a will is a true free will only if there is no cause for the selection and the source of decision-making should be within us without any external cause for it to be considered a true free will (Ginet, 2016; McCann, 2019; Palmer, 2021). Therefore, our ability to exercise free will is unaffected by prior events as a *de novo* event initiating within us (Ginet, 1966, 2008). This point of view is also known as “simple indeterminism.” Stays silent as to why among all causal events, willpower is not following the universal rules of cause-and-effect. Yet, the main problem with this school of thought is not its non-conforming pose toward physical causality but extends further into a problem with lack of control. Based on Kane’s pillar of free will, a decision that is made based on free will should follow a rationale and a rationale could be considered as a cause. Thus, the proponents of this school of thought may have problem explaining whether a decision that is made based on a rationale could still be considered a decision based on free will. And if, those decisions are made with lack of free will, then those that are made based on free will are made based on a random selection (random will). Due to these caveats, this perspective has not gained much traction among scholars (O’Conner, 1993).

**Event-causal Libertarianism.** The proponents of event-causal libertarianism believe in the need for a cause for our willpower which fulfill the need for rational selection, but they also believe that a nondeterministic event in our mind is the cause for having free will. Even though, by assigning the cause to the event we solve the issue of rational for the events, but at the same time since the event takes over the control for a decision and would overshadow agent’s accountability for any decision. This is why, event-causal libertarians align themselves with the scientific indeterministic theories of causality (Franklin, 2014). This perspective also mirrors James’s choice and chance decision-making process (Doyle, 2010). Therefore, the line that

separates event-causal libertarianism and soft determinism is blurred, as the proposed notion of random will does not allow the agent full control over the decision-making process (Kane, 1999).

**Agent-causal Libertarianism.** Agent-causal libertarianism purports that free will is caused by an agent and his/her agency follows a non-deterministic rules. For the most part, the perspective presented by agent-causal libertarianism aligns with causal indeterminism, since it would be hard if not impossible to tease out if event acted through an agent to cause an action or agent acted without any precedent event (O’Conner, 1993). Nozick was a proponent of agent-causal libertarianism and could be as well considered a follower of causal indeterminism. He believed in the universal rules of cause and effect, according to which free will is caused by reasoning (Nozick, 1981). He thought, willpower is a product of assigning different weights to the available choices. Therefore, our discretion is not at the level of selecting, but at the level of assigning the degree of importance to the options presented to us. The question remains, that how through assigning weight to choices we could escape from causality. Nozick also appealed to the rules of quantum mechanics to explain attribution of different weights to options. One may argue that this exchange in outfit is just a semantic change from “random will” to “random weights.”

Yet, other agent-causal libertarians departed from Nozick’s perspective by claiming that not all choices are actionable, and hence not all actions are a result of choice (Kane, 1999). In doing so, Kane made a distinction between “effort of will” and “willing.” He asserted that the inner conflict between beliefs and desires is the basis of willing (which is determined). However, willing needs the “effort of will” (which is not determined) to select one of the available choices through the process of reasoning. Unfortunately, he failed to explain how an agent can have an “effort of will” (selection of a choice) without any prior cause, or why this particular action could be exempt from the rules of cause and effect.

Not all proponents of agent-causal libertarianism adhere to causal indeterminism, and some believe a metaphysical agent is the only viable means to liberate our free will from the chain of causality. Even though this point of view could be credited to Berkeley who was first to propose this perspective in 1710 (Dancy, 1998) it was Reid (1969) and several other scholars who put agent in the driver seat of decision making (Chisholm, 1966; Clarke, 1996; O'Connor, 1995; Pereboom, 2014; Zimmerman, 1984). They proposed a metaphysical agent in the form of a nonphysical mind, soul, or a form of self that was not bound to causality for making a decision..

**Physical Libertarianism.** This new subgroup of libertarianism introduced in this manuscript departs from those perspectives presented before and it is unique in supporting the existence of true free will without countering the tenet of causality. Most importantly, this perspective does not rely on a metaphysical entity to power the engine of free will, nor substitutes our free will with a random will offered by scientific indeterminism. Physical libertarianism is rooted in the in a new paradigm of consciousness called trilogy.

### **Trilogy paradigm of Consciousness**

**Model Overview.** Consciousness and awareness are commonly used interchangeably despite their semantic differences in the field of philosophy and psychology. Trilogy draws a sharp line between these mental phenomena since it purports that consciousness is the result of a unique interaction of awareness and decision-making processes and this interaction results in creation of two newly defined mental functions of awareness-based choice selection (ABCS) and discretionary selection of information for awareness (DSIA). ABCS or true free will is the result of applying awareness to the decision-making process, while DSIA or intentional attention is conceived as the result of employing the power of decision making to the process of awareness. The intertwined actions of ABCS and DSIA gives rise to a new entity called “I” which is the

faculty of our consciousness that sets natural intelligence (NI) apart from artificial intelligence (AI) (Farhadi, 2021).

Trilogy explains that as human beings, we are a union of three independent but closely interrelated entities—our bodies, our minds, and “I.” Our mind is an unconscious entity and a compilation of all mental functions except ABCS and DSIA. Only through the gateway of “I” we become a conscious being (Farhadi, 2021). Moreover, “I” is what separates NI from AI. Based on this perspective, determinism can only be applied to AI or inanimate beings, as it has no jurisdiction in the realm of NI.

**Model Details.** Trilogy purports that consciousness is due to juxtaposition of awareness and the decision-making process and below is the brief description of each process in trilogy.

**Decision-making Process.** To make a decision, one needs to select one option over others guided by rational that are based on beliefs, desires, and values (Slovic et al., 1977). This path is not followed by all decisions due to limited understanding of the state of problem or complexity of the problem in the name of bounded rationality proposed by Simon (1956). Based on trilogy, decision making process consists of three stages, namely, preselection, selection and post-selection.

During preselection stage, our mind process informational and emotional intelligence in a process called reasoning and present its result as the best option. A similar process was presented by naturalistic decision models proposed by Drummond (1991), where our mind identify the problem and generating options to solve the problem. However, this theory is silent on parallel process in our mind called counter-reasoning which provide us with the second or third best options for selection.

Based on trilogy, the prepared choices by our mind are presented to “I” for selection stage of decision-making process. During this stage the matrix of information that has been the

base of the reasoning and counter-reasoning process reaches our awareness and only then through the ABCS function a choice is selected among all options. Even though all factors involved in the reasoning and counter reasoning such as desires, beliefs, and values are determined in nature, ABCS allows us to depart from a selection of a choice based on an algorithm (SCBA) and make a decision purely based on a free will. The decision that may not essentially be aligned with our best interest. This stage of decision making in trilogy stands in sharp contrast with SCBA the is the mainstay of decision-making in AI and follows the naturalistic decision model proposed by Drummond (1991), where we pick a choice that we predict to resolve the problem the best.

After selection of a choice by “I” during the selection stage, the decision enters the post selection stage and is sent back to mind for execution. In postselection stage, decision goes through another newly defined analytical mental process called appropriation. During appropriation process the practicality, feasibility, and operational logistics of the selected choice is evaluated, and either the decision will be receiving a stamp of approval and be sent for execution or be rejected and sent back for reconsideration. This step serves as a safety net for decision making process, preventing the execution of decisions that may be paradoxical to our belief, desires, or values.

Proposing a second administrative process in the decision-making process in trilogy may seem to be new. But the concept of changes in a decision that has already been made or literally, having a second thought after a decision seems intuitive and could be aligned with new research in this field. Earlier theories on decision-making such as, shared optimization hypothesis rejects any gap between the selection of the choice and execution of the decision. In fact, the selection and execution process align with each other with the goal of maximizing the reward (Ditterich, 2006; Thura et al., 2014). This theory explains how AI moves seamlessly from a decision to

execution. however, more recent studies showed that the factors that govern a selection of a choice may be different from those that govern its execution (Marti-Marca et al., 2020; Reynaud et al., 2020). This is why a selected choice may fail to result in an action (Cos et al., 2011; Morel et al., 2017). Even though the results of these studies line up with appropriation process in trilogy, but none of those studies pointed toward this gap as an active process in decision making. Some have interpreted this finding as a constant feedback of our actions (Hagura et al., 2017) or “post-initiation deliberation” (Burk et al., 2014) and some labeled it as dynamic decision theory (Edwards, 1962, Fox et al., 2013, Newell and Simon, 1972).

Nevertheless, some decisions made by “I” never end up as an action, nor every decision has to be made by “I.” We make many decisions without ever invoking our awareness in the form of autopilot using SCBA such as autopilot decisions and reflexes. In these instances, our mind makes these decisions and execute them without any stamp of approval of our awareness.

Based on trilogy, awareness is not only instrumental for the selection of a choice—ABCS, but it is also essential for realization of the choice-selection power itself. The realization of making a choice or intention provides us with a sense of agency. Since awareness of a selection comes after a selection based on ABCS, trilogy could easily explain why intention lags behind a willful decision itself. The finding that was misinterpreted as evidence for the nonexistence of free will after a movement that was started with Benjamin Libet’s (1983) experiment.

***The Process of Awareness.*** Like decision-making process, the process of awareness starts with preselection stage. Based on trilogy, our mind receives a constant stream of informational and emotional information and through the selection stage, only a certain information will be chosen for awareness in a process called attention. The preselection stage of awareness stands in odd with early selection theory of attention (Broadbent, 1971), while aligns

with late selection theory (Deutsch & Deutsch, 1963; Norman, 1968) and spotlight theory of attention (Fernandez-Duque & Johnson, 2002), where our mind receives abundance of information and only a select information would eventually be filtered by our attention to reach our awareness. In these theories, attention is regarded as a rate-limiting step in processing information. However, trilogy present a unique form of attention—DSIA as the operator of our selection stage of awareness.

Trilogy is the only model that places an agency's discretion at the steering wheel of attention. Therefore, DSIA or intentional attention stands in contrast with several current theories of attention including feature integration theory (Treisman, 1999), where attention serves as a binding mechanism for information before being processed for awareness, coherence theories (Hirst et al., 1980), where attention serves as a form of coordination between body and mind (Neisser, 1976), precision optimization theories (Clark, 2013, Hohwy, 2013) where attention does not serve as a limiting filter but a venue for improving the cognition, and finally unison theories of attention (Desimone & Duncan, 1995; Reynolds & Desimone, 2000) where a top-down biased mechanism intervenes in a fair competition of information for awareness. In none of these theories of attention except for unison theory, there is no place for an intentional attention like what it has been proposed in trilogy. Even though unison theories of attention describes a need for an agency for attention, but it remains silent as how a top down biased mechanism can even work without defining a role for an agency for this process.

Not all information selected for transformation stage of awareness passes through intentional attention or DSIA. Some information can bypass "I" and reach our awareness through selection of information based on algorithm (SIBA). An example of SIBA in NI could be an unintentional attention to loud sound, a bright flash of light, or a sudden change in any sensory or

motor input for purpose of protecting us from harms. While DSIA is proprietary attribute of NI, SIBA functions in both NI and AI and serves to improve efficiency of their mental functions.

After selection stage, the information is submitted for the transformation stage of awareness where the objective information turns into a subjective experience (qualia). The process that remained as a puzzle and was first described as the “hard problem of consciousness” (Chalmers, 2010). Trilogy does not cover the transformation stage of the awareness process but it is worth mentioning what was proposed as the hard problem of consciousness is in fact the hard problem of awareness.

After transformation stage of awareness, the information can enter postselection stage and be submitted for further processing by our mind such as thinking, reasoning, judgment or preservation through short or long-term memories.

**“I” as an independent entity from Mind.** In trilogy mind is an unconscious culmination of all mental functions but ABCS and DSIA. Using SCBA and SIBA, mind works on a deterministic platform like AI to make autopilot decisions or automated awareness to improve its efficiency. Only through a unique interaction of ABCS and DSIA in “I,” we are conscious beings. Therefore, the independence of “I” and mind in trilogy is mainly for a functional distinction rather than an anatomical or physiological separation.

**Relationship of “I” and Self.** Historically, I has been considered as a physical self, mind, soul, a combination of thereof or literally as a simple pronoun to refer to self. Psyche is a metaphysical form of self apart from body introduced by ancient Greeks and could be one of earliest description of duality of self into a physical body and a metaphysical entity. Psyche was later elaborated by Plato into an immortal form of self or soul—a form of metaphysical self that survives our bodily demise and would be capable of carrying out all our mental functions independent of our physical self (Lorenz, 2009). Many religions share the notion that the soul is

the true self and our body is merely a physical vessel for our true self (Tornau 2020). Likewise, Descartes famously declared “I think, therefore I am” in Cartesian cogito, implying that our identity of self is directly linked to our mind. In his interpretation, he replaced a thousand-year-old duality of body-soul with the new version of duality of mind-body. He even characterizes the self further, in Cartesian theater where “I” is an entity in our mind that is the viewer of subjective experiences (Dennett & Kinsbourne, 1992). John Locke was the first to promote the idea of consciousness as the most important aspect of self, giving rise to self-identity and self-awareness that are the cornerstone of modern science of mind (Gordon-Roth J, 2020). Later on, David Hume and William James presented a more nuanced version of self, defining it as the owner of state of consciousness that is distinct from our mind (IvyPanda, 2019). The most recent interpretation of self is attributed to Antonio Damasio, who defined two forms of self. “Protoself” is the form of self that is ephemeral and stands in contrast with more permanent “autobiographical self” that corresponds to the information about self in our long term memory (Araujo et al., 2015).

In trilogy, “I” could be instrumental in the process of self-awareness by pointing the DSIA to the information of “self” in our mind. That may include the preserved information in our memory which could well resonate with autobiographical self, described by Damasio. However, it is not likely that we can be aware of all information about self at one point of time every moment to have a sense of self awareness. Thus, the notion of self-awareness as a literal awareness of self is neither sensible nor practical. This is why several scholars claimed that the sense of self-awareness extends beyond awareness of bodily or mental characteristics. For example, an argument was presented by Avicenna almost a millennia ago in the form of thought experiment called “floating man” (Goodman, 2013). In this line of reasoning, one can have self-awareness without a need for any sensory awareness of self. Similarly, others pointed toward

independence of self-awareness from awareness of any particular bodily or mental characteristics (Cory, 2013).

In trilogy, “I” provides a sense of agency by allowing us to be aware of our will power and simultaneously have a will to steer our awareness. This description of sense of agency could be aligned with the protoself described by Damasio (Araujo et al., 2015). This description can also line up with the idea of active agency proposed by Bermudez (1998), which describes a sense of action in self-consciousness.

**Trilogy versus theories of consciousness.** Despite slight semantic differences, consciousness and awareness have been used interchangeably throughout literature and not surprisingly, all current theories of consciousness share this notion. However, trilogy draw a clear line separating these two mental phenomena. Based on trilogy, consciousness is an amalgam of awareness and decision-making processes. Only a joint venture of ABCS and DSIA within “I” allows for a NI to be a conscious being.

Another drastic distinction of trilogy and most theories of consciousness lies in a idea of dichotomy of mind into conscious and unconscious. Global workspace theory (Baars, 1988), neuronal global workspace theory (Dehaene et al., 1998) and Freud’s psychoanalytic theory (Freud, 1924) are the major theories that base their argument on dichotomy of mind. Based on trilogy mind is an unconscious entity. Even if part of information of the mind reaches our awareness similar to the spotlight theory, it does not make mind a conscious entity. The work of “I” in trilogy make us a conscious being.

Trilogy also opposes integrated information theory (Tononi et al., 2016) and its subsidiary theory of recurrent processing theory (Lamme, 2006) since it does not consider a mere processing of information as a gateway of consciousness. Both NI’s mind and AI are constantly processing information and this processing does not necessarily translate into awareness nor

consciousness. It is uniformly accepted that only a select information in our mind reaches our awareness. However, these theories are silent on how a select information is chosen for awareness while other information is not. Trilogy explicitly counters this caveat through proposing DSIA. In addition, the notion of graded consciousness based on the complexity of the information is far from reality. Based on trilogy, the consciousness has no correlation to the complexity of the information that reaches our awareness. Many complex information may remain under the radar of awareness in our mind, while some simple information may reach our awareness. Furthermore, consciousness in trilogy is an all-or-none phenomenon.

Trilogy also rejects the propositions of higher-order theories of consciousness (Rosenthal, 2002). This theory explains the importance of subjective sense of self within the awareness process allowing us to observe an experience from first person (higher order) view. However, the theory remains silent on how the sense of self interject itself into the experience of awareness. This is where trilogy elaborates how as the result of interaction of free will and intentional attention we have sense of agency regardless of the subject of awareness.

Yet, attention schema theory (Webb & Graziano, 2015) proposes an argument that opposes trilogy. The difference starts with semantics where in this theory there is no clear distinctions between attention, awareness, or consciousness. Furthermore, this theory leaves no placeholder for any agency in these processes as it is clearly proposed by trilogy.

### **Limitations of trilogy.**

*Trilogy as a model.* As a conceptual model, trilogy makes it easy to understand the process of consciousness and serves as a foundation for generating hypotheses or theories. However, trilogy is not constructed as an empirically falsifiable theory itself. In other words, trilogy is a general roadmap of the consciousness mechanism and potential theories that can branch off of this model can further complete and evolve this model further in the future.

***Trilogy and Infinite Regress.*** Based on the commitment of trilogy to causality, all events are subject to the tenet of cause and effect and free will is not an exception. Trilogy explains that awareness is the primary reason for free will in the selection stage of the decision-making process (ABCS), and in turn, free will is the main reason for a discretion in the selection of the subject for awareness (DSIA), giving rise to a cycle of non-reflexive and asymmetric infinite regress. At first glance, any argument containing an infinite regress is vicious and doomed by fallacy. However, an argument using infinite regress could be a viable (virtuous) theoretical argument if it is not used to explain the origin of infinite regress, it does not discuss the temporal succession of the event such as which event comes first and finally does not intend to explain why the regress is the way it is (Bliss, 2013, Nolan, 2003). In other words, if an argument shows infinite regress as a part of an interconnected coherent network of events without stressing the succession of the those events, it could be considered a virtuous cycle.

Indeed, the structure of trilogy is aligned with a virtuous infinite regress, since awareness and decision-making processes are interconnected through their intermediary of ABCS and DSIA to form a coherent model comprising of a functional network of events rather than events that are chronologically ordered. Trilogy maintains its coherentism and is not after explaining which of these two processes came first. In this scheme, the notion of succession remains within the realm of plausibility, and although it rejects the idea of simultaneous events, it grants legitimacy to the notion of causation. Moreover, trilogy does not intend to explain how the processes of free will or intentional attention came into existence or why these two mental functions are interdependent.

***Trilogy and problems of consciousness.*** Trilogy is silent on the details of the transformation stage of the awareness, which Chalmers (2010) labelled “the hard problem of

consciousness.” Similarly, trilogy does not provide further information on how two mental functions of ABCS and DSIA interact with each other.

**Trilogy and Physical Libertarianism.** It seems hard to see which school of thought is congruent with the will power proposed by trilogy. On one hand, the commitment to the tenet of causality and belief in a free will would align trilogy with compatibilism. However, since trilogy negates the jurisdiction of determinism when it comes to NI, it stands in odds with compatibilism. Moreover, ABCS has no correspondence to random will proposed by indeterminism.

Alternatively, the will power presented by trilogy shares some features with agent-causal and event-causal libertarianism. However in trilogy, neither the agent, nor an event is the cause of a decision. In fact, the awareness of an event by an agent is the source of a decision. This is why, there has been a need for a new model of decision making that bases its foundation on awareness-causal will power as a new class of libertarianism, namely physical libertarianism. In this school of thought, a true free will coexists with the tenet of causality without resorting to metaphysical properties of mind or random will offered through quantum mechanics.

## References

- Araujo, H. F., Kaplan, J., Damasio, H., & Damasio, A. (2015). Neural correlates of different self domains. *Brain and Behavior*, 5(12), 1–15. <http://doi:10.1002/brb3.409>
- Ayer, A. J. (1954). *Philosophical essays*. MacMillan.
- Baars, B. J. (1988). *A cognitive theory of consciousness*. Cambridge University Press.
- Balaguer M (2019) Free Will, Determinism, and Epiphenomenalism. *Front. Psychol.* 9:2623. doi: 10.3389/fpsyg.2018.02623
- Balaguer, M. (2010). *Free Will as an Open Scientific Problem*. MIT Press.
- Bear A, Bloom P. (2016) A Simple Task Uncovers a Postdictive Illusion of Choice. *Psychological Science* 27(6), April 2016. [<https://doi.org/10.1177/0956797616641943>]
- Belnap, N. D., Perloff, M., & Xu, M. (2001). *Facing the future: agents and choices in our indeterminist world*. Oxford University Press on Demand Chicago
- Bermúdez, J. L., Marcel, A., & Eilan, N. (Eds.). (1995). *The Body and the Self*. MIT Press.
- Berofsky, B. (1987). *Freedom from Necessity: The Metaphysical Basis of Responsibility* (1st ed.). Routledge. <https://doi.org/10.4324/9781315202532>
- Bliss, R. L. (2013). Viciousness and the structure of reality. *Philosophical Studies*, 166(2), 399–418.
- Broadbent, D. E. (1971). *Decision and Stress*. Academic Press.
- Burk, D., Ingram, J. N., Franklin, D. W., Shadlen, M. N., & Wolpert, D. M. (2014). Motor effort alters changes of mind in sensorimotor decision making. *PloS one*, 9(3), e92681. <https://doi.org/10.1371/journal.pone.0092681>
- Campbell, J (1997). A Compatibilist Theory of Alternative Possibilities. *Philosophical Studies*, 88: 319–30

- Caruso G. (2020). Buddhism, Free Will, and Punishment: Taking Buddhist Ethics Seriously (June 1, 2020). *Zygon*, Vol.55, No.2, 2020. <https://ssrn.com/abstract=3627372>
- Chalmers, D (2010). Facing up to the problem of consciousness. In *The character of consciousness*. Oxford University Press.  
<https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780195311105.001.0001/acprof-9780195311105-chapter-1>
- Chisholm, R. (1966). Freedom and action. In K. Lehrer (Ed.), *Freedom and determinism* (pp. 11–40). Random House.
- Clark, A. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. *Behavioral and Brain Sciences*, 36(3), 181–204.
- Clarke R, Capes J, Swenson P (2021). Incompatibilist (Nondeterministic) Theories of Free Will. *The Stanford Encyclopedia of Philosophy* (Fall 2021 Edition), Edward N. Zalta (ed.)  
<https://plato.stanford.edu/archives/fall2021/entries/incompatibilism-theories>
- Clarke, R. (1996). Agent causation and event causation in the production of free action. *Philosophical Topics*, 24(2), 19–48.
- Cory, T. (2013). *Aquinas on Human Self-Knowledge*. Cambridge: Cambridge University Press.  
<https://doi:10.1017/CBO9781107337619>
- Cos, I., Bélanger, N., & Cisek, P. (2011). The influence of predicted arm biomechanics on decision making. *Journal of Neurophysiology*, 105(6), 3022–3033.  
<https://doi.org/10.1152/jn.00975.2010>
- Dehaene, S., Kerszberg, M., & Changeux, J.-P. (1998). A neuronal model of a global workspace in effortful cognitive tasks. *Proceedings of the National Academy of Sciences of the United States of America*, 95(24), 14529–14534.  
<https://doi.org/10.1073/pnas.95.24.14529>

- Dennett, D. (1984). *Elbow room: The varieties of free will worth wanting*. MIT Press.
- Dennett, D. C., & Kinsbourne, M. (1992). Time and the observer: The where and when of consciousness in the brain. *Behavioral and Brain Science*, 15(2), 183–201.  
<https://doi.org/10.1017/S0140525X00068229>
- Desimone, R., & Duncan, J. (1995). Neural mechanisms of selective visual attention. *Annual Review of Neuroscience*, 18, 193–222.
- Deutsch, J. A., & Deutsch, D. (1963) Attention: Some theoretical considerations. *Psychological Review*, 70, 80–90.
- Ditterich, J. (2006). Evidence for time-variant decision making. *The European Journal of Neuroscience*, 24(12), 3628–3641. <https://doi.org/10.1111/j.1460-9568.2006.05221>
- Doyle, B. (2010). Janesian free will, the two-stage model of William James. *William James Studies*, 5, 1–28. Retrieved November 1, 2020, from  
<https://www.jstor.org/stable/26203733>
- Drummond, H. (1991). *Effective Decision Making: A Practical Guide for Management*. Kogan Page.
- Duignan B. (2017). Epiphenomenalistic materialism. *Encyclopedia Britannica*, 16 Jun. 2017.  
<https://www.britannica.com/topic/epiphenomenalistic-materialism>
- Duignan, B (2021). Democritus. *Encyclopedia Britannica*, 19 Feb. 2021,  
<https://www.britannica.com/biography/Democritus>. Accessed 22 October 2021.
- Edwards, W. (1962). Dynamic decision theory and probabilistic information processing. *Human Factor Ergonomic Society*, 4, 59–73.
- Farhadi, A. (2021). There is no “I” in “AI”. *AI & Soc.* 36, pages 1035–1046.  
<https://doi.org/10.1007/s00146-020-01136-2>

- Fernandez-Duque, D., & Johnson, M. L. (2002). Cause and effect theories of attention: The role of conceptual metaphors. *Review of General Psychology*, 6(2), 153–165.
- Festinger, L. (1957) *A theory of cognitive dissonance*, Stanford, CA: Stanford University Press
- Fischer, J. M. (1982). Responsibility and control. *Journal of Philosophy*, 79, 24–40.
- Fox, J., Cooper, R. P., & Glasspool, D. W. (2013). A canonical theory of dynamic decision-making. *Frontiers in Psychology*, 4, 150–END PAGE.  
<https://doi.org/10.3389/fpsyg.2013.00150>
- Frankfurt, H. G. (1969). Alternate possibilities and moral responsibility. *The Journal of Philosophy*, 66(23), 829–839.
- Franklin, C. E. (2014). Event-causal libertarianism, functional reduction, and the disappearing agent argument. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 170(3), 413–432. <http://www.jstor.org/stable/42920610>
- Freud, S. (1924). *A general introduction to psychoanalysis* (J. Riviere, Trans.). PUBLISHER.
- Ginet, C. (1966). Might we have no choice? In K. Lehrer (Ed.), *Freedom and determinism* (pp. 87–104). Random House.
- Ginet, C. (2008). In defense of a non-causal account of reasons explanations. *The Journal of Ethics*, 12(3/4), 229–237. <http://www.jstor.org/stable/40345380>
- Ginet, C. (2016). Reasons explanation: Further defense of a non-causal account. *The Journal of Ethics*, 20(1/3), 219–228. <http://www.jstor.org/stable/44077328>
- Goodman, L. E. (2013). *Avicenna: Arabic Thought and Culture*. Routledge Press.
- Gordon-Roth Jessica (2020). Locke on Personal Identity. *The Stanford Encyclopedia of Philosophy* (Spring 2020 Edition), Edward N. Zalta(ed.).  
<https://plato.stanford.edu/archives/spr2020/entries/locke-personal-identity>.

- Hagura, N., Haggard, P., & Diedrichsen, J. (2017). Perceptual decisions are biased by the cost to act. *eLife*, 6, e18422. <https://doi.org/10.7554/eLife.18422>
- Harper J. (2015). Majority of Americans believe in fate . *The Washington Times* - Monday, July 13, 2015. <https://www.washingtontimes.com/news/2015/jul/13/poll-61-percent-republicans-believe-fate-horosocop/>
- Hirst, W., Spelke, E. S., Reaves, C. C., Caharack, G., & Neisser, U. (1980). Dividing attention without alternation or automaticity. *Journal of Experimental Psychology: General*, 109, 98–117.
- Hobbes, T. (1997). *Leviathan* (R. E. Flatman & D. Johnston, Eds.). New York ; London : W.W.Norton, 1997.
- Hoefer C (2016). Causal Determinism. *The Stanford Encyclopedia of Philosophy* (Spring 2016 Edition), Edward N. Zalta. <https://plato.stanford.edu/archives/spr2016/entries/determinism-causal/>>.
- Hohwy, J. (2013). *The Predictive Mind*. Oxford University Press.
- IvyPanda. (2019). *The Concept of Self as Discussed by David Hume*. Retrieved from <https://ivypanda.com/essays/the-concept-of-self-as-discussed-by-david-hume/>
- Kane, R. (1999). Responsibility, luck, and chance: Reflections on free will and indeterminism. *Journal of Philosophy*, 96(5), 217–240. doi:10.2307/2564666
- Kane, R. (2005). *A Contemporary Introduction to Free Will*. New York, NY: Oxford University Press.
- Lamme, V. A. F. (2006). Towards a true neural stance on consciousness. *Trends in Cognitive Sciences*, 10(11), 494–501. <https://doi.org/10.1016/j.tics.2006.09.001>

- 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–END PAGE. <https://doi.org/10.3389/fnhum.2016.00262>
- Libet, B., Gleason, C. A., Wright, E. W., & Pearl, D. K. (1983). Time of conscious intention to act in relation to onset of cerebral activity (readiness-potential): The unconscious initiation of a freely voluntary act. *Brain: A Journal of Neurology*, 106(3), 623–642. <https://doi.org/10.1093/brain/106.3.623>
- Long, A. (1999). Stoic psychology. In K. Algra, J. Barnes, J. Mansfeld, & M. Schofield (Eds.), *The Cambridge History of Hellenistic Philosophy* (pp. 560-584). Cambridge: Cambridge University Press. doi:10.1017/CHOL9780521250283.018
- Lorenz H (2009). Ancient Theories of Soul. *The Stanford Encyclopedia of philosophy* (Summer 2009 Edition), Edward N. Zalta (ed.). <https://plato.stanford.edu/archives/sum2009/entries/ancient-soul>.
- Mackie, P. (2018). Compatibilism, Indeterminism, and Chance. *Royal Institute of Philosophy Supplement*, 82, 265-287. doi:10.1017/S1358246118000140
- Maercker A, Ben-Ezra M, Esparza OA, Augsburger M. Fatalism as a traditional cultural belief potentially relevant to trauma sequelae: Measurement equivalence, extent and associations in six countries. *Eur J Psychotraumatol*. 2019 Sep 2;10(1):1657371. doi: 10.1080/20008198.2019.1657371. PMID: 31528270; PMCID: PMC6735334.
- Marti-Marca, A., Deco, G., & Cos, I. (2020). Visual-reward driven changes of movement during action execution. *Scientific Reports*, 10(1), 15527–END PAGE. <https://doi.org/10.1038/s41598-020-72220-2>
- McCann, H. J. (2019). *The works of agency*. Cornell University Press.

- McKenna Mm, Coates DJ. (2021). Compatibilism. The Stanford Encyclopedia of Philosophy (Fall 2021 Edition), Edward N. Zalta (ed.)  
<https://plato.stanford.edu/archives/fall2021/entries/compatibilism>
- Morel, P., Ulbrich, P., & Gail, A. (2017). What makes a reach movement effortful? Physical effort discounting supports common minimization principles in decision making and motor control. *PLoS biology*, 15(6), e2001323.  
<https://doi.org/10.1371/journal.pbio.2001323>
- Neisser, U. (1976). *Cognition and Reality*. Freeman.
- Nolan, D. (2003). What's wrong with infinite regresses? *Metaphilosophy*, 32, 523–538.  
<https://doi.org/10.1111/1467-9973.00206>
- Norman, D. A. (1968). Toward a theory of memory and attention. *Psychological Review*, 75(6), 522–536. <https://doi.org/10.1037/h0026699>
- Nozick, R. (1981). *Philosophical explanations*. Harvard University Press , pp. 291–316.
- O'Connor, Timothy (1993). Indeterminism and free agency: Three recent views. *Philosophy and Phenomenological Research* 53 (3):499-526.
- O'Connor, T. (1995). Agent causation. In T. O'Connor (Ed.), *Agents, Causes, and Events: Essays on Indeterminism and Free Will* (pp. 173–200). Oxford University Press.
- Palmer, D. (2021). Free will and control: A noncausal approach. *Synthese*, 198(10), 10043–10062.
- Pereboom, D. (2014). *Free Will, Agency, and Meaning in Life*. Oxford University Press.
- Pike, N. (1965). Divine Omniscience and Voluntary Action. *The Philosophical Review*, 74(1), 27-46. doi:10.2307/2183529
- Reid, T. (1969). *Essays on the Active Powers of the Human Mind*. MIT Press.

- Reynaud, A. J., Saleri Lunazzi, C., & Thura, D. (2020). Humans sacrifice decision-making for action execution when a demanding control of movement is required. *Journal of Neurophysiology*, 124(2), 497–509. <https://doi.org/10.1152/jn.00220.2020>
- Reynolds, J., & Desimone, R. (2000). Competitive mechanisms subserve selective visual attention. In A. Marantz, Y. Miyashita, & W. O'Neil (Eds.), *Image, Language, Brain: Papers from the First mind Articulation Project Symposium* (pp. 233–247). The MIT Press.
- Rosenthal, D. M. (2002). How many kinds of consciousness? *Consciousness and Cognition*, 11(4), 653–665. [https://doi.org/10.1016/s1053-8100\(02\)00017-x](https://doi.org/10.1016/s1053-8100(02)00017-x)
- Russell P. (2021). Hume on Free Will. *The Stanford Encyclopedia of Philosophy* (Fall 2021 Edition), Edward N. Zalta. <https://plato.stanford.edu/archives/fall2021/entries/hume-freewill/>
- Russell, B. (1945). *A history of western philosophy and its connection with political and social circumstances from the earliest times to the present day*. Simon and Schuster.
- Searle, J. R. (2001). *Rationality in Action*. MIT Press.
- Shariff, A. F., Schooler J., & Vohs, K. D. (2008). The hazards of claiming to have solved the hard problem of free will. In J. Baer, J. C. Kaufman, & R. F. Baumeister (Eds.), *Are we free? Psychology and free will* (pp. 183, 190–193). Oxford University Press.
- Shoemaker, Sydney (1986). Introspection and the self. *Midwest Studies in Philosophy* 10 (1):101-120.
- Simon, H. A. (1956). Rational choice and the structure of the environment. *Psychological Review*, 63, 129–138.
- Slovic, P., Fischhoff, B., & Lichtenstein, S. (1977). Behavioral decision theory. *Annual Review of Psychology*, 28(1), 1–39. <https://doi.org/10.1146/annurev.ps.28.020177.000245>

Smart, J. J. C. (1961). Free-Will, Praise and Blame. *Mind*, 70(279), 291–306.

<http://www.jstor.org/stable/2251619>

Smilansky S. (2005). Free Will, Fundamental Dualism, and the Centrality of Illusion. *The*

*Oxford Handbook of Free Will* (1st edn). Edited by Robert Kane. Mar 2005.

<https://doi.org/10.1093/oxfordhb/9780195178548.003.0022>

Solomon, R. (2003). On Fate and Fatalism. *Philosophy East and West*, 53(4), 435-454. Retrieved

June 4, 2021. <http://www.jstor.org/stable/1399977>

Soraj Hongladarom (2015). Free Will, Agency, and Meaning in Life, by Derk Pereboom,

*Australasian Journal of Philosophy*, 93:2, 411-412. DOI: 10.1080/00048402.2014.994011

Statista research Department. (2019). Belief in karma in the United States in 2019.

<https://www.statista.com/statistics/959368/belief-in-karma-in-the-us/>

Stone, D. A. (2013). *Einstein and the Quantum: The Quest of the Valiant Swabian*. Princeton

University Press: Princeton.

Strawson, G. (1994). The impossibility of moral responsibility. *Philos Stud* 75, 5–24.

<https://doi.org/10.1007/BF00989879>

Thura, D., Cos, I., Trung, J., & Cisek, P. (2014). Context-dependent urgency influences speed-

accuracy trade-offs in decision-making and movement execution. *The Journal of*

*Neuroscience: The Official Journal of the Society for Neuroscience*, 34(49), 16442–

16454. <https://doi.org/10.1523/JNEUROSCI.0162-14.2014>

Tononi, G., Boly, M., Massimini, M., & Koch, C. (2016). Integrated information theory: From

consciousness to its physical substrate. *Nature Reviews Neuroscience*, 17(7), 450–461.

<https://doi.org/10.1038/nrn.2016.44>

Tornau C (2020) Saint Augustine. The Stanford Encyclopedia of Philosophy (Summer 2020 Edition), Edward N. Zalta (ed.).

<https://plato.stanford.edu/archives/sum2020/entries/augustine>.

Treisman, A. (1999). Feature binding, attention and object perception. In G. W. Humphries, J. Duncan, & A. Treisman (Eds.), *Attention, Space and Action* (pp. 91–111). Oxford University Press.

Vihvelin, K. (2013). *Causes, Laws, & Free Will*. Oxford University Press.

Vohs KD, Schooler JW (2008). The Value of Believing in Free Will: Encouraging a Belief in Determinism Increases Cheating. *Psychological Science*. 2008;19(1):49-54.

doi:10.1111/j.1467-9280.2008.02045.x

Wallace, R. J. (1994). *Responsibility and the Moral Sentiments*. Harvard University Press.

Watson, G. (1975). Free agency. *Journal of Philosophy*, 72, 205–220.

Webb, T. W., & Graziano, M. S. A. (2015). The attention schema theory: A mechanistic account of subjective awareness. *Frontiers in Psychology*, 6, 500-510.

<https://doi.org/10.3389/fpsyg.2015.00500>

Yen CL. (2012). It is our destiny to die: the effects of mortality salience and culture-priming on fatalism and karma belief. *Int J Psychol*. 2013;48(5):818-28.

doi:10.1080/00207594.2012.678363.

Zagzebski L, (2008). *Omnisubjectivity*. *Oxford Studies in Philosophy of Religion*, Vol. 1, Jonathan Kvanvig (ed.), Oxford: Oxford University Press, pp. 231–247.

Zimmerman, M. J. (1984). *An Essay on Human Action*. Peter Lang.