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Free Will in Islamic Philosophy and Cognitive Neuroscience: Ṭabāṭabā'ī and Gazzaniga in Dialogue¹

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Abstract

Free will is still one of the most challenging debates among philosophers and theologians and, even in recent decades, scientists' particularly cognitive neuroscientists. For Michael Gazzaniga (b.1939), as a cognitive neuroscientist, free will is nothing but an illusion. For him human's freedom is, in fact, to have more choices in their actions which occurs in their continuous endeavor in the environment and social interactions. In Islamic philosophy, Ṭabāṭabā'ī (d.1402/1981) as one of the most eminent contemporary representatives of the Transcendent philosophy founded by Mullā Ṣadrā (d. 1050/1640), has specific innovative ideas on this matter. According to him, human's free will is ontologically creational and innate, and all the actions chosen, preferred and issued by an agent through knowledge and volition are free, even if this choice has been limited by natural or human obstacles. For both of the thinkers, therefore, the division of actions into free and non-free and the problem of free will and determinism, in general, is a conventional issue that is more suitable to the social-ethical realm than to the philosophical one. This paper tries to compare and evaluate the two thinkers' positions.

Keywords: Volition, Free Will, Interpreter of Experience, Conventional Perceptions.

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1. Introduction

The philosophical debates on the problem of human's free will trace back to ancient Greek philosophy and now have been extended to scopes other than philosophy, such as theology and even to new branches of science. Since scientists are usually reluctant to participate in philosophical debates, there are a few of them who deal with philosophical issues such as free will. One of the most important non-philosophers who have paid much attention to the issue is the cognitive neuroscientist Michael Gazzaniga. Having several works on this problem, such as *Who's in Charge?*, *Mental Life and Responsibility in Real Time with a Determined Brain*, *Understanding Layers: From Neuroscience to Human Responsibility*, he points out explicitly that 'I believe it is at this point where modern philosophical argument should begin, at the point where modern neuroscience is both appreciated and understood' (Gazzaniga, 2014, p 60). Therefore, comparing Gazzaniga's point of view on free will with that of a contemporary philosopher such as Ṭabāṭabā'ī, whose position is approximately similar, can help us better understand both thinkers' viewpoints. To achieve this aim, we have to concentrate on the foundations of their doctrines. Since the main difference between the two thinkers is the problem of mind-brain or soul-body, we start with that.

2. Ṭabāṭabā'ī's Viewpoint

2.1. Soul

According to Ṭabāṭabā'ī, the soul is the reality which we call 'I', and through which our humanity is realized. It possesses volition and knowledge and performs our actions through the body (Ṭabāṭabā'ī, 1992, v.10, p. 118 & v.1, p 364). Following Mullā Ṣadrā, he considers the soul to be created as a natural bodily contingent that gradually accepts various and substitutional forms to the point that God develops another creation in this body enjoying actions such as volition and perception and so on (Ibid, v.1, p352) .

2.2. Body-soul relationship

The soul and body are identified in the sense that body is the lower state of the soul, which co-occurs with the creation of the body and, consequently, after developing to the higher states of its existence, becomes the higher level of the body (Mullā Ṣadrā, 1981, v.8, p 134). Following Mullā Ṣadrā, he admits that the soul needs its body in the origination of its existence (Ibid, v.6, p 326) and also in utilizing body's faculties and organs to perform its own purposes (Ṭabāṭabā'ī, 1992, v.10, p 118). For Ṭabāṭabā'ī, the soul is initially identical to the body but gradually becomes completely independent

through trans-substantial motion and transcends the material body to become an imaginal immaterial being (Ṭabāṭabā'ī, 1992, v.1, p 352). This is rooted in the innovative Sadrian principle claiming that, “the soul is corporeal in its origination and spiritual in its survival” (Mullā Ṣadrā, 2009, p 94-95). Also, he, like Ṣadrā, holds that ‘the soul in its own unity is all the faculties’ but expresses it differently (Ṭabāṭabā'ī, 2007, v. 3, p 666; Rahman, 1976, 172). Since the soul is a graded being with the body as its lowest state, any interaction in each level is related to its upper and lower levels (Yousefi, 2013, p. 234). It seems that Ṭabāṭabā'ī's view has much in common with that of Emergentists:

- a) He considers the soul as a form of the body (Mullā Ṣadrā, 1981, v.8, p 134) which means that the soul is the actualization of the body and is the source of any action and effect on it.
- b) The soul is a bodily created being that occurs when the body as a biological system, through its increasingly trans-substantial motion, transcends all the physical levels and is prepared for the emergence of the soul.
- c) He holds that the body is the lower state of the soul and the soul and its faculties are one unified reality which means that the soul and body are unified in a hierarchal gradation.
- d) Another characteristic of the emergent issue is its innovation in the sense that in the increasingly trans-substantial motion of the body and at a particular moment, a particular soul can emerge from the body, uniquely and unprecedentedly.
- e) It seems that the inherent relation between the soul and the body for Ṭabāṭabā'ī is equivalent to the basic level of dependency traits in emergentism. Since the soul depends on the body in its occurrence and emergence, they are, in fact, identical. Later on, it also utilizes the body's members and faculties for its own purposes.
- f) Also, the emergent issue has causal power. According to Transcendent philosophy, the body and the soul have ontologically mutual dependence, namely the existence and non-existence of each one implies the existence and non-existence of the other. On the other hand, there are always specific interactions between the body and the soul so that any mental quality affects the body and vice versa, as Ṣadrā states that “just as the bodies are qualified by the attributes of the souls, so are the souls qualified by the attributes of the bodies. That is why you indicate to your soul as [for instance]: ‘I am a writer, I am sitting’.” (Mullā Ṣadrā, 2008 p 219). There is also a causal

relationship between body and soul (Mullā Ṣadrā, 2009, p 428). Although the soul and its properties have emerged from the body and are now united with it as a whole existential entity, they are irreducible to the material body and even at higher levels of progress, they can survive without it.

2.3. Free will

We can infer three definitions of free will in Ṭabāṭabā'ī's works:

A) The criterion of free actions is the agent's equal position about doing something or not doing it (Ṭabāṭabā'ī, 2007, v.2, p 466; 992, v.2, p 351). This is what Ṭabāṭabā'ī calls the 'creational freedom' (Ibid, 1992, v.10, p. 37).

B) According to Ṭabāṭabā'ī, before action, we think of whether taking action could be beneficial; sometimes, we can easily decide to take it without much contemplation, but sometimes, due to some considerations, obstacles, or lack of instruments, we need to ponder much on the benefits and drawbacks of the act so that our volition is provoked. Therefore, to provoke one's will to choose depends on thinking. Thus, we start using our thought and after evaluating the advantages and disadvantages of an act, if we can confirm its advantages, we 'will' to do them (Ṭabāṭabā'ī, 1995, v.7, p.112).

C) Free will, indeed, is the act that is attributed to a knowledgeable agent whose agency is total and autonomous (Mullā Ṣadrā, 1981, v.3, p.12). This meaning of 'total and autonomous agency' is fundamental for Ṭabāṭabā'ī because it is according to this meaning that he classifies the voluntary actions to 'free' and 'determined' (Ibid, 1992, v. 1, p 106). Ṭabāṭabā'ī thinks that free will is innate for humans, and they are free based upon their own nature and creation (Ṭabāṭabā'ī, 1995, v. 10, p 554). According to him, free will is compulsory in the sense that God has created human beings as free creatures and this fact is out of their volition (Mullā Ṣadrā, 1981, v. 6, p 312).

Both Ṭabāṭabā'ī and Mullā Ṣadrā hold that though the existence of 'will' or 'volition' is evident, it is too hard to define their reality (Ṭabāṭabā'ī, 1983, p121). However, Ṭabāṭabā'ī defines volition in human being as a psychic quality that follows the knowledge of the usefulness of an action, which together influence the agency of the agent (Mullā Ṣadrā, 1981, v.6, p 307) and are deemed as the criteria for an action to be free (Ṭabāṭabā'ī, 1995, v.7, p 112).

Mostly, Muslim Philosophers do not differentiate between free will and volition. Ṭabāṭabā'ī is not an exception, but it can be inferred from his works that free will is different from volition; accordingly, he puts voluntary actions against compulsory actions and divides them into two types: free and determined actions (Ṭabāṭabā'ī, 1995, v.1, p 165). Also, despite Mullā Ṣadrā,

he differentiates between the meaning and definition of volition and knowledge (Mullā Ṣadrā, 1981, v. 6, p 315, 318, 352) and argues that volition differs from desire and even strong desire, as well (Ibid, 315).

Being compelled, Ṭabāṭabā'ī argues, means that: 'something else interferes in the completion of one's agency, and one does not choose their action independently and without the interference of any extra motivators and dominating factors' (Mullā Ṣadrā, 1981, v.6, p 312; v.3, p.12; Ṭabāṭabā'ī, 1995, v. 11, p 222).

2.4. Conventional perceptions

Conventional perceptions are said to be one of Ṭabāṭabā'ī's innovations. He divides perceptions into real and conventional:

a) Real perceptions: they are the real and veritable mental discoveries and reflections with logical values and are absolute, permanent and necessary (Ṭabāṭabā'ī, 1989, v. 2, p 138).

b) Conventional perceptions: "convention means attributing definition of something to something else" (Ibid, v.2, p 157; Ṭabāṭabā'ī, 2000, p 258). For example, considering the 'bold man' a referent of the "lion" which, in fact, is not a real referent for it. These are, in fact, certain suppositions made by the mind to overcome some of the human's ordinary life needs and are relative, temporal, and contingent (Ibid, 1989, v. 2, p. 158).

The most peculiar features of these perceptions are as follows:

a) What corresponds to them exists in the realm of imagination. So, they do not exist in external reality.

b) They would survive as long as the feelings and motives which are the causes of their convention exist.

c) Though imaginary, they are based on a specific corresponding reality, such as feelings, needs, and environmental facilities.

d) In (social) life, they have real effects (Ibid, pp159-161). As we will see, Ṭabāṭabā'ī holds that the debate of free will and determinism is a conventional one and the issue is not philosophical.

2.5. Explanation of free will

Ṭabāṭabā'ī states that any volitional act is based on four principles of "mental form", "desire", "will", and "practical faculty" (Ṭabāṭabā'ī, 2007, p 123) or to be more precise, you may subdivide the first principle into "concept" and "judgement". These principles are as briefly follows (Ṭabāṭabā'ī, 1992, v.2, p 63):

a) The conception of the advantages of the action: The soul is a knowledgeable agent and takes actions only when it recognizes them as

perfections for itself. Thus, the first step is to have a clear concept of the advantages of acting or avoiding.

b) Conventional judgment: After perceiving the act and its potential benefits, one can judge whether the action is necessary for them or not. This may happen spontaneously or after contemplation. For example, after feeling like eating, one imagines the act of eating and what is concomitant with it (food) and then affirms that one benefit of eating is satiety, a conventional judgment like “I should be sated” is issued. In other words, the relation between human and their acts is a contingent relation due to their free will. And if it wants to happen, it has to become necessary. Therefore, to make their actions happen, they contract a “must” between themselves and the knowledgeable form of their action. Ṭabāṭabā’ī holds that when human being uses their practical faculties for the first time, they put the relation of “necessity” between themselves and their mental form of their feeling which corresponds to the result of the action, while it must be put between practical faculties and the real movements issued from them. Therefore, this initial relation will be conventional. For instance, when a person wants to eat food, they do not designate the relation of necessity between themselves and the actions which are produced by hands, lips, mouth, esophagus, or stomach, but, in fact, when they are hungry, they remember satiety and put the relation of necessity between themselves and the inner feeling of satiety or enjoyment, while the necessity in fact must be attributed to the actions of muscles which are the results of practical faculties (Ṭabāṭabā’ī, 1983, v.2, p 188). This relation of necessity is the first conventional perception that human beings can establish. This convention is so inclusive that any act issued from the human beings is based on a belief in it.

c) Desire: After confirming the usefulness of an act and judging that the act is necessary, a desire to do so occurs in the soul.

d) Volition (will): It motivates the practical faculty.

e) The practical faculty: The practical faculty motivates the muscles. After the desire for eating, volition provokes the practical faculty which then moves muscles to provide food, and finally, the person achieves satiety. Here, Ṭabāṭabā’ī, rather than giving some complete analytical explanation, ignores the explanation of the role of practical faculty and the place of the brain as the most crucial physical organ. However, since Islamic philosophers put the soul in a higher position, they usually consider the body to be under the soul’s influence, paving the way for the soul’s actions.

Nevertheless, it seems that to have more precise explanations on these matters, philosophers need to refer to more experimental data.

2.5. Another conventional aspect of free actions

People are different in terms of the principles of free will, such as mental qualities and inner states like intelligence and stupidity and bravery and fear. This makes them behave differently and that is why religion and other social traditions consider only those volitional actions to be free that common sense regards them as such, that is what the average people do and understand as a free action. It can be a plausible criterion for punishment or reward, as well as for excusing those who lack the standards determined by common sense. Ontologically, of course, this does not mean that their actions are not free in reality; only religious or social standards consider them not to be free and hence exonerate their agents (Ṭabāṭabā'ī, 1995, v. 7, p 113-114). In reality, however, free and determined actions do not differ in nature and effects and both are volitional. It is sufficient for an action to be volitional if the knowledgeable agent prefers and chooses one side of doing or avoiding, even if this choice and preference has been limited by another cause, either natural or human, like an earthquake or an armed robber forcing a person to leave a place. Here, the agent of the action “chooses” and “prefers” in the same sense that an apparently free agent does because they may choose to risk and not to leave the place. The limitation caused by natural or human risks does not change the nature and actual effects of such actions in reality (Ṭabāṭabā'ī, 1995, v.1, p 165).

Therefore, Ṭabāṭabā'ī concludes that free will and determinism are not philosophical discussions about external beings and their objective effects, but about intellectual conventions, though they may have their own validity and effects in their own field (society). Therefore, we have to discuss the problem of free will and determinism through a non-philosophical method (Ibid, p 166). As discussed previously, another aspect of this conventional feature is rooted in his innovative theory of conventional concepts. Based on the conventional judgment, one judges the necessity of action for them and transforms the relation of possibility to necessity. For Ṭabāṭabā'ī, these conventional conceptions are far from the understanding of theoretical intellect and do not exist externally. They are not subject to any definition and demonstration, either, as they get their true values from the very imaginal realm that practical intellect has provided for them. That is why he does not consider this aspect of the issue of free will a philosophical issue and advises us to pursue the issue in a field other than philosophy, that is, social, judicial,

and ethical sciences. What he has philosophically argued for is the very definition of free will in human beings, proof of its existence through the arguments such as argument from the human's responsibility, refutation of determinism and proving compatibility between free will and causality and considering the human free will as a part of the complete cause (Ibid, p166-168), and the fact that all human actions issued because of knowledge and volition are free and we have no compulsory action in reality.

3. Gazzaniga on the nature of free will

Gazzaniga holds that the methods of the brain function and our understanding of its mechanism of function influence downward causation and consciousness as well as the free will and our behavior. Hence, here, we will start explaining the related issues of the structure of the brain briefly and then deal with human's free will, and with the mechanism of the brain function in free actions .

3.1. Brain's structure

According to Gazzaniga, 'The brain is a complex, temporally and spatially multiscale structure that gives rise to, elaborate molecular, cellular, and neuronal phenomena that form the physical and biological basis of cognition altogether. Furthermore, the structure within any given scale is organized into modules that form the basis of cognitive functions' (Bassett & Gazzaniga, 2011, p 200). The human brain is a complex yet not random structure with automatic processing, particular skill sets, constraints, and a capacity to generalize. All these evolved through natural selection. The functioning, fully developed brain has modularized and frequently localized processes (Gazzaniga, 2013, p 5).

3.2. Mind

For Gazzaniga, the human mind is a complex phenomenon that is enabled on the physical scaffolding of the brain, and the nature of the relationship between the mind and the brain is far from being understood (Bassett & Gazzaniga, 2011, p 200). Gazzaniga does not state explicitly what he means by 'mind', but Wilson as Gazzaniga's commentator claims that there are certain signs showing that he means 'consciousness' (Wilson, 2013, p111). However, it seems that what Gazzaniga meant by 'mind' is more extensive than consciousness, as it includes perceptions as well. Mental states arise from our underlying neuronal, cell-to-cell interactions. Mental states constrain the brain activity that already gave rise to them. Mental states represent a layer, and that layer arises from brain activity and does influence our decisions to act one way or another.

3.3 .The mind-brain problem

The notion of emergence, Gazzaniga believes, is widely accepted in many different disciplines including Quantum Physics, Chemistry and Chaos/Complexity theory but to name a few. Whether conscious or not, Bassett & Gazzaniga argue, emergence can determine the interactions between the two broad levels of the physical brain and the mind (Bassett & Gazzaniga, 2011, p 9). Emergence is defined as ‘a multiscale organization is one hallmark of complex systems and provides the structural basis for another defining phenomenon; this is the concept of emergence in which the behavior, function and/or other properties of the system (e.g., consciousness or the subjective features of consciousness-qualia) are more than the sum of the system’s parts at any particular level or across levels. In fact, such system properties can emerge from complex patterns of underlying subsystems’ (Ibid, p 204). Accordingly, the emergence of mental properties is far stronger than physical ones. In other words, ‘mental states emerge from physical states by strong emergence’ (Ibid, p 205). Gazzaniga states that in strong emergence ‘the new property is irreducible, is more than the sum of its parts, and because of the amplification of random events, the laws cannot be predicted by an underlying fundamental theory or from an understanding of the laws of another level of organization.’ (Gazzaniga, 2011, p72) He, in line with other emergentists, enumerates several characteristics such as complexity, novelty, hierarchical levels, irreducibility, unpredictability and dependence on features of lower levels for these two levels .

3.4 .The experience interpreter

In a seminal paper, Gazzaniga explains his efforts to unearth a special capacity in the left hemisphere. He called it ‘the interpreter’. His experiments reveal ‘what happened when one processing system was disconnected from others, even though it was still present and functioning. It just went on functioning, outside the realm of awareness of the other systems. The right brain was able to go about its business normally while the left brain didn’t have the slightest idea what the right brain was doing, and vice-versa’ (Gazzaniga, 2013, p 5)

People, even split-brain patients, feel integrated, whole and purposeful, yet not modularized and or multiple. Therefore, he raises the following question ‘how can our sense of being singular and responsible come from a neural architecture like ours?’ (Ibid, p6). Studies on split-brain patients demonstrate that each hemisphere could respond to perceptual queries by pointing to answers in a multiple-choice paradigm. Therefore, a picture of a chicken

claw was shown to the left brain and the right hand could choose a picture of a chicken in a group of pictures. At the same time, the right brain was shown a picture of a snow scene, and it could guide the left hand to another set of pictures and select the one that depicted a snow shovel. This hemisphere, despite looking at the snow scene, did not see it. It seemed as if left and right hands were pointing to two different pictures. However, the left hemisphere knew why the hand it controlled had pointed to the chicken. On the other hand, there was no information concerning why his left hand, controlled by the right hemisphere, had pointed to the shovel. The key question after these experiments is to ask the participant why he did so. The left hemisphere made up a story and an interpretation of why his hand controlled by a separate module did what it did. Accordingly, he answered ‘oh, the chicken claw goes with the chicken, and you need a shovel to clean out the chicken shed’. Years of research have confirmed the idea that there is a system that builds a narrative in each of us about why we do things we do, even though our behaviors are the product of a highly modularized and automatic brain, working at several different levels of function (Gazzaniga, 2011, p 70). Our dispositions, quick emotional reactions, and past learned behaviors are all fodder for the interpreter to observe. The interpreter finds causes and builds our story, our sense of self. It asks, for example, ‘who is in charge?’ And eventually, concludes that ‘Well, looks like I am.’ However, it is, of course, an illusion so that how the brain works could be demonstrated (Gazzaniga, 2014, p 69). Gazzaniga concludes that through the use of the inputs from the current cognitive states and cues available in the surroundings, the interpreter explains the world. This is the interpretation of what we feel and the reasons behind our behavior as well as what is actually going on in the brain. The interpreter is only as good as the information it receives (Ibid, p 56). ‘Lesions or malfunctions in any one of these domain-monitoring systems lead to an array of peculiar neurological conditions that involve the formation of either incomplete or delusional understandings about oneself, other individuals, objects, and the surrounding environment, manifesting in what appears to be bizarre behavior’ (Ibid, p 56). In this regard, Wilson believes that conscious experience turning to a single, unified, and coherent narrative is the responsibility of the interpreter module and, in fact, creates a story based on what has already happened (Wilson, 2013, p 106). This story, Gazzaniga believes, ‘ties together all the disparate aspects of our conscious experience into a coherent whole: order from chaos’ (Gazzaniga, 2011, p 60).

According to Gazzaniga, human beliefs which can constrain the brain, are triggered by the drive to generate hypotheses. The interpreter that weaves our story only weaves what makes it into consciousness. However, as consciousness is a slow process, whatever has made it to consciousness has already happened (Ibid). Indeed, he believes that there is no free will since 'the self that we perceive to be the locus of free will is a fiction, produced by the interpreter module' (Wilson, 2013, p 107). However, the narratives created by the interpreter are of great value because they work. We, therefore, would not be here if our inherited capacity for these narratives were unproductive. Furthermore, these narratives create space for valid, emergent conceptions of freedom and personal responsibility in human affairs (Ibid).

3.5.8 The brain's dynamicity and layered function

As mentioned before, according to Gazzaniga, it is all about the brain, how it is built and what it does. One of the main features of the brain, according to him, is that it is a complex system, which is influential in considering the free will, neuroscience, determinism and law (Gazzaniga, 2011, p 43). Gazzaniga considers brain development to be layered over an evolutionary timescale (Gazzaniga, 2018, p 79). The brain, he believes, has distributed simultaneous, parallel systems (Gazzaniga, 2013, p 5). Gazzaniga believes that 'our behaviors are the product of a highly modularized and automatic brain working at several different layers of function' (Gazzaniga, 2000, p 6). In other words, we use application layers in order to produce actions, or our behaviors to be specific. In fact, in a layered architecture, as in the brain, each layer in a system operates independently because each layer has its own specific protocols. 'Each layer in a stack of layers processes the output it receives from the layer below, according to its specific protocol, and passes the result on to the layer above and/or back to the layer below. The layer above does the same, according to its own specific protocol, which may be similar or completely different, and passes its processing results on up to the higher layers' (Gazzaniga, 2018, p 75). In this respect, once a layered architecture is created, information cannot skip layers. Mental states that emerge from our neural actions, do constrain the very brain activity that gave rise to them. Our mental state represents a layer and the layer, according to him, stems from brain activity and consequently, influences the decisions we make to act one way or another. 'Ultimately, these interactions will be understood only with a new vocabulary that captures the fact that two different layers of stuff are interacting in such a way that existing alone

animates neither' (Gazzaniga, 2011, p 7). However, Gazzaniga explains that this interpretation, in which upward and downward causations are discussed, is accompanied by precautions. Hence, finding the right words to describe it would be the most difficult and idiosyncratic issue in science as Doyle puts it (Gazzaniga, 2013, p 8). Working in this fashion can lead to clarification of concepts that are interpreted based on emergence, and will allow a better understanding of interactions among layers (Gazzaniga, 2011, p 76).

3.6. Freedom and human responsibility

Human beings desire to be free to make decisions. However, Gazzaniga believes this notion of freedom must be questioned as they do not know what they would like to be free from: their very nature, causality or life experiences. Neuroscientists, he believes, are mistaken in their systematic point of view toward freedom and responsibility. Therefore, he draws attention to what Bunge mentions. Accordingly, 'we must place the thing of interest in its context instead of treating it as a solitary individual' (Bunge, 2010, pp 73-74). Gazzaniga argues that as we observe most of the emergent things, we accept the definitions of free will and responsibility. Mentioning emergence, he explains that emergence is not spiritual, but, in fact, going through one organization level to another and the key to understanding emergence is to bear in mind that an organization has several levels. He also exemplifies that if you, for instance, look at an isolated car part, you cannot predict the traffic at certain freeway at particular time. You cannot analyze traffic at the level of car parts. You cannot even analyze traffic at the level of the individual car. When you get a bunch of cars and drivers together, with the variables of location, time, weather, and society, all in the mix, then at that level you can predict traffic. A new set of laws emerges, yet they are not predicted from the parts alone. The same story is true when considering 'brains are automatic machines following decision pathways, but analyzing single brains in isolation cannot illuminate the capacity of responsibility. Responsibility is a dimension of life that comes from social exchange, and social exchange requires more than one brain. When more than one brain interacts, new and unpredictable things begin to emerge, establishing a new set of rules. Two of the properties that are acquired in this new set of rules that were not previously present are responsibility and freedom. (Gazzaniga, 2011, p 79).

The decisions made by the brains are on the grounds of experience, innate biases and much more. Thus, freedom has to be found in developing more options for the computing brains so that they can choose among them.

Moving through time, we are generating new thoughts, ideas and beliefs where these new states can provide us with a rich array of possible actions. A couch potato, thus, has a different array in comparison with the explorer's one. 'New experience provides the window into more choices, and that is what freedom truly means' (Gazzaniga, 2014, p 73).

3.7. Emergence, causation and complementarity

Finally, neuroscience is happy to accept that human behavior is the product of a determined system that is guided by experience. If the brain is a decision-making device and gathers information to inform those decisions, then can a mental state, which is the result of some experience or the result of some social interaction, affect or constrain the brain and, with it, future mental states? This question is rooted in a classic puzzle. The puzzle is as follows. There is a physical state, P1, at time 1, which produces a mental state, M1. Then after a bit of time, now time 2, there is another physical state, P2, which produces another mental state, M2. How do we get from M1 to M2? In other words, does M1, in some downward-constraining process, guide P2, thus affect M2?

Gazzaniga suggests asking for help from a geneticist. In this manner, Pattee figures out that a good example of upward and downward causation is the genotype-phenotype mapping of description to construction. According to Pattee, 'the best understood case of an essential relation of upward and downward causation is what I have called semantic closure (e.g., Pattee, 1995). It is an extension of von Neumann's logic of description and construction for open-ended evolution. Semantic closure is both physical and logical, and it is an apparently irreducible closure, which is why the origin of life is such a complex problem. It is exhibited by the well-known genotype-phenotype mapping of description to construction that we know empirically is how evolution works. It requires the gene to describe the sequence of parts forming enzymes, and that description, in turn, requires the enzymes to read the description' (Pattee, 1997, p10). Pattee, finally, claims that they are complementary. Gazzaniga accepts his idea and states: 'with the arrow of time all moving in one direction, with the notion that everything is caused by something before it, we lose a grip on the concept of complementarity. Consciousness is its own abstraction on its own time scale and that time scale is current with respect to it. Thus, Libet's thinking is not correct. That is not where the action is, any more than a transistor is where the software action is. Setting a course of action is automatic, deterministic,

modularized, and driven not by one physical system at any one time but by hundreds, thousands, and perhaps millions' (Gazzaniga, 2011, p 81).

According to Gazzaniga, 'the course of action taken appears to us as a matter of choice, but the fact is, it is the result of a particular emergent mental state being selected by the complex interacting surrounding milieu. Action is made up of complementary components arising from within and without. That is how the machine (brain) works. Thus, the idea of downward causation may be confusing our understanding. What is going on is the match between ever-present multiple mental states and the impinging contextual forces within which it functions. Our interpreter then claims we freely made a choice. It gets more complicated. We are now going to have to consider the social context and the social constraints on individual actions. There is something going on at the group level' (Gazzaniga, 2014, p 81).

4. Comparison, analysis, and critic

Despite the fact that the two thinkers belong to two basically different realms of thoughts and there are some clear distinctions in their opinions, there are certain important similarities in their viewpoints that make their ideas particular. Here, we will first study the differences and similarities between their ideas and then we will analyze them and finally we will consider them critically.

4.1 .Differences

1 -For Ṭabāṭabā'ī, the soul is a reality which we speak about as 'I' and our humanity is based on the very 'soul' or 'I', but Gazzaniga holds that 'I' is nothing, but an illusion developed by the brain's interpreter, and we do not possess any kind of integrated 'soul' or 'I'.

2 -According to Ṭabāṭabā'ī, the human beings innately possess perception and volition that are of their faculties, but for Gazzaniga, the human beings do not have free will and what is called the human's free will, in fact, is an elusive notion created by the interpreter.

3 -Ṭabāṭabā'ī, concerned with the problem of whether the act is voluntary or not, emphasizes that in non-voluntary action, the will comes from a cause outside of human soul. The cause which creates the will in the soul, while Gazzaniga concentrates on the will itself and what he considers free will is to have more choices for selection which occurs in the context of society.

4 -Regarding the relation between free will and causality, Ṭabāṭabā'ī is a fully compatibilist and considers human's free will to be a part of the complete cause, but Gazzaniga takes what is called free will in traditional philosophy as an illusion made by the interpreter, and explicitly states that

he agrees with those believing in determinism, but simultaneously holds that human being is responsible for his actions .

5 -On the domain of responsibility, Ṭabāṭabā'ī considers religion as one source of the conventional aspect of free will and thus we may infer that he may tend to think that human being, in addition to being responsible in the society, is responsible in front of God as well, but for Gazzaniga the analysis of the brain in isolation does not show the possibility of responsibility because responsibility is a dimension of human life which occurs in social interactions which require more than one brain.

6 -For Ṭabāṭabā'ī, all beliefs, desires and decisions are of soul's modes where the soul is their source and principle, whereas according to Gazzaniga, they emerge directly from the causal relations between brain's state and its processing .

7 -Ṭabāṭabā'ī states that volition without knowledge is blind and human, at the first stage, is a knowledgeable agent who decides to take action after coming to know that it is directed toward perfection, but for Gazzaniga, human actions are mostly outside the realm of conscious experience and if we do them consciously, we may face a kind of disorder in preciseness and speed. Hence, in many instances when we face danger, he argues, if we start contemplating on the issue, we cannot solve it correctly .

4.2 .Similarities

1 -Regarding the problem of body-mind, both thinkers believe in emergentism.

2 -Despite having different explanations of free will, both agree on the responsibility of human beings for their actions. For Ṭabāṭabā'ī, being responsible is an apparent reason for being free, and similarly, Gazzaniga holds that it is in the brain's interactions that certain new sets of laws that require responsibility and free will occur.

3 -For Ṭabāṭabā'ī, one of the principles of our volitional act is the conventional judgement which man makes the act necessary for themselves and converts the 'must' after conceiving the act and its advantage(s) and asserting its advantage(s). This conventional judgement which is of conventional perceptions emerges from our feelings and desires and also belongs to the social, religious, and ethical realm, not to the external world. So, we can conclude that for Ṭabāṭabā'ī, free will is a conventional concept and its reality is no more than conventional realities. In a somewhat similar way, for Gazzaniga, the interpreter is continuously interpreting the objects,

feelings, and events of our brain, and the causes of our behavior and emotions and, in fact, it invents the notion of free will which is an illusional issue.

4 -Ṭabāṭabā'ī holds that the human soul needs the body in the origination of its existence. Likewise, Gazzaniga thinks that the mind emerges from the brain and all mental states strongly emerge from physical states so that mental properties do not change and even do not occur without physical properties.

4.3 .Analysis

In analyzing the differences and similarities in free will in both thinkers' viewpoints, we have found two fundamental bases underlying all of them. The most important difference is in the methodology. Ṭabāṭabā'ī's method is mostly conceptual and intellectual, and this enables him to elucidate his position and his terms such as volition, free will, knowledge and their relations, and to demonstrate his universal and necessary arguments clearly. In specific issues, however, he fails to make his position clear like when he claims that we cannot solve the problem of free will philosophically, he does not introduce the alternative field of knowledge responsible for overcoming the problem. As far as Gazzaniga's neuroscientific experimental method is concerned, there are no such intellectually necessary demonstrations, although the experimental method also has its own practical preciseness and clarity in the realm of experience, which is not suitable and sufficient for philosophical debates. For instance, in the case of causality, he claims that 'Modern neuroscience maintains that nonfundamental causality is real and will ultimately thoroughly explain the neural mechanisms of the mind'.

Another critical difference is the distinction in the foundations of their doctrines. In the debate on the body-mind relationship, Gazzaniga believes in emergentism in general and in ontological emergentism in particular, which regards the mind and its properties as issues emerging from the layered brain system which in each level or in all levels are more than the collection of the individuals of the system and are not reducible to properties of the fundamental level. These mental states arise from the interactions of human fundamental neural cells, which, at the same time, constrain the brain's activities. For him, the two distinct layers of mind-brain interact in a way that none of them can occur without the other. For the authors of the present paper, however, Ṭabāṭabā'ī's view is also similar to Gazzaniga's, but the difference lies in the fact that the former believes in monist immaterial substantial emergentism since he considers the soul as a substance emerging from the body which at the same time is identical to it and initially cannot

exist separately, but later on in the climax of its progressive trans-substantial motion, it can exist without the body .

5. Conclusion

One may conclude that Islamic philosophy particularly the Transcendent philosophy requires some more compromise with contemporary philosophical diction and up-to-date scientific data especially in anthropological subject matters despite having solid and profound intellectual foundations which correspond to revealed doctrines, and despite being premier in claiming certain perspectives raised in contemporary philosophy of mind such as the emergence of the soul from the body. In this respect, comparative studies can be chiefly influential and bridges the gap between Islamic philosophy and science, and illustrate the complementary relationship between the two. In the realm of neuroscience, on the other hand, although Gazzaniga in some of his earlier works emphasizes the need for certain dictions other than that of Aristotle's, it seems that some philosophical concepts such as causality still have their own influence. However, in his later work, he states that 'I believe it is at this point where the modern philosophical argument should begin, at the point where modern neuroscience is both appreciated and understood', which is more intimate with his own inclusive view on complementarity.

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