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Trilogy: A New Paradigm of Consciousness

Ashkan Farhadi MD, MS, FACP, FACG[1,2]

Abstract

Consciousness is usually interpreted as a state of being aware of one's environment as well as self, while awareness is understood as knowledge of something. Despite their semantic differences, in philosophy, these terms are often used interchangeably, as is the case of the hard problem of consciousness proposed by Chalmers, which in fact is the hard problem of awareness. Trilogy paradigm of consciousness (or simply "trilogy") offers a new paradigm where consciousness is the result of a unique interaction between awareness and the decision-making process. By conferring the input of awareness to the decision-making process, a new mental function of awareness-based choice selection (ABCS) or true free will emerges. Likewise, application of the power of decision-making to the process of awareness gives rise to discretionary selection of information for awareness (DSIA) or intentional attention. The intertwined actions of ABCS and DSIA comprise "I" which is the faculty of our consciousness and is what sets natural intelligence (NI) apart from artificial intelligence (AI). Based on trilogy, mind is an unconscious compilation of all mental function excluding ABCS and DSIA that are the essence of consciousness. As humans, we are a union of "I," our minds, and our bodies.

Keywords: Consciousness, awareness, free will, attention, self-awareness

[1] Memorial Care Foundation.
[2] University of California, Irvine. Department of medicine.
Correspondence email: farhadiashkan@gmail.com
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The Model Overview

Despite subtle semantic differences, consciousness and awareness are commonly used interchangeably in the literature in the related fields of philosophy and psychology. As I elaborate through this manuscript, awareness is not sufficient for consciousness, nor it could exist without the power of decision making. By introducing, trilogy paradigm of consciousness, or "trilogy" for short, I explain why consciousness is the result of a unique interaction of awareness and decision making and this interaction results in creation of two mental functions of awareness-based choice selection (ABCS) and discretionary selection of information for awareness (DSIA). By applying the input of awareness to the decision-making process, ABCS or true free will emerges. ABCS is instrumental in the decision-making process not a deus ex machina from a metaphysical property of the mind, a special property of an agent nor because of a prior event. ABCS is simply steering of a decision by an agent due to awareness of the agent from a piece of intelligence. Likewise, by applying the power of decision making to awareness, DSIA or intentional attention arises. The intertwined actions of ABCS and DSIA comprise a new entity called "I" which is the faculty of our consciousness that sets natural intelligence (NI) apart from artificial intelligence (AI). Based on trilogy, mind is an unconscious entity and compilation of all mental functions except for ABCS and DSIA. As shown in Figure 1, as humans, we are a union of "I," our minds, and our bodies.

Awareness and Decision-making Process in Trilogy

Decision-making Process

Rational decisions are based on the evaluation of choices guided by an agent's beliefs, desires, and values (Slovic et al., 1977). However, according to Simon (1956), not all decisions are based on elaborate reasoning due to limitations in our mind and its framework to preserve our

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efficiency in the decision making. Thus, the decisions we make have varying degrees of rationality based on the degree of complexity of our understanding of the state of the problem. Besides, our decisions could be biased due to several other factors such as belief framework—preference—or existence of factors of uncertainty —risk-taking appetite—which has been further elaborated in expected utility theory (Briggs, 2019; Frisch & Baron, 1988; Steele & Stefansson, 2020). Based on trilogy, decision-making processes is comprised of three separate stages.

Preselection Stage

The decision-making process starts with the preparatory work our minds carry out in the preselection stage (Figure 2), transforming information into two forms of informational and emotional intelligence. Informational intelligence includes information based on sensory inputs, motor information, memories, knowledge, beliefs, morals, virtues, values, desires, and the thinking process. Emotional intelligence constitutes the information obtained from moods, emotions, physiological status (pain, tiredness, hunger, physiological urges), and self-esteem. However, other factors such as genetics, upbringing, childhood experiences, and certain structural or biochemical properties of our brain also influence the decision-making process, or modify the intelligence used for decision making.

In the preselection stage, our minds synthesize and analyze a blend of informational inputs as well as emotional intelligence, considering the other factors mentioned above in a process called “reasoning.” However, parallel to our reasoning process, our mind develops counter-reasoning arguments to challenge our most logical choice, which provides alternatives for the selection stage of the decision-making process.

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The preselection stage of decision making aligns well with the naturalistic decision models proposed by Drummond (1991) where the mind first identifies the problem, before clarifying and prioritizing the goals in order to generate and evaluate options by comparing their predicted consequences with the goal. However, this model lack counter reasoning which is a necessary element of making a decision in NI as proposed by trilogy.

In another model of decision making proposed by Dijksterhuis (2004), our unconscious mind plays a significant role in the processing of decisions through its vast capacity by providing the best rational option for a decision. He believed that the problem presented by Simon (1956) as bounded rationality was mainly due to the limitations in our conscious mind that is not the same ofr unconsciouss mind. Trilogy rejects this division of mind into conscious and unconscious component, as it considers mind as an unconscious entity that renders the entire process of reasoning and counter-reasoning in the preselection stage of the decision-making process. However, when the details of the matrix of information used for the reasoning and counter-reasoning reaches our awareness through the ABCS function in the selection stage, we will be aware of the choices and their detailed information as elaborated below.

Selection Stage

After the mind completes the processing of available choices, the selection of the choices are performed using the ABCS function, as shown in Figure 2 and 3. In this context, awareness is depicted as a momentary process that could influence the selection as a cause and tip the balance toward a particular choice over others in the process of choice selection. ABCS function allows us to make a selection considering the entire matrix of information used for the reasoning and counter reasoning process. Thus, the selected choice may neither be a determined choice nor the most rational one. Let us consider an example. Imagine you are looking for a job, and ask a

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friend to check all the available job listings for you in today's newspaper, and to mark them down so that you can call and make appointments for interviews. You have created an algorithm, and your friend follows through with a selection of a choice based on an algorithm (SCBA). As you approach your friend, he is already halfway down the job listings page. With a quick glance at the posted jobs in the list, you quickly cross off a listing for a ballerina and another for a nightclub bouncer, simply because you are aware of your situation and know that you are not capable of doing those jobs. In this example, your awareness provides you with an insight that you would not possess without it; therefore, because of awareness, you may depart from the SCBA that your friend followed.

Since not all the intelligence and factors comprising the matrix of information reach our awareness at the same time due to the function of DSIA, our rational decision may encounter limitations, and this aligns selection stage of decision-making in trilogy with the concept of bounded rationality proposed by Simon (1956).

Yet, the selection stage in trilogy could seem to line up with the last step of naturalistic decision models of choosing an option, where the selection of the option happens based on considering which option's outcome aligns the best with the goal. This model lack a proper explanation of situations where we may select a choice that is neither the most rational one nor align the best with our goals and interests. This short coming of naturalistic decision model has previously mentioned by Klein (2008and also addressed by Fox et al. (2013) who equated option selection to commitment in canonical theory of dynamic decision making. In their model, the commitment is made when an agent selects the most preferred option. In that sense, commitment is like the selection of choice based on an algorithm (SCBA) that is completely distinct from ABCS in trilogy.

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How ABCS Stands Up to the Current Views on Free Will

In his interpretation Kane (1999) defined willpower or free will as the ability to make choices intentionally, voluntarily, and rationally without constraints. Therefore, the agent must be capable of making a decision while be able to choose otherwise and remains the responsible source of the choosing. However, not all these criteria may be present in every decision that is based on free will (Walter, 2001). For example, we may make a decision that is not completely rational nor is in our best interests.

There are several schools of thought about free will. On one end of spectrum, the existence of free will is completely denied. Determinism—a perspective that many scientists and thinkers have adopted—is one of these school of thought that raises serious doubt on the existence of free will, positing that the unwavering tenets of cause and effect do not leave any room for the loose cannon of free will (Ayer, 1954). From this point of view, free will is nothing but a mere illusion.

On the other end of spectrum libertarians believe in free will but there are major differences among various subgroups of this school of thought . Non-causal libertarian is the first subgroup of libertarians and believe that a will is a true free will if there is no cause for the selection (Ginet, 2016; McCann, 2019; Palmer, 2021). They purport that the source of decision making resides within us, and does not need a cause beside our willpower. This point of view has received little attention by scientific communities, since it is difficult to defend this type of free will in the context of a physical cause-and-effect chain of events (O'Connor, 1993). Moreover, the problem with non-causal theories of free will extends beyond physical causality and centers around elimination of control and rational in the decision-making process. If there is no cause for the selection, how do agents exert control over their selection? What if a decision is driven by a

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cause? Are such decisions made without free will? If there is no cause then there is no reason for the selection and therefore, most of the core criteria for free will are not fulfilled in non-causal interpretation of free will. In trilogy, ABCS follows the rules of causality and therefore does not align with non-causal theories of free will.

The second subgroup of libertarians, believe in event-causal theories of free will. However, they consider only a non-deterministic event is the cause of a selection (Dennett, 1978; Ekstrom, 2003; Mele, 2006), which fulfills the criteria for control and reason (Balaguer, 2010; Franklin, 2018; Kane, 2005; Searle, 2001). However, these theories not only transfer the control from the agent to the event, but also, if non-deterministic events cause our decisions, our decisions are merely driven by luck, removing any sense of agent responsibility. Some authors would nonetheless argue that if our preferences are guided by indeterministic factors, our decisions are still based on free will (Church, 2019; Franklin, 2014). This may also resonate with the premises underpinning the quantum nondeterministic probability, and echoes William James's choice-and-chance decision-making process (Doyle, 2010; Kane, 1999). Trilogy does not align with this subgroup since our selection is caused by our awareness. The awareness may be the result of an event or other other forms of information such as memories. In addition, there is no component of sheer luck in this process.

The third subgroup of libertarians believe in an agent-causal theories of free will. These theories are based on the premise that agents are solely responsible for making a choice regardless of the prior events, and are thus both the source and the cause of a decision. This view was first elaborated by George Berkeley in 1710 (Dansy, 1998) and was later advanced by Reid (1969) as well as many other scholars (Chisholm, 1966; Clarke, 1996; O'Connor, 1995; Pereboom, 2014; Zimmerman, 1984). According to some proponents of these theories, a

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"substance" or metaphysical mind that is beyond the reach of causality is responsible for our decisions. The question remains how can a substance or metaphysical mind that is beyond causality communicate with a physical mind and acquire intelligence to make a decision? Not all proponents of agent-causal theories of free will concur with the existence of a metaphysical mind, as some argue that our decisions are guided (but not caused) by motives, giving rise to "causal indeterminism" (O'Connor, 1993). For example, Nozick (1981) posited that decisions are driven by reasons only because of the weight the agent assigns to those reasons. Even though, this would give the agent a freedom of choice among a set of determined reasons by assigning weight to the reasons, his theory failed to explain how an agent could willfully assign weights to reasons beside the random properties of quantum mechanics—random will. Conversely, in trilogy, agent's awareness rather than the agent itself is the cause of a decision. Second, the ABCS is bound to a physical world of causality, eliminating the need for a metaphysical entity or pure luck.

Compatibilists are trying to build a bridge between determinism and libertarianism. Compatibilists are originally causal determinists but uphold the belief that causal determinism does not oppose free will (Dennett, 1984; Frankfurt, 1969). The classical compatibilists such as Hobbes and Hume argued that free will is nothing but an ability to do what an agent wants without any impediments (Chisholm, 1964; Ginet, 1980; Hobbes, 1997). Based on compatibilism, when an agent does something, it is what an agent truly wanted to do without any impediment, and this translates into agent's free will even though the agent's decision was causally determined. The question remains whether the agent was able to do otherwise, which is the core foundation of free will and moral responsibility associated with it (Chisholm 1964, Ginet, 1980). Some compatibilists further argue that neither the freedom to do otherwise nor the

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resulting moral responsibility are necessary criteria for free will (Dennett, 1984; Frankfurt, 1969; Watson, 1975). In particular, Frankfurt (1969) proposed a "hierarchical view of will" that sets priorities for our desires, akin to Nozick's weights assigned for the reasons driving our choices. From this perspective, agents' beliefs and desires can be considered the reason for a selection, but do not necessitate the selection. One can interpret this statement as a hard problem of free will, in the sense that a deterministic deliberation in the brain occurs from the third-person perspective whereas a conscious agent performs the deliberation from the first-person perspective (Shariff et al., 2008). Other compatibilists 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). Guided by the need to restore the moral responsibility for our actions (O'Connor, 1993) several compatibilists argue that causal determinism is not at odds with freedom to do otherwise (Campbell, 1997; Vihvelin, 2013) but these arguments are beyond the scope of this manuscript.

At first glance, trilogy may seem to be aligned with compatibilism due to its commitment to the tenets of causality and free will and the acknowledgment of the need for deterministic constraints during the preselection stages. However, ABCS operates in an indeterminate fashion between the edges of deterministic constraints. Thus, trilogy clearly invalidates the deterministic perspective of the world when it comes to natural intelligence. Therefore, since trilogy stands at odds with determinism, it is not aligned with compatibilism.

In general, ABCS stands the litmus test of Kane (1999) for free will and fulfils all the criteria including allowing the agent to choose otherwise and thus bears the ultimate responsibility for the choosing. Hence, we may consider trilogy as the basis for a novel subgroup of libertarianism that purports awareness-causal free will in the name of physical libertarianism.

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Postselection Stage

Based on trilogy, once a choice has been made using ABCS, mind is responsible for its execution. However, before execution, the selected choice would go through the appropriation process, as shown in Figure 2, 4 and 5. The appropriation process is a newly defined analytical mental process in trilogy that checks the practicality, feasibility, and administrative aspects of the implementation of the selected choice. If during an appropriation process, our minds encounter paradoxical or practical impediments to the selected choice, it is sent back to "I" for reconsideration. As shown in Figure 6, the passage or failure of passage of the decision in the appropriation process, modification of the decision and or abandonment of it will reach our awareness. The appropriation process may have an evolutionary basis as it serves as a safety net, preventing irrational decisions from being acted upon.

Appropriation is a newly defined mental process and earlier studies do not reserve any room for this phenomenon as there is no clear boundaries between the selection of the choice and execution of the selection. One example is shared optimization hypothesis that explains the selection and execution process as a harmonic syncytium with the aim of maximizing the reward (Ditterich, 2006; Thura et al., 2014). However, later studies implied a gap in the proposed harmonic syncytium of making a decision and executing it (Marti-Marca et al., 2020; Reynaud et al., 2020) showing that the principles governing each process were independent of each other. In other words, not all our decisions may result in action (Cos et al., 2011; Morel et al., 2017). This may be due to the fact that we constantly evaluate costs of actions before executing them (Hagura et al., 2017) in the form of "post-initiation deliberation" (Burk et al., 2014) which literally translates into "changing one's mind."

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Appropriation process may also resonate with the dynamic decision theory and rule-based models initially presented by Edwards (1962) and Newell and Simon (1972), respectively. The former theory later advanced by Fox et al. (2013) and latter one advanced into Soar project (Laird et al., 1987). Based on these theories, our decisions could be dependent on other decisions, and implementation of a decision may alter the state of the problem entirely and therefore results in a dynamic change in our decision in real time. However, the major distinction between the appropriation in trilogy and dynamic change in the decision process stems from the fact that in trilogy the decision has not been yet executed at the time of appropriation, while an executed decision and its outcome determines future decisions in the form of a feedback in dynamic decision theory and rule-based model.

Autopilot Decisions

The decision-making in AI is based on selection of choice based on algorithm or SCBA. Similarly, not all decisions in NI involve awareness, using SCBA without ever invoking the "I" (Figure 4). SCBA or autopilot decisions typically skip the reasoning process due to the need for an urgent action such as reflexes.

Some argued that special AI called BDI agents could go beyond SCBA by replicating basic mental states such as beliefs, desires, and intention (Bratman, 1987, Rao & Georgeff, 1995). They claimed that by learning from their decisions, BDI agents maintain their beliefs; through generating goals, they exhibit desires; and by adopting plans, they demonstrate intentions. These capabilities, allows BDI agents to make decisions based on newly self-made algorithms, akin to the decision-making of a NI. However, this depiction of BDI agents is not only oversimplification of complex mental functions, but nonetheless, BDI agents follow an

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algorithm—SCBA—even though that algorithm involves improving their algorithm. In contrast to AI, even if we make autopilot decisions using SCBA, we can override these choices at will.

Dilemma of Intention

Awareness is not only an essential element of ABCS but is also critical for allowing us to appreciate our discretionary power in our decision-making process (Figure 6). This notion can be aligned with the findings of the scientific movement that started with Benjamin Libet's experiment in 1983, which cast a shadow over the existence of intentional action (Libet et al., 1983). According to Libet's findings, the intention to move a limb lagged behind the brain's electrical activity indicating readiness for the movement of that limb, suggesting presence of an unconscious process that precedes conscious decision needed for the physical movement. Therefore, the intention to move the limb was interpreted as a mere illusion. Not all scientists and philosophers agreed with this conclusion. For example, Shariff et al. (2008) proposed the close enough theory, suggesting that the conscious attention of mind is usually not focused on the present, but on the future to maintain its effectiveness in causality within the confines of real time. This relationship between time and consciousness allows the interpretation of free will to cohere with the findings of Libet's experiment.

A new interpretation of Libet's finding in the light of trilogy may lead to a different interpretation of the sequence of events, as the intention to decide simply corresponds to the ABCS. However, as shown in Figure 6, awareness of the intention is different from the intention itself. This is why the process of becoming aware of the ABCS could lag behind the actual ABCS.

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The Process of Awareness

Awareness is the keystone to our consciousness and the reason for meaning in our lives, as it transforms objective information in our mind into subjective experience. In this process, sensation turns into perception (qualia), knowledge turns into knowing, memory turns into remembering, and emotion turns into feeling. Based on trilogy, awareness process is comprised of four distinct stages.

Preselection Stage

Preparatory work by our minds organizes informational and emotional intelligence for our awareness (Figure 7). The preselection stage of awareness in trilogy aligns with the late selection theory of attention (Deutsch & Deutsch, 1963; Norman, 1968), spotlight theory of attention (Fernandez-Duque & Johnson, 2002) and unison theory of attention (Desimone & Duncan, 1995; Reynolds & Desimone, 2000). However, these theories deviate from trilogy when it comes to the selection stage of awareness, as explained below.

Selection Stage

For any information to reach our awareness, it must be selected through a process that can be called attention. Attention is a mandatory process for improving the efficiency of information processing in AI as well as NI and without it, the constant stream of information could overwhelm our awareness. Based on trilogy, by applying the power of decision-making to the selection stage of awareness we have DSIA or intentional attention, making NI distinct from AI.

How DSIA Stands Up to the Current Views on Attention

Before comparing DSIA with current theories of attention, I provide a brief overview of the concept of attention. William James deemed the definition of attention superfluous, as he

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famously argued that “everybody knows what attention is.” John Locke provided one of the first modern definitions of attention, denoting it as “mode of thought” necessary for any act of memory (Mole, 2009). Kame later proposed that “attention is a state of mind that prepares one to receive impressions” (Mole, 2021). James proposed that accommodation/adjustment of the sensory organs and anticipatory preparation are two main functions of attention (Mole, 2021). Over time, the role of attention changed from an instrumental component of perception and communication, to a limiting bottleneck for information processing when early-selection theory of attention proposed that attention is a filter that allows a selective passage of a stimuli among multiple stimuli coming from our surroundings to affect our nervous system and get registered by our perception (Broadbent, 1971). Late selection theory of attention, proposed as an alternative to the early selection theory, defining attention as a filter for perception and mental functions, but presume that all stimuli automatically get registered in our nervous system and those that are filtered by attention reaching the working memory (Deutsch & Deutsch, 1963; Norman, 1968; Prinz, 2012). The working memory is a reference to subjective awareness in these group of theories. However, the objection raises about the vague terms of early or late that leaves an imprecise interpretation and does not address empirical evidence that suggests filtering process can actually occur at multiple levels of information processing (Allport, 1992; Johnston & McCann, 2006, O’Connor et al., 2002). At first glance, trilogy aligns with late selection theories in a sense that all information is processed in our mind, whereby intelligence competes for attention to reach our awareness. However, the sentinel difference between trilogy and the

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late selection theories of attention stems from the intentional nature of attention, which requires DSIA.

Feature integration theory describes attention as a binding mechanism of information from different sources (Treisman, 1999), albeit without defining how this binding process occurs. Based on this perspective without binding of information, we can not be aware of it and attention serves as a solution to the binding problem. Not all scholars agree that binding of information is essential for our awareness and argued that the binding problem is a pseudoproblem that does not require a solution (Bennett & Hacker, 2003; O'Regan & Noe, 2001). Even, if we agree attention is binding of information as part of processing for awareness, the theory is silent how some information may go through binding and how some do not. Based on trilogy, DSIA is the key discretionary power to direct our awareness to select subject regardless of binded or unbinded nature of the information.

Another interesting theory of attention is coherence theories. In this theory, attention is not a true bottle neck in information processing in our nervous system, but the limitation is due to the mind−body duality (Hirst et al., 1980). Neisser (1976) believed that the inherent limitation of behavioral coordination by our body mandates the selection of information by our vast cognition capabilities just to prevent overwhelming the joint operation giving rise to the notion of "selection for action" (Neumann, 1987). Based on the coherence theory, attention is aimed at preventing distraction and maintaining coherence of our actions to preserve our agency (Watzl, 2017; Wu, 2011). This theory departs from trilogy since the intentional aspect of attention is clearly missing from coherence theories of attention.

In fact, precision optimization theories also does not see attention as a limiting factor in our mental function but a selection processing for improving our cognition and prediction (Clark,

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2017; Hohwy, 2013). A practical application of this model in AI, optimizes its processing function with no need for any discretionary selection of the subject of attention which is sentinel part of trilogy.

Yet another interesting model of attention called competition and unison theories is the first to discuss a selective manner of attention. In this model of attention, through a top-down biased selection, information does not compete with equal opportunity to grab our attention (Desimone & Duncan, 1995; Reynolds & Desimone, 2000). This particular theory, aligns with trilogy in a sense that proposes the need for a form of agency in the process of attention but is silent how a top-down selection bias works or which agency control this bias. Mole (2011) proposed attention as a unison of many cognitive function and considered it as a metaphysical process.

The last but not least theory of attention that has been used as a popular model describes attention as akin to a spotlight that focuses on specific information. Despite its simplicity, many scholars have been hesitant to use it since our mind may attend more than one subject at one particular time (Fernandez-Duque & Johnson, 2002). In addition, the use of spotlight metaphor puts emphasis on the role of agency for directing the spotlight which is not incorporated component of the most current theories of attention (Henry, 2017).

As it is depicted above, all theories of attention are following the selection of information based on algorithm or SIBA. Trilogy is the only model that collides intention and attention in the form of DSIA that is solely reserved for NI and makes us conscious beings.

Reflex Attention

Even though trilogy reserve intentional attenbtion to NI, not every subject of our attention is intentional. Similar to AI, our mind uses SIBA as an alternative way of attending a subject.

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For example, during a startling reaction, we become aware of a loud sound, a bright flash of light, or a sudden change in any sensory or motor input based on present algorithms in our mind.

Transformation Stage

Regardless of the method of selection of information through DSIA or SIBA, the intelligence is then presented to the transformation stage of awareness. In the transformation stage of awareness, biologically objective information in our mind is transformed into a subjective experience. As there is no credible scientific explanation for this process, it is referred to as the "hard problem of consciousness" (Chalmers, 2010).

Postselection Stage

After undergoing transformation, the information may be subjected to further mental processing based on our discretion to make our awareness more effective. This may resemble the feature integration theory, where information from different sources binds together to form a bundle (Treisman, 1999). Alternatively, a bundle of information can be unbundled as we intend to pay attention to a specific aspect of an object. As part of the postselection process, our minds can compare the information against our memories for patterns or details, make a judgment about some aspects of the information, use the information as a clue for reasoning, stamp the event with the time and location for preservation in our short- or long-term memory. This is akin to the neuronal version of global workspace presented by Dehaene et al. (1998).

The Independence of "I" and Mind in Trilogy

The separation of "I" and mind in trilogy is mainly for a functional reason, given that all mental functions at the level of mind are unconscious, as they are guided by a set of rules that can be likened to algorithms akin to AI. Two of these rules, SCBA and SIBA, allow our mind to make autopilot decisions or improve its efficiency by reflex attention to a particular task,

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respectively. However, adding two unique mental functions of ABCS and DSIA in a shell called "I" to unconscious mind is what makes us conscious beings and demarcates NI from AI.

Furthermore, the functional partition of "I" and mind could be realized through the steps of decision making. If the mind was the sole entity in charge of the decision making, there would be no need for counter-reasoning akin to AI. Only when the mind as an independent entity prepares the choices for another entity—"I," counter-reasoning could make a sense. This functional separation of mind and "I" as proposed by trilogy does not necessarily equate to a physical or physiological partition between these two entities.

"I" and the Concept of Self and Selfhood

Self-consciousness could be defined as self-image, self-concept, or self-awareness, and could be translated into a subjective experience of self. Although "I" is often literally equated to our body, mind, soul, or a combination thereof in the form of self. One of the earliest notions of "I" can be traced to the description of the metaphysical psyche in ancient Greece. The conception of "I" was further elaborated by Plato and later on by Augustine of Hippo as the base of religious form of soul.

Further modifications of the description of "I" can be found in the more modern Western philosophy presented in Cartesian dualism, where the "I" is depicted as an entity interchangeable with mind. Further, in the Cartesian model, there is a place in our mind where our observations are presented for our subjective judgment in the form of Cartesian theater. In this theater, the self—or "I"—observes subjective experiences (Dennett & Kinsbourne, 1992). According to Berkeley's interpretation (1713), spirit could be observing the ideas akin to the Cartesian theater (Downing, 2020).

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The first modern definition of I was proposed by John Locke as the sense of self that is composed of a continuity of conscious memory and makes us who we are in any moment and over time. In the mid-18th century, David Hume advanced this idea by claiming that the sense of self does not relate to the physical experience of self, as it is nothing but a bundle of different perceptions. Later, William James argued that the stream of consciousness is at the core of the sense of self, which harbors our innermost thoughts. Antonio Damasio put forward one of the latest interpretations of self, reasoning that, like our perception of the external environment, we also have an internal perception of our body's inner environment, which signifies self (Araujo et al., 2015). He also labeled this self as a "protoself" that stands in contrast with permanent forms or the "autobiographical self," which stores all the information related to self-identity.

How Trilogy Stands Up to the Concept of Self and Self-consciousness

Even though "I" could be instrumental in the process of self-awareness by guiding awareness to the information of "self" that is preserved in memory and sensory inputs in our mind, the relationship between "I" and self-awareness extends beyond a simple venue for intentional awareness about oneself in trilogy. Even if all pieces of information about oneself could be accessible to DSIA and the information manages to reach one's awareness, one can only be aware of a specific piece of information about self at any point in time. It is hard to imagine that a fragmented awareness of vast amounts of sensory inputs, mental characteristics, memories, and thoughts could be combined in a united bundle of information at any particular point in time and that be translated and conceived as a unified self-image. Therefore, the notion of self-awareness as a literal awareness of self is neither sensible nor compatible with real-world experience. The same argument was presented centuries ago through the thought experiment called "floating man" by Avicenna (Goodman, 2013) explained why there was no need for any

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sensory awareness for a floating man deprived of all sensory information to be aware of himself. Similarly, based on Aristotelian accounts, Aquinas explained that there was no need for any awareness of the body or mental characteristics for us to be aware of ourselves (Cory, 2014). When Descartes proclaimed "I think, therefore I am," he not only created a logical progression from thinking to existing but also eliminated the line between the thinking process and self. A few centuries later, Bertrand Russell modified this famous cogito to "I think, therefore, there are thoughts" (Russell, 1945), thereby separating self from the thinking process, while affirming that the thinking process exists. Likewise, we could argue that "I think," is synonymous with "I am aware of my thoughts" which automatically places us as the subject of the thought process and gives us the sense of self (Shoemaker, 1986).

Even if thinking could be a harbinger of sense of self, according to trilogy, thinking is a mental process involving our unconscious mind that may or may not reach our awareness. Only through the venue of "I" we may become aware of thinking and only through this awareness we may have a sense of self. Therefore, awareness rather than thinking may be the gateway to the sense of self. In particular, as the trilogy presents "I" as an amalgam of willpower and awareness, the sense of self could be a mere experience of sensing of an agency through the interaction of ABCS and DSIA that give us a unique sense of self-consciousness. This notion may resonate with the idea of self-awareness presented by Bermudez (1998), who argued that there may be a need for an active agency in processing self-awareness and this may translate into sense of action in self-consciousness. Based on trilogy, having a mixture of being aware and a willpower could give us a sense of agency and action suggested by Bermudez as an essential ingredient of self-consciousness.

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Finally, the conception of self in trilogy resonates with the two types of self, proposed by Damasio (2003). On one hand the sense of self generated by the agency generated by "I" aligns with "protoself" that is an elusive, momentary phenomenon that creates itself from a moment to the next. On the other hand, "I" is instrumental in intentional awareness of self-images, memories of self, internal senses and all attributes related to self, stored in our mind, which makes this type of self-awareness aligned with "autobiographical self."

Trilogy and an Unconventional Form of Self-awareness

"I" is also a gateway to another form of self-awareness that is not captured by the conventional definition based on self-image, self-identity, or subjective experience of oneself. This form of self-awareness does not occur spontaneously and may require training and practice, as it only emerges when we intentionally focus our attention to our bodily inputs and away from thoughts, reasoning, and judgments that commonly preoccupy our mind. Experiencing this special form of awareness is an example of "mindless" self-awareness ironically labelled "mindfulness" (Lutz et al., 2016; Vago, 2013). According to Hanley et al. (2017), there is a spectrum of attention to self in mindfulness that spans from self-interest to selflessness. Trilogy explains how intentional attention could be trained to limit our awareness to our body/environment sensation without typical brokering effects of our mind with thoughts and judgments.

How Trilogy Stands Up to the Theories of Consciousness

Global Workspace Theory

Global workspace (GW) theory (Baars, 1988) is one of the earlies comprehensive theories of the consciousness that explains how we may have conscious as well as parallel unconscious mental processes, whereby GW can be imagined as a stage that is lit by a spotlight

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of attention. Only integrated information that reaches this specialized mental module—GW—will have the opportunity to reach conscious awareness, whereas information outside of this spotlight will remain in the dark, that is in the unconscious mind. GW theory shares some key features with trilogy as the spotlight of attention allows for awareness of select information just as intentional attention in trilogy allows a select information to reach the transformational stage of awareness. However, GW theory remains silent on how the information competes for the consciousness spotlight, which the trilogy directly addresses by positing that we rely on DSIA to determine which information will be placed in the spotlight for awareness. Besides, the dichotomy of mind into conscious and unconscious does not aling with trilogy.

Neuronal version of GW theory (Dehaene et al., 1998) has many similarities with GW theory but claims that only the information that reaches the GW can be globally accessible across multiple systems, including long-term memory and motor, evaluational, attentional, and perceptual systems. Even though, this version of GW theory resembles the postselection stage of the awareness process in trilogy, this modified model has the same shortcoming of GW theory when it comes to selection process of information for processing.

Integrated Information Theory

Tononi et al.'s (2016) integrated information theory (IIT) is one of the most fascinating theories of consciousness that generously assigns consciousness to any entity that processes integrated information. Based on IIT, even though, awareness and consciousness are synonyms, it is difficult to ascertain whether the stream of information that does not reach our awareness could still be considered as a part in the state of consciousness. In trilogy, without awareness, there is no consciousness, while awareness alone is not enough for having consciousness.

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Another interesting distinction is the quantitative approach to consciousness. In IIT, the amount of processed integrated information determines the level of consciousness of that entity. Based on trilogy, awareness is an "all-or-none" phenomenon, which remains the same regardless of the complexity of the information. As a result, a simple form of NI that could only process simple tasks, is as conscious as a complex mind.

IIT does not differentiate between the NI and AI functions as long as the processing of information occurs at the same level. Trilogy excludes the possibility of consciousness for AI regardless of the processing capability or the amount and complexity of the processed information because there is no "I" in AI.

The main difference between IIT and trilogy lies in the selection process of the information that reaches our awareness. While IIT is silent on how the selection process is applied to choose the information that reaches our awareness, according to trilogy, DSIA at the selection stage of awareness allows selection of information that is presented for our awareness.

Recurrent Processing Theory

Another important theory of consciousness that builds its premise based on GW theory is Recurrent processing theory (Lamme, 2006). This theory purports that recurrent activity in cerebral sensory areas results in consciousness. This is only possible when a sensory system, with its highly interconnected feed-forward and feedback connections, processes information. In that sense, RPT is the bridge between GW theory and IIT (Tononi et al., 2016), as like IIT it explains that integrated information can result in consciousness, but this integration occurs in a special sensory area of the brain, similar to the GW theory. This theory nonetheless suffers the same problem as GW theory or IIT and that is the issue with selective access of information to be processed for our awareness.

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Higher-order Theories of Consciousness

Yet, another interesting theory of consciousness aims the cognition of cognition or thinking of thinking process as the core of consciousness. Alan Turing, over a half century ago, believed that a computer could never be the subject of its own thought, as it lacks self-awareness or self-identity. This notion was later extended to higher-order theories of consciousness that postulate how consciousness only occurs in higher-order thought processes (Rosenthal, 2002). Based on these theories, a phenomenal consciousness would not occur with immediate sensations but rather with higher-order representation of perception. For example, a conscious visual state of seeing an object only occurs when one represents oneself as being in that visual state (first-order state).

This theory has some similarities to IIT in the sense that integration of information remains necessary for consciousness, but the distinction lies in the fact that only particular integration of information—integration with the sense of self (first-order information)—can elevate the information to the level of consciousness. Still, this theory is one of the few theories to include intentional states (thus implying the role of agency), albeit in general terms, which renders it similar to trilogy. However, how and why just one bit of information can be selected to attain a higher-order or first-order state and therefore achieve awareness is not explained.

Attention Schema Theory

The last but not least theory of consciousness or attention schema theory (Webb & Graziano, 2015) base its foundation on the core of awareness, attention. It is not surprising that this theory shares common ground with trilogy. This theory purports that our mind has evolved for deep processing of a few select signals through attention, whereby consciousness is the ultimate result of this evolutionary sequence. This theory explains when we attend to some

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information, we make a schema of attention that helps us better control our attention. The schema of attention leads the brain to conclude that it has a nonphysical essence of awareness. In this theory, awareness and consciousness are treated as synonyms and the line between attention and awareness becomes blurry if not completely disappears. Moreover, this theory does not explain how we focus our attention on something, but not another thing.

Psychoanalytic Theory of Personality

I described this theory which is not a true theory of consciousness just to put emphasis on the function of mind in trilogy. The main focus of this theory is on the hierarchical architecture of human mind rather than on the nature of consciousness. Nonetheless, it has had profound implications for our understanding of consciousness. Although the notion of conscious mind was not proposed by Freud, he is credited for promoting the importance of unconscious mind in human behavior (Freud, 1924). Freud (1915) described the conscious mind as a collective mental process of which we are aware. He also used the metaphor of tip of the iceberg for conscious mind to show the magnitude of our unconscious mind—the part of the mind of which we are unaware. Trilogy opposes the segregation of mind into conscious and unconscious and shift this paradigm into a conscious being with an unconscious mind. Only "I" through a joint interaction of ABCS and DSIA can bring a select information from unconscious mind into our awareness. It remains to be acknowledged that not all the information in our unconscious mind gets the opportunity to easily get access to our awareness.

Limitations of Trilogy and Future Directions

Trilogy as a Non-Popperian Falsifiable Theory

In general, a model may be constructed after a theory is empirically proven to provide details of the theory or as a tool for calculation and predictions. These models are called

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mathematical or statistical models. Alternatively, a model is conceived before a theory to serve as a source for generating hypotheses or theories. These models are usually called conceptual models and typically make it easier for us to understand and visualize the main concept of a complex reality. In other words, a conceptual model serves as a macro level roadmap while theories provide micro level guides for explaining a distinct process. In those instances, the theories that arise from a model usually evolve the model further. In fact, trilogy is a clear example of a conceptual model that improves one's understanding about how consciousness works. Even though trilogy model is not a Popperian falsifiable theory itself (similar to almost all comparable theories that were presented in the manuscript), it serves as a framework and provides a platform for building falsifiable scientific theories on consciousness, decision-making and awareness.

Trilogy and underlying neural mechanism

Trilogy does not provide an explanation of the nature or neural mechanism of ABCS or DSIA. The theory does not attempt to explain these mental functions at a granular level.

Trilogy and the Issue of Infinite Regress

ABCS is at the heart of the decision-making process and depends on awareness, which is contingent on DSIA. Therefore, awareness and decision making are subject to a unique interaction that would make it difficult, if not impossible, to clearly sequence the events, or describe which of the two processes should be considered the cause or the effect of the other one. In other words, we can consider this interdependence as an indirect infinite regress that, like any other logical infinite regress, creates ambiguity about the sequence of events.

Although conventional wisdom says that any argument containing an infinite regress is vicious and doomed to fallacy, this notion has long been debunked, as there are many instances

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in which a virtuous or benign infinite regress could theoretically be considered a successful argument, as is the case with "coherentism." This strategy depicts entities not as a linear series in time but as interconnected entities in a functional network (Bliss, 2013). Moreover, infinite regress does not intend to explain how the processes of ABCS or DSIA came into existence. In other words, trilogy does not intend to explain the development of ABCS and DSIA in a network of decision-making and awareness processes, but rather aims to describe the phenomenological application of ABCS and DSIA in the study of structures of consciousness as experienced from the first-person point of view.

Bliss (2013) also believed that the ontological distinction between vicious and benign infinite regress depends on the main objective of a theory being considered. Nolan (2008) also points toward this property of a theory as the commitment of a theory. Based on these interpretations, if the theory attempts to explain how each entity functions, infinite regress is benign, whereas if the theory attempts to explain why there are such entities at all, then infinite regress is vicious. Consequently, an infinite regress does not eliminate the existence of the entities involved in the process in the real world, nor does it eliminate the cause-and-effect relationship of entities, including ABCS and DSIA.

The infinite regress presented in trilogy is based on the cause-and-effect scheme, even though the interaction between ABCS and DSIA is neither reflexive nor symmetric. Nonetheless, the notion of causation and temporal succession remains within the realm of plausibility.

Trilogy and the Hard Problem of Consciousness

What happens in the transformation stage of awareness and how and where our objective information turns into subjective experience (i.e., the hard problem of consciousness), are questions that trilogy does not intend to answer. Still, it would be prudent to consider if the

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problem proposed Chalmers is truly the “hard problem of awareness,” as consciousness is a combination of awareness and the decision-making process.

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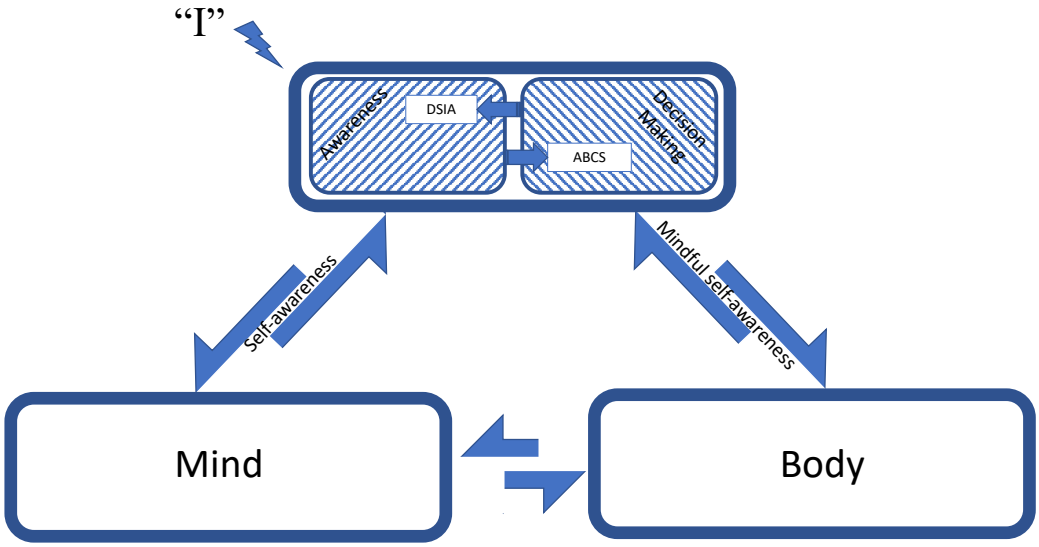

Figure 1. Based on trilogy we are a union of "I," our mind and our bodies. "I" composed of amalgam of two mental functions, Discretionary selection of information for awareness (DSIA) or intentional attention and awareness-based choice selection (ABCS) or free will that are the core of awareness and decision-making processes, respectively.

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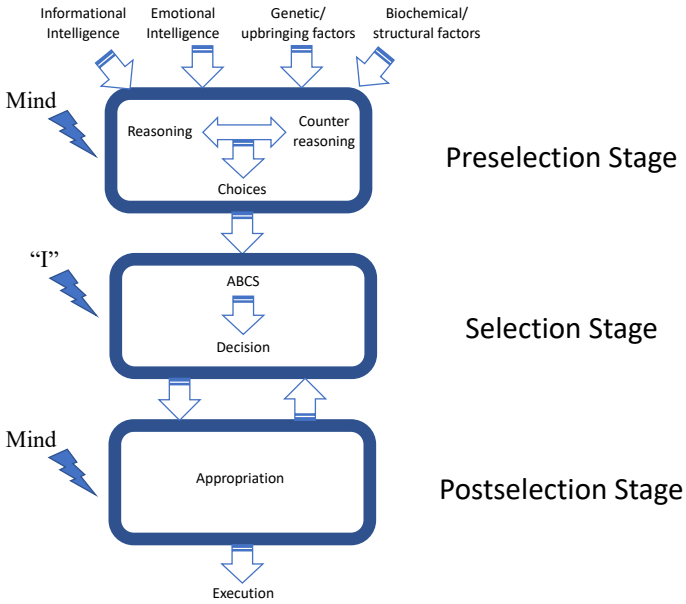

Figure 2. The different stages of the decision-making process. The awareness-based choice selection (ABCS) is the heart of decision-making process and allow us to have free will in our decision-making process.

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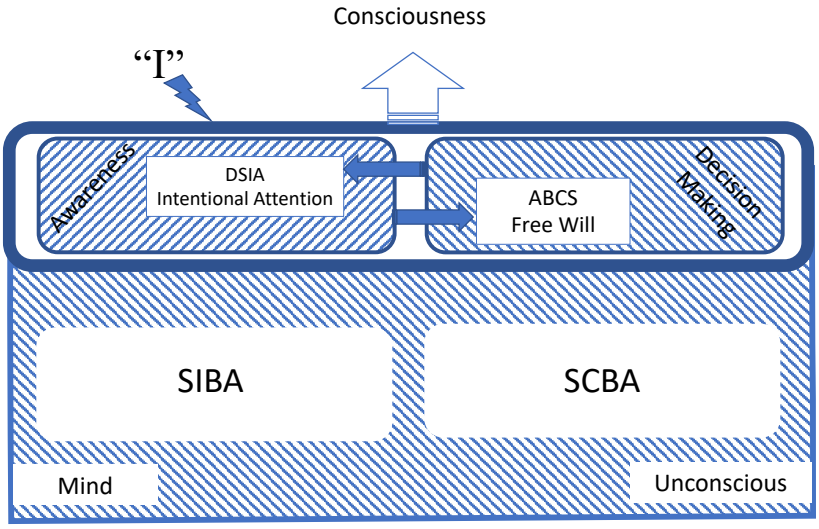

Figure 3. The intelligence in mind is constantly processed through SCBA and SIBA but remains unconscious unless is being processed by "I," which is a gateway to consciousness through two mental functions of ABCS (free will) and DSIA (intentional attention).

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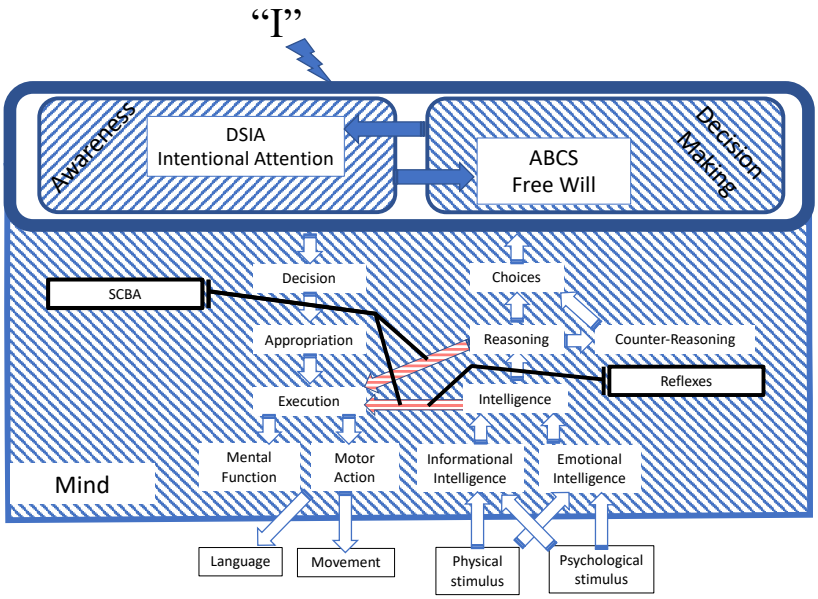

Figure 4. The autopilot decisions or selection of choice based on an algorithm (SCBA) are either posited after a reasoning process in the mind or would skip the reasoning process due to the need for an urgent action such as reflexes

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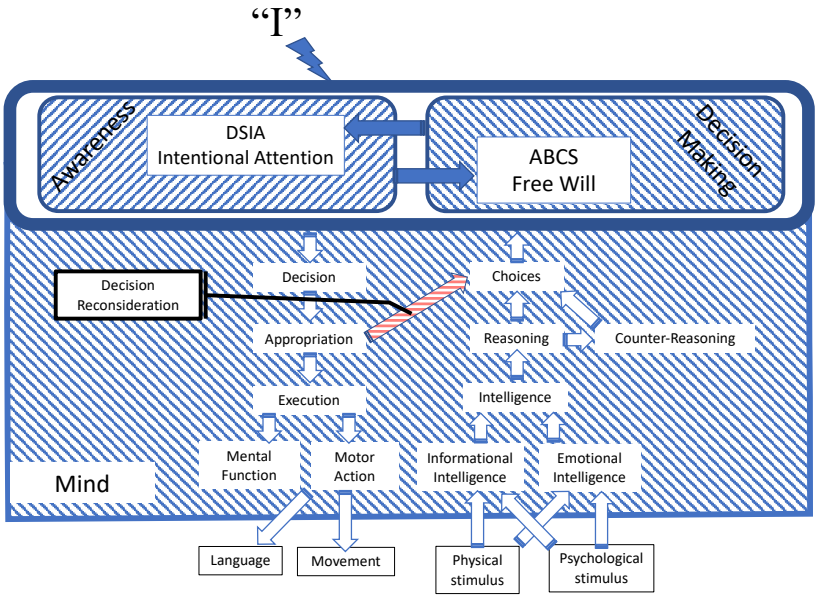

Figure 5. The relationship role of appropriation in the postselection process

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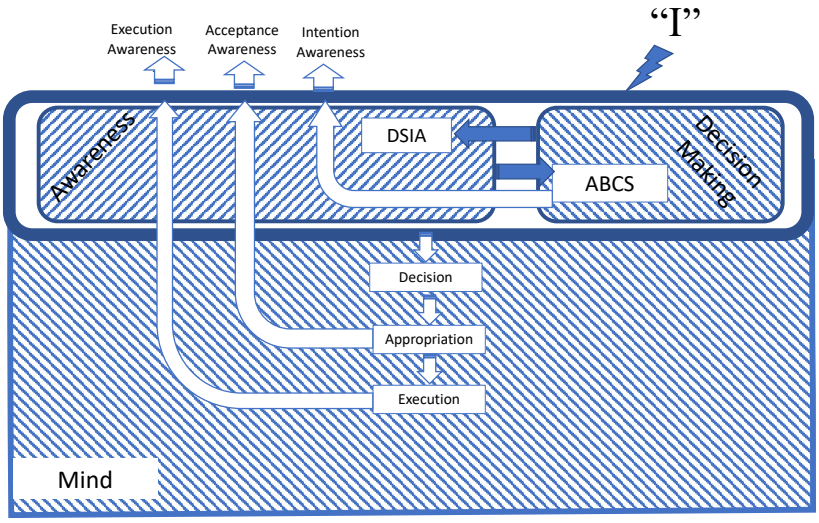

Figure 6. The efferent and afferent pathways of the decision-making process and our awareness of the various steps of the decision-making process provides us with awareness of various stages of a decision-making process

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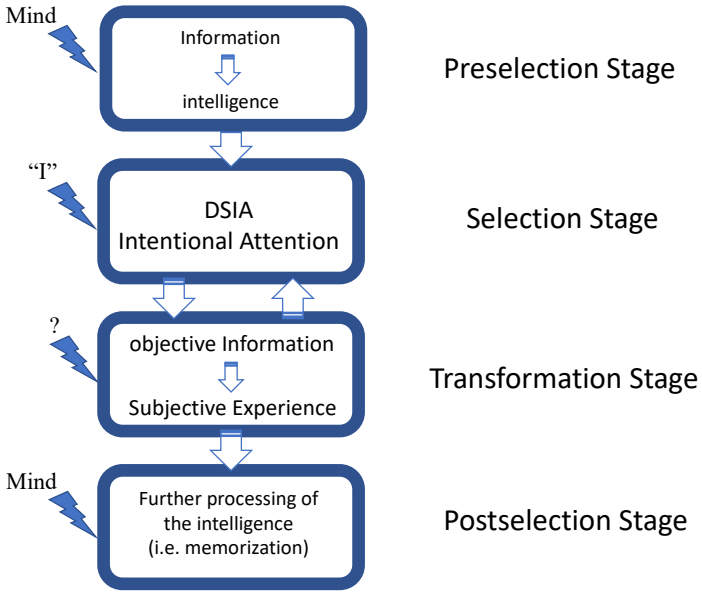

Figure 7. Different stages of the awareness process. The discretionary selection of information for awareness (DSIA) before the transformation stage of awareness position the "I" as a key step in the awareness process.