

Triple Definition or Explanation of Consciousness

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Abstract:

The author argues in this paper that consciousness may never be defined or explained with entities and properties, neither with brains and neurons, nor with particles, waves, and fields.

Instead, a system is proposed in this paper, with matter, energy and lives as its components, and with all its components defined as changes. The definitions or explanations of consciousness based on the systematic relationships among these components are:

- Ontologically, consciousness is universal, since it may only be the systematic distinction between matter and energy.
- Epistemologically, consciousness is unique, since it may only be the energy qualified systematically by the matter.
- Semantically, consciousness is neither the cause nor the effect of mental activities, since it may only be languages.

To deny its ontology means to be a dualist. To deny its epistemology means to be a Platonist. And to deny its semantics means to be an animist or panpsychist. None of them may contribute anything to neuroscience or artificial intelligence.

Compared with matter and energy, life is the more difficult part of this definition and explanation, also an indispensable part since life is the only cause or effect of matter and energy. If without life, matter and energy by themselves cannot be the explanation of agency or intentional action, nor the explanation of learning and knowledge. Moreover, a system only with matter and energy as its components is fundamentally against birth, death, development, and evolution. Neither of them may explain why everything including us and our cosmos must be created but nothing may remain forever. And the only reason why there is consciousness is that it may be the birth or death of lives.

Such defined or explained consciousness might be useful for us to find a more unified framework for neuroscience, the philosophy of mind, and the studies of artificial intelligence. At least, it helps us to avoid making more useless efforts.

Keywords: consciousness; definition; epistemology; explanation; life; mind; ontology; psychology; semantics;

Main text:

Introduction

It seems to me that knowing is communication, and understanding is creating or activating a system that explains or interprets the communication. Newton's laws of motion, Maxwell's equations about electromagnetism, Einstein's theory of relativity, and Schrödinger's wave function, for example, are all such systems.

Biologists, chemists, biochemists, and physicists all have their own systems, and so are philosophers. All their definitions or explanations of consciousness, if they have any, are based on systems composed of specific entities, such as particles, molecules, neurons, brains, nerve systems, or societies.

I do not think that systems composed of entities and their properties may ever define or explain what and how consciousness is, why there is consciousness, or what its significance or meaning is [Zhang, 2022, 2023].

As my definition or explanation of consciousness, I will describe below a system with matter, energy and lives as its components, and with all its components defined as changes.

This system is described below ontologically, epistemologically, and semantically.

The ontological definition or explanation

It is our fundamental assumption that the cosmos is a closed system, composed of elements that never change. The random changes of those elements explain the origins of everything we know. And the system's selection of those changes explains their evolutions [Hertog (2023), Sharma et al (2023)].

The idea of such a cosmos may be traced back to Parmenides' notion of "the one", and such elements to Leucippus or Democritus' notion of "ones".

However, as human beings, the only thing we may know is change or relativity. We may know nothing so absolute as the one or ones, even if they are not the manifestation of our anthropocentrism. Those particles discovered by particle physicists and the cosmos revealed by astrophysicists have not been and may never be proven as the ultimate components or entirety of our reality.

Fermions and bosons, for example, may never explain why they should originate, or even evolve into human beings who always want to define and explain everything.

There is one that is not the one, and there are ones that are not the ones, both of which are together the working language we use to define or explain changes.

There are two kinds of changes defined or explained, either the changes between different ones or the changes of the one itself or the ones themselves. The former changes are empirical, and the latter changes are ontological. In other words, an ontological change is the change of selfness or sameness, not the changes between different selves.

Heraclitus from ancient Ephesus identified two kinds of ontological changes:

- Irreversible change (symbolized below as “C”), as he described: “You cannot step twice into the same river”.
- Reciprocal change (symbolized as “O”), as he described: “Fire lives the death of earth, and air the death of fire; water lives the death of air, earth that of water.”

C is the opening of O changes, and O is the closure of a C change. Quantum fluctuation is, for example, a kind of O change, and parity non-conservation in weak interaction or spontaneous symmetry breaking is then a C change.

It seems to me [Zhang, 2022, 2023] that life may then be defined as the oneness, unity, or interdependency of O changes and a C change (symbolized as “OC”). Birth or death marks the beginning or end of such oneness, unity, or interdependence.

$$Life = OC \quad (Ax. 1)$$

OC is the third ontological change. In other words, life is both and neither of the other two changes.

The O of OC explains a life’s free creation, and the C its determined transcendence. OC is a better explanation of adaptation or reproduction, better than teleology or intelligent design.

Matter may be defined as the O change that is not the O of OC (symbolized as “M”), and energy as the C change that is not the C of OC (symbolized as “E”).

Because of the C of OC, all lives are asymmetric or non-conservative changes. The C of OC is not only the open of O changes but also the directionality of the open. Lives may therefore be divided into two categories according to the contrary directions of their C changes. The one with its C toward the E might be called a

spring life, and the one with its C toward the M *an autumn life* [Zhang, 2020].

A spring life consumes the M and creates the E, and an autumn life does the opposite.

M plus M may be a spring life's birth or an autumn life's death, and E plus E may be the opposite. The so-called non-living matters, such as protons, neutrons, or atomic nuclei, may all be understood as the remains of some dead autumn lives deeply frozen by the temperature of our environment.

An artificial life, whether hard, soft, or wet [Agnieszka et al, 2022], is not a life if it is neither a spring life nor an autumn life, or if it is inherently immortal.

Plants and animals are living systems, but not all living systems are biological, and not all systematic changes are life changes. The possibility that organisms may arise from inanimate matter does not exclude the possibility that all known physical entities may have been created by lives existing before them.

Beings are never the ontological limitation of lives.

As ontological changes, the E, the M, and OC differ from each other only as components of the same system, even though there is no ontological difference between a system and its components.

Being = system relations (Ax. 2)

Ax. 2 means that, without OC, the M and the E alone may neither be ontological changes nor compose any system.

Ax. 2 means that paradox is also ontological, just the same as self-consistency.

It redefines Aristotle's "ousia" discussed in his *Metaphysics*, "which is not asserted of a subject but of which everything else is asserted."

It also reinterprets Parmenides' idea that "to think and to be is the same thing".

Even though M, E, and OC determine together all the possibilities of a living system, the OC alone explains the system's agency or intentional action.

OC is the only ontological explanation of morality, and even the only explanation of free will, with the O as its freedom and the C as the will.

Because of the C of OC, it is exclusively autumn lives' mission to create systems or systematic complexity.

Human beings are not only the M and the E but also living systems dominated by autumn lives, which

explains why creating systems has been our main business, and why we explain or define everything in systematic relations.

Ontologically, consciousness may only be defined or explained as the systematic distinction between the E and the M.

The epistemological definition or explanation

The E is always the same, and so are both lives. All the distinctions among all the living systems, including their subsystems, are only the differences of the M.

The M is the structures, the memories, or the complexity of a specific living system dominated by autumn lives.

Human brains are structurally different not only from non-human brains but also from each other. Even the same brain is not identical to itself across time. If not confused or conflated with the differences in their structural complexity, neuroscience may never prove either that consciousness is exclusive to human brains, brains in general, neurons, or organisms, or that consciousness may be explained without its general evolution and individual development.

Perception is the process in which the E is manipulated by the M [Zhang, 2023]. Knowledge is nothing more or less than the M.

Ax. 2 determines that no memory or knowledge is possible if without the E, the M, or lives gathered together as components of the same system. The directionality of autumn life determines fundamentally the nature of memory or knowledge.

The C of autumn lives also determines memories to be either hereditary or acquired. For example, all the physical or chemical elements in our bodies or brains are our oldest hereditary memories.

Every living system, including its subsystems, may have its own hereditary or acquired memories. Hereditary memory or knowledge determines a system's hereditary behaviors, and acquired memory or knowledge those acquired behaviors.

Different species may always arise based on different complexity of the M.

Evolution is nothing more or less than the changes of the M. Therefore, knowledge and evolution are one and the same thing. In other words, knowledge is nothing subjective or objective, but only systematic.

The M is always the truth of its system.

For a system dominated by autumn lives, the M is both a unique world and a unique self, as either the birth or the death of lives but never the lives themselves.

No world is ever the world, and no self may ever live. And therefore, no consciousness may ever be the same.

Epistemologically, consciousness may only be defined or explained as the E qualified systematically by the M.

The semantic definition or explanation

Only lives may communicate with each other, and subjects, egos, or selves do not.

The M is the only thing communicated when an autumn life acts as the sender, and the E the only thing communicated when a spring life does.

Both the E and the M are symmetric or conservative changes, and both lives are dissymmetric or non-conservative changes. An effect may become its cause if in symmetrical or conservative changes, but never in life changes.

A symmetric or conservative change may only be a language since it may not be a cause or an effect. And life changes may only be the semantic meaning since it may not be communicated. Therefore, a language and its meaning may never be one or the same. Their semantic relation may be formulated as:

$$OC = \textit{the meaning of E or M} \quad (\text{Ax. 3})$$

Lives are therefore the only cause or effect of all other changes in our brains, bodies, societies, and cosmos, even lives are not their purpose.

The E and the M are the only differences between languages. And the nature we experience is a duet of them both.

Understanding is a life change and knowing is the communication of E or M. Semantically, information or the meaning of communication may only be understood but never known.

Consciousness is the systematic distinction between the M and the E. The reason why there is consciousness

is that it may be the birth of autumn lives. In other words, consciousness is the knowing that may lead to understanding.

A Turing machine can know or behave intelligently and even consciously, but it may never understand if there is no life as the cause or effect of its activities. Artificial intelligence is meaningful only because there are human lives as its cause or effect.

Ax. 3 means that all languages are equal to each other.

It also means that there is causation but no first cause.

Semantically, consciousness is neither the cause nor the effect of mental activities, and it may only be defined or explained as the language with certain lives as its meanings.

The differences from other definitions or explanations

The system proposed here is ontologically, epistemologically, and semantically different from many other theories of consciousness [Van Gulick (2021), Del Pin et al (2021), Doerig et al (2021), Seth & Bayne (2022), Patrick et al (2023), Ding et al (2023)].

The fundamental difference is that my definition or explanation is based not on entities and properties but on ontological, epistemological, and semantic changes, which means that consciousness might be more fundamental than the brain or neurons, and more fundamental than particles, waves, or fields. And it questions the possibility that consciousness may ever be defined or explained by neuroscience or quantum physics.

Life alone is my explanation of agency or intentional action, but consciousness is not [Schlosser, 2019], nor the difference between subjectivity and objectivity.

And it negates any teleological explanation, such as predictive processing and neurorepresentationalism [Pennartz, 2022].

It is, for example, different from Descartes' dualistic explanation since it means that nothing is ontological except changes of the E, the M, and lives; different from the panpsychism explanation since it means that the distinction between the E and the M is systematic; different from functionalistic explanation since it means that consciousness is ontological, epistemological, and semantical; different from the Higher-Order theory [Rosenthal, 1986] or Recurrent Processing Theory [Lamme, 2020], since it means that consciousness is an inner event of every living system and all its subsystems; different from the Global Workspace [Baars, 1988]

since it means that information may not be broadcasted; different from the integrated information theory [Tononi, 2004, 2008] since it means that systematic complexity, such as different neural connections, explains only the differences but not the essence of consciousness; and also different from Daniel Dennett's multiple drafts model [1991] since it means that the E or the M does not compete for survival.

Suggestions and refutable predictions

Consciousness is not the same as physical or biological consciousness nor as human consciousness. Such defined or explained consciousness may be studied, not only based on neurons, brains, or nervous systems but also on muscle cells, even all living cells or organisms.

For example, the myocardial refractory period may be understood as the period of cardiac muscle's sleep, even though it lasts only for 250ms. The period between two refractory periods may be understood as those cells' waking state and the change of action potential as the communication. The communication based on the waking state may be understood as cardiac cells' consciousness.

So is the voluntary movement of our limbs and bodies, which is a unification of the communication of the E that goes through pyramidal tracts and the waking state controlled by the E from extrapyramidal tracts.

Ground and excited states of atoms or molecules may also be understood as the sleeping and waking states of organisms.

Waking states of the M may be quantified by the E, but communication of the E may only be qualified by the M.

Consciousness and behavior are the same. A behavior may be understood as an explicit consciousness, and a consciousness as an implicit behavior, even though the same E may never be both explicit and implicit.

Our attention is then the E as either consciousness in our brains or behavior of our sensory or motor organs.

Summary and perspective

Consciousness may never be defined or explained with entities and properties.

A system is proposed as the definition or the explanation in this paper, with matter, energy and lives as its components, and with all its components defined as changes.

Ontologically, consciousness is universal, since it is the systematic distinction between matter and energy,

Epistemologically, consciousness is always individual and particular, since it is qualified by the M,

Semantically, consciousness is the E that may lead to the death of spring lives or the birth of autumn lives, even lives are never its purpose Therefore, it may be understood without the difference between subjectivity and objectivity, especially without teleology as its basis.

Such defined or explained consciousness might be useful for us to find a more unified framework for neuroscience, the philosophy of mind, and the studies of artificial intelligence.

At least, it helps us to avoid making more useless efforts.

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