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Global Consciousness: A Functionalist Neurophilosophical Perspective

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Dedication:

This thesis is dedicated to my loving and supportive parents. They deserve a major shout-out of appreciation, for their support and encouragement throughout the years. They have helped me in my development as a person and in my pursuit of an education. Without them, I would not be the man I am today.

Thank you.

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Abstract

The purpose of this thesis is to explore a thought-provoking consequence of the functionalist theory of mind. Given the current organizational structure of Earth and field theories of consciousness in neuroscience, Earth is probably conscious. The argument is explored through an examination of the current organizational structure of Earth and field theories of consciousness in neuroscience, which leads to the conclusion that Earth is conscious. Various theories of mind have been proposed by neuroscientists and philosophers alike in an attempt to qualify what consciousness is and what provides the basis for consciousness to occur. Support, in the form of data and information, for this thesis was found through reviews of philosophic and neuroscientific literature. Using a functionalist argument and field theories of consciousness, I argue for the possibility of Earth’s consciousness due to its organization. Based on the likelihood of human consciousness being spatially distributed, I illustrate how Earth’s organization is sufficiently similar. However, there is controversy surrounding functionalist theories of mind. This is detailed with Ned Block’s (1978) objection to functionalism, the Chinese Nation thought experiment. I place this objection in conversation with Paul and Patricia Churchland’s (1981) work on inverted qualia, absent qualia, and the method to identify systems with and without qualia. A further objection to my conclusion is explored with Kammerer’s (2015) Sophisticated Anti-Nesting Principle is addressed. Finally, this thesis draws some inspiration from Eric Schwitzgebel’s (2014) paper “If Materialism is True, the United States is Probably Conscious,” but the conclusion is projected to a larger scale, resulting in implications for morality, politics, and theories of mind.

Introduction:

A global consciousness is not foreign to academia. In the mid to late 1900s several scholars (Peter Russell, Gottfried Mayer-Kress, Francis Heylighen, and Johan Bollen) attempted to generate a theory for how a global consciousness would come about, but it fell by the wayside due to technological insufficiencies (e.g. lack of the Internet).[1] However, with the technological advancements of the last 30 years (e.g., the Internet, satellites, machine learning, artificial intelligence), the idea of global consciousness is making a slight resurgence with projects such as the Global Brain Initiative[2] and Neuralink.[3]

A spatially distributed organism[4] is difficult to conceive of, as is a spatially distributed consciousness, because consciousness seems to be confined to individual entities, bound by their physical substrate. However, neuroscientific theories by Wolf Singer (2006)[5] and E.R. John (2001)[6] suggest that the traditional phenomenon of consciousness as experienced by humans arises from spatially distribution in the brain. In other words, these theories provide support for the idea that spatial distribution is does not preclude consciousness. So, as far as a conceptualizing spatially distributed organism, it’s all about perspective.

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[1] “The Global Brain Institute.” *Google Sites*, sites.google.com/site/gbialternative1/.
[2] The Global Brain Initiative is a project that the Global Brain Institute is working towards. The goal is to increase connectivity among people in an effort to instantiate and measure progress towards a global brain (Global Brain Institute).
[3] Neuralink is a company owned by Tesla that is working towards computerized brain implants, which would allow connection to the Internet and other brains (Neuralink, 2018).
[4] An organism that is not bound to a single entity and is made-up of parts spread throughout different locations.
[5] Singer, Wolf. “Consciousness and the Binding Problem.” *Annals of the New York Academy of Sciences*, John Wiley & Sons, Ltd (10.1111), 25 Jan. 2006, nyaspubs.onlinelibrary.wiley.com/doi/full/10.1111/j.1749-6632.2001.tb05712.x.
[6] John, E.R. “A Field Theory of Consciousness.” *Consciousness and Cognition*, vol. 10, no. 2, 2001, p. 184–213., doi:10.1006/ccog.2001.0508.

Regardless of its size, if an organism has a defined and encapsulated form with proper organization to meet the requirements for consciousness, I aver that its consciousness should be considered no different from a human’s. Thus, my argument for the possibility of Earth’s consciousness commences by exploring the functionalist theory of mind, demonstrating the spatial distribution of consciousness (the units that form Earth’s consciousness that are comparable to neural assemblies), illustrating the ways they communicate, and (although this may be slightly optimistic) elucidating how Earth’s organizational groups, communication networks, and spatial distribution all come together to allow for a global consciousness.

The following argument for Earth’s consciousness relies on two basic assumptions: one, that consciousness exists, and two, that the brain gives rise to consciousness. One of the goals of this thesis is to demonstrate that the reason the brain gives rise to consciousness is because of the functional organization of the neurons and networks within the brain. In the brain, neurons communicate with each other to bring a person general awareness and understanding, provide networks for voluntary and automatic movements, and process stimuli for the five senses (sound waves, visual input, auditory cues, olfactory and gustatory particles, and provide a tactile map for proprioceptive reports). Neurons compose the networks that allow for feedback (the use of brain activity for real-time neural and synaptic adjustments to a plan) and feedforward (a plan that is executed without augmentation) communication within the body. In other words, neurons interact with each other for a purpose: to create a unified goal-oriented action,

which is only possible because they can communicate through a staggering number of electrical impulses (Purves, 2019).[7] The composition of these individual cells into larger cortices, networks, and pathways provides the organization for the understanding of our environment.

The communication occurs when a neuron or neurons perceive[8] an environmental stimulus or another (excitatory or inhibitory) signal from other neurons. These signals are only possible through the specialized organization that has been developed over millions of years of evolution. The organization seen in human brains can be generalized to almost every other living multicellular creature that has been observed, with minor variation. It is the organization and function of these networks and their communicative capabilities that give rise to consciousness. The functional unity of these cells is critical for a human’s perception, awareness, language, learning, intelligence, emotion, and other mental and physical action. The formation of neurons and the way neurons communicate indicates that there is an order of operations for consciousness. This will ultimately lead one to the conclusion that proper organization of the system is a sufficient condition for the birth of consciousness.

We, as humans,[9] mainly communicate with one another through body language or action and verbal or written cues. Proper forms of communication (e.g., expression of intent, thought, experience) allow for the recognition of another’s consciousness. When people interact, the possibility for collective

[7] Purves, Dale. *Neuroscience*. Oxford University Press, 2019.
[8] Perception, in this sense, means the interpretation of stimuli, convey information within their networks, or receive a signal from other cells.
[9] I make a slight assumption that you are a human reading this, but I think that is a safe bet.

intentionality, shared agency, and unity of consciousness arise. However, unity of consciousness requires unity of consciousness within the participants of the whole, complete communication of experience and thoughts (a difficult task with current technology), and spatial unity (Brook and Raymont, 2017).[10] As difficult as the communicative aspect is now, it was impossible before the rise of the Internet. When examining the possibility of global consciousness it is important to note that the situation in the 1900s was very different from the modern scenario. This idea will be expanded in Chapter Two.

Neurons and humans both have distinct forms of communication that are well known in the scientific community, but they will be explored in further detail in this thesis to elucidate the ties to my argument. That communication forms the basis of everyday interactions. I assert that these two units (a neuron and a person) have similar interactions within their respectively categorized unit. Because of the similarity of interaction and communication between similar units (human with human and neuron with neuron), properly organizing humans into networks with efficient, precise, accurate, and cohesive communicative abilities could elicit the birth of consciousness for Earth. When compared to the human brain with its 86 billion neurons, Earth is on the precipice of blossoming, if it has not already, into a fully conscious entity of a magnitude never before observed.

There are striking similarities in the way that a neural network and a network of humans is organized, which will be explored in the coming sections.

[10] Brook, Andrew, and Raymont, Paul. “The Unity of Consciousness.” *Stanford Encyclopedia of Philosophy*, Stanford University, 19 May 2017, plato.stanford.edu/entries/consciousness-unity/#JoinCons.

However, I will argue that relatively minor changes would create a network of humans that mimics or functions comparably to a neuronal network. Communication within the human body, a body moving through space, occurs through synaptic transmission and hormone secretion. The processes of transduction, reception, and response characterize this communication. Similarly, the Earth is a body moving through space. I maintain that humans can be organized in networks with similar functional outputs and structure as neural networks. As such, the Earth can, and should, be viewed as a preconscious or (partially) conscious entity.

A theory of for a global consciousness would improve the communicative aspects of humanity. Additionally, it would provide a more complete theory of consciousness to clarify research goals and promote targeted research into neural assembly patterns and synchronization. After continued thought on the project, this theory could also illustrate the moral implications of being a conscious entity, illuminate the metaphysical and causal positioning of consciousness, and assist in the achievement of seemingly insurmountable global goals, such as: the prevention of Global Warming. The relevance of that example lies with the capabilities of a global consciousness. If the world were organized in this way, ‘excitatory neurons’ in the world could scream Global Warming exists and ‘inhibitory neurons’ could scream that it doesn’t. The synchronization of the neurons in the most proactive and efficient manner would reach the system in charge of executive control to decide how to handle the issue. The executive

planning would either decide it is not worthy of attention, non-existent, or impossible to solve, or it would decide on the best method to solve it.

The backbone of this thesis consists of determining the functional organization necessary for consciousness to arise, the current organization of the Earth and how to adjust it for consciousness to arise, and addressing objections to global consciousness. Chapter One will consist of defining and explaining functionalism. After the explanation of functionalism, I will address Ned Block’s (1978)[11] Chinese Nation argument from “Troubles with Functionalism” with insight from Paul and Patricia Churchland’s (1981)[12] paper “Functionalism, Qualia, and Intentionality.” I aim to demonstrate the significance of functionalism in light of Block’s (1978) objection. However, if I fail to convince you that a homunculi-robot is conscious, I ask you to suspend your disbelief and follow this argument out to its conclusion. After an analysis of functionalism and one of the more pressing objections to functionalism, Chapter Two will discuss the organization of human consciousness and neural networks. Subsequently, comparisons of said neural organization to the current organization of Earth will be evaluated, leading to the establishment of Earth’s consciousness. Chapter Three will engage relevant philosophical literature and principles in an attempt to draw comparisons to a contemporary functional-materialist theory of mind. Additionally, I will examine the recent “sophisticated anti-nesting principle”

[11] Block, Ned. “Troubles with Functionalism.” *Minnesota Studies in the Philosophy of Science*, no. 9, 1978, p. 261–325., www.nyu.edu/gsas/dept/philo/faculty/block/papers/1978.troubles.with.f.pdf.
[12] Churchland, Paul M., and Churchland, Patricia Smith. “Functionalism, Qualia, and Intentionality.” *Philosophical Topics: Functionalism and the Philosophy of Mind*, vol. 12, no. 1, 1981, p. 121–145., www.jstor.org/stable/pdf/43153848.pdf.

(Kammerer, 2015),[13] which poses a prevalent threat to this theory of consciousness. Nevertheless, I believe that this thesis withstands an objection from the sophisticated anti-nesting principle.

[13] Kammerer, François. “How a Materialist Can Deny That the United States Is Probably Conscious – Response to Schwitzgebel.” *SpringerLink*, Springer Netherlands, 28 Sept. 2015, link.springer.com/article/10.1007/s11406-015-9653-z.

Chapter 1: A Functionalist Theory of Mind

Despite some of the greatest minds conducting neuroscientific experiments and philosophy, there is no definite answer to the mystery of consciousness. One of the challenges of this thesis originates from the debate surrounding a definition of consciousness. However, for purposes of practicality, philosophers have to some extent, without actually providing a definition, reached a general consensus that if certain conditions are met, a creature is conscious – which functions as a definition for our purposes. The working definition of consciousness will relate to the conditions set forth. I will define consciousness as the possession of awareness, both of self and environment, the capacity for intelligence, and a certain "what it's like to be"[14] that organism (e.g., the possession of qualia[15] or phenomenal experience).

I shall assume that through introspection one can know and understand that one is conscious.[16] This ideology is best understood from the well-known and concise phrasing of Descartes in his *Meditations* (1641), "I think therefore I am." Consciousness in another person can be seen through the outputs observed during interactions with others. There is not, however, a current model to empirically verify the consciousness of another entity. Using fMRIs, EEGs, or PET scans, neuroscientists can observe the brain activity of another organism,

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[14] Nagel, Thomas. "What Is It Like to Be a Bat?" *The Philosophical Review*, vol. 83, no. 4, 1974, p. 435-450., doi:10.2307/2183914.

[15] According to the Churchlands, qualia are "those intrinsic or monadic properties of our sensations discriminated in introspection" (p. 121). Qualia come about through a subjective instant of awareness achieved by filtering out the noise of the environment and focusing on significant stimuli (John, 2001).

[16] This assumption is somewhat contentious (Schwitzgebel, 2013)

Schwitzgebel, Eric. *Perplexities of Consciousness*. The MIT Press, 2013.

but still have a limited understanding of whether that organism is thinking, experiencing qualia, or making active decisions (Purves, 2019). The consciousness of another is an assumption made during interactions or upon observation of another. Multiple theories of consciousness such as the Type-Identity Theory, Behaviorism, Panpsychism, and Eliminativism, have all been proposed that rely on various ideologies (Van Gulick, 2014).[17] However, there are many proposed theories not listed. The multitude of theories of mind demonstrates the difficulty of outlining an argument that is logical and does not lead to an absurdity.

Theories can be broadly organized into either a physicalist approach, one that emphasizes the matter composing consciousness, or a dualist approach, one that asserts that there is something other than what physically exists. In both categories, theories suffer from various flaws of liberalism[18] or chauvinism,[19] resulting in theories that, when taken to the extreme in thought experiments of which philosophers are so fond, conclude in strange, unintuitive, or contradictory outcomes. Contradictory conclusions are easily understood as problematic, but strange or unintuitive conclusions are not as easily dismissed. However, theories ought to be intelligible, logical, have unity and be easily generalized.

The compressing of consciousness severely limits the ability of some of these theories to generalize, meaning that the theory is too confined and cannot be applied for identification of consciousness in organisms that one would be

[17] Van Gulick, Robert. "Consciousness." *Stanford Encyclopedia of Philosophy*, Stanford University, 14 Jan. 2014, plato.stanford.edu/entries/consciousness/.
[18] Attribution of consciousness to an entity that should not possess it.
[19] Restricting consciousness from entities that it should be attributed to.

inclined to attribute it to. I plan to illustrate that relying on theories based on functional organization is the proper way to respectfully identify consciousness and attribute it correctly.

Securing a way to properly identify consciousness can provide a framework for correctly and efficiently analyzing the mechanism(s) behind consciousness. These mechanisms are the factors that give rise to consciousness. They may be neural correlates of consciousness (NCCs)[20], organization, a soul, or consciousness may be fundamental in every living thing. As the true mechanism behind consciousness is currently unknown, or at the very least poorly understood in terms of how it gives rise to consciousness, it is important to examine consciousness in a way that is based upon functional organization. Functional organization states that the function produced by an organism is based on the organization of an organism. This suggests that similar organizations of things with similar properties will create similar functions or outputs. After outlining the argument for functionalism, a prominent objection to the argument of functionalism by Ned Block (1978) will be addressed.

Currently, consciousness is explained without knowing the mechanism behind it, resulting in an incomplete account. Because of that deficiency, descriptions of consciousness are put in terms of functional representation, behavior and/or structure. Thus, functional organization and output of an entity is what matters for a person’s conception of consciousness. Humans are the

[20] Neural correlates of consciousness are the suspected areas in the brain responsible for consciousness (Purves, 2019).

example of a conscious organisms that immediately comes to mind, but there may be organisms with different functionally organization that are still consciousness. That does not mean they are not conscious. While this may seem like a contentious statement due to lack of non-fictional examples, the metaphysical possibility remains. There can be multiple ways to organize an entity that elicits consciousness. That being said, I the majority of this thesis will focus on the most well-known and understood organization of consciousness, that of a human being and the brain.

Conscious Thought Experiments:

A person recognizes their own consciousness anytime they think, perform a ‘voluntary’ movement, or experience qualia. They also assume consciousness in other humans due to verbal reports and similar observed behaviors. The other person reports seeing red when stopped at a traffic light, feels pain upon being pinched, can communicate similarly, and feels the heat of a 100-degree sunny day. This may lead one to say, “Consciousness is purely a human experience.” However, it would be close-minded to not consider the possibility of an elephant or dolphin being at least partially conscious.[21] After all, both species pass the self-awareness test upon viewing their own reflection in a mirror, are highly intelligent, mourn the loss of family and friends (indicating the capacity for relationships), communicate with body language and sounds, use tools, can

[21] The idea of partial consciousness will be explained in further detail in Chapter Two of this thesis.

create art, and display other complex behavior (Gill, 2011; Harley, 2013; Morrison and Reiss, 2018; Plotnik, et al., 2011; *National Geographic* 2014).[22] For the purposes of this thesis, these organisms will be considered conscious due to the proper organization (they have brains organized similarly to a human brain) and similar behavioral output. While the assumption that these behaviors indicate consciousness does not solve the problem presented, it does illustrate that the proper functional organization in animals other than humans can result in similar behavior observed in conscious organisms.

Upon reflecting on the examples of the dolphin and elephant, the previous statement surrounding what types of organisms possess consciousness should change. The declaration on the previous page may now be modified, “Well it is possible that consciousness is not a phenomenon confined to humans. Maybe consciousness is based on the neural activity occurring in the brain or carbon molecules that compose all life (as we know it).” Working from the assumption that we (humans) all have brains with neurons functioning in a typical manner, the organization of our neurons and subsequent neural activity is sufficient for the creation of consciousness, but it does not prove that neural activity is

[22] Gill, Victoria. “Earth News - Elephants Know How to Co-Operate.” *BBC*, BBC, 7 Mar. 2011, news.bbc.co.uk/earth/hi/earth_news/newsid_9417000/9417308.stm.
Harley, Heidi E. “Consciousness in Dolphins? A Review of Recent Evidence.” *Journal of Comparative Physiology. A, Neuroethology, Sensory, Neural, and Behavioral Physiology*, U.S. National Library of Medicine, June 2013, www.ncbi.nlm.nih.gov/pubmed/23649907.
Morrison, Rachel, and Reiss, Diana. “Precocious Development of Self-Awareness in Dolphins.” *Plos One*, vol. 13, no. 1, 2018, doi:10.1371/journal.pone.0189813.
Plotnik, J. M., et al. “Elephants Know When They Need a Helping Trunk in a Cooperative Task.” *Proceedings of the National Academy of Sciences*, vol. 108, no. 12, 2011, p. 5116–5121., doi:10.1073/pnas.1101765108.
“What Elephant Calls Mean: A User's Guide.” *National Geographic*, National Geographic Society, 2 May 2014, news.nationalgeographic.com/news/2014/05/what-elephant-calls-mean/.

necessary. This statement moves one further away from humanistic chauvinism but is not quite as liberal of a definition as is required for an all-encompassing approach. While neurotypical humans appear to be conscious, it is unknown if consciousness arises from the neural organization. This may statement may seem to be covered by the assumption previously made that the brain gives rise to consciousness, but it is not. Consciousness could come from various aspects of the brain other than the neural organization.

In order to illustrate the possibility for various organizations or subtrates ot elicit consciousness, turn your imagination up a couple notches if you will to allow for a thought experiment involving an alien race called “Vollandrians.” After a period of observation, the species decides to visit Earth. Upon their arrival, humans notice Vollandrians are isomorphic in function and appearance to humans. Additionally, if a Vollandrian were to enter society, it would be impossible for a person to discern between a human and a Vollandrian without serious chemical testing because these aliens behave in a human-like way and can speak perfectly in whatever human dialect they have learned during their observation of our species. There are two major differences between humans and Vollandrians. Instead of being carbon-based lifeforms, Vollandrians are composed of silicon, and where we have neurons, this species has volleons. The volleons are organized in the same way that the neurons in a human brain are organized, have identical interactions, and are composed of silicon. The inability to know whether one was speaking to a Vollandrian or a human demonstrates

that a Vollandrian would pass the Turing Test[23] (Turing, 1950),[24] which would at least validate the intelligence of a Vollandrian. This does not signify that a Vollandrian is conscious, but proves the capacity for intelligence, one of the markers for consciousness. The possibility of other intelligent life with identical functional outputs and organization to humans makes the restriction of consciousness to purely neuronal interactions absurd in light of functionalism.

Multiple Realizability:

After that thought experiment, a reader may be wondering, “So, what does that leave us with?” These examples provide some fodder for rejecting theories based on humanistic chauvinism, neural correlates, and carbon, leaving functional organization as the best approach to identify conscious entities. It allows organisms of different species and constitutions the possibility to meet the conditions for consciousness through the idea of multiple realizability (Levin, 2018).[25] The principle of multiple realizability is critical for functionalism. It states that a psychological kind can be realized by different physical kinds. In other words, different physical structures or organizations can allow for the same mental states. Mental states are defined by the causes and effects of the states (e.g., consciousness, as a mental state, would be defined by what allows for the

[23] The Turing Test is a test administered by a human to assess the intelligence of another entity. There are two participants. One of the participants is a human, and the other participant is the entity in question. If the moderator is unable to distinguish between the entity in question and the human, the entity has passed the test (Turing, 1950).
[24] Turing, Alan M. “Computing Machinery And Intelligence.” *Mind*, vol. 49, 1950, p. 433–460., doi:10.1093/mind/lix.236.433.
[25] Levin, Janet. “Functionalism.” *Stanford Encyclopedia of Philosophy*, Stanford University, 20 July 2018, plato.stanford.edu/entries/functionalism/.

creation of consciousness and what effects come from consciousness). The characterization of mental kinds relies on the functional kind (Bickle, 2013).[26]

Multiple realizability is should be a necessary component in any theory of mind because the Vollandrian example illustrates that various substrates could feasibly give rise to, or exhibit, consciousness. It allows one to see that there is nothing special about humans, neurons, or carbon, but there is a biologically and psychologically extraordinary factor in the organization of physical materials. In other words, consciousness comes from organization, not from material composition.

To detail the concept of multiple realizability further, I will use another example taken from reality instead of fiction. The cochlear implant is a small device used to provide auditory representations to a person that is deaf or otherwise hearing impaired. Consisting of a microphone, speech processor, transmitter and receiver, and an electrode array (See Figure 1 on the next page), a cochlear implant is able to register and arrange sounds, convert the sounds into electric impulses, and send them to the auditory nerve (NIDCD, 2018).[27] A deaf person can 'hear' with a cochlear implant, but the way this is accomplished is different from the natural composition of the cochlea. These implants bypass the damaged sections of the ear to directly stimulate the auditory nerve. The auditory

[26] Bickle, John. "Multiple Realizability." *Stanford Encyclopedia of Philosophy*, Stanford University, 15 Jan. 2013, plato.stanford.edu/entries/multiple-realizability/.
[27] "Cochlear Implants." *National Institute of Deafness and Other Communication Disorders*, U.S. Department of Health and Human Services, 15 June 2018, www.nidcd.nih.gov/health/cochlear-implants.

nerve then transmits the signal to the brain, where it is registered as sound (Figure 1).

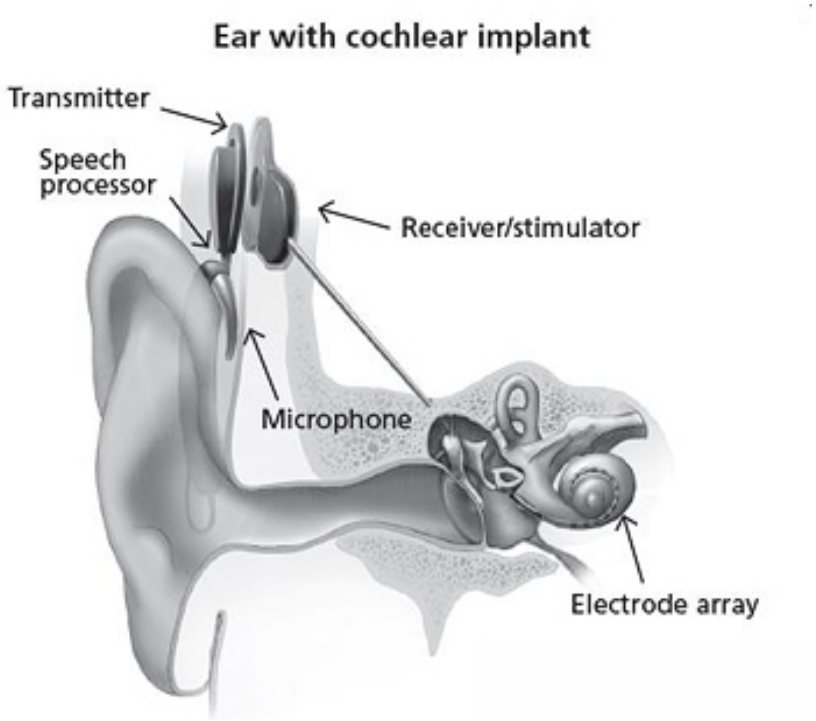

Figure 1. Layout of a cochlear implant in the human ear (NIDCD, 2018)

As one can see, the functional organization of an ear with a cochlear implant is very different than that of a human cochlea. The process by which sound travels to the brain for recognition is also distinct. However, the result is functionally the same, illustrating that different organizations can lead to the same output or result.

Introduction to Functionalism:

In summation, multiple realizability allows for consciousness to be realized by tokens of distinct physical kinds. So, a property of the mental kinds, such as consciousness, can be realized by multiple tokens (Block, 1978). Another illustration of this can be abstracted from Hilary Putnam’s (1967) argument

against identity theories with a slight change of verbiage from “pain” to “consciousness.” He details that, if consciousness is realized in tokens of different physical kinds (neurons, volleons, etc.), consciousness cannot be identical to the physical kind. Therefore, consciousness is not identical to a specific physical kind or substrate (Bickle, 2013).

The organization of a human provides the basis for the mental states one constantly experiences. The neurons, in the nervous system, provide the foundation for our phenomenal experience. However, functionally speaking, the focus of functionalism is the functional output achieved by the cognitive system, not the physical composition of the system. I do not maintain that this ideology will remain stalwart as neuroscience evolves into the hydra it most surely will, but, with any luck, it will be sufficient to assist in the understanding of conscious experience. The idea of psycho-functionalism allows different processes to be conscious and different physical things to be conscious so long as they play the sufficient psychological role in the relevant cognitive theory (Levin, 2018). That role will be defined according to the probable scientific explanation of the organization of consciousness (Singer, 2006; John, 2001).

The theory of behaviorism is a significant precursor to functionalism. Behaviorism states that human behavior is explained by behavioral dispositions of an organism in response to environmental stimuli. Behaviorists attempt to explain behavior without reference to mental states or processes. The dispositions of an individual are only observable through introspection (Levin, 2018). On the other hand, functionalism references mental states and the mental

processes to explain behavior. A mental state is something that corresponds to thinking or feeling (e.g., trust, belief, pain, anger). Mental processes are the abilities of a mind (e.g., perceiving, hearing, imagining). A person behaving in a certain way could be explained by the fact that they are in a certain mental state or experiencing a certain mental process. For example, a person yelping and withdrawing from something might be explicated by the experience of pain. Additionally, someone running away could be explained by the perception of a threat.

The Chinese Nation Objection:

Despite the logical succinctness and validity of arguments for functionalism, it is not immune to objection. In “Troubles with Functionalism,” Ned Block (1978) comes up with a noteworthy thought experiment to demonstrate the shortcomings of functionalism. His goal was to create a system that counted as a mental or psychological agent according to the tenants of psycho-functionalism but where that system seems not to be an agent that one would ordinarily attribute consciousness too. That is, he offers this thought experiment as a *reductio ad absurdum* argument against psycho-functionalism. The example starts by proposing the existence of a robot with homunculi inside the cranial cavity instead of a brain. Each “little man” is assigned a specific task, which they execute upon receiving an input. Through the actions of these men, this robot is able to carry out the same functional activities as an individual human. The system simulates you because the homunculi within it have been

trained to realize your functional organization. Through the realization of the machine table,[28] they obtain functional equivalency to you. Then, Block tweaks the scenario. The homunculus in the robot is now formed by the entire nation of China, where each cognitive role is played by a citizen of China. The nation has been converted to functionalism and people have been provided the necessary equipment for all inhabitants to communicate without interference. To make this more equivalent to human brain functionality, let's say that the communication of any amount of information between people is nearly instantaneous.

Block (1978) posits that the functional organization of the robot mimics the functional organization that an individual exhibits but vehemently denies that it should result in mentality for the robot (i.e., it does not have qualitative states). The functional organization of the robot would necessitate that a functionalist attribute consciousness and any other mental property that a functionally equivalent person has to the system, which Block (1978) avers is absurd. He references Thomas Nagel (1974) when he details his reluctance to accept the robot's consciousness, "there is a prima facie doubt whether there is anything *which it is like to be* the homunculi-headed system" (Block, 1978, p. 453, emphasis added). The thought experiment is primed to illustrate the inability of

[28] A machine table theory "states that each system having mental states is described by at least one Turing-machine table of a specifiable sort and that each type of mental state of the system is identical to one of the machine-table states. Consider, for example, the Turing machine describe in the accompanying table (cf. Nelson, 1975):"

	S_1	S_2
Nickel input	Emit no output Go to S_2	Emit a Coke Go to S_1
Dime input	Emit a Coke Stay in S_1	Emit a Coke & a nickel Go to S_1

functionalism to operate as a theory of consciousness due to his Absent Qualia Argument. He insists that the doctrine of functionalism has no independent reason to be accepted. As it leads to the ‘absurd’ conclusion of the homunculi-robot having consciousness, functionalism itself should be rejected. However, I do not find that conclusion absurd. The possibility of consciousness being a fundamental property of cells (Chalmers, 1996)[29] could leave humans in a position similar to the robot. The absent information on how and why a cell moves or fires the way it does leaves room for speculation and the continuation of thought surrounding functionalist arguments, despite any strange outcomes that may result.

Without the experience of qualia, or the intrinsic properties of a sensation determined through introspection, a thing cannot be considered conscious. Block (1978) maintains that as one cannot know whether the homunculi robot experiences qualia, it cannot be considered conscious. The formulation of this argument leads Block to conclude “that there is no independent reason to believe in the mentality of the homunculi-head, and I know of no way of explaining away the absurdity of the conclusion that it has mentality” (Block, 1978, p. 456). There is no threat of that extending to knowledge about other humans being conscious or experiencing qualia because you and I both have brains (that would be the kind of “independent reason” Block asks for in the quotation referenced), which leads me to believe that we both have qualitative experiences. The homunculi-

[29] Chalmers, David J. “The Conscious Mind: In Search of a Fundamental Theory.” *The Journal of Mind and Behavior*, vol. 17, no. 4, 1996, p. 391–398., www.jstor.org/stable/43853712?seq=1#metadata_info_tab_contents.

headed robot does not have a brain, thus there is no reason to believe that it experiences qualia.

The crux of Block’s (1978) issue is the idea of a reason, independent of the situation, to accept the phenomenal characteristics of the homunculi robot. He believes that we have independent reason to believe the consciousness of another person, but do not have independent reason to accept the consciousness of the robot. For another person, they seem isomorphic to us in regard to structure and behavioral output. We have reason to believe they also have a brain, despite not seeing it, due to the reactions observed during an interaction between us and them. The subconscious process works like this, “I’m conscious, and in this situation (A), X, Y, and Z, are my actions. They look like me and, in this situation (A), X, Y, and Z, are their actions. I have complex thoughts, experience qualia, am aware, which all lead me to know I am conscious. Because of the similarity in appearance and action, I believe they have complex thoughts, experience qualia, are aware, and are ultimately conscious.”[30]

As there is no identification with the robot for a human, we have no reason, separate from the thought experiment, to believe that the robot is conscious. However, Block (1978) does provide the reader with defined information about the functional organization of the robot, which is not available for interactions with another human. The independent reason when interacting with another person is that they have a brain, which manifests in manners

[30] See Bertrand Russell “The Argument from Analogy for Other Minds” for further information on arguments from analogy.

previously discussed and the appearance of consciousness. This is not to say that similar behavior points to the possession of a mind. However, possession of a brain is a sufficiently reasonable explanation of the attribution of consciousness to that person. That being said, there are two issues that one must deal with: 1) Does the other person have a brain? and 2) Is the other person conscious?

It is typically assumed that yes, the other person has a brain, and yes, they are conscious. Either assumption could be wrong and there might be no phenomenal characteristics for that human. Attributing consciousness or mentality is provisional without access to the other person’s brain. If information arises that might negate the provisional assumption, Block would maintain that we have evidence to believe that person does not possess mentality. A distillation of the situation is provided by Brian Keeley:

> Compare: I happen to think, say, that Ted Cruz would make a great US President and I support his candidacy. Of course, one must be a native-born US Citizen to be eligible for that office. I’ve never seen his birth certificate. So, I continue to believe he would be a great POTUS, but if somebody provided me with evidence that he was, in fact, born in Scotland, then I’d of course revise that opinion. But part of my reason for thinking he’d be a great President is that I think he’s U.S. born. But that reason is defeasible. In the same way, my belief that you have a brain is defeasible.

If Block (1978) were in a situation with another person and discovered the other person did not have a brain, he would state that they were not conscious. Knowing the outputs of the homunculi-robot system and the internal organization might not provide an independent reason for acceptance of a functionalist theory of mind, but it does provide a dependent one. With an imaginative shift in perspective detailed in the next section, this may be enough

to allow functionalism to escape relatively unscathed. If not, the Churchlands (1981) will provide more ammunition.

What it’s like to be a Robot:

Block’s (1978) reference to Nagel (1974) is a compelling point but makes a poor analogy. Nagel (1974) specifically chooses a bat, something that, while being a mammal and closely related to humans, is sufficiently dissimilar to a human. Part of the dissimilarity arises from the “alien” sensory system of echolocation, the ability to fly, and experience of a range of different experiences than those a human will experience. All of which lead to the inability for one to clearly demarcate a bat as conscious or not conscious. Choosing a dog would be too similar and result in an overwhelming acceptance of its “what it’s likeness” (Nagel, 1974). On the other hand, a spider would have the opposite effect, probably resulting in immediate denial of consciousness. While it is a reasonable assumption to view a bat as related because of the mammalian link, the extreme sensory difference denotes a markedly different perception of the world, leading to a mental life distinct from our own.

Nagel’s (1974) argument goes something like this: conscious experience is a widespread phenomenon and exists “if and only if there is something that it is like to *be* that organism” (Nagel, 1974, p. 436, his emphasis). Nagel does not provide a defense for this claim, and it is a definitional part of his argument. He proceeds by saying no amount of physical information can tell one what it is like to be a bat because there is “no conception of what an explanation of the physical

nature of a mental phenomenon would be” (Nagel, 1974, p. 436). The mental phenomenon cannot be reduced to something physical because doing so leaves out the problem of consciousness by avoiding the issue of subjective experience. Nagel (1974) details that to reduce consciousness “the phenomenological features must themselves be given a physical account. But when we examine their subjective character it seems that such a result is impossible” (Nagel, 1974, p. 437). Switching this back to the example given by Block, one cannot imagine what it is like to be the homunculi-robot because our own experience provides limited and basic material for imagination to allow the extension of our existence to the robot. I maintain that if someone projected their consciousness on an organism that is functionally equivalent, it would provide an example of what it’s like to be the being in question. The issue that arises is that “what its likeness” of the robot. Block states that it cannot have qualia; I aim to prove that this is simply a failure of imagination.

Failure of Imagination:

Imagination-based denial stems from a body of immature empirical fact about consciousness, which causes an ignorance gap regarding qualitative experience for the robot. Arguing from empiricism is difficult due to the knowledge gap surrounding the consciousness conversation, which creates a poor context for analysis. Until the ignorance gap is bridged by scientific knowledge, I find it difficult to resort to brain-identity theory for consciousness. If it walks like it’s conscious, talks like it’s conscious, acts like it’s conscious, is functionally organized like something that is conscious, and seems like it’s conscious, it’s

(probably) conscious. What’s really being said by invoking that age-old adage is that, for practical purposes and in everyday life, there is not a doubt about the consciousness of an entity with those characteristics.

Assume for the sake of this thesis that it is not a stretch to say that once the organizational prerequisites for consciousness are met, consciousness arises. The organization is integral because the system needs to be able to communicate and process information in the appropriate manner. This idea of consciousness allows for it to be the same within any being, regardless of the substrate. Assuming this view, consciousness carries as much weight (if not less) as Nagel’s (1974) first assumption, which Block (1978) seems to have accepted. While this may beg the question, it simply asks for a shift in perspective by the reader in an attempt to elicit a more imaginative approach to Block’s (1978) thought experiment.

Following the conception of consciousness established above, the defining feature of consciousness becomes the organizational set-up. Because each being is physically and spatially different, there will be differences and subjectivity in experiences based on physical interactions and physical composition. If consciousness is the same in all beings, then it doesn’t matter what it is like for the robot to be that robot. In other words, my consciousness is the same as the robot’s consciousness, which simplifies the process of knowing what qualitative capabilities the homunculi-robot could experience.

Remedying Functionalism:

One main rejoinder to Block (1978) comes from Patricia and Paul Churchland (1981) in their paper, “Functionalism, Qualia, and Intentionality.” While they may not be functionalists, they do defend it against Block’s attacks because they believe his account is uncharitable. They identify three different problems relevant to this thesis that functionalism must address: 1) absent qualia, 2) inverted qualia, and 3) differentiation between systems with and without qualia. In terms of Block (1978), they are committed to the idea that sensations have intrinsic properties that allow for the discernment between sensations. However, they assert that qualia are not essential to a mental state. I agree with the Churchlands’ approach to the Chinese Nation thought experiment. By critically analyzing these three problems, the Churchlands demonstrate that Block misconstrues the nature of the debate surrounding functionalism, and in doing so, they allow for functionalism to be used as a theory of consciousness.

Absent Qualia

This section specifically addresses the homunculi-headed robot problem raised by Block, which creates a functionally isomorphic entity with no qualia. If the system has no qualia, then it must have no feeling, resulting in an absurdity derived from functionalism. A mental state functionally equivalent to pain, not the qualia of pain, has intrinsic properties that introspection can differentiate from other states, resulting in the belief that one is in pain. This demonstrates the causal role that introspection has with sensation, which is integral to the composition of qualia within a conscious entity. According to functionalism the

method of instantiation for that relationship is irrelevant. There is not an issue of absent qualia in the robot, rather, we lack the means to perceive the modal qualities of the qualia outside of the inner functional roles we use to discriminate between them for ourselves. This makes qualia a physical feature of mental states, allowing them to be present in a being functionally equivalent to a human. Block (1978) asserts that the absence of qualia in the homunculi-robot is a key factor in its absence of consciousness, but this seems to be a faulty method of viewing the situation as the qualia aren’t truly absent, just inaccessible.

Inverted Qualia

Imagine two people, person A and person B, who are functionally identical. However, their qualia for pain and pleasure are opposite.[31] When A feels pain, B feels pleasure and vice versa. When B has the sensation of pain, it is actually the sensation of pleasure. Functionalism does not succumb to the situation described, as the internal differences experienced are not intrinsic to every instance of feeling pain. The differences are either scientifically determined (e.g., color as a wavelength or sound as frequency and amplitude) or subjectively determined. The physiological and chemical variety within our own, and other, species makes it highly unlikely that the sensation or qualia of pain is uniform. There is not a common nature for feeling pain. If there were, qualia would be qualified as the manifestation of natural kinds, such that their intrinsic nature would be common to every instance of pain. However, because one’s experience

[31] While typically described with colors, I chose the pain and pleasure response due to the prevalence of pain as the mental state chosen by functionalists.

of pain is non-relational to others, the central aspect of feeling pain is forced to be the subjective experience. It follows, then, that the functional role something plays is far more important than the qualia experienced, which is exemplified in this excerpt from the Churchlands’ paper:

> Consider the wide variety of qualia willfully lumped together in common practice under the heading of pain. Compare the qualitative character of a severe electric shock with that of a sharp blow to the kneecap; compare the character of hands dully aching from making too many snowballs with the piercing sensation of a jet engine heard at very close range; compare the character of a frontal headache with the sensation of a scalding pot grasped firmly. It is evident that what unites sensations of such diverse characters is the similarity in their functional roles. The sudden onset of any of them prompts an involuntary withdrawal of some sort. Our reaction to all of them is immediate dislike, and the violence of the dislike increases with the intensity and duration of the sensation. All of them are indicators of physical trauma of some kind, actual or potential. All of them tend to produce shock, impatience, distraction, and vocal reactions of familiar kinds. Plainly, these collected causal features are what unite the class of painful sensations, not some uniform quale, invariant across cases. (P. & P. Churchland, 1981, p. 125-126)

If there truly was an intrinsic property to pain, these experiences would feel the same, as they all fall under the general heading of “pain”. However, pain is characterized by the functional profile. Furthermore, similar qualia may be experienced through different emotions, but they are differentiated from one another by the situation. Only using qualia leaves one with an incomplete picture with regard to the functional role, which Block (1978) does not seem to take into account.

Differentiating Between Systems with and without Qualia

It has been asserted that functionalism incorrectly ascribes qualia and mentality to systems that do not have that capability, one of the more notable being the ascription of pain to Block’s robot. However, the human brain is able to

knowingly and empirically differentiate between individual sensations due to the intrinsic characteristics previously described. The brain has finite storage and power, but there are a potentially infinite number of beliefs and attitudes, making it impossible for the brain to categorize and process them using the same method used for sensations. Additionally, the abstract, compounding, and intertwined nature of beliefs links multiple sets together. So, while they still have intrinsic functional qualities, the structure of beliefs is what is analyzed for identification. This is, in part, responsible for the differences in beliefs and awareness.

While inability to discern between two sensations may seem problematic, it does not matter if one realizes the difference. The functional difference is still present, even if one is unaware of it. Plus, pursuant to the discussion of absent qualia and inverted qualia earlier, there is still a causal and/or functional difference in the output of the entity.

Summary

In light of the three points analyzed from the Churchlands’ (1981) paper, it seems as though qualia are less of an issue for the homunculi-robot than Block (1978) thought. His major qualm was that things such as the homunculi-robot were assigned mental states when they should not be. I assert that, due to its functional organization and output, the homunculi headed robot should be ascribed mental states and the experience of qualia, culminating in consciousness. Just because “we have not possessed the concepts necessary to make more penetrating judgements, and our mechanisms of sensory discrimination are of insufficient resolution to reveal on their own the intricacies

uncovered by other means” (P. & P. Churchland, 1981, p. 129), does not mean that mental states should be withheld from organisms with functionally equivalency. This conclusion causes the thought experiment to lose its bite against functionalism, allowing for the functionalist theory to provide a thoughtful and encompassing explanation of mental states.

Chapter 2: The Global Consciousness of Earth

As previously argued for in Chapter One, the theory of consciousness or phenomenal awareness is based upon functional organization. Working from the most basic theory that only I or other humans are conscious – a notion which I have argued against but one which provides useful common ground – an entity would need to be organized in a functionally similar manner to a human in order to be conscious. Thus, the next step becomes determining if Earth has (or can have) the right functional organization to be conscious. Allow me to lay the groundwork for this conclusion. In doing so, I will address three important factors in the operations and organization of consciousness understood by neuroscience today: communication within the brain, groups within the brain, and the spatial distribution of the brain. These three characteristics will also be demonstrated as prevalent in the current organization of Earth. Furthermore, I will discuss the development of consciousness in humans to draw comparisons to the development of the global consciousness.

Communication:

In the Brain:

The brain contains specialized areas for different types of neuroanatomical information processing, which assist in making behavioral responses. From significant scientific observation, it is clear that there is a flow of information into and from a neuron. This information is restricted by the neurotransmitters and the neuron itself. The neurons within the brain communicate through electrical

and chemical transmission. In electrical transmission, an electrical signal is carried from neuron to neuron, allowing passive ion flow. This results in the neurons essentially acting as one, because electrical changes in one neuron influences changes in the other. In chemical transmission, neurotransmitters are released from the terminal button into the synapse. Once in the synapse, the neurotransmitters bind to receptors on the dendrites of other neurons, eliciting a chain reaction of cellular processes in the receiving neuron. This ultimately leads to the propagation of that signal or the inhibition and termination of the signal.

Most of the information processing by the brain is diffused throughout the cerebral and nervous systems. Lower-order systems process and then transmit the information to higher level systems where it is processed again. The process continues, passing from lower-order systems to higher and higher-order systems until either a person is made aware of it or the signal is terminated (See Figure 2 on the following page). These systems are spread out throughout the brain, but the spatially separated brain regions are still able to communicate with each other and create a unified percept. However, there must be discrete and concrete groups that synchronize in the appropriate way for that to occur. This grouping shall be discussed in an upcoming section.

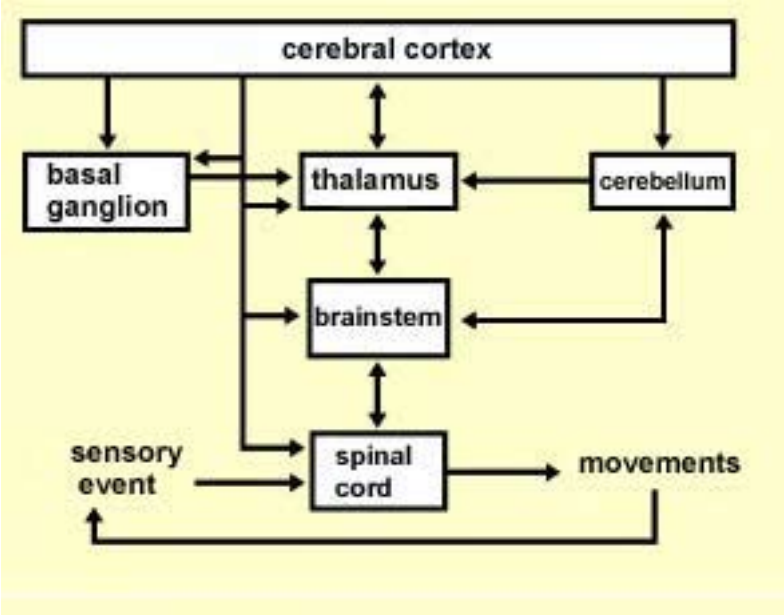

Figure 2. A simplified example of information integration and transmission for voluntary movement (The Brain from Top to Bottom)[32]

On Earth:

With the inventions of the telephone, the cellular phone, the Internet, satellites, radios, and fiber optic cables, the human species has bolstered communicative capabilities, making it relatively simple to look someone eye-to-eye and carry out a conversation while separated by thousands of miles. This set of communication networks provides the backbone of the functional organization of global consciousness. As biological nervous systems evolved, they became more complex due to the specialized cells, which allow for the distribution and rapid access of information throughout the brain. Data on the Internet is stored in a similar manner, distributed across computers and networks around the

[32] “Figure 2.” *The Brain from Top to Bottom*, thebrain.mcgill.ca/flash/i/i_06/i_06_cr/i_06_cr_mou/i_06_cr_mou.html.

world. Peter Russell's (1991)[33] prediction is that evolving technology will create an Internet that "will be able to form new associations, synthesize information creating new knowledge, and perhaps solve problems presented to it," which is precisely what Neuralink is attempting to do. This would make humans the "nerve cells of an awakening global brain" (Russell, 1991). The expanding field of machine learning and artificial intelligence makes this concept more obvious.[34]

The connectedness of the world is evident, but Russell (1991) provides a vivid and relatable example, "From an isolated cottage in a forest in England, I can dial a number in Fiji, and it takes the same amount of time for my voice to reach down the telephone line to Fiji as it does for my brain to tell my finger to touch the dial. As far as time to communicate is concerned, the planet has figuratively shrunk, due to the increased communication networks, to the extent that the other cells of the global brain are no further away from our brains than are the extremities of our own bodies." In other words, the Internet and cellular systems are tying people together in a single information processing system, acting as the nervous system of the planet, and providing the foundation for ideas to spread through mechanisms similar to the neural networks in the brain.

[33] "Chapter 8." *The Awakening Earth: The Global Brain*, by Peter Russell, Arkana, 1991, www.coreresonance.com/new/excerpts/the-emerging-global-brain-excerpt.pdf.
[34] E.g., IBM Watson's victories in Jeopardy.

Grouping:

In the Brain:

Human consciousness is hypothesized to come from the neural organization of the brain. In his paper, “A Field Theory of Consciousness”, E.R. John (2001) asserts that neural populations respond to various stimuli presented in the environment and act to unify temporally and spatially distributed information in a holistic manner. The brain, but mainly the prefrontal cortex, the frontal cortex, the pre-and paracentral cortex, thalamus, limbic system, and basal ganglia (John, 2001) are thought to be the critical areas responsible for consciousness. This means there is no ‘consciousness center.’

And yet of course, different parts of the brain communicate to create unified thoughts and actions. Individual neurons are structured to pick up on specific inputs from the environment, creating representational maps. However, this process is extremely costly in both structure, time, and energy for proper informational conveyance. If neurons did not work in assemblies, the number of neurons required would be much higher than the 86 billion humans currently have in a healthy, developed brain, and the connections would need to proliferate even further than they already do. By utilizing a systems approach, neurons can create an increased amplitude of signal, rather than random synchronization of neuronal activity.

The putative notion is that neurons are grouped for particular content, allowing each neuron to be focused on a subset of a stimuli. However, the neurons and groupings are flexible, as a single neuron can be a part of multiple

networks and groups. The group then composes a holistic percept of the stimuli. Single-cell recording data suggests that individual neurons in awake, sleeping, and anesthetized people have insignificant differences in their response properties, providing further support for the idea that individual neurons are not enough to support consciousness. Rather, EEG monitoring suggest that these individual neurons create assemblies that provide the basis for the “distributed dynamical processes” associated with consciousness (Singer, 2006).

Neural assemblies require two things: a selection mechanism and labeled neural responses. These are necessary to properly group neurons that belong together and allow pliable, yet consistent, groupings. The neural responses are ‘labeled’ into assemblies through inhibition of singular neural activity, then selected response amplitudes are increased, and the grouped neurons synchronize individual signal discharge, causing the individual neurons to fire signals that reach the target cell at the same time. The joint arrival of the signals elicits a stronger response from the target cell. This is supported by research on the auditory systems, which uses coincident signals to locate and map sounds (Purves, 2019). Additionally, the synchronization of the neurons was detectable by correlating successively recorded responses, demonstrating that there was timed internal coordination of action potentials.

Consciousness arises from self-similar cognitive operations originating in the cortical networks of the brain. The neurons composing these networks and processing systems self-organize into groups for functional coherence to generate larger outputs. They are primarily activated while an animal is paying attention

or aware of what is happening in the surrounding environment. Because of the dynamic and distributed[35] nature of these groupings, it is difficult to pinpoint a neural correlate of consciousness, but it does suggest that there is not a specific locus. Consciousness, rather than being contained in the prefrontal cortex, thalamus, medulla, or other regions, is spread throughout the brain.

These various ideas have led to the creation of a “Dynamic Core Hypothesis” (John, 2001). The dynamic core is composed of spatially distributed components in the brain, which allows a variety and multitude of cortical interactions and maintains unity (Tononi & Edelman, 1998).[36] An instant of perception is created through synchronization of spatially distributed neural populations and by the negligible total uncertainty of spatio-temporal assembly pattern fluctuations measured in the brain (John, 2001, p. 208). Synchronization of neural signals assists with the binding of multimodal stimuli to one idea or perception. The network provides the possibility to account for uncertainty and fluctuation, otherwise there would be no internal coherence despite synchronized communication. As John writes, “No conceivable network of synaptic connections could evaluate this continuous fluctuation of negative entropy in space, which can only be described as a field” (John, 2001, p. 208).

The “dynamic core” previously described can be characterized by the modules that compose it. The modules are domain-specific, have mandatory[37] operations, fixed architecture (albeit neutrally plastic), encapsulate information,

[35] See the following section, Spatial Distribution: In the Brain.
[36] Tononi, G., and Edelman, GM. “Consciousness and Complexity.” *Science*, vol. 282, no. 5395, 1998, pp. 1846–1851., doi:10.1126/science.282.5395.1846.
[37] Mandatory essentially means automatic or not consciously controlled.

and have limited central accessibility (Robbins, 2017).[38] This suggests that there is a singular grouping that allows for the synchronization of information and for the binding of consciousness. The thalamus’s “core system” can distribute information regarding stimuli and assess internal stimuli. Distribution of activities and communication help establish coherence within an organism. Trading and distribution of information in the brain likely happens through nonrandom[39] neuronal activity (John, 2001). Thus, consciousness becomes the integration of many spatially distributed brain regions, supported by reports of oscillatory phase-locking between the prefrontal cortex and parietal cortex at 40 Hz.

John (2001) concludes that “consciousness arises as a property of field resonating within a coherent dynamic core, composed of anatomical structures herein found to change state reversibly” (p. 208). These ideas are also supported by Wolf Singer (2006) in his paper “Consciousness and the Binding Problem” in which he discusses the dynamic binding that provides the means for higher-order processes to form via neural groups.[40] Data suggests that the groups self-organize to provide this mechanism for consciousness and highlight the signal synchronization described by John (2001).

[38] Robbins, Philip. “Modularity of Mind.” *Stanford Encyclopedia of Philosophy*, Stanford University, 21 Aug. 2017, plato.stanford.edu/entries/modularity-mind/#ModuPhil.
[39] Also known as negative entropy.
[40] This conclusion only applies to physically and psychologically healthy people and may differ for those with abnormalities.

On Earth:

Trying to understand the idea of a unified global consciousness in terms of the individual is comparable to attempting to understand a person’s consciousness by viewing an individual neuron. In other words, viewing planetary consciousness in terms of an individual is as fruitless an endeavor as viewing human consciousness in terms of a single neuron. Yes, the neuron is the functional unit and of high import. Without a neural discharge there is not cerebral activity. However, the research evaluated by Singer (2006) and John (2001) suggests that viewing an individual neuron will yield little to no information for a greater understanding of consciousness. The networks and assemblies within the brain are what need to be examined. Thus, the determination of these groupings in the global brain ought to be examined. For Earth to be similarly conscious to a human, it must have modular groups that function as the dynamic core does.[41]

A coherent group of people (modular group) can be defined as one that is unified in opinion, action, and has a standardized and agreed upon hierarchy (Fodor, 1983).[42]. It can include many organizations. However, there is one key aspect of a group: collective intentionality. Collective intentionality is the power of minds to be jointly directed at objects, matters of fact, states of affairs, goals, or values. For example, take the United States. Through the power of democracy, a singular decision is reached by the synchronization of a signal. This signal

[41] For more characteristics of a module see Fodor (1983) “The Modularity of Mind”.
[42] Fodor, Jerry A. “The Modularity of Mind.” 1983, doi:10.7551/mitpress/4737.001.0001.

inhibits the less powerful one, resulting in a system of individuals acting as a cohesive unit. This is an important point for this argument as it clarifies an example of a coherent group similar to the neural assemblies in human consciousness. This type of grouping could function as a larger functional unit in the global consciousness.

There are four necessary and sufficient conditions for collective intentionality: joint attention; shared intention; collective acceptance; and shared evaluative attitudes (Schweikard, 2013).[43] For instance, a well-practiced, championship basketball team shares the intention of winning the game, which can be broken down into scoring and preventing the opposing team from scoring. They have a set authoritative hierarchy of a coach, captains, and players. Each person on the team has a set role, and each person shares the same standards for excellence. When that team is playing at their highest level, everything lines up, almost as if there was one mind striving for the goal through the actions of the individuals.

Distributions, summations, and aggregates of individual intentions do not make for collective intention, even if combined with common knowledge or mutual belief. The intention cannot only be ascribed to the members, but also must be applied to the group. Max Scheler (1954) states that when a collective exists, it is caused by independent minds sharing numerically identical states (Schweikard, 2013). Despite being physically distinct, the same functional state is

[43] Schweikard, David P., and Hans Bernhard Schmid. “Collective Intentionality.” *Stanford Encyclopedia of Philosophy*, Stanford University, 13 June 2013, plato.stanford.edu/entries/collective-intentionality/.

occurring for both, resulting in a group being irreducibly collective. If any part of the group is removed, it is no longer the same group despite still being a group.

The aspect of a society only being made up as a composite of its members is intuitive. But this does not necessitate the conclusion of society not being a group mind or singular consciousness that has been decided on by the participants. To unify consciousness, experiences are combined to form a more complex experience (combining visual, textile, auditory, etc. into one). This could be done for two brains given the proper form of communication (e.g., an electronic link between the brains, functioning similarly to the corpus callosum), allowing for a unified consciousness between two already conscious entities. A necessary condition for unified consciousness is the combination of two distinct conscious experiences into a single state of consciousness with a distinctive phenomenology.

The experiential parts view, which states that a unified conscious experience is a composite of other experiences, must be accepted in light of John’s (2001) conclusion that consciousness is the integration of multimodal stimuli each individual perceived by the respective system. This would lend more support to the idea of subsumption[44] espoused by Bayne and Chalmers (2010)[45] in “What is the Unity of Consciousness?” In other words, there will be “a phenomenology of having both states at once that subsumes the phenomenology of the individual states: ‘there is something it is like for the subject to be in [two

[44] Experiences are absorbed into a more complicated whole to create consciousness.
[45] Chalmers, David J., and Bayne, Tim. “What Is the Unity of Consciousness?” *The Character of Consciousness*, 2010, p. 497–540., doi:10.1093/acprof:oso/9780195311105.003.0014.

conscious] states simultaneously’ (Bayne 2010: 32)” (Brook and Raymont, 2017). For example, if one is to receive two different stimuli simultaneously, the sound of Beethoven’s 9th Symphony and the taste of a very sour lemon, the experiential parts theory allows for the person to isolate and experience each aspect individually. The individual experience of the taste and the individual experience of the sound are then combined into a unified experience, which is perceived by the conscious.

Accepting the experiential parts view lends support to the possibility of unified consciousness for distinct entities if there is proper communication. It allows for the distinct experience of each person to be subsumed into the global consciousness. Additionally, the possibility of grouping of humans in a coherent and modular manner sufficiently demonstrates how the functional organization of humanity will give (or perhaps already has given) rise to unified consciousness.

Spatial Distribution:

Now a reader may be wondering, “But human populations, which would play the role of neurons in the global consciousness, are spatially distributed. The brain does not have a spatially distributed consciousness.” However, several studies (Libbet, 1998; Pockett, 1999; Singer, 2006; John, 2001) provide evidence that suggests otherwise.

In the Brain:

Working from the theories provided by that E.R. John (2001) and Wolf Singer (2006) regarding the functional organization of consciousness, it is clear

how consciousness could be spatially distributed as there is no locus for it in the brain.

More recent evidence suggests that the issue of spatial distribution within the brain is resolved by the electromagnetic field created by neurons with rather than the firing of neurons (Pockett, 1999). The brain, according to John (2001) and Singer (2006), uses this electrical field of neural connections to convey information. This electrical field is similar to the groupings and the networks that are being established around the world. Thus, the neurons “emphasize more distributed dynamical processes that rely on self-organization” (Singer, 2006). Furthermore, the aforementioned synchronization of individual neurons in assemblies occurs between different regions of the brain and even between hemispheres, which signifies the ability for the communication to occur between different neural assemblies despite spatial distribution.

John cites Libbet (1998) who argued that the ability for spatially dispersed regions of the brain to cohere and bind stimuli into a unified percept of the environment comes from nerve cells “reflecting relational properties not reducible to the description of any of its parts” (John, 2001, p. 198). Other scholars, Chalmers (1996) in his Fundamental Theory of Consciousness and Larry Squires (1998), have also suggested that consciousness is a fundamental aspect of the world and cannot be reduced to anything but consciousness. These theories suggest that the neurons within the brain could be conscious. As these neurons would be interacting as conscious entities to give rise to human

consciousness, further support for the idea of a unified consciousness with a conscious entity serving as the functional unit is provided.

On Earth:

I shall take it as an obvious statement to say that the neural populations communications networks of the global consciousness are spatially distributed across Earth. However, for those that doubt this statement, some examples shall be provided. The entirety of the human population is dispersed across seven continents,[46] living on small islands in the oceans, dense forests near the equator, small towns in the countryside, or booming metropolitan areas. They are not spread equally across the planet, but neural populations occur in varying densities in the brain. Furthermore, the communication networks are scattered across the planet. There are satellites in space and a cellular tower in Antarctica (Tilley, 2016).[47] Depending on the service provider, a person has the ability to receive a cellular signal almost anywhere in the world and access to the Internet is expanding rapidly.

[46] There are researchers in Antarctica.
[47] Tilley, Aaron. “Antarctica Gets A Cellular Network For The 'Internet Of Things'.” *Forbes*, Forbes Magazine, 19 Jan. 2016, www.forbes.com/sites/aarontilley/2016/01/19/antarctica-gets-a-cellular-network-for-the-internet-of-things/#58bc722d77a6.

Gradual Development of Consciousness:

For Humans:

Consciousness is not a binary: existent or non-existent. The gradual evolution and expansion of the brain suggests that “consciousness is a graded phenomenon whereby the gradations are correlated with the phylogenetic and ontogenetic differentiation of the cerebral cortex” (Singer, 2006). This is evident upon reviewing development of the brain while in the womb and after birth.

While in the womb, the brain undergoes two main states of development. There is the proliferation of nerve cells, and the connecting phase where each of the billions of neurons begins to send out axons and dendrites to connect to other cells in the body. The rudimentary structures of the brain and central nervous system are established in the embryonic period, gestational weeks 3-8. In humans, neuron production begins 42 days after conception and “is largely complete by midgestation” (Stiles, et al., 2012).[48] As neurons are created, the neural networks begin to form. However, brain development continues after birth despite neuron production finishing in-utero (Stiles, et al., 2012).

The post-birth development of the brain is illustrated by a distillation of the CDC Childhood Development Milestones brochure (2018) [49] to the most notable aspects of development, which allows one to see the evolution of consciousness as a child develops: at 2 months, they smile and can recognize

[48] Stiles, Joan, et al. “The Basics of Brain Development.” *Neural Plasticity and Cognitive Development*, 2012, pp. 31–82., doi:10.1093/med/9780195389944.003.0002.
[49] “‘Learn the Signs. Act Early." | CDC.” *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, www.cdc.gov/ncbddd/actearly/index.html.

others. At six months, they can recognize other people’s emotions, will respond to their own name, and show general curiosity. At nine months, they have favorite toys and items. At 18 months, vocabulary has increased, they can follow verbal commands without gestures, and communication with single words commences. At three years old, they can dress themselves, follow multi-step instructions, recognize age and gender, understand what “two” means, and can complete simple puzzles. At four years old, they are cooperative with others, tell stories about the past, predict what will happen next in a story, and begin to understand time (CDC, 2018).

These developmental milestones (CDC, 2018) are used in this argument to demonstrate the developmental nature of consciousness in humans and illustrate the likelihood of partial consciousness during human development. Consciousness appears gradually and there is no critical point or threshold where a child goes from a state of non-conscious experience to conscious experience. There are stages of partial consciousness in between the two resolute states. A child will show increasing signs of consciousness as they move along a graded line until development has finished. In other words, consciousness is not an absolute in humans, which delineates the possibility of a burgeoning consciousness for Earth.

For the Earth:

Consider human society as an embryonic brain. Over the past decades, the population has exploded. In 1951, the world population was approximately 2.7 billion. Currently, world population is roughly 7.6 billion. Additionally,

population growth rate has been steadily decreasing since the 1970s, signaling the end of neuron production. This is similar to the development of the neurons during gestational weeks 3-8. Additionally, the increased communication networks mimic the proliferation of neural connectivity during development.

According to Russell (1991), Earth is currently in the connective phase of constructing consciousness. There has been a clear proliferation phase with the explosion of new technologies and population growth, which is tapering as the focus shifts towards connection strengthening. As these communication networks become stronger, faster and more prolific, the global consciousness will increasingly unify. Without that proper communicative aspect between people, there can be no global consciousness.

Furthermore, consciousness, despite seeming continuous, flits in and out of existence. John (2001) cites behavioral studies, which “suggest that consciousness is temporally discontinuous, parsed into sensory sampling intervals” which last, on average, 140 ms in a mammal (p. 195).[50] Now, take the brain to be a sphere for easier comparison to Earth. In that case, the brain has a diameter of 15 cm (Schoenemann, 2003).[51] The Earth has a diameter of approximately 12756 km (Smale, 2015).[52] That makes the Earth approximately 85,000,000 times larger than the human brain. This would allow for Earth to

[50] This sampling interval is hard to explain or understand from personal experience, as it seems that we have a continuity of experience. This does not mean that there is no continuity of consciousness, that continuity just needs to be redefined. The lack of continuity is remedied by falsified connection of the present with the past despite the literal temporal link being absent.
[51] Schoenemann, P. Thomas. “Brain Size Scaling and Body Composition in Mammals.” *Brain, Behavior and Evolution*, vol. 63, no. 1, 2003, pp. 47–60., doi:10.1159/000073759.
[52] Smale, Alan. “The Earth.” *NASA*, NASA, 2015, imagine.gsfc.nasa.gov/features/cosmic/earth_info.html.

have a sampling period of roughly 11,900,000 seconds, 198,333 minutes, 3,306 hours, or 138 days when compared to the average size of the human brain and average sampling period in a mammal. Thus, within my framework, for Earth to be considered similarly conscious to a human it would not have to be conscious for eternity after rising to a conscious state.

The examples and comparisons on the previous pages highlight the development of Earth’s consciousness in comparison to a human’s consciousness. While the developmental aspect and the analogy are not necessary for a functionalist theory of mind or this argument, I believe it assists in the perception of how Earth could be conscious, and while the global consciousness may not yet be at the peak of its sentience, it is absolutely on track.

In conclusion, the analogy for the global brain is formed. A person is a neuron, E-mail, phones, the Internet, and other forms of communication are the neural impulses, and countries or other unified groups are the neural assemblies. Bringing about a global consciousness does not subject everyone to participate in a borg-like[53] hive mind or exist like the planet taken over by Unity in Rick and Morty with no individual control or free will. A situation emerging that mimicked the Borg mind would only reinforce the effectiveness of the goal-oriented behavior of the human collective. Imagine 7.7 billion people working together towards one goal that we all collectively decided on. There isn’t one ‘Super-Ego’ or world dictator. The planet could feasibly run similarly to the brain. There

[53] The Borg are the main antagonist in the fictional series Star Trek. They are cybernetic creatures that are assimilated into and linked with “The Collective”, a hive mind with one leader. Individual Borg are drones for the collective.

would be some people that would be inhibited from their signal reaching to the level of total consciousness, but they would still be able to do everything just as they are now (albeit more interconnected with the rest of humanity).

Chapter 3: Schwitzgebel & Anti-Nesting Principles

Schwitzgebel:

Eric Schwitzgebel (2014)[54] in his paper, “If Materialism is True, the United States is Probably Conscious” makes a similar functional-materialist argument to what I have laid out in Chapters One and Two. To convey his thoughts about the possibility of spatially distributed consciousness, he uses two pure thought experiments: the “Antarean Antheads” and “Sirian Supersquids.” His ultimate goal is to demonstrate that a properly organized group of spatially distributed people can be conscious, (he uses the United States as his example because many other entities do not perform coherent group-level actions). Schwitzgebel (2014) demonstrates the United States is not fundamentally different in organization or behavior from other entities that are viewed as possessing phenomenal consciousness.

The Thought Experiments:

The “Antarean Antheads” are intelligent beings composed of 10,000,000 squirming insects each with “a complete set of minute sensory organs and a nervous system of its own” (Schwitzgebel, 2014, p. 1701). If one were to break an anthead down to the ’functional unit’, a multitude of non-sentient, presumably non-conscious, entities would be observed. Schwitzgebel details that the antheads’ “behavior arises from complex patterns of interaction among these

[54] Schwitzgebel, Eric. “If Materialism Is True, the United States Is Probably Conscious.” *Philosophical Studies*, vol. 172, no. 7, 2014, p. 1697–1721., doi:10.1007/s11098-014-0387-8.

individually dumb insects” (Schwitzgebel, 2014, p. 1701). Normal behavioral activities occur for antheads (e.g., excellent conversationalists, no trouble with logic tests, etc.). Their cognitive activities take about ten times longer than humans, but this slow processing does not affect their intelligence. Despite their intelligence and relative normalcy “no individual ant, for example, has an inkling of Shakespeare despite the Antareans’ great appreciation of Shakespeare’s work” (Schwitzgebel, 2014, p. 1701). This example, which is set up to be organizationally similar to a human brain (precluding the individual sensory organs and nervous systems of the ants), is used to highlight that processing speed is not a relevant factor in the determination of consciousness.

The “Sirian Supersquid” has a brain that “is distributed throughout the nodes in its thousand tentacles” (Schwitzgebel, 2014, p. 1700). Despite that distribution, they have a single stream of consciousness and are very similar to humans in cognitive abilities. The supersquids use light signals, similar to fiber optic cables, to facilitate rapid communication between the nodes and the rest of the body. Furthermore, they are able to detach these limbs through evolutionary advances and maintain continuity of consciousness with no decline in communicative or cognitive ability. When detached, the limbs don’t move independently; they are still controlled by the supersquid’s body. In other words, a squid with a roving limb will operate just as a supersquid with a non-roaming limb. Additionally, the supersquid will maintain distinctive and private consciousness because each squid has a distinctive signal used to communicate with their own roving limbs. This example highlights the possibility of spatially

distributed organisms maintaining continuity of consciousness despite being spatially distributed.

Schwitzgebel (2014) concludes that an organism can be spatially distributed and composed of multiple smaller organisms resulting in a conscious organism. The possibility of consciousness for spatially distributed organisms composed of smaller units is the launching point of his argument for consciousness of the United States. The bounded group of the United States can, and does, act in unison, represent and self-represent, respond to environmental stimuli, and act in a coherent, semi-intelligent manner. Despite not reproducing sexually, nations reproduce through fission, similar to cells (e.g., the United States was created through fission from Great Britain).

Additionally, the United States engages in resource distribution, general maintenance, possibly self-monitors, and engages in other homeostatic activities. It has a hierarchical organization with an accepted system of authority. The United States can also organize information for coordinated, goal-directed responses. Immense amounts of information are communicated constantly between citizens, in the government, and through media. These actions help establish the United States as a modular unit or coherent group, which is necessary for a unified consciousness. In other words, “there isn’t a question about the required information exchange in this process. The important aspect is the integration of that information into a singular experience or entity”, which is the role of the United States (Schwitzgebel, 2014, p. 1707). Moreover, there is no requirement that a conscious entity be a biological organism, so the United

States, as it acts and is currently organized, can qualify. This leads to the conclusion that “the United States seems to have what it takes [for consciousness], if standard materialist criteria are straightforwardly applied without post hoc noodling. It is mainly unjustified morphological prejudice that blinds us to this” (Schwitzgebel, 2014, p. 1706).

Relation:

While Eric Schwitzgebel and I both argue from subsections of physicalism, he concludes his expansion with an entity the size of the United States. However, I argue that this can be expanded even further, to the size of a planet, but it need not stop there. While the planet does not engage in all of the same behavioral activities as the United States,[55] this is not necessary for my argument because the organization of Earth could elicit similar behavioral responses in the future. Should this argument be coherent, it could apply to the entirety of the universe provided other planets obtain consciousness and begin to communicate in the proper manner. To combat the intuition surrounding spatially distributed consciousness and elucidate issues about the binding of consciousness when spatially distributed, I referenced E.R. John (2001) and Wolfe Singer (2006), which was not done by Schwitzgebel. He, instead, used two creative thought experiments. These two neuroscientists, working on the problem of consciousness, contend that current evidence suggests consciousness arises from

[55] Earth does self-regulate, humans would likely organize to defend the planet in the event of an alien invasion, and distribution of resources to other countries for aid and trade occurs.

spatially distributed neurons synchronizing throughout the brain. Ultimately, we both argue for the possibility of a singular, group, phenomenal consciousness.

The Anti-Nesting Principle Objection:

There is very little literature about the concept of anti-nesting principles. Simply put, anti-nesting principles state that an entity cannot be conscious if it has subparts within it that are also conscious. In other words, the larger conscious entity's consciousness cannot contain a part that is also conscious. The theory originates from the fairly intuitive idea that there is no other conscious entity residing within a human being. However, while the principle aims to avoid circularity, it results in strange conclusions. It seems ridiculous to say that a table cannot be smooth if a subpart of the table is smooth or to say that a muscle group cannot contain smaller muscle groups.

The idea of an anti-nesting principle originates from Hilary Putnam (1967) and Guilio Tononi (2004). Putnam made the assertion in regard to pain and maintained that an organism can't be simplified into smaller parts that experience the same thing separately. According to Schwitzgebel (2104), Tononi's exclusion postulate suggested that "consciousness occurs only at the level of organization that integrates the most information" (Schwitzgebel, 2014, p. 1703). More firmly, Tononi and Koch (2015)[56] asserted that "the system of mechanisms that generates a maximally irreducible conceptual structure is called a complex…

[56] Tononi, Guilio, and Koch, Christof. "Consciousness: Here, There and Everywhere?" *Philosophical Transactions of the Royal Society B: Biological Sciences*, 19 May 2015, royalsocietypublishing.org/doi/full/10.1098/rstb.2014.0167.

complexes cannot overlap” (Tononi & Koch, 2015, p. 5). This is a familiar argument invoked by philosophers that wish to disregard an ‘absurd’ outcome from their supported theory of consciousness. It is especially relevant for functionalist theories of mind because, despite a group being functionally organized in the correct manner to bring about consciousness, if one of the parts of the whole is conscious, the whole is not.

The most recent proponent of this theory has been François Kammerer (2015) in his paper, “How a Materialist Can Deny that the United States is Conscious – Response to Schwitzgebel.” Kammerer (2015) concludes, that “any theory of consciousness which asserts that the conscious states of an entity supervene on its functional states… will have to determine, given a conscious mental state S, a functionally individuated property P such that an entity instantiating P is a sufficient condition for the entity instantiating S.” He works from the assumption that an entity is phenomenally conscious if, and only if, it has the proper functional organization. From there, he makes an attempt to update the anti-nesting principles purported by Putnam and Tononi, while maintaining the preclusion of a group entity’s consciousness, such as the United States. He dubbed this reinvigorated theory the “Sophisticated Anti-Nesting Principle”.

The Sophisticated Anti-Nesting Principle:

In brief, the” Sophisticated Anti-Nesting Principle” (SAP) states that an entity does not instantiate a conscious mental state if: (1) a subpart within the entity requires the possession of conscious mental states to perform its functional

role, and (2) upon cessation of the functional role by the subpart and no other part takes over, the entity no longer has conscious mental states (Kammerer, 2015). These conditions are designed to prevent subparts from being necessitated to have mental states representing the whole entity. For if a subpart does have that representation, there cannot be functionally individuated properties of the entity.

Due to the complexity of the sophisticated anti-nesting principle, I will provide several explanations in the hopes that one will resonate. The SAP states:

1) The functional property sufficient for the consciousness of the whole cannot be based on a subpart with functional properties sufficient for consciousness.
2) If a subpart has the functionally sufficient property for consciousness, and that subpart’s consciousness has a representation of the whole, which provides the basis for the functional property sufficient for consciousness of the whole, then the whole does not have consciousness. For if the subpart was removed, the whole would no longer be conscious.
3) Consciousness arising from functional organization can only occur if a subpart of the whole does not consciously represent the whole with a conscious state not possessed by the whole

When those three distillations are combined, Kammerer's (2015) deduction is revealed:

> One should only ascribe consciousness to an entity when one cannot explain the behavior and the organization that seems to justify this ascription as the consequence of mental states of other, distinct subjects – notably mental states of other subjects which bear on the very behavior and organization of the entity (Kammerer, 2015).

This raises the problems of explaining behavior and organization. There are many things still left unexplained (e.g., quarks).[57] The existence of quarks and other unexplained aspects of life demonstrate that things cannot be fully explained at this point.[58] Furthermore, it could be argued that the cellular interactions, evolution, physical stimuli, and previous experiences explain the organization and behavior that lead to consciousness being ascribed. That being said, any theory of consciousness will have a certain degree of assumption and arbitrariness due to the "hard problem" propounded by Chalmers (1995), but if behavior can be explained through other reasoning, consciousness should not be applied.

Defense of the Sophisticated Anti-nesting Principle:

So long as the role being played by the conscious subpart or organism does not induce new behavior or alter the consciousness then the sophisticated anti-nesting principle will not prevent consciousness. New conscious states of the

[57] A quark is a subatomic particle with a fracitonal electric charge. They are theorized to be a building block in hadrons, but have yet to be observed. (Britannica, 2019).
Britannica, The Editors of Encyclopaedia. "Quark." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 15 Feb. 2019, www.britannica.com/science/quark
[58] An in-depth discussion of such things would distract from the topic at hand.

whole would not occur unless new functional organization, resulting in new behavior of the whole, stems from the discovery of the subparts role in the entity.

The functional organization of the whole must not depend on the members of the whole being conscious states representing the whole, therefore a group entity could be conscious.

> For example, it could be the case that we humans, without knowing it, are currently engaged in a kind of collective functional organization which is responsible for a form of group consciousness, of which we are unaware. It could also be the case that some members of humankind could come to discover the existence of the collective organization or of the group consciousness without making it disappear (Kammerer, 2015).[59]

Furthermore, SAP does not apply phenomenal consciousness, rather it gives a description of phenomenal mental states. So, an entity could have phenomenal mental states about some things, but if the organism in the brain that replaced a neuron shifted that person’s behavior, the person would not be conscious about those behaviors (absurd). SAP still allows for spatially distributed conscious entities, removing threats of contiguism or neurochauvinism, which is more accurate when compared to some other objections raised against group consciousness in Schwitzgebel’s (2014) paper (Clark, Dretske, Dennett, & Chalmers) (Schwtizgebel, 2016, p. 24-30).

SAP refers to functional subparts rather than material subparts. It modifies Putnam’s theory by stating that there is only a problem if consciousness of the whole is dependent on phenomenal states instantiated by parts of the whole or because organization of the whole is dependent on the phenomenality of

[59] Because of this statement alone, I think that the anti-nesting argument loses its bite against my argument.

the subparts. It is through this clarification that Kammerer (2015) can detail that “it is not impossible for a conscious whole to have conscious subparts, but it is impossible for a conscious whole to be conscious in virtue of the fact that its subparts are themselves conscious of the whole (when certain conditions are fulfilled)” (Kammerer, 2015).

Rebuttal to the Sophisticated Anti-Nesting Principle:

Specialized areas in the brain deal with most of the information processing, which is then integrated in the cerebral cortex to compose a cohesive picture of the environment. Despite these subparts having representations of the whole, a human is still considered conscious. Additionally, it is not clear that the SAP excludes phenomenal consciousness of existing groups. Individuals have a major role in a complex group entity through the way it is represented in their consciousness. Should consciousness be explained at the cellular level, humans are at risk of losing consciousness when SAP is applied unless a causal explanation is provided.[60]

The picture painted in Chapter Two surrounding the consciousness of Earth suggests that humans (the subparts) are not conscious of their role in a larger conscious whole. Thus, they would not have mental representations of that larger entity and have no influence on the organization or behavior. This precludes it from being invalidated by the SAP for there must be conscious representation of the global consciousness within the subpart in a manner

[60] See Hume (1978) “An Enquiry about Human Understanding” for more information on causal skepticism.

relevant to the SAP. Additionally, the motivations of individuals in the whole are the building blocks of the whole's consciousness. Even if people did consciously represent the global consciousness, their representation of it would not be necessary for the consciousness of the person or the planet to continue.

Should the entirety of the human race suddenly recognize the global consciousness, it would not magically disappear just because they are consciously representing the whole. Moreover, an individual with knowledge of the global consciousness will still contribute to the group consciousness regardless of possessing or not possessing knowledge about the whole:

> If a person who is a subpart of a larger conscious organism represents the conscious whole, then depending on how one interprets the idea of 'requirement', there will likely be possible cases where that representation is at first not required for the person to participate and then something in the background conditions changes so that the representation later becomes required – with no different to the processing of information by the whole (Schwitzgebel, 2016).[61]

This would create the possibility of conscious states of a group flitting in and out of existence despite a functional or organizational difference.[62] There is a dissociation of higher-level functional organization from phenomenal consciousness, which produces issues with qualia perception upon situational manipulation.

Furthermore, subparts of the brain are responsible for different phenomenal aspects experienced by the mind. For example, without a temporal

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[61] Schwitzgebel, Eric. "Is the United States Phenomenally Conscious? Reply to Kammerer." *SpringerLink*, Springer Netherlands, 20 June 2016, link.springer.com/article/10.1007/s11406-016-9725-8.

[62] I don't consider this a valid objection to the SAP due to the sampling gaps in the human consciousness.

lobe, the ability to perceive auditory stimuli in the environment would not occur. This quale of sound would disappear from the consciousness. Now while the temporal lobe may not be a conscious entity itself, it is absolutely responsible for a phenomenal mental state (e.g., the pleasure from hearing your favorite song).

It seems though, that anti-nesting principles are designed to preclude strange conclusions from a materialist or functionalist theory. In the words of Block (1978), ‘there is no independent reason’ to accept this principle. Additionally, Schwitzgebel (2014) provides several thought experiments to lead to intuitive conclusions that run contrary to the anti-nesting principles, such as the intrusion of conscious organisms entering a person’s body. Should one of them take over the role of a neuron in that person’s brain, they would no longer be conscious.

Conclusion:

The ideas presented in this paper are highly abstract and, more than likely, foreign to most. That being said, I firmly believe that, should one accept a functionalist theory of mind, the conclusion that Earth is, at least partially, conscious is necessarily adopted. The examples of human consciousness being spatially distributed should quell any doubts about an entity with spatially distributed consciousness. The technology implemented by the human race mimics the electric impulses carried by neurons in the brain. This thesis bears relevance to the field of philosophy and neuroscience, with strong ties to ideas espoused by experts in each discipline. Kammerer’s (2015) careful formulation of the SAP does not block my theory because some humans do not know they are a part of the global consciousness, at least not consciously. Even if they do, Kammerer (2015) details that they would be unable to sufficiently influence the consciousness of the whole (Earth). Therefore, the consciousness of the planet would remain viable.

This theory may be seen to rely heavily on the cooperative aspect of human communication and interaction. However, it is clear that conflict arises between differing groups of people, culminating in war, genocide, and other atrocities. This could be viewed in a manner similar to neurodegenerative diseases, where astrocytes in the brain attack properly functioning systems and cause behavioral and/or cognitive disabilities. That being said, further exploration into this topic must occur for the continuation of this argument.

The largest hurdle to overcome for this theory is the initial acceptance of functionalism in light of Block’s (1978) objection. There are additional objections to functionalism that should also be dealt with, but I perceived his as the most pressing. While I may not have ‘fixed’ functionalism, I believe it is the proper way of constructing a theory of mind. The requirement of assuming it for this argument after much exploration is a frustrating prerequisite for the continuation of this theory. Future examination should be done regarding the ability of functionalism to stand as a coherent theory of mind, the moral implications in human to human and country to country interaction, and the possible personhood of Earth should this theory be accepted, or proven correct after later formulations.

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