The Hard Problem of Consciousness & The Progressivism of Scientific Explanation

Several philosophers believe that with phenomenal consciousness and neural-biological properties, there will always be some kind of epistemic gap between the two that will lead to a corresponding ontological gap. Perhaps the most notable of these philosophers is David Chalmers with his zombie conceivability argument. In order to address those who espouse this hardline position, I first briefly will examine certain aspects of the history of scientific explanation. I will put forth a positive thesis that there is what I call a *progressivism* to scientific explanations in certain fields, where kinds of explanations tend to advance or progress, somewhat analogous to how overall scientific theories also significantly advance or progress. Given the progressivism of kinds of explanations, I provide a new contention that adherents to the hardline view are not justified in making their relevant claims. While progressivism and its use against hardline views may seem intuitively obvious to some readers, I offer its first articulation and attempt to illustrate the novel virtues it brings to the table of the phenomenal consciousness debate.

1. The Progressivism of Scientific Explanation

Scientific theories may do various things such as postulate laws, make predictions, and posit the existence of theoretical entities. They also importantly provide explanations of natural phenomena. In other words, a primary aspect of science is that it tells us why things happen or why things just are the way they are and not some other way. Science may not only instruct us in descriptive matters as to what the world or the structure of the world is like, but it also provides an explanation or understanding of why certain phenomena occur. For example, science may attempt to explain numerous things such as why it rains, the motions of the planets, why a government failed, why an individual psychologically made one decision rather than another, and why penguins cannot fly.

When examining the nature and history of scientific explanations, I would like to introduce and adopt a *progressivism view*. This view simply states that just as it is generally conceived that scientific

theories can progress or advance within a field and become closer approximations to the truth, kinds of scientific explanations within a field also may progress or advance in their ability to explain even more natural phenomena with at times even greater precision. Advancements in types of explanation may increase the explanatory power of the overall scientific theory to which the scientific explanation is tied.[1] Just as overall scientific theories that in part provide explanations of phenomena may significantly change and advance, there tends to also be advancements in kinds of explanations in particular fields.[2] Historically, types of scientific explanations within certain fields tend to advance and develop. Notice that progressivism does not simply state that the ability of science to explain phenomena advances over time. Rather, progressivism makes the deeper point that *the kinds of frameworks that underlie scientific explanations* advances and progresses over time in particular fields which lead to a greater rather than a lesser or stagnant explanatory power for a given theory.

Since it may be the case that kinds of explanations within a field may progress and develop over time, there may be a moderate to strong relationship between such development and concurrent significant and even revolutionary-like progress of scientific theories within a field. As we shall see, this may be the case as it does appear that new progressive types of explanations do take part in the significant advancement of scientific theories. The development of scientific theories generally allows for the explanation of ever more refined phenomena, and any new and more developed kinds of explanations being inextricably linked to a scientific theory itself must have necessarily played a role in the advancement of the overall scientific theory. Here, new kinds of explanations may in part be unfolded through advancements in the particular scientific field, such as through advancements in instrumentation, abstract theoretical reasoning, experimentation, or having increased observational capacities. This new

[1] Kinds of explanation are not to be confused with theories of explanation, where theories of explanation posit the logical structure a correct scientific explanation must take. Our focus in this paper will only be on kinds of explanations. As understood here, differences in kinds of explanations are more fine-grained than differences in underlying theories of explanation. Kinds of explanations are not necessarily individuated by having different underlying theories of explanation. For example, historical explanations such as what brought about the first world war and functionalist explanations in the study of the mind both can be categorized under the umbrella of the causal theory of explanation. However, historical causal explanations are still a different kind of explanation than functional explanations.

[2] The phrase “in particular fields” will be explained shortly.

type of explanation subsequently may play a role in the further advancement of the overall scientific theory itself as it is applied or used to explain diverse and previously unexplainable phenomena. Later we will explore the possibility that advancements in kinds of explanations for the mind-body problem may advance overall theories in this subject matter as well. As an additional point, it should not be wholly surprising if we find that in certain fields there is a progressivism due to the fact that because overall scientific theories tend to progress closer to the truth and explanations are intricately related to overall scientific theories, then it may be the case that new advanced types of explanations develop as well in being more explanatorily powerful and precise.

Moreover, progressivism does not deny that previous kinds of explanations might still play some role in explanation within a field. Yet, it does say that even if this is the case, the more advanced kinds of explanations which arise are generally responsible for the greater explanatory power a scientific theory may have. Furthermore, it may be the case that there is no progression of kinds of explanations within a certain field. Therefore, progressivism claims that kinds of explanations *relative to a particular field* may develop over time. However, progressivism does contend that there are a number of fields of scientific inquiry in which historical progress in kinds of scientific explanations does take place.

For example, while Newton allowed for mechanical explanations, his overall scientific theory did stray from Galileo, Kepler, and Descartes in that it did do away with strict adherence to mechanistic explanations in that he allowed for non-mechanical interactions and action at a distance in his view on gravity and gravitational interaction. In fact, in his explanation of gravity, he provided no causal mechanistic explanation, but rather gave a mathematical relationship. In part due to such development of this new kind of non-mechanistic mathematical explanation, Newtonian physics during its heyday was the most explanatorily powerful physical theory of its time. Moreover, in the twentieth century, there were additional advancements in that the advent of quantum mechanics brought to the forefront in microphysics a novel objective probabilistic mathematical explanation. To date, quantum mechanics is the most explanatorily successful theory in the history of science. For instance, while classical physics cannot answer the explanatory hurdles or obstacles related to black-body radiation, the photoelectric

effect, the stability of atoms, and the discrete spectrum of hydrogen, quantum mechanics can. Quantum mechanics can explain a host of diverse phenomena such as tunneling in transistors and electron orbital binding in chemistry.

While a complete and thorough investigation of the changes in kinds of scientific explanations in physics cannot be provided here, as we can begin to see, there is a progressivism in physics. Kinds of scientific explanations progress just as overall scientific theories also progress within this field. Types of scientific explanations that at times were never previously conceived before in the relevant field develop that lead to more precise explanations of even more phenomena. Such progression not only leads to greater explanatory power and the overcoming of previous explanatory hurdles, but also to the general advancement of the scientific theory to which it is inextricably linked. The advancing theories in physics in each of these discussed periods was immensely more powerful and precise than its predecessors, and the new kinds of progressive explanations, insofar as being tied to physical theory itself, played a role in its advancement.

As another example, let us quickly examine the theoretical developments concerning the nature of the mind or, in other words, the mind-body problem in the narrow time frame of the twentieth century. In the early part of this century, influenced by logical positivism and the psychologists J. B. Watson and B. F. Skinner, philosophical behaviorism was born; a view that was in part progressively instrumental in eliminating the ghost from the machine or, in other words, in undermining the explanation provided by a Cartesian substance dualism that posits and uses an immaterial substance.[3] Philosophical behaviorism claims that mental state terms can be translated into behavioral terms without loss of meaning. Given that this is the case, one need not worry about the relation between the mind and body. For, to talk of someone's mind is not to talk about some immaterial substance or even inner state that this person

[3] In the current literature, there is a distinction between psychological behaviorism and philosophical behaviorism, although there are theorists such as Skinner that held both views. Psychological behaviorism focuses on the status of psychology being a legitimate and objective scientific discipline while philosophical behaviorism is more concerned with the meaning of mental terms. Psychological behaviorism is heavily influenced by the idea that psychological mental states such as beliefs, desires, pains, and itches cannot be publicly observable and that science must only deal with publicly observable states of affairs. Therefore, psychology is the study of behavior.

possesses, but it is to talk about this person's behavior and disposition to behave. A number of such behaviorists also held an ontological thesis that mental states are reduced to behavior and the disposition to behave. This ontological behaviorism thesis eliminates the very need to ask the question of whether inner psychological states can be reductively explained in terms of neural-biological states since there are no inner psychological states to begin with. Rather, mental states are reductively explained in terms of scientifically observable behavior and dispositions to behave.

The philosophers U. T. Place, Herbert Feigl, and J. J. C. Smart are commonly thought to be the founders of the next development in theories concerning the nature of the mind (Place 1956; Feigl 1958; Smart 1959). While some were in part influenced by findings in neuroscience, they posited a type identity physicalism, where mental types are identical to physical types just as water is identical to H_2O or lightning is identical to electrical discharges. On this view, by providing an identity reduction, mental states just are physical states. This can be seen as an advancement in types of reductive explanation from philosophical behaviorism in that mental states are properly placed in the head such that there may be an inner psychological to neural-biological state explanation. On this view, in principle there is no explanatory gap of providing some kind of reductive explanation of the mental to the physical since mental states are identical to physical states. However, to note, while there is no gap for this view, an identity reduction still provides a scientific explanation. Just as chemists think that the identity reduction of water to H_2O provides an explanation of what water is, identity physicalism purports to also provide a scientific explanation of what mental states are. On this view there is explanation but no gap.

While identity physicalism, whose dominance as a theory of the mind is generally considered to be rather short, suffered from numerous problems including the possibility that mental states can be multiply realized by various physical states such as those in different life forms, the next advancement in kinds of scientific explanation on the nature of the mind came from psychologists who began using a functionalist reduction in order to tackle the mind-body problem. While philosophers such as Hilary Putnam and Jerry Fodor gave an explicit articulation of functionalism of the mind years after it was already being used by psychologists who were working on the mind-body problem (Putnam 1967; Fodor

1968), this brand of scientific explanation reductively explained the psychological to the neural-biological by claiming that mental states are higher order functional properties that play a causal role within the causal network of the mind; a mind that receives environmental inputs, has mental state to mental state causal interactions, and produces behavior. As it is generally conceived, once mental states are functionally defined, they are constituted by whatever lower level physical states realize the causal role. For example, if pain is functionally defined as being a tissue damage detector, then pain is constituted by whatever neural-biological states realize this job description. On a general understanding of this view, mental states are not type identical to physical states as mental properties are higher level properties that may be multiply realized in various ways depending on the person or even life form that is in question. The intertwined scientific explanation that is a part of the scientific theory of functionalism is generally seen as an advancement on the nature of the mind so much so that, although it is highly contentious whether it can handle the issue of phenomenal consciousness (also known as qualia or the introspectively accessible "what it is like" phenomenal aspect of our mental lives), David Chalmers labels the mind-body problem in relation to non-phenomenal mental states and processes as being the easy problem of consciousness (1996, 2010). Insofar as we may functionally define a number of relevant mental states and mental competences such as learning, categorization, and memory, such aspects of the mind-body problem are easy given a functionalist reductive explanation. An enormous swath of what was previously seen as a daunting and nearly insurmountable mind-body problem, laced with explanatory hurdles and obstacles, may now be seen as an easy problem that the sciences of the mind in principle may resolve given the progression of a functionalist scientific explanation within the discipline of the mind. Even though the easy problem may still be a difficult task for cognitive scientists, a functionalist explanation opens the gateway for a tractable and well-defined research program for non-phenomenal mental states. A large chunk of the mind-body problem may be conceived as an issue for cognitive science. Historically within the subject matter of the mind in the 20th century, we see a shifting field where there is a general progress made in kinds of scientific reductive explanation that allows for a greater explanatory power for theories of the nature of the mind.

2. The Problem of Phenomenal Consciousness

Now that we have laid down the positive project of establishing progressivism, before discussing the applicability of progressivism to those who adopt hardline views, we first will have to discuss and elaborate upon such views that claim that there is some kind of epistemic gap and a resulting ontological gap between qualitative psychological and neural-biological properties. I label such theories as hardline views in that there is the more moderate option of allowing for an epistemic gap but denying that there is an ontological gap between mental and physical properties. One such contention for the hardline position is the explanatory gap argument, which may also be viewed as being tied to Chalmers' notion of the hard problem of consciousness. It claims that there is a gap between phenomenal psychological properties that we may grasp subjectively through introspection and neural-biological properties that may be objectively studied from the third person point of view (Levine 1983; Chalmers 1996). This epistemic gap questions whether there can be a reductive explanation of phenomenal properties to the neural-biological. For instance, if an itch arises from a certain neural-biological property, what makes it the case that the sensation of an itch arises from this physical property rather than some other sensation when this physical property occurs? Why is it the case that an itch does not arise from a different neural-biological state? Why does qualia arise from this physical state? These legitimate questions illustrate that there may be some gap in reductively explaining qualitative psychological properties to neural-biological ones. To positively answer the explanatory gap is to provide such a reductive explanation that closes this supposed gap. Along these lines, Chalmers labels phenomenal consciousness the hard problem in that qualia resists functional characterization. While the research program is quite clear for non-phenomenal mental states and processes, the lack of a functional definition for the qualitative aspect of mental states makes the issue of phenomenal consciousness unruly and difficult. There is an explanatory gap that leads to a corresponding ontological gap, and the explanatory gap exists primarily because of the absence of a complete functional account of phenomenal psychological states.

There also are numerous hardline contentions mostly in the form of thought experiments that arguably are ultimately based on or influenced by Descartes' objections against materialism. Even though they may have their differences in the type of epistemic gap formed, hypotheticals such as Chalmers' zombie conceivability argument (1996, 2010), inverted qualia (Block 1990), absent qualia (Block 1980), and Frank Jackson's knowledge argument (1982) all can be understood as claiming that there is some kind of epistemic gap between psychological and neural-biological truths, and thus, there is an ontological gap between such truths, and materialism is false. With progressivism in hand, we only have the space to directly address Chalmers' conceivability argument. The conceivability argument has been selected because I take this contention to be perhaps the most intricately defended hardline position. Nevertheless, given the structural similarity amongst the group of thought experiments that take a hardline view, it may be understood that my objections to the conceivability argument also hold *mutatis mutandis* for the remaining hypotheticals in this group. As we shall later see, Chalmers further buttresses the conceivability argument with the explanatory gap contention, so in objecting to the conceivability argument, arguments will also be put forth against the explanatory gap contention as well. Therefore, if my objections grounded in progressivism are correct, then they will purport to demonstrate that hardline contentions against materialism are not justified.

The conceivability argument basically states that it is epistemically conceivable that there is a being such as a zombie that is molecule-for-molecule identical to a conscious being, but this zombie lacks phenomenal consciousness. Despite being physically identical and behaviorally the same as some conscious person, it is conceivable that this zombie lacks first personal qualitative states. There is nothing it is like to be a zombie. Given its conceivability, the existence of such a zombie is metaphysically possible. Metaphysical possibility in turn leads to the fact that materialism is false.

In its more sophisticated form, the argument brings in the framework of two-dimensional semantics. Several key concepts need to be introduced in order to fully comprehend this more nuanced claim. Chalmers is well aware that conceivability does not always entail possibility due to Kripke cases, where, for example, sentences such as 'water is not H_2O' are conceivable but

not metaphysically possible given that water being H_2O is a posteriori necessary. In order to respond to this, Chalmers differentiates between two *senses* of conceivability. *Secondary conceivability* is the sense in which 'water is not H_2O' is not conceivable since water is H_2O in the actual world. In this sense, hypothetically if there were a nearly identical planet to our own called Twin Earth where it seems that water is not H_2O on this twin planet, it is really a situation in which water is H_2O, but there is some kind of watery stuff that fills up the oceans and lakes on Twin Earth that is not H_2O. In this sense, 'water is not H_2O' appears to initially be conceivable, but in fact, it is not. As we can see, secondary conceivability provides an a posteriori link to metaphysical possibility.

On the other hand, *primary conceivability* is the sense in which 'water is not H_2O' can properly be said to be conceivable given that primary conceivability turns on matters of a priori reasoning. In the a priori domain, there is a sense in which it is conceivable and imaginable that there is a Twin Earth in which the watery stuff that fills up the oceans and lakes is made up of XYZ rather than H_2O. With the further assumption that this situation obtains in the subject's own environment, in this circumstance, the subject then should conclude that water is XYZ rather than H_2O. In this sense, 'water is not H_2O' is primary conceivable. However, primary conceivability does not seem to entail metaphysical possibility because although 'water is not H_2O' is primary conceivable, it is not actually metaphysically possible given that water being H_2O is a posteriori necessary.

However, Chalmers clarifies the link between primary conceivability and metaphysical possibility. He notes that since we can primary conceive of water not being H_2O on Twin Earth, it is metaphysically possible that water is not H_2O, where there is a sense in which we have access to such a possible world. While this possible world is not one in which water is not H_2O, this world still stands in a strong relation to the sentence 'water is not H_2O.' In two-dimensional terms, Twin Earth does not *satisfy* 'water is not H_2O' since this sentence is not true of that world considered as counterfactual. However, Twin Earth *verifies* 'water is not H_2O' given that 'water is not H_2O' is true of that world when the world is considered as actual. In other words, given the difference in the senses of the sentence, the *secondary intension* of 'water is not H_2O' is false for Twin Earth, but its *primary intension* is true for this world.

Here, Chalmers states that a world *w* verifies a sentence *S*, where the primary intension of *S* is true at *w*, when we should endorse *S* if we accepted that our own world is qualitatively like *w.*

From here we may conclude that when the primary intension of *S* is true at some world *w* where *w* verifies *S*, *S* is primary possible. Likewise, when the secondary intension of *S* is true at some *w* where *w* satisfies *S*, then *S* is secondary possible. Therefore, sentences like 'water is not H_2O' are primary conceivable but not secondary possible. Primary conceivability does not entail secondary possibility. However, secondary conceivability does entail secondary possibility, and most importantly for Chalmers thus far, primary conceivability entails primary possibility.

Understanding P to be the conjunction of all microphysical truths about the universe including the features of microphysical entities as well as the fundamental microphysical laws while Q represents an arbitrary phenomenal truth such as that everyone is phenomenally conscious, as a first pass, we now may view Chalmers' two-dimensional argument as:

1. P & ~Q is primary conceivable.
2. If P & ~Q is primary conceivable, then P & ~Q is primary possible.
3. If P & ~Q is primary possible, then P & ~Q is secondary possible.
4. <u>If P & ~Q is secondary</u> possible, then materialism is false.

5. Materialism is false (2010, 142).

The first premise states that it is primary conceivable that everything is microphysically the same as in our world, but no one is phenomenally conscious. In other words, P & ~Q claims that it is primary conceivable that the world is a zombie world. The second premise comes from our previous discussion that primary conceivability entails primary possibility. Notice that the primary possibility of 'P & ~Q' alone is not sufficient to get Chalmers his refutation of physicalism since physicalism hinges upon a secondary possibility claim. Chalmers writes, "materialism requires not the 1-impossibility of P & ~Q but the 2-impossibility of P & ~Q. That is materialism requires that it *could not have been the case* that P is true without Q also being true. This is a subjunctive claim about ordinary metaphysical possibility and so invokes 2-impossibility rather than 1-impossibility."[4]

[4] Chalmers, *The Character of Consciousness*, p. 149.

The third premise requires that P and Q must have primary and secondary intensions that coincide in order to garner secondary possibility from primary possibility. Chalmers supports an altered version of the third premise by first granting that P and Q do not have primary and secondary intensions that coincide. Just as 'water is not H_2O' does not have the same primary and secondary intensions, for P, there probably are microphysical terms such as 'mass' and 'charge' that for similar reasons also do not have the same primary and secondary intensions. Thus, it may be the case that a world *w* verifies P without satisfying P. For example, the primary intension of 'mass' is tied to a certain theoretical role, where the primary intension picks out whatever plays the mass role in some world *w*. However, the secondary intension of 'mass' is tied to the property that actually plays the role. Here, *w* may verify 'mass' but it may not satisfy 'mass.' Assuming that *w* verifies but does not satisfy P, Chalmers claims that the physics of *w* has the same *structural* profile as the physics in the actual world, but it has a different *intrinsic* profile in that *w* has different intrinsic properties that fill the structural profile of *w* as compared to the actual world. Thus, in order to verify P, a world must have the correct structural profile, but in order to satisfy P, a world must both have the correct structural and intrinsic profiles. All in all, up to this point, the third premise is not guaranteed to be true since the primary and secondary intensions may not be the same for P. Even though we as of yet have not stated anything in particular about the primary and secondary intensions of Q and their relationship to one another (Chalmers does understand Q's intensions to be the same for Kripkean reasons although he does not believe that this sameness is required for his argument to work), since the primary and secondary intensions may not be the same for P, the third premise requirement that the conjunction P and Q must have primary and secondary intensions that coincide may not be met.

However, Chalmers attempts to resolve this problem by first noting that for the third premise to be false, it must be the case that the structural profile of physics in the actual world does not necessitate Q but that the structural and intrinsic profiles of physics in the actual world do necessitate Q. Yet, if this is the case, then this leads to the view of *Russellian monism*. For Russellian monism, Bertrand Russell in *The Analysis of Matter* claimed that the intrinsic properties that are the bases of microphysical entities

may themselves be phenomenal properties, where the nature of such properties are not revealed to us by science or by perception (1927). As physics is silent about the intrinsic nature of microphysical entities and there is the question of how phenomenal consciousness can be integrated in the physical world, Russell attempted to kill two birds with one stone by stating that phenomenal consciousness is constituted by the intrinsic properties of microphysical dispositions. While this view has ties to materialism in that phenomenal properties may be considered to be physical properties that are the intrinsic properties to microphysical entities, Russellian monism is a property dualism in that phenomenal properties are ontologically fundamental, and they are ontologically disparate from the structural-dispositional properties characterized in physical theory. Given Russellian monism, with the third premise, if P & ~Q is primary possible, then Chalmers believes the only options are that it is the case that P & ~Q is either secondary possible or Russellian monism is true. Either end of the disjunction embedded in premise three inevitably will lead to an ontological gap that Chalmers desires. The above is how Chalmers defends a revised version of the third premise. With Chalmers' defense in mind, we may now restate the two-dimensional argument as:

1. P & ~Q is primary conceivable.
2. If P & ~Q is primary conceivable, then P & ~Q is primary possible.
3. If P & ~Q is primary possible, then P & ~Q is secondary possible or Russellian monism is true.
4. <u>If P & ~Q is secondary</u> possible, then materialism is false.

5. Materialism is false or Russellian monism is true (Chalmers 2010, 152).

Continuing with the discussion of the premises, with the fourth premise, the secondary possibility of P & ~Q straightforwardly leads to the fact that materialism is false given that materialism generally entails a modal thesis. Instantiating a Kripkean metaphor, if it is possible that there is a physically identical world to ours that is phenomenally different, then after God fixed the physical facts, he had to do extra work to fix the phenomenal facts. Materialists generally maintain that once the physical facts are fixed, the phenomenal facts are fixed as well. From this valid two-dimensional argument, Chalmers' journey from epistemic conceivability to the modal to the ontological is complete by concluding that it is either the case that materialism is false or Russellian monism is true.

3. The Tutelage of Progressivism – Chalmers' First Premise

Progressivism provides two objections to the two-dimensional conceivability argument. While there are numerous and various responses to Chalmers in the literature, here we focus only on the kinds of objections that can be made by progressivism. As we will see, the first counter is in line with the general spirit of arguments made by a number of philosophers. However, I discuss the following authors in order to eventually illustrate the contrast between their views and progressivism. This will help to demonstrate the important novel virtues of progressivism. Thomas Nagel's agnosticism states that it seems that it is impossible that the subjective phenomenal feel from a specific point of view can be given a physicalist account because any objective physical theory will abandon the subjective point of view (1974). While he is initially doubtful of the possibility of physicalism, he is agnostic on the problem of phenomenal consciousness in that he allows for the possibility of some kind of future conceptual revolution that may allow for a future physicalist understanding. Colin McGinn writes that from a third person perspective, what we perceptually observe of another's brain are physical entities and properties, not the person's phenomenal properties (1989). Likewise, through introspection and self-awareness, we can know what is going on within us mentally, but such introspection does not allow us to see the link between the mental and the physical. Thus, the ability to link phenomenal psychological states to neural-biological states is cognitively closed to us, and human beings are not suited to conceptually understand the nature of the psycho-neural link. However, McGinn notes that in principle there is a solution to this problem even though we cannot solve it. Robert Van Gulick claims that although zombies and the like may be prima facie conceivable, they may not be *ideally* conceivable or conceivable under idealized rational reflection due to future scientific discoveries and novel types of reasoning (1993, 1999). Patricia Churchland argues that even though we currently may not be able to grasp how the epistemic gap may be closed, it may be possible that future scientific discoveries somehow may be able to close the gap (1997).

The above views are similar in that they grant that there is a prima facie epistemic gap between qualitative psychological properties and neural-biological ones, but they leave open the possibility that in

principle, such a gap is closable. Moreover, some of these views rely vaguely on the advancement of science to demonstrate in the future that there is indeed a way to close the epistemic gap. Notice that none of the above views explicitly adopt the notion of progressivism that is introduced here. As Chalmers sees it, all of these views, with the exception of McGinn's, may be seen as being an attack on the first premise of Chalmers' argument. However, Chalmers has a ready response to these views. To counter these views, Chalmers explicitly brings in the explanatory gap argument to buttress his first premise. He claims that despite the possibility of future advancements, there always will still be a gap because the felt aspect of conscious states lacks spatiotemporal structure and a complete functional description. He notes that at most scientific theories explain things with physical structure and dynamical properties, but explaining things with structure and dynamical properties does not suffice to explain consciousness because the felt aspect of consciousness lacks physical spatiotemporal structure. Moreover, felt mental states also lack a complete functional description. This makes them unruly. Without such a description, there is an explanatory gap and there is no reductive explanation.

Concerning the fact that qualia lack physical structure, he provides what I shall call *the structural argument*:

> First, physical descriptions of the world characterize the world in terms of structure and dynamics. Second, from truths about structure and dynamics, one can deduce only further truths about structure and dynamics. Third, truths about consciousness are not truths about structure and dynamics (2010, 120).

Chalmers' first premise is that microphysics only provides descriptions of things that have physical spatiotemporal structure. Moreover, such things may have dynamical properties in which certain laws may govern their change over time. Second, as we work our way up levels from physics to chemistry to biology, etc., the low-level microphysical structural and dynamic descriptions only entail more structural and dynamic descriptions at the higher levels, such as in chemistry and biology. The third premise is that phenomenal consciousness does not have spatiotemporal structure. While Chalmers admits that qualia may have some kind of phenomenal structure, this structure is not in-and-of-itself physical structure. From these premises, he concludes that even if there may be some vaguely stated notion of a conceptual

revolution in science, science will still never be able to reductively explain qualia because science only reductively explains things with structure and dynamical properties, but qualia does not have physical structure.

The problem with the structural argument is with the second premise. Once we get to the higher levels of the social sciences, such as with psychology and economics, it does appear that structural descriptions do entail non-structural descriptions. For example, consider easy problems of the mind-body problem such as with non-phenomenal psychological states and processes that are multiply realized at the neural-biological level. Here, certain structural neural-biological states entail certain non-phenomenal psychological states, where such psychological states are non-structural, distinct, and higher order states as compared to the physical structural neural-biological states in question. Likewise, in economics, there are higher order properties such as *the economies of scale*[5] that are non-reductively and multiply realized at the bio-sociological levels. Spatiotemporally structured biological human beings and certain complex stories of their social interactions explain the economies of scale at the lower bio-sociological levels. As the economies of scale is a distinct and higher level property from the bio-sociological levels, the economies of scale does not have spatiotemporal structure even though what reductively explains and entails it does.

Thus, I take it that the structural argument alone is false, and it alone cannot be used against, for example, the above philosophers who think that a future conceptual revolution may show that there is not an epistemic gap. Requiring the explanandum be something that has physical structure and dynamics has, by itself, got nothing to do with shaping the limits of scientific explanation. The structural argument by itself is debunked. Now, Chalmers may be read as having anticipated this move in that he acknowledges that non-structural psychological beliefs are entailed by a structural-dynamic system. He writes:

> [T]here are some truths that are not themselves structural-dynamic but are nevertheless implied by a structural-dynamic description. It might be argued, perhaps, that truths about *representation* or *belief* have this character. As we saw earlier, however, it seems clear that any sense in which

[5] Economies of scale are the cost advantages one may receive from business expansion.

> these truths are implied by a structural-dynamic description involves a tacitly functional sense of representation or belief (2010, 121).[6]

Here, Chalmers may be read as now hinging his objection to those who believe in a future conceptual revolution on the fact that phenomenal consciousness lacks a complete functional description. In science, only functionalism can provide a reductive explanation of non-structural states to structural ones. Assuming that a behaviorist explanation is misguided, and a type identity explanation is also false, although we will discuss the general idea of an identity reduction and its plausibility given progressivism in further detail in the next section, the only remotely tenable hope to explain non-structural qualia is with functionalism, but functionalism still leaves an explanatory gap for qualia. Chalmers writes:

> The basic problem…is that epistemic implication from A to B requires some sort of *conceptual hook* by virtue of which the condition described in A can satisfy the conceptual requirements for the truth of B. When a physical account implies truths about life, for example, it does so in virtue of implying information about the macroscopic functioning of physical systems of the sort required for life. Here, broadly functional notions provide the conceptual hook. In the case of consciousness, by contrast, no such conceptual hook is available…(2010, p. 123).

However, while this response may be adequate to reply to the likes of those who allow for the possibility that future advancements, vaguely stated, may close the gap, progressivism in specifically and precisely allowing for the future development of kinds of explanations in the sciences of the mind, can respond to Chalmers' counter whereas the others initially cannot. For, the other views do not explicitly use the notion of progressivism that is introduced here, although they certainly could adopt progressivism upon learning about it. Recall that progressivism does not simply say that over time, science tends to gain a greater explanatory power. It states that the kinds of frameworks that underlie scientific explanations used in certain fields changes and progresses over time. In other words, based on the history of the philosophy of science, progressivism makes a deeper and more underlying point that the

[6] Chalmers immediately continues this quote with: "This is what we would expect: if claims involving these can be seen (on conceptual grounds) to be true *in virtue* of structural-dynamic description[s] holding, then the notions involved must themselves be structural-dynamic at some level (121-122)." Here, he seems to be saying that since representational truths are truths due to functionalism and lower level structural-dynamic descriptions, then representational truths are structural and dynamic at a lower level. Notice that representations are still non-structural at the psychological level. Hence, Chalmers' statement is all well and good, but the second premise of the structural argument still is false because from truths about structure, we may deduce truths about things that do not have physical structure at the psychological level.

types of frameworks of explanations used in particular fields do advance, which then leads to a greater rather than a lesser or stagnant explanatory power for a given theory. This new thesis is certainly not articulated by the above philosophers who vaguely rely on future advancements in science. Therefore, such philosophers may be susceptible to the explanatory gap objection, whereas, as we shall see, progressivism provides a clear and explicit theoretical response to the objection.

For the sake of argument, let us grant Chalmers his premises that a zombie world is prima facie conceivable and that a functionalist conceptual hook is not adequate or available for explaining phenomenal consciousness. In granting Chalmers' vital premise that a functionalist theory of phenomenal consciousness is not feasible, progressivism can still demonstrate that such a functionalist requirement may not be ultimately necessary for a materialist and that Chalmers still is not justified in reaching his conclusion that materialism is false. For, given the progressivism of explanations within the subject of the mind, it very well could be the case that a new kind of explanation may arise that can provide the requisite conceptual hook and close the gap. A new kind of explanation may be theorized that can explain non-structural qualitative properties in terms of structural ones. Therefore, it may be the case that a zombie world is not *ideally* conceivable. Progressivism provides a novel substantive justification for this claim. It is important to remember that a functional explanation of the mind-body problem has not been around forever and only has been instantiated rather recently. Moreover, the sciences of the mind are only in their nascent stages. The tutelage of progressivism shows that the progression of kinds of explanations has occurred in the past in the study of the nature of the mind and very well may occur in the future. Notice the inherent and sheer power of progressivism as the utilization of it does not even require or demand painting even a remotely nebulous picture of what the new kind of explanation may look like. The history of science demonstrates that the progression of kinds of explanations in certain fields can provide or underwrite new types of explanations within that field that can overcome previous explanatory obstacles and augment a theory's explanatory power; types of explanations some of which were not even previously imagined before within the field.

Chalmers claims that despite future progress in science, there can be no conceptual hook to explain phenomenal consciousness due to the failure of functionalism and other previous conceptual explanatory hooks. Science and its numerous potential types of explanations cannot reductively explain non-structural qualia in terms of structural neural-biological properties. Recalling his two-dimensional argument, he boldly concludes that materialism is false or Russellian monism is true. However, Chalmers does not specifically account for the thesis of progressivism. Chalmers's problem is that he understands science's explanatory methods and frameworks to be stagnant. However, given progressivism, it does not immediately follow that there absolutely cannot be a conceptual hook. Remember how we have previously discussed how the study of fields such as physics and the nature of the mind have produced new types of explanations within their respective fields that allowed for overcoming previous explanatory hurdles and also allowed for a greater explanatory power and success. Therefore, given the wisdom of progressivism, Chalmers' first premise that 'P & ~Q is primary conceivable' is not warranted since there is a reasonable and legitimate likelihood that P & ~Q is not ideally conceivable due to potential future ideal reflection and theoretical rationalization that is influenced by the discovery of a new kind of explanation. Although the premise 'P & ~Q is primary conceivable' has not absolutely been ruled out, we are not justified in making the strong claim that this premise is true. Just as we would not be justified in believing that a five year old boy will never grow up to be a good soccer player given the poor way in which he currently plays, we likewise would not be justified in wholly believing Chalmers' first premise either.[7] There is a legitimate warranted possibility that it is not the case that P & ~Q is primary conceivable.

At this point one may object that what is required of progressivism is an assessment of the balance of probabilities (this objection may also apply to progressivism's next attack on Chalmers' third premise). For, even though progressivism may be true, Chalmers' argument inevitably may provide us with stronger reasons to think that physicalism is false and that we should pursue a property dualism

[7] I understand this particular response to Chalmers to also be a sufficient response to McGinn, *mutatis mutandis*.

project. On which side do the scales actually tip? Does the balance lie in favor of a property dualism or the pursuit of a reductive explanation of phenomenal consciousness? Given that 1) there has been a rapid progressivism on the study of the nature of the mind in the twentieth century with a large swath of the mind-body problem already being listed as an easy problem; 2) modern psychology and neuroscience are still young developing fields and; 3) linked to the idea of progressivism, there is the general and overwhelmingly successful track record of science and its ability to explain worldly phenomena, I take it that the default view should be that it is more likely that a reductive explanation will be found. Now, although I am by no means stating that it absolutely will be the case that such an explanation will be found, the balance of reasons lies in favor of physicalism, and we should proceed with some justified optimism that a physicalist explanation may eventually be found. At such an early stage of the mind sciences, in claiming that the scales tip in favor of property dualism, one would almost have to deny and be blind to the very existence of progressivism. In science's eyes, with a stable full of thoroughbreds, to claim at this point that the probabilities for the balance of success lies in favor of property dualism is to call the winner almost before the race has even begun.

4. <u>The Tutelage of Progressivsm – Chalmers' Third Premise</u>

Progressivism may also be used to attack the third premise: 'If P & ~Q is primary possible, then P & ~Q is secondary possible or Russellian monism is true.' For the sake of argument, let us assume the antecedent that 'P & ~Q is primary possible' and that Russellian monism is a legitimate possibility. However, the disjunction contained within the consequent of the conditional is not complete. For, it very well could be the case that in the future, progressivism provides a new kind of materialistic means of reductively explaining phenomenal psychological states to neural-biological ones such that phenomenal states are identified with *x*, where *x* will be left as an open and unspecified variable. Progressivism provides a unique content and justification to the notion that we might be able to explain consciousness in the future. Similar to the fact that water is H_2O, such a reasonable possibility may lead to an a posteriori necessity claim that phenomenal consciousness is *x* (although for qualia it need not be a type identity

reduction to the physical). P & ~Q may not be secondary conceivable, although it may be primary conceivable. Thus, even though P & ~Q is primary conceivable and thus, primary possible, it may be that it is not the case that P & ~Q is secondary possible, where Russellian monism also is not true. If there is a physicalist a posteriori necessity, a warranted possibility that progressivism legitimately allows for, then the consequent of Chalmers' third premise must allow for this possibility of physicalism, and this renders the third premise as false or incomplete. Here, I do not claim that a materialist a posteriori necessity will in fact be discovered, but as I have previously argued, I do believe that there is a reasonably strong probability that this may occur. Hence, this leads to an altered conclusion for the two-dimensional conceivability argument that allows for the possibility of a materialist picture. No strong conclusion for dualism may be drawn. On this objection, Chalmers' argument now appears as:

1. P & ~Q is primary conceivable.
2. If P & ~Q is primary conceivable, then P & ~Q is primary possible.
3. If P & ~Q is primary possible, then P & ~Q is secondary possible, or Russellian monism is true, or it is not the case that P & ~Q is secondary possible where Russellian monism is also false.
4. If P & ~Q is secondary possible, then materialism is false.
5. If it is not the case that P& ~Q is secondary possible where Russellian monism is also false, then materialism is true.

6. Materialism is false, or Russellian monism is true, or materialism is true.

Chalmers may respond that based on his argument, materialism cannot be true because if it is not the case that P & ~Q is secondary possible, then the only option is for Russellian monism. Recall, that Chalmers states that if the structural and intrinsic properties of physics do necessitate the existence of phenomenal consciousness, then the intrinsic properties of microphysical entities must be phenomenal properties. This is Russellian monism. However, the issue with this is that the problem of phenomenal consciousness asks for a reductive explanation of the psychological to the neural-biological, not to the microphysical. It is the structural and intrinsic profiles of the neural-biological level that is important here. As a legitimate possibility, progressivism in the future may help to provide a materialist explanation to the question of what are the intrinsic profiles of neural-biological properties that are in some way connected to phenomenal consciousness. This would be analogous to how scientists have provided the

intrinsic profile of water at the chemical as contrasted with the microphysical level (once again, for qualia, it need not be a type identity reduction to the physical). Here, on this a posteriori necessity materialist framework, the intrinsic profiles of microphysical entities that non-reductively realize the chemical and biological levels need not be phenomenal properties themselves any more than the intrinsic profiles of the relevant microphysical entities need to be the property of *being water* in order to account for the a posteriori necessity claim that water is H_2O. Just as water has the intrinsic profile of being H_2O at the chemical level in which the corresponding identity is an a posteriori necessity even though the intrinsic profile at the relevant microphysical level is not constituted by the property of *being water*, the intrinsic profile at the microphysical level for phenomenal consciousness need not be constituted by phenomenal properties. There may still be a materialistic a posteriori necessity from the phenomenal to the neural-biological levels that allows for it to not be the case that P & ~Q is secondary possible where Russellian monism is also false. What matters for the intrinsic profiles that are a crucial element of a posteriori necessity claims is the relevant scientific level of reductive explanation that one is seeking. For the problem of phenomenal consciousness, this scientific level is the neural-biological. Therefore, progressivism allows for the possibility that even if P & ~Q is primary possible, then it is not the case that P & ~Q is secondary possible where Russellian monism is also false. Hence, Chalmers' argument allows for the serious possibility of materialism, and his contention cannot make the strong claim that some kind of property dualism is true.

Notice that if one questions how there can be a conceptual hook from the psychological to the neural-biological level when neural-biology currently only deals with explaining functions, then progressivism swiftly may respond that even if neural-biology currently only concerns itself with functional explanations, this is perfectly fine with progressivism. For, progressivism demonstrates that there is a reasonably strong probability that a new type of explanation may arise in neural-biology that can reductively explain phenomenal consciousness. Assuming that a functional explanation of qualia is not viable, progressivism shows that in the future there is a reasonably strong likelihood that neural-

biology will develop another kind of explanation in its arsenal that can explain phenomenal consciousness.[8]

One may also object that even if in the future we can reductively explain phenomenal consciousness to the neural-biological, would there not still be a problem in being able to reductively explain the neural-biological to the level of microphysics? However, even though the primary focus of the subject matter of phenomenal consciousness currently is on the relationship between psychological and neural-biological properties, here once again progressivism may make the same move for this neural-biological to microphysical issue as well. Even if there currently is no account of such a reductive explanation, a general progressivism in the sciences of the mind and in physics allows for the reasonably strong probability that the requisite kind of microphysical explanation may develop in the future.

Finally, there is also the general Kripkean objection that there is a crucial difference between normal a posteriori necessities such as water = H_2O and a posteriori necessities involving conscious states such as pain = *x* (Kripke 1980). For Kripke, when we attempt to imagine that water is not the same thing

[8] Chalmers will also object that an a posteriori necessity in relation to phenomenal consciousness is unlike cases such as water = H_2O because the former involves necessities that are epistemically primitive whereas the latter do not. In other words, cases like water = H_2O can be deduced from a complete physical description of the world given structure and/or functional properties, but the connection between the neural-biological and the phenomenal cannot given the lack of structure and a complete functional description of the phenomenal. Without a complete functional description of the phenomenal, we cannot simply find the physical realizers of the functional role in order to find the a posteriori necessity. Chalmers states that this makes epistemically primitive necessities mysterious and ad hoc. Rather, we should posit the connection as being a fundamental law of nature in which there are the two distinct properties of the neural-biological and the phenomenal. However, the lack of a functional description of qualia which leads to the supposed corresponding epistemically primitive necessities is not sufficient to stop progressivism. For, progressivism allows for the legitimate warranted possibility that the a posteriori necessity in relation to phenomenal consciousness may be shown to not be epistemically primitive given future advancements in explanation. The a posteriori necessity may be able to be deduced from a complete physical description of the world. In other words, the new conceptual explanatory hook will allow us to deduce the a posteriori necessity relationship by examining the physical world without there being any kind of gaps. In continuation of this point, progressivism does not necessarily claim that the a posteriori necessity will be made in terms of the mental to the physical. All I have said is that phenomenal consciousness may be *x*. For example, *x* may be something that allows for a previously unimagined conceptual hook; a hook that in some way also allows for multiple realizability. This identity of phenomenal consciousness to *x* may allow the a posteriori relation to not be epistemically primitive in that it may be deduced from a complete physical description of the world regardless of the lack of a complete functional description for qualia.

as H_2O, what we are really imagining is something qualitatively the same as water, but not really water. In other words, in two-dimensional semantic terms, for Kripke, 'water is not H_2O' is not secondary conceivable. This something that we are imagining is not really water because water = H_2O. What potentially explains this illusion is that we can fix the reference of 'water' with contingent properties such as *being clear and tasteless.* It is due to imagining such contingent properties fixing the reference of 'water' when we are under the false illusion that water is not H_2O that allows us to potentially explain why we may be imagining something other than water when we are falsely imagining that water is not identical to H_2O. However, Kripke claims that the reference of pain is picked out by the necessary property of *being in pain*. He writes, "Pain, on the other hand, is not picked out by one of its accidental properties; rather it is picked out by the property of being pain itself, by its immediate phenomenological quality (1980, 152)." This is the crucial difference between pain = *x* versus other a posteriori necessities in that the reference for pain is fixed by a necessary property whereas the reference for other a posteriori necessities can be fixed by contingent properties. This difference means that we cannot explain away at the level of secondary conceivability, as we can with the case of water, that when someone imagines that pain is not identical to *x* they are really not imagining pain. Rather, they must be imagining pain since the reference of pain is fixed by the necessary property of *being painful*. When someone is in the epistemic qualitatively same situation as being in a state of pain, then this person must be in a state of pain. Imagining that pain is not identical to x is to imagine pain and not something else.

> To be in the same epistemic situation that would obtain if one had a pain *is* to have a pain; to be in the same epistemic situation that would obtain in the absence of pain *is* not to have a pain. The apparent contingency of the connection between the mental state and the corresponding brain state thus cannot be explained by some sort of qualitative analogue as in the case of heat (Kripke, 1980, 152).

In response to this objection, it is first important to note that water does also have a necessary property; namely, *being H_2O*. Furthermore, pain also has contingent properties such as *causing me to wince*, or *causing me to say 'ouch.'* Thus, psychological states as well as other properties in other kinds of a posteriori necessities both have contingent and necessary properties. Second, there have been what I take to be numerous responses to Kripke; responses which I will not discuss here (Lycan 1974; Feldman

1973; Hill 1991; Bealer 1994; Polger 2004; Papineau 2007). However, I will attempt to add my own objection to Kripke in what follows.

Now, when Kripke argues that when one imagines that pain is not x, one must qualitatively be experiencing pain, a specified version of the use-mention distinction may come into play. At this point, I will qualify what this specified use-mention distinction is. One can in a sense *use* pain in that one feels or experiences the state of pain. However, one can also *mention* or talk about pain in that one does not experience pain but one is talking about pain. For example, scientists and philosophers of the mind frequently mention and discuss pain and its possible properties on a regular basis without experiencing the feeling of pain in virtue of having such discussions. In fact, I take it that when most people discuss consciousness-based a posteriori necessities and certain select other relevant a posteriori necessities in a metaphysical way, they usually are mentioning rather than using the properties at hand.[9] For example, when scientists contemplate that heat is identical to molecular motion, they usually are mentioning or talking about heat rather than using or feeling the sensation of heat.

Thus, when one attempts to imagine that pain is not x, there may actually be an explanation for why one is not truly thinking of pain when attempting this task. What potentially explains the illusion is that when thinking that pain is not x, one is mentioning pain (as most commonly do in such a situation) in this circumstance. In the context of mentioning pain, the contingent properties of pain can fix the reference of pain. For example, as is common in scientific studies of pain, where scientists mention pain, they can fix the reference of pain by observable behavior such as the winces and groans of patients. One need not be a behaviorist to do this. Insofar as contingent properties of pain can fix the reference of pain in cases when pain is being mentioned rather than used, this may explain away the false illusion that one can imagine that pain is not identical to x. Of course, when mentioning pain, one may fix the reference of pain by a necessary property just as one may also do so for water and heat. However, in the context of mentioning pain, it appears that one is not constrained to fixing its reference with a necessary property.

[9] This use-mention distinction may not apply to all kinds of a posteriori necessities, but all that is important for our purposes is that it does in fact apply to the pain = *x* identity.

One can fix the reference with contingent properties. Psychologists do this all the time. Inevitably, what is important here is the fact that one may put oneself in the same qualitative state of mentioning rather than using pain. This allows for an explanation of the apparent contingency of consciousness-based a posteriori necessities at the level of secondary conceivability; an explanation that Kripke believes cannot exist. Thus, since Kripke fails to account for the use-mention distinction, his claim against consciousness-based a posteriori necessities is false.

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