Original Article

The Mind − Brain Problem from the Perspective of Agency

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Abstract

Aim: In this article, it is argued that the elusive mind qualifies as an active agent which works through the brain rather than the brain creating the subjective mind or acting as the mind itself. **Materials and Methods:** This article relies on observation-based reasoned arguments and thus it is philosophical in nature. **Discussion:** We seem to be living in a virtual reality interwoven of subjective experiences of sights, sounds, tastes, smells, colors, pain, and pleasure, all rendered by the enigmatic mind. The mind cannot be reduced to physical existence such as the sporadic electrical activity of the brain since no electrical activity has ever produced such cohesive subjective experience, the same way that the laws of physics cannot be reduced to matter and energy that comprise the physical existence. **Conclusion:** Unlike properties, agencies differ from emergent quantities in that agencies more than passively qualify matter; they actively control and rule matter. Agencies are characterized by causal power, and thus the capacity to cause changes. Several agencies can be identified in nature. The agency of physics is associated with the physical realm and is comprised of the universal laws and forces of physics. Life qualifies as a purposive agency which is comprised of the laws and influences of life. Even quantum fields act like virtual mechanisms and thus qualify as active agents associated with the production of the fundamental particles of physics with a fixed set of properties out of quanta of energy.

Keywords: *Active agents, agencies, brain, emergent qualities, mind, perceptions*

Introduction

Despite remarkable developments in science and technology during the past century, there is still widespread ambiguity and confusion about the human mind and the associated faculties such as intelligence, consciousness, emotions, desires, and free will. We are nowhere close to reaching a consensus in understanding these traits. Perhaps, this is not surprising since we are dealing with invisible subjective qualities the existence of which is highly controversial. Although we tend to confirm their presence innately, we cannot pinpoint them physically. The nonphysical mind is a fertile ground for a variety of opinions, ideologies, and beliefs to flourish and individual prejudices to form. There is not even an agreed upon methodology for the investigation of the matters of the mind.

The prevailing neuroscientific view the human brain is that it is a mystifying biological machine and that fundamentally every thought and feeling we experience is simply the flickers of the billions of neurons. It is generally believed that our thoughts and our understanding of ourselves and our world are somehow produced by these crackling connections between brain cells, although nobody has the faintest idea how those brain cells composed of inept molecules can possibly do this. Despite the decades of neurological research by the best minds in the field and major U. S. government initiatives on brain research such as the "Decade of the Brain" in the 1990s and the "BRAIN Initiative" launched in 2013 and involved the collaboration of hundreds of researchers around the globe, the human brain still remains largely a puzzle.[1] We are nowhere close to understanding its mysteries. Clearly, there is a need to think out of box and develop new perspectives.

From a physiological point of view, the wondrous brain is merely a meat which involves random electric signals through the movement of charged particles such as sodium and potassium ions. However, functionally, the material brain is said to be planning, coordinating, and overseeing all our physical and mental activity. Such difficult acts are feats that no piece of meat,

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with or without electric signals, can perform. Hence, the notion that the electrical activity in the brain produces the kind of mastermind that has the knowledge, intelligence, will, and the skill to coordinate and direct all internal and external human bodily functions does not seem plausible. No electrically active matter such as the batteries or microprocessors in smartphones has ever produced anything close to such subjective qualities or a trace of those skills. Therefore, the brain is still associated with deep mystery, and researchers have expressed doubt whether we ever will be able to unlock this mystery.

Many researchers and scientists firmly subscribe to the materialistic worldview when it comes to brain. At best, they accept the existence of subjective entities such as intelligence and consciousness, but only as products of brain activity. At worst, they deny their existence altogether, proclaiming that the mind is simply the brain and the exhibition of neurophysiological activities in the brain.

Hard-line materialists insist that all subjective qualities such as consciousness, emotions, life, and free will stem from matter and are reducible to matter. The origin of this contention, it seems, is simply the materialistic worldview that these thinkers subscribe to, as there is no compelling evidence or justification for this hard stance. The presumption that "existence is limited to physical things only and all apparently nonphysical things are merely the outcome of physical interactions" is simply an ideological view since it cannot be tested. Therefore, the notion that 'the sources of all subjective things like consciousness and free will are physical things' is just an opinion or hypothesis, and not an indisputable scientific fact. The opposing notion that "subjective qualities do not need to originate from physical realm" is an equally valid view. All such views should be judged by their own merits on the basis of reason, logical consistency, and conformity with observations, without prejudice. Also, care should be exercised to avoid drawing wrong conclusions from the right observations.

Those who subscribe to the Cartesian dualist perspective, on the other hand, view the physical body and the nonphysical mind as the perfectly harmonious cooperation of two distinct and separate entities,[2] and thus the name "duality." The word "mind" is used in a broad sense which includes everything other than the physical body. Dualists posit that the mind must be distinct from the body, irreducible to the physical realm, for it to be able to assert influence over the body. Other theories borrow and merge some aspects of these two opposing worldviews.

The advocates of emergent theories, for example, reject as baseless the idea that subjective qualities can be reduced to the physical realm, but they do not subscribe to the idea of a nonphysical mind distinct from the physical body. They maintain that the mind is a phenomenon which emerges on the assembly of brain out of nowhere. There is an abondance of literature on existence, notably by Goldstein,[3] Corning,[4] O'connor and Wong,[5] and Çengel[6] on emergence, and Davidson[7] and Schlosser[8] on agency.

In this article, we challenge the prevailing strict materialist worldview that matter is everything and everything is matter, and the reductionist approach that all subjective qualities are illusions and that they can be reduced to matter, as these contentions do not conform with common observations. In fact, all objective observations refute both notions. We demonstrate these refutations with examples, analogies and compelling arguments showing that inept matter, including the nerve cells in the brain, which are not much different than other nerve cells in the rest of the body, cannot possibly be the generator of subjective human traits such as consciousness, emotions, and free will.

Emergent Quantities and Agencies

Emergence is described as the phenomenon of a quality appearing out of nothing on a physical entity during its formation, and disappearing into nothingness when the entity is taken apart. Emergent qualities are the properties of physical entities that appear out of nowhere, and disappear into nothingness when the physical thing is broken down into its constituents.[6] That is, emergent qualities do not originate from the physical constituents of an entity, assembly, or organization.[9]

The appearance of emergent qualities is contingent upon the existence of the physical entities on which they emerge. This sets the stage for the perfect illusion that emergent qualities originate from the physical entity. However, *intimacy* should not be confused with *causality*. Recurrent intimacy is not a valid reason for causality. Unless a *causal mechanism* is identified and replicated, the claim that emergent qualities originate from physical entities themselves remains an unsubstantiated supposition.

The phrases *agent*, *active agent*, and *agency* are commonly used within the context of causation. Agencies are characterized by *causal power*, and thus the capacity to cause change. An agency is said to be *purposive* or *goal oriented* if its activity is aimed at realizing an objective. Life, for example, qualifies as a *purposive agency* since all living beings are goal oriented. The laws and forces of physics, on the other hand, qualify as a *non-purposive agency* since they exert the same pull or push effect of certain magnitude on all physical existence in the entire universe without being selective.

After pointing out that living organisms have goals and purposes while atoms and molecules just blindly follow physical laws, physicist and astrobiologist Davies[10] also attracts attention to life acting as an agent: "*Life's ability to construct an internal representation of the world and itself to act as an agent, manipulate its environment and harness energy — reflects its foundation in the rules of logic. It*

is also the logic of life that permits biology to explore a boundless universe of novelty."

A *physical phenomenon* is recognized as the *effect* under the action of an *influence* exerted on physical existence made of matter and energy, such as water flowing downwards under the influence of gravity. An observed *influence* indicates the existence of an *influencer*. The discovery of dark matter and dark energy is simply the inferred result of the observed new influences. Observed regularity of effects under the action of influences as evidenced by repeatability and predictability are indicators of the presence of underlying laws which includes the rules and principles. As such, the laws of physics are expressions of the regularity of the effects that manifest in the physical realm under the action of influences in a repeatable and predictable manner. The formulations of the laws are simply the cause-and-effect relations between the *causative influences* and the *manifested effects*.

The universal laws and forces of physics qualify as an *agency* with causal power since, collectively, they govern the behavior of all physical existence in the entire universe. Alfred Montapert has expressed this eloquently as "*Nature's laws are the invisible government of the earth*." Einstein put it as "*Everyone who is seriously involved in the pursuit of science becomes convinced that a spirit is manifest in the laws of the Universe – a spirit vastly superior to that of man, and one in the face of which we with our modest powers must feel humble.*"[11] The notion of existing beyond the visible universe and fully governing the entire physical existence is a peculiar characterization of the laws of physics which have no mass or energy.

The Brain versus the Neuromorphic Computer (Artificial Brain)

The brain is often likened to a microprocessor or a computer. But the human brain is obviously much more than a super-powerful computer or a central signal-processing unit: It seems to be home to subjective mental faculties like imagination, intelligence, thought, and consciousness as well as sensations. The web of interrelations between the physical brain and the nonphysical faculties associated with it further complicates the mind–brain problem.

The intense electric signal activity in the brain is no different from the intense electric signal activity in microprocessors, and the brain waves generated are no different from the electromagnetic waves encountered in broadcasting, telecommunications, microwave ovens, and even ordinary light. However, neither microprocessors' intense electric signal activity, produced by billions of transistors, nor the constant barrage of electromagnetic waves, produced by the sun and many common devices and appliances, has ever produced anything like a subjective quality. The intense electric and chemical signal activity throughout the rest of the human body, with about 30 trillion interconnected cells (like the electrical signals transmitted from the eye to the brain), does not produce any such subjective qualities, either.

The new generation intelligent computers that learn by trial and error and modify their software are still lifeless dummies, with no awareness of what they are doing and no ability to initiate things. All their actions are governed by the objectives set by their conscious programmers with purpose and free will, and the algorithms devised by the same programmers. That is, the impressive acts of computers and robots that mimic the learning of a child while acquiring motor skills simply reflect the will of the programmers. There is an army of code writers behind those so-called self-learning and evolving intelligent computers and robots that write their own codes. If the software is removed, those marvelous machines with their state-of-the-art microprocessors will turn into a pile of metal and plastic parts. If a different software is loaded, same machines would be doing something else.

The nearly 100 billion neuron cells of the brain stand out from the nearly 100 trillion cells in an average human body by the electrical activity through about 100 trillion synapses triggered by the motion of the ions. The information processing in the brain via electrical signal transmission resembles the information processing in a modern computer via electrical signal transmission. This resemblance gave rise to the idea to label the brain as a very advanced computer. With this notion, *mental processes* are reduced to *computational processes*.

To model and simulate the brain, which is orders of magnitude more energy efficient than a computer since it combines processing and memory, IBM and other technology companies have been working on neuromorphic computing since early 2000s. In 2008, DARPA announced the SyNAPSe program with the aim to develop a *neuromorphic computer* using cognitive computing architecture with 10 billion neurons and 100 trillion synapses, which is basically a *brain simulation*. Neuromorphic computing involves the production and use of *neural networks*, and it deals with *mimicking* the way the brain performs its functions like producing information from data and deducing fact.

As part of this project, IBM announced in 2012 that it has managed to build a neuromorphic computer with 530 billion neurons and 100 trillion synapses, using the world's second fastest supercomputer with over 1.5 million processor cores. The result was a new generation of faster and more energy-efficient computer, but again with *no trace* of subjective qualities such as consciousness, thoughts, free will and emotions.[12]

The engineering of neuromorphic computers involves the development of components whose functions are analogous to their organic counterparts in the brain. Therefore,

neuromorphic computers differ from the digital computers, which are deterministic given a specific set of inputs, they always produce the same set of outputs. Despite the claims by hard determinists that the brain activity is absolutely determined by the laws of nature, the observations of neuron firings, which are displays of peak electrical charges, point to a probabilistic nature instead. The same inputs to the neurons sometimes produce different electrical outputs. Furthermore, some inputs produce excitation in the neuron, while other inputs inhibit it.

The activity of individual neurons occurs in *milliseconds* compared to clocked speeds of *nanoseconds* for modern microprocessors. That is, the electric signal activity in the brain is millions of times slower than that of microprocessors. Therefore, neuron activity is much easier to trace and fully understand. However, obviously this understanding is no help in unearthing how neuron activity connects with subjective qualities like consciousness, emotions, intent, and free will. Some neuromorphic engineers and neurologists question the accuracy and adequacy of truly simulating the real brain activity. Gerard Marx of MX Biotech, for example, points out the missing of an *active agent* in the brain's recall process in current simulations.[13]

At base level, computers consist of 0's and 1's, corresponding to switches being on or off. Deep down, everything we see on the screen is the result of manipulations of these 0's and 1's and the resulting electrical activity. The drivers or programs onboard or on the cloud, which reflect the *will of the programmers*, control and direct the computation and information flow.

Despite their impressive computational power, computers have value and meaning only in the hands of *external users*. Without an operator, a computer with all its powerful circuitry and sophisticated software is just a marvelous thing sitting idle on a table. That is, it is the conscious and intelligent users that give computers functionality and meaning, and makes sense out of its output. If all people were suddenly to disappear from the world, for example, all the computers in the world, including those which learn by trial-and-error modify their software, would suddenly be meaningless and functionless.

Even a sophisticated computer with billions of transistors is a dummy since, despite the intense electrical activity in its brain, it is not aware of anything and it cannot initiate anything. The human brain with billions of neurons with sporadic intense electrical activity is not any different. A computer has meaning and utility only in the hands of an external conscious and intelligent user. If all the people were to vanish today, all those state-of-the-art computers, including the smart ones with artificial intelligence, would just sit there and wait for instructions. The same can be said about the brain, which is often viewed as a computer. It also needs an *external agent* with consciousness and intelligence to perform purposeful acts. Otherwise, all the sporadic electrical activity goes astray.

If a computer produces meaningful outputs, this is an indication that there is knowledgeable user with purpose behind it. Similarly, if the brain produces meaningful and purposive outputs, it is only logical that there is an invisible operator with purpose behind the scenes. This is because outcomes of computations have no meaning unless they are interpreted by a conscious, external agent. The patterns that both a computer and a brain produce by processing signals have no causal power, and neither is equipped with an intrinsic agency.

Intuition is a credible source of information, and any person can intuitively feel that it is the innate willpower extrinsic to the brain that dictates the behavior of a person. Otherwise, we would act like a preprogrammed robot or a zombie. When someone steps on our toe, we feel the pain in the toe and not in the brain. This shows that the body is fused with a subjective sentient avatar, which is an extension of the mind. Mental qualities such as intention, initiation, and goal orientation which are extrinsic to the brain do not originate from the brain, they govern the brain. These traits cannot be explained by the chaotic, disjointed, nonpurposive neurophysiological processes of the brain.

Also, there is no indication that the brain has an *internal software*. But even if it did, this does not alleviate the need for an *external operator* which determines the algorithms to be executed and implemented. A *software* or a *computer program* is merely a set of instructions to perform certain tasks, and it has no ability to initiate things– just like a cookbook being a set of cooking instructions with no ability to cook. There needs to be an *external programmer* in the first case, and a chef in the second. Without an operator to assign tasks and make sense of the results, a computer is a maze of electric signals. Similarly, a brain is like a maze of spark plugs or fireworks firing aimlessly unless there is an external agent with purpose.

Does the Brain Qualify as an Experiencing Agency?

When existence is limited to matter and energy, the sentient and conscious subjective entity with knowledge and skill is necessarily imbedded into the brain. This chunk of opaque matter is portrayed as a marvelous gadget with traits such as (1) being aware of everything; (2) having a mastery of all the intricate physiological processes in the entire body; (3) instantly converting millions of electric signals that correctly to images, sounds, tastes, and smells; and (4) giving orders to other parts of the body that are made of the same material as itself, etc. How tenable is it to think that all these wondrous acts are done by a cluster of atoms and molecules made of electrons, protons and neutrons?

All the marvelous acts listed above are associated with a subjective agency. Considering that *acts* are indicators of the traits and capabilities of the *actor*, which is the mind in this case, we infer that the mind is an *agent* that comes with the traits of unity, organization, control, knowledge, skill, and power.

The perceived physical reality is something that the mind renders out of the sensory signals received from the physical world.[14] The things that we see are nonphysical depictions of the mind [Figure 1]. As it turns out, we live in a mentally constructed subjective virtual reality world. As Glattfelder[15] puts it: "*Recall that neuroscientists are quite clear: Our perception of reality is a hallucination tethered by a bit of sensory input. What I experience through sober waking consciousness is an elaborate virtual reality rendering in my brain. The nature of this hallucination can be modulated by the chemical composition of the brain*."

The electric signals that arrive at the brain are decoded and woven into what we perceive by an agency which resembles a veiled skillful *virtual mechanism*. As Metzinger[16] puts it: "*The global model of reality constructed by our brain is updated at such great speed and with such reliability that we generally do not experience it as a model. For us, phenomenal reality is not a simulational space constructed by our brains; in a direct and experientially untranscendable manner, it is the world we live in*." Of course, a capable mysterious invisible agent must be doing the depicting of visual images, not the material brain itself, since 'matter' is inherently incapable of constructing images and perceiving them.

The notion of the random firings of the inept neurons in the brain constantly constructing the virtual vivid world that we live in and experience day and night, complete with sights and sounds, is as implausible as the claim that the shows we watch on TV are the constructs of the random flickering of the pixels of the LCD screen alone, with no controlling agent with purpose, knowledge and power behind the scenes. Yes, we cannot watch a TV show unless the millions of pixels on the screen flicker in a cohesive pattern. But the reasoning '*there is no TV show when there is no flickering pixels; therefore, pixel flickering is the maker of the TV shows*' is obviously unacceptable. Not knowing the nature of the mind is no valid reason to deny its necessary existence. It takes an active agent with intent, consciousness, knowledge, skill, and power to make a TV show, and the pixels on an LCD screen are anything but such an agent [Figure 2].

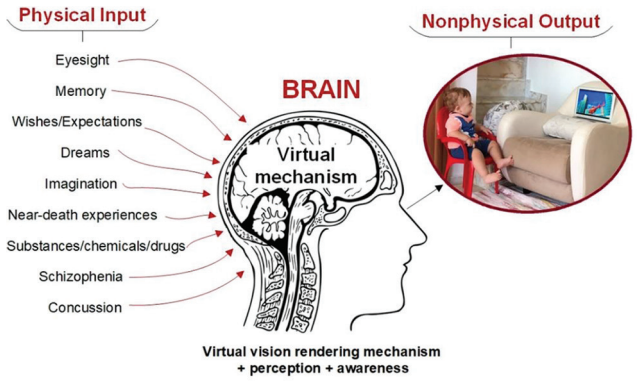

Figure 1: The mechanism of the construction of the life-like subjective 3D visual images out of electric signals triggered by various phenomena by a sentient conscious agent associated with the brain[14]

The Pilot Cabin with Flickering Signals and the Pilot

The cockpit of an airplane is equipped with the most sophisticated microprocessors and flashing displays that show the intense signal activity occurring in the processors. Yet, the controls equipment in the cockpit is far from having the necessary consciousness and free will to fly an airplane. If there is an airplane flying in the sky, surely there is a live pilot with emotions, consciousness, and free will who flies the airplane through the controls in the cockpit. If there is no physical pilot present in the cockpit, then we know that there is a distant pilot controlling the airplane remotely. In the case of an autonomous airplane, again we know that essential information such as the time of departure and the city of destination is keyed in by an authorized person.

The one-to-one correspondence between the patterns of the lit display signals and the action of the airplane is no proof that it is the cockpit with the flickering lights which determined what the airplane will do [Figure 3]. The inability of the airplane to fly when the cockpit malfunctions again does not show that the cockpit is the active agent with the ability to control and fly the airplane as it wishes. This is because the signal activity in the microprocessors and the control rooms, no matter how intense, is inherently incapable of generating subjective qualities such as consciousness, intent, and free will.

Similarly, to the contrary of what neuroscientist Harris[17] asserts, the one-to-one correspondence between a certain pattern of brain electrical activity and a certain act performed does not show that the involuntary electrical brain activity is the active agent behind the acts of a person. Therefore, his conclusion that there is no free will is flawed. We intuitively confirm the existence of an innate sense of freedom of action, and his contention that free will is a delusion is obviously disregarded by the courts of law as they hold people accountable for their willful acts. If there were no accountability, some people would act very differently with the same underlying physiology of the brain. We innately reject the notion of denying responsibility for our choices and actions and putting the blame on the neural activity of the brain which we have no control over.

Also, there is deterministic one-to-one correspondence between a bullet leaving a gun toward a target and a pulled

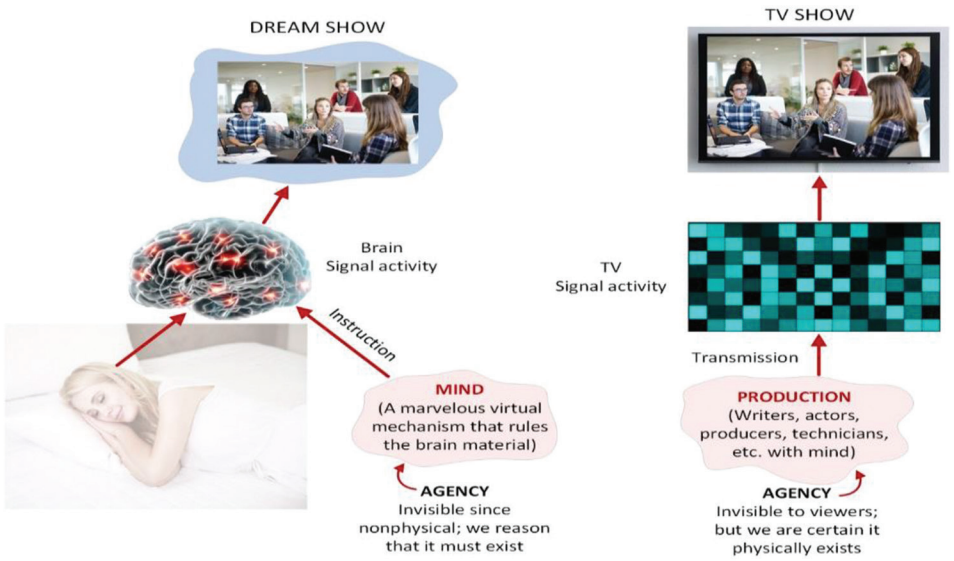

Figure 2: The virtual agency (invisible mind) involved in constructing a cohesive dream is no less sophisticated than an actual agency (visible TV production team) involved in making a TV show[14]

Figure 3: The one-to-one correspondence between the patterns of the lit display signals in the cockpit and the behavior of the airplane does not mean that the electric signal activity is what flies and controls the airplane. Same is true for the electric signal activity in the brain

trigger. By observing the direction the gun points to when the trigger is pulled, we can accurately predict the intended target before the bullet leaves the barrel of the gun. But this does not mean that the gun is responsible for shooting the targeted person—after all, the gun is just a dummy item, and it does what its user wills. A gun cannot intend anything, and it cannot choose a particular person to go after. It cannot do anything by its own volition. If there is a firing gun and a person killed by its shots, we know that there is killer out there as the active agent, whether we see that person or not. This is because a physical thing made of inanimate matter cannot develop any subjective qualities like consciousness, intent and vengeance. It is against their character, and there is no theoretical or observational evidence that suggests otherwise. Also, there is no such thing as animate raw material from which to build animate beings.

Despite the intense electrical activity in the cockpit, we contend that if there is an airplane flying, there must be a pilot in the cockpit of the airplane, regardless of how many billions of operations per second are being performed in the cockpit's microprocessors and the patterns of the flashing lights on its display screens. This is also the case even if there is no visible pilot in the cockpit, but the plane is being piloted from a distance using remote-control technology. There can be no doubt that the airplane is controlled *through* the cockpit, not by the cockpit.

For an airplane to be functional, all its essential parts—including its cockpit and the pilot—must be properly functioning. But for the airplane to fail, the failure of just one essential part is sufficient. Obviously, the observation-based argument, "When this part fails, the entire airplane fails; therefore, it is this part that makes the airplane fly," is invalid. Such simplistic and short-sighted linear thinking is responsible for a lot of misunderstandings and misjudgments.

In the case of human beings, the brain is made up of the same atoms (with the same electrons, protons, and neutrons) that the cockpit is made of, and neurons fire the same electric signals that the cockpit processors do. Both the brain and the cockpit are mere assemblies of matter, like other bodily organs and the body of the airplane. And as inept material beings, they cannot possibly have, or give rise to, subjective qualities such as consciousness, perceptions, emotions, and free will. All claims to the contrary are not evidence based. Therefore, commonly expressed thoughts like, "The human brain can compose symphonies, or create beautiful works of art" and "It allows us to navigate our world, to probe the universe, and to invent technology that can do amazing things,"[18] consist of baseless characterizations and unjustified glorifications of a lump of meat. Similarly, a microprocessor which can

perform billions of calculations per second is, at the end, an inept piece of silicon.

The electromagnetic *brain waves* measured by EEG devices are no different than the waves transmitted to and from the airplane cockpit, except for their wavelength or frequency. The material of the brain as well as the signals it generates are as inept as the matter and signals encountered everywhere else. Therefore, like the pilot in the cockpit, there must be a subjective agent called the mind equipped with a compatible set of subjective traits like consciousness, emotions, life, and free will that operates as the active agent through the brain. Otherwise, we will continue to be amazed and amused by what we think the brain is doing, as we talk about its mind-blowing mysteries. We will have to continue giving the brain supernatural powers, like telling other bodily parts what to do and how to do it, although it is a bodily part itself, made of the same atoms and molecules as the rest of the body.

By following the same line of argument, if we deny the existence of the enigmatic agency of life, we will also have to keep describing life as chemical reactions, knowing well that no chemical reaction has ever produced life, and that there is no indication on the horizon that it ever will. Sciences are based on impartial observations with no prejudice and is open to confirmation and refutation. To preserve this objectivity, we should abstain from mixing sciences with opinions or ideology. The notion of limiting existence to physical realm is a plain ideology or worldview since no experiment can be conducted to confirm or refute it. Nonphysical things obviously cannot be studied by science because the sciences are based on observations of the physical realm.

An Advertisement Billboard with an LCD Screen

To appreciate the scale of the qualities we attribute to the brain without devoting much thought or critical scrutiny, consider a large advertisement billboard with thousands of pixels (or small light bulbs) on its surface. The billboard works by powering the pixels selectively so that they form intelligible phrases like 'Joe's Coffee' with rendered pictures of coffee, as shown in Figure 4. We don't think much of the billboard ads since we know that there is a person with intelligence, knowledge, and intent behind them. The sequence of the pixels turning on and off and the patterns formed by them are determined by that operator, who is the active agent behind the scenes. The billboard with all its flickering lights is simply a dummy interface equipped with the necessary switches to turn the right pixels on and off at the command of an external agent. This way, the operator dictates and fully controls the intelligible patterns formed on the billboard by the lit pixels on the LCD screen.

Now, if we try to make sense of the intelligible ads exhibited by the light activity on the billboards without including the human operator in the scenario, and we certainly will understand why the brain is such a deep mystery. The lamps or the pixels come alive, so to speak, when they are lit, and fascinate us with their flickering meaningful messages. But the pixels and their switches are lifeless inept beings with no knowledge, intelligence, or intent. The pixels are not even aware of their own existence, let alone the existence of the neighboring pixels and the coffee shops in the neighborhood. And they have no idea about what happens when electric current passes through them. A switch cannot simply *decide* to allow electric current to pass to the lamp it is connected to, and to cut it off after a while. A switch cannot align its activity with the activities of other switches, and the switches cannot decide collectively to turn on and off selectively so that the phrase 'Joe's Coffee' together with related pictures is depicted by the lit lamps or pixels. Yes, there is a one-to-one correspondence between the patterns of on switches and the intelligible message that appears on the billboard. But this does not mean that the switches are the author of those messages.

Figure 4: The one-to-one correspondence between the patterns of lit pixels and the intelligible message that appears on an LCD billboard does not mean that the pixels are the intelligent author of the message

If we disregard the human operator and associate the relevant attributes of the operator—intelligence, consciousness, knowledge, sight, and intent with the billboard, it is no wonder that we will have to describe that extraordinary billboard as mysterious, mind-boggling, and perplexing. Whether we realize it or not, we end up including in our mental picture of the billboard the mysterious human operator that we have disregarded since he or she is nowhere in sight. But this presumption did not solve the mystery of the billboard; it simply locked the mystery inside it.

Therefore, it should come as no surprise that attempts to build such an extraordinary billboard that makes its own decisions about which ads to compose and how long to display them will end up in plain failure. This is because there are no physical components with subjective or nonphysical qualities like consciousness, will, or intent.

Such subjective qualities appear on matter, but don't originate from matter. And thus, they cannot be reduced to matter, as all attempts to do otherwise have shown.

Both the billboard and the brain are composed of the same atoms, and both operate by the same electric current triggered by an electric potential. Neither electric signals nor atoms or subatomic particles possess subjective qualities like consciousness, intelligence, will, intent, purpose, or knowledge. Laws of nature, such as the law of gravity, are not equipped with these qualities, either. Therefore, we cannot solve the puzzle of the physical brain by rejecting outright the possible existence of an external invisible operator with those qualities, just as we cannot develop a factual understanding of the operation of a billboard by rejecting the existence of an unseen external human operator. After all, the whole being more than the sum of its parts is a commonly encountered natural phenomenon.[19]

The Causal Chain of Existence

The occurrence of something is contingent upon the presence of all contributing factors that together constitute a complete *causal mechanism* or the *causal chain*. The absence of one of those factors is sufficient cause for the nonoccurrence of that thing. That is, for something to occur, the entire set of the necessary factors must be present concurrently and make their contributions. That thing will not occur if one of the necessary factors is disabled or is absent.

Failure to make this subtle distinction is a common cause of blunt misjudgments, especially when all the contributing factors in the causal chain other than one are always present. This paints a false picture of one-to-one correspondence between the 'occurrence or non-occurrence' of something, and the 'factor being present or absent.' As a consequence, that factors is mistakenly viewed as a powerful causal agent. This delusion is based on the false logic that if something disappears when one of its constituents disappears, then that constituent must have served as the 'causal agent' of that thing.

The lighting of a lamp in a room, for example, is dependent on the presence of a light bulb in the lamp, the light switch being turned on, the electric wiring through the grid being intact, and the power plant generating electricity. That is, for the lamp to give light, all the necessary components that constitute the causal mechanism must be in place. Removing or disabling one of those components, such as turning the light switch off, is sufficient to halt the entire mechanism and cause the lamp to go out. In this simple case, we all know that the light switch is simply one of many passive links in the chain of causal mechanism, and we do not identify the light switch as an agency with causal power. Besides, a light switch is never observed to produce electricity or light and it is inherently incapable of doing so.

Likewise, a TV show can appear on the screen only if all the elements of the entire causal chain– the performers, cameras, broadcasters, TV set, and electric power, etc.,– are actively involved and are properly linked to one another. The removal of just one of the links in the chain – like cutting off electricity to the LCD screen – is sufficient to make the show disappear. However, this does not mean that the TV show is the making of the electrical activity within the millions of pixels of the LCD screen [Figure 5].

Furthermore, a slew of contributing factors such as sunlight, water, nutrients, temperature, etc., must be in place for a tomato plant to grow and bear tomato fruits. Watering is a necessary condition for the plant to eventually bear tomatoes, and failing to water the plant for several days may cause the plant to die. But this does not mean that watering alone is the sufficient condition for the making of tomatoes, and that it is the water which deserves all the credit for the formation of the tomatoes. Furthermore, a person cannot live more than a few minutes if his or her lungs stop functioning. However, all the vital organs need to be working properly for the person to continue living. The absence of functioning lungs is a sufficient cause for the absence of life, but the presence of functioning lungs is one of many necessary conditions for the presence of life.

When some of the links in the causality chain as well as the outcomes are nonphysical, such as the mind, consciousness, free will, the sense of sight, and the emotions, we do just that without questioning– like ascribing supernatural causal powers to the brain which is a lump of inept fatty meat. Superficial explanations such as 'vision was lost when a certain part of the brain was damaged, and the sense of vision was restored when that part was repaired; and this shows that that part of the brain is responsible for the

Figure 5: A TV show can appear on the screen only if all the elements of the entire causal chain of the performers, cameras, broadcasters, TV set, and electric power, etc., actively participate

creation of vision' abound. But this is no different than saying "the light of the lamp was gone when the light switch was damaged, and lighting was restored when the switch was repaired; and this shows that the light switch is responsible for the generation of light.' Of course, both statements remain equally as pure speculations, not scientific facts, until a light switch which generates light, and an artificial brain which generates vision, mind, consciousness, etc., are built.

A damaged or turned-off switch is sufficient to cause the absence of light, but a complete causal mechanism with all constituents being in place is necessary to cause the presence of light. It is a deep delusion to put the presence and absence on equal footing. The notion that a constituent factor is a causal agent on the basis of the observation of something disappearing when the factor is absent and reappearing when the factor is present is a blunt deception.

This delusion of crediting one of the links of the causal chain for the outcoming effect is so deeply entrenched in our minds that we view the link as the source of the effect. For example, we ordinarily think that the source of the pleasure of eating an apple is the apple itself, since, when there is no apple, there is no pleasure of eating an apple. But this is a delusion, and dreams are sufficient to burst this bubble of deep-rooted notion. The virtual apple that we eat in our dreams with our eyes and mouth closed is as pleasurable as the physical one.

We are so conditioned to concurrently having perceptions and experiences of the material world that we have developed this deeply entrenched notion that the physical realm is the source of everything we experience – such as the taste being embedded throughout the food as virtual miniscule particles. In reality, the sense of taste emerges out of nowhere when certain chemicals in the food that we eat react with the thousands of taste receptor cells in the mouth and on the tongue. This phenomenon is a common delusion called *habituation*, which describes the mental blindness and conditioning that occur after countless experiences of two things always occurring simultaneously.

A casual observer will easily deduce based on observations that corporeal things which consist of tangible material bodies are characteristically passive, recessive, submissive, affected, subjugated, controlled, and governed by external influencers. In contrast, the active, dominant, forceful, effective, subjugating, controlling, and governing things are intangible and nonphysical, and they are not made of matter. All material things such as air, water, soil, stones, bricks, tools, etc., do not initiate anything of their own; but rather, they are fully controlled by the immaterial laws and forces of physics which qualify as an agency.

Therefore, it is no surprise that all entities that qualify as active agents with causal power are of nonphysical nature, with no limitations of space and time, ruling over the bodies of physical entities made of matter-energy. This is also the logical basis for the postulation of the immaterial agency of life which governs the corporeal bodies of living beings built of atoms and molecules. Physical but immaterial ethereal things such as light, radio waves, and other electromagnetic signals appear to be sharing some aspects of nonphysical things, such as not occupying any space and being almost timeless.

Closure

In this article, the plausibility of the materialistic worldview that reduces all subjective qualities of the human mind to the brain which is a lump of material tissue is challenged on the basis of reason, logical consistency, and conformity with observations. It is demonstrated that the existence of a distinct nonphysical mind which qualifies as an agent is the most plausible representation of observed reality. The mysterious and miraculous mind appears to be an attribute of conscious animate beings like the humans. The nonmaterial mind reigns supreme over the material body, and it is irreducible to matter or energy. As such, it is in the same category of existence as consciousness, free will, beauty, knowledge, and meaning, except that the mind qualifies as an agency with causal power. The mind seems to be equipped with subjective qualities such as consciousness, free will, knowledge, and skill.

All ambitious investigations in recent decades to create artificial life and artificial consciousness from inanimate matter have amassed considerable evidence that life and consciousness cannot be reduced to matter, and life and consciousness cannot be generated from lifeless matter. This line of reasoning is constantly underscored by the scientists and philosophers who advocate emergence theories. These findings again point to the necessary existence of an invisible nonphysical active agent equipped with subjective qualities such as life, consciousness, will, and emotions that distinguish live humans from the lifeless bodies. Similarly, the view that the physical brain creating the nonphysical mind should be treated as a hypothesis only rather than a scientific fact until a brain which produces a sentient mind is built. Until then, mind should be treated as a subjective agency that transcends matter.

It is recognized that we do not fully understand the natures of emergent qualities and agencies, and it is difficult to make the physical and nonphysical realms work together cohesively. But not knowing the nature of a thing is not a valid reason for rejecting the existence of that thing. Having no idea about the natures of dark matter and dark energy did not keep physicists from recognizing their existence on the basis of the observed influence on known physical realm. As it turns out, the mysterious dark matter and dark energy together constitute 95% of the physical existence.

Science and philosophy exist to unearth the mysteries of such apparently insurmountable challenges using

observations and logic-based inductive reasoning. In the end, our picture of reality must conform to the observed external world. Besides, the test of falsifiability is always in our weaponry to discard any fallacies that may slip in. After all, in physical sciences, it takes only a single contradiction of observed phenomenon to falsify a proposition.

When we hear the sporadic firing sounds of hundreds of fireworks followed by meaningless mix of captivating bright colors, we just enjoy the show. However, if the bright colors organize to form intelligible letters that spells "Juliet, will you marry me?" we know that there is a Romeo with life, consciousness, and intent somewhere out there.

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