Naturalized Panpsychism: An Alternative to Fundamentalist Physicalism and Supernaturalism

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NATURALIZED PANPSYCHISM: AN ALTERNATIVE TO FUNDAMENTALIST PHYSICALISM AND SUPERNATURALISM

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ABSTRACT
NATURALIZED PANPSYCHISM: AN ALTERNATIVE TO FUNDAMENTALIST PHYSICALISM AND SUPERNATURALISM

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A central problem in the mind-body debate is the generation problem: how consciousness occurs in a universe understood as primarily non-conscious. This problem is particularly bothersome for physicalists. I argue that the generation problem stems from a non-critical presupposition about the nature of reality, namely, that the mental is an exception in the universe, a non-fundamental property. I call this presupposition ***mental specialism***. Despite the fact that mental specialism dogmatically ingrained in the debate, there has been little reason offered either to accept or reject it. And doing so would dissolve the generation problem. But rejecting mental specialism, though it would dissolve the generation problem, would mean accepting another anathema presupposition: panpsychism. The resistance to panpsychism stems from the perception that panpsychism runs counter to science, that it is based on dogmatic metaphysical (even transcendental) arguments, and that it entails doctrines that cannot be accepted by science, such as mysteriousness. This perception is misguided and here I argue that a naturalized panpsychism, one that does not run contrary to science in these ways, can be developed and defended. I argue that consciousness emerges from proto-consciousness, the fundamental property that is disposed to give rise to consciousness. Proto-consciousness is not an arbitrarily posited property; following an important contemporary approach in neuroscience (the integrated information account), I understand proto-consciousness as information. The thesis that consciousness emerges from proto-consciousness elicits a fatal problem with panpsychic theories, the combination problem. This problem is how to account for higher-order conscious properties emerging from proto-conscious properties. I solve the combination problem that by adopting Giuolio Tononi's *Integrated Information Theory of Consciousnes*s and demonstrating emerging higher-order conscious properties just is a system integrating information. Thus information is the fundamental property that, when integrated in a system such as a human being, is consciousness. Proto-consciousness is thus a *natural* property and the formulated panpsychic theory based upon information is a naturalized panpsychism.

DEDICATION

Earl Robert Cookson, B.A., M.A.

In memory of Dr. Claudia M. Schmidt—her soul shone like a jewel.

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Earl Robert Cookson, B.A., M.A.

In no particular order, I would like to thank my family. I would like to thank my wife, and my son. I would like to thank the Buddha. I would like to thank my teachers, my faculty, my committee, my director, and my colleagues. I would like to thank the Graduate School and all of the Marquette University administration.

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Introduction

The core problem physicalism faces is the generation problem: how consciousness arises from something not-conscious. The generation problem originates from the view I call *mental specialism*, which is the view that the mental is more rare or exceptional than the non-mental. The way out of the generation problem is to reject *mental specialism* and then formulate a "science friendly" panpsychic theory, a *naturalized panpsychism*. Panpsychism's core thesis is that the mental is as fundamental to the world as the physical. I understand panpsychism to be constituted by the following tenets: 1) the mental is a fundamental property that permeates the universe; 2) the mental is ontologically independent of matter (entailing that the mental cannot be reduced to the physical); 3) the physicalist worldview requires expansion to include the fundamentality of the mental; 4) higher forms of mentality (e.g., conscious thought) emerge from the basic *mental* constituents of reality.

In this dissertation I will work to *naturalize* panpsychism. A viable naturalized panpsychism will show that panpsychism is a scientifically plausible solution to the mind-body problem. I will not be arguing that naturalizing panpsychism definitively solves the mind-body problem, nor am I attempting to argue directly against any other theory. I am not arguing that reality is in fact panpsychic nor am I definitively arguing that the human mind is a certain way rather than another. I am not even seeking to demonstrate that naturalized panpsychism is superior to any other account of the mind. I seek merely to establish that naturalized panpsychism is coherent and has its own virtues, and thus is a plausible theory of mind and *possible* solution to the mind-body problem.

The idiom 'the devil is in the details' means that there are often hidden problems or disadvantages in the details of one's endeavors, theories, or plans. For philosophy the idea is better expressed as 'the devil is in the presuppositions,' for it is often in a theorist's apparently innocuous assumptions that undermine an otherwise well-conceived theory. Even more notably, the assumptions within a debate determine the dialectic topography of that debate. These sorts of assumptions constrain the theories of not just particular theorists, but rather an entire community's theorists. This is the case with the mind-body debate. Except for a very few exceptions, the mind-body debate is dominated by the ontological assumption that mental properties are anomalous in the universe. Anomalous properties are deviations from the "standard order" of the universe; they are not fundamental. I call this assumption ***mental specialism***. Quite obviously physicalistic accounts of the mind subscribe to mental specialism, since they endeavor to show that mind is really just physical properties arranged in a particular way. Substance dualism—and more specifically Cartesian dualism—assume mental specialism as well. Descartes' account is so entrenched in mental specialism that it subscribes to *supernaturalism*; his theory works only by positing extra-natural entities with supra-natural powers.

Mental specialism is an assumption, not a fact and not generally supported by arguments. True, a theorist may occasionally appeal to observation, though observation itself is conditioned by a landscape of assumptions. There is an alternative to mental specialism, an alternative that has a rich history within philosophy. This alternative is ***panpsychism***. Panpsychism holds that mental properties are the *standard order* of the universe, a fundamental feature. Galen Strawson notes that "there is *absolutely no*

evidence whatever against panpsychism" (2006a, 20).[1] William Lycan repeats this statement and then adds that "there is no scientific evidence for panpsychism, there is no scientific reason, as opposed to philosophical argument, for believing it" (Lycan 2006, 66). Lycan (2006, footnote four) notes that the Copenhagen Interpretation of quantum mechanics does provide evidence for panpsychism, but scoffs at such evidence since the Copenhagen Interpretation is an *interpretation* of quantum facts and not itself a quantum fact. These statements from Strawson and Lycan are indicative of the lack of conclusive evidence for or against panpsychism. Support for either ontological position, as I will argue below, will rise or fall on the explanatory value of the theories that grow out of one or the other of these positions.

Naturalized panpsychism (NP) rejects mental specialism. Rejecting mental specialism leads to the commitment of four principles that I take as constitutive of NP. These four principles are: 1) that proto-consciousness or information is a fundamental property that permeates the universe; 2) that proto-consciousness/information is ontologically independent of matter, which entails that the proto-consciousness/information cannot be fully explained physically; 3) following principles (1) and (2), the physicalist worldview must include the fundamentality of proto-consciousness/information; 4) consciousness just is integrated information (Tononi 2008). The first principle does not entail a strong version of the all-thesis, that every existent is conscious. NP does not hold that rocks and billboard signs are conscious. NP assumes that theories of the mind and reality in general must be commensurable with science. Thus NP is decidedly anti-substance dualist, but not due to the immateriality

[1] Emphasis Strawson's.

thesis of substance dualism. Rather NP rejects substance dualism on the basis that substance dualism contradicts the naturalistic principle of causal closure. NP does hold that mental properties permeate reality; as a fundamental entity it will permeate reality. But this fundamental property is not consciousness, but rather the fundamental constituents of consciousness, *proto-consciousness*. Proto-consciousness is ontologically independent in the sense of being unable to be ontologically reduced to another category of existence, though it is not a separate substance. One cannot account for proto-consciousness in terms of physical facts, but proto-consciousness can have interaction with the physical.

NP maintains that mental properties have a degree of causal efficacy. Much of current science is missing something significant about the universe—something branches of science itself (such as quantum physics) have the ability to see, namely that mental properties are fundamental to the universe. Finally NP is committed to the thesis that higher-order mental properties, such as consciousness, emerge from 'mental-simples' such as proto-consciousness. This thesis requires that NP offer a solution to the famous combination problem. Because of NP's naturalistic commitments, its solution to the combination problem will not rely on transcendental arguments nor resort to a doctrine of mysteriousness. Naturalism demands that the solution be continuous with a scientific understanding of the mind.

The above discussion clearly shows that NP is a scientifically acceptable theory, a theory that accepts the authority of science, not necessarily as an univocal "trump card," but certainly as a fully equal partner in the inquiry, with respect to what we know about the universe. Thus NP also accepts, acknowledges, and relies upon non-scientific (i.e.

philosophical) methods for coming to a full understanding the mind. Science alone will not find the solution to problems like the nature of the mind, nor can a philosophical inquiry ignore or run afoul of the results and methods of science. Yet, where a priori metaphysical presuppositions conflict with results from the natural sciences, the power of veto rests with science. So while NP maintains that science has a powerful seat at the table, and particular sway in the case of conflict, this does not fall into scientism, which takes science to be the only method able to produce meaningful results about the universe and ourselves. Accordingly NP's metaphysical discourse about the mind may be seen as the "applied metaphysics" of John Heil (2004), which works hand in hand with science and is only vindicated to the extent that its application fits with what science does and discovers.

Mental properties and physical properties both describe reality, and an account of both is required for an understanding of the universe. NP holds that fundamental mental properties (not necessarily higher-level mental properties) share an inherent bond with fundamental physical properties. So, in cases where fundamental mental properties and fundamental physical properties share a bond, both properties constitute an ontological event. NP is not necessarily committed to the thesis that all events are constituted by both properties, though at least some events are so constituted. NP holds that causal relationships are relationships between discrete events. It is this view of causal relationships as between events combined with the thesis that some events are fundamentally constituted by mental *and* physical properties that provides an account of mental causation. When such an event is constituted by the combined properties, the causal efficacy of the event is due to *both* the physical and the mental properties.

Proto-consciousness is the fundamental lower-level state from which higher-level conscious states emerge. On the particular issue of how to naturalize panpsychism I am proposing here (NP), proto-consciousness is ***information***. Consciousness arises when information is arranged in a specific way by an appropriate system, as for example in the case of a mammal's brain. Following Guilio Tononi (2008), NP maintains that consciousness just is integrated information, which itself is just information arranged in specific (that is integrated) ways. It is the identification of proto-consciousness with information that enables NP to provide a naturalized account of panpsychism that solves the combination problem. Information is the reduction of uncertainty, the elimination of alternatives in a given configuration; it is a precise formal scientific theory that traces back to Shannon's work in the 1940s and 50s.[2] Intuitively, the more alternatives that are eliminated reduce more uncertainty, producing more information. The human brain has a vast amount of information because its connections and states number in the billions. The information is highly integrated because that the neurons are organized into higher involuted structures on multiple levels. This integration is what a computer with high information-states lacks. This measure of *integrated* information explains why humans have consciousness and mere computers possessing information states do not. Integration is the key to the proto-consciousness of information becoming full blown consciousness. And notice that in this there is no appeal to mysteriousness: the NP solution to the combination problem grows out of a scientific account with real empirical credentials.

Before moving on to a chapter summary, I recapitulate below the various presuppositions I will be employing as outlined above.

[2] See Cover and Thomas 2006 for the current state of the theory.

1. Consciousness is a real phenomenon in the universe. This assumption does not assign any particular nature to consciousness. Conscious states could turn out to be brain states under this assumption, though I will argue that consciousness is integrated information.
2. I reject the brute emergence of properties from ontologically distinct realms. I hold that brute emergence—cases of emergence where a property, X, emerges from a property that is fundamentally and in all ways not-X—is impossible. Thus, if consciousness emerges from the physical, the physical must, in some way, be so constituted to produce consciousness. In other words, I hold that something cannot come from nothing.
3. I accept the principle of causal closure of the universe, though with some modifications in how the principle is interpreted. Thus, I reject all forms of supernaturalism, especially substance dualism. I accept Barry Stroud's characterization of 'supernaturalism': "the invocation of an agent or force that somehow stands outside the familiar natural world and whose doings cannot be understood as part of it" (Stroud 2004, 23).
4. I accept scientific credibility of the Copenhagen Interpretation of quantum mechanics; again I only need to do so provisionally. My account of a plausible naturalized panpsychism need not (and should not) be any more certain than credible scientific theory.

I now turn to a brief summary of each of the chapters.

Chapter One

In chapter one I formulate *mental specialism,* the assumption that the mental or consciousness is an anomaly in the universe and how it continues to dominate the mind-body debate. The mental, it is held, is something to be explained away rather than a part of the universe that is necessary for a complete understanding of reality. The mind-body problem arises from failure to treat the mental as a distinct and fundamental category of reality. But this failure is only part of the problem. The second part of the problem is that it is conceived that the category of the mental can only be posited as the opposite of the physical. It should be understood that mental specialism is not a necessary aspect of the mind-body debate. Thus I assert that the rejection of mental specialism is the key for a better understanding and a possible solution to the generation problem. Rejecting mental specialism lands us squarely into *panpsychism*, the view that the mental is fundamental to the universe.

Chapter Two

In chapter two I demonstrate the compatibility of naturalism—the view that the universe is thoroughly natural as opposed to supernatural—and panpsychism.[3] I do not argue that panpsychism is the only theory that is compatible with naturalism. I merely aim to naturalize panpsychism, to make panpsychism compatible and even coherent with science. If, for example, dualism or property dualism can be shown to be compatible with naturalism, then my project is not harmed. Demonstrating the compatibility of

[3] I merely characterize naturalism with the view that the universe is 'natural' and not supernatural. This characterization is not meant as a theory or as a definition.

naturalism and panpsychism discourages an a priori dismissal of panpsychism because it is ***unscientific*** (in the sense of being unable to be put in conversation with scientific results). First I shall determine the dispositions that are necessary aspects of naturalism. I do not mean for this to be a definitive understanding of naturalism. My purpose is rather to determine a ***method*** with which to test whether a proposed disposition of naturalism is a necessary aspect of naturalism or not. I test the proposed dispositions by determining whether the disposition is entailed by naturalism's core or fundamental thesis, which I assume to be: '*A conclusion about reality is only defensible if it fits with what and how science discovers and is not categorically removed from empirical (dis)confirmation.*' I call this the '*defensibility thesis.*' While I believe that the defensibility thesis is in fact the central thesis of naturalism, it is irrelevant if another theorist argues that some other thesis is in fact the central thesis. The issue in this chapter is a method for determining whether naturalism and panpsychism are compatible. If another theorist in fact demonstrates that a new thesis is central, such as anti-supernaturalism, for instance, then it is a small matter to re-test the compatibility in question and advance from that point. I understand naturalism to be completely constituted by its core dispositions. Then I shall demonstrate that panpsychism does not contradict these core theses.

The two most obvious objections to panpsychism-naturalism compatibility are that panpsychism is a supernatural doctrine and that panpsychism demonstrates that science is incomplete. To refute the supernaturalism objection, I note that my version of panpsychism does not require recourse to supernaturalism. The next objection is about

the authority of the sciences on what exists. This objection depends on the view that today's science universally or significantly holds mental specialism.

Because of the special status of physicalism in naturalist circles, I take special issue to reconcile physicalism and panpsychism. I proceed by offering an account of a dual physical-mental causation. I accomplish this by adopting much of the work of *Embodied Minds in Action* by Robert Hanna and Michelle Maiese (2009). The key is rejecting the standard interpretation of causal closure, or fundamentalism, which holds that fundamentally physical properties necessarily exclude any sort of intrinsic connection with fundamental mental properties (Hanna & Maiese 2009, 273-274). This allows for events with both mental *and* physical properties instantiated in those events. Thus, the mental does not inject free-causation and in fact works within the physicalist disposition.

The ultimate goal of this dissertation is to naturalize panpsychism and thus give panpsychism plausibility that it did not as of yet posses. While metaphysical theories may be proposed and may be considered meaningful independently of naturalism, one of the greatest hindrances to real progress on the mind is a lack of substantive commensurability between philosophical and scientific theorizing. A successful theory just cannot contradict science or even operate entirely outside of science. Thus, any theory must be sensitive to the current science and must be accessible and willing to be in serious conversation with science. Thus the first step in naturalizing panpsychism is to show that the two doctrines are in fact compatible.

Chapter Three

In chapter three I offer an empirical solution to the combination problem. If panpsychism is true, then either each and every thought exists in its own right perfectly formed, or higher-order mental properties emerge from lower-order mental properties. The latter is combination. The former contradicts metaphysical minimalism and creates the problem of instantiation of these thoughts in particular thinking beings. The combination problem has proved difficult to solve except through appeals to mysteriousness or by establishment through transcendental arguments. Mental properties are quite different from physical properties. The emergence of higher-level mental properties is not a matter of the summing of lower-level mental properties like physical properties. Phenomenal properties like consciousness simply cannot sum.

I offer a scientific solution to the combination problem. My solution adapts Guilio Tononi's Integrated Information Theory of Consciousness (IITC) (2008). Tononi proposes that consciousness just is integrated information, both the existence of and character of specific conscious states. A conscious state is a result of the relationships between different mechanisms processing information in a system, such as a human brain. So, combination results from one set of neurons communicating with another—systems that are part of a larger system. Each system receives input that results in that system entering into an internal informational state. Thus, Combination is input that results in an internal state of a system.

Excluding the emergence of conscious properties from physical properties, which are taken to be fundamentally non-conscious, physical reduction *work*s. Higher-order

physical properties can be successfully explained by referring to fundamental particles. Panpsychism hold that this success cannot be repeated in order to explain conscious properties that conscious properties cannot reduce to non-conscious properties. But, unless a panpsychist can offer an empirical and convincing solution to the combination problem to explain where higher-order mental properties come from, then the panpsychic proposal just does not explain enough to consider it as a possible solution to the mind-body problem. By offering a solution to the combination problem I advance one more step to establishing a viable panpsychic theory, because I overcome the major difficulty to panpsychism. If my solution holds, then naturalized panpsychism holds as well.

Chapter Four

In chapter three I offer a solution to the combination problem. This solution depends upon Guilio Tononi's Integrated Information Theory of Consciousness. In turn, my solution depends upon the viability of Tononi's theory. Anthony Peressini, in his article "Consciousness as Integrated Information: A Provisional Philosophical Critique," offers several maiming if not fatal objections to Tononi's project. In this chapter I meet Peressini's objections in order to solidify Tononi's. First, Peressini's division of qualitative experience and subjective experience is not warranted. I argue that introspection and conceptual distinctions (being able to talk about phenomena as if they are different) are problematic. Next I demonstrate how accounts of qualia are oversimplified, focusing on singular aspects of experience. I then argue that information is intrinsic to a system. I establish information's intrinsic-ness by demonstrating that the information meets the basic intuition about the 'intrinsic,' namely that if an informational system was in a lonely universe (the only existent), that system would still have

information. Then I argue that information is fundamental by utilizing Galen Strawson's argument that emergent experience requires an emergent base that is fundamentally mental (Strawson 2006a). I then argue that information is fundamental if one considers its role in the Copenhagen Interpretation of quantum physics. Finally I explain that since full-blown consciousness is, in fact, an arrangement of fundamental properties, it has the theoretical and ontological strength to carry IITC's basic propositions.

Chapter Five

I have argued that a naturalized panpsychism is a possibility. This final chapter answers two questions. The first question is: What is naturalized panpsychism (NP)? The second is: What is the character of human consciousness according to naturalized panpsychism? I shall conclude with a brief examination of areas that require further investigation and some possible areas that NP may benefit.

Chapter One
Where We're at, the Mind-Body Problem; Mental Specialism to Panpsychism

1.0 Synopsis of Chapter One

In this chapter I address the generation problem, the problem of where consciousness comes from in our universe, which is taken to be primarily physical. The physical is taken to be fundamentally non-conscious. So, how consciousness occurs in the universe is a mystery. My diagnosis of the generation problem traces its origin in the Modern period until today, though I certainly do not cover every aspect due to space and time. I trace a basic history of the evolution of the mind-body problem to display that the generation problem, how conscious properties come to exist, is not in fact a problem of a particular theory but a problem of the debate itself. Behind the debate is the assumption of mental specialism, the principle that the mental is an aberration of nature or something that is out of place in the universe. This assumption leads to at least the generation problem, but it is not an assumption needed for a complete understanding of the universe, only particular theories. It is un-argued for and seems to be a matter of dogmatism rather than scientific support. Rejecting mental specialism lands us in another assumption, that the mental is a fundamental part of nature, or *panpsychism*. Both are assumptions but both are actually equally acceptable.

My first goal is to explain the switch of mind as intellect to mind as consciousness that arose in the philosophy of mind. This change is due to the qualia objections to functionalism and physicalism. The second is to describe the method the majority of theorists employ to circumvent what David Chalmers calls the hard problem of

consciousness. I shall only describe some of these theories due to limited space. The method in question I call the *method of conversion,* for these theories seek to convert consciousness into cognition. Next I will diagnose and explicate where the primary and fatal problem of physicalist theories arises from, that is how to explain the emergence of consciousness from non-conscious matter. The origin of the physicalist difficulty is the ontological assumption that I term *mental specialism,* the assumption that the mental is an anomaly in a universe that is fundamentally non-mental. Finally I shall offer what I take to be the only answer open to theorists if they wish to solve the generation problem. This answer is to abandon mental specialism and embrace the notion of consciousness as a fundamental feature of the universe, or panpsychism

1.1 Intellect to Consciousness

Science routinely takes observable phenomena and explains them with more basic, underlying structures. For example, water is explained by the more basic underlying account of the molecular structure, H_2O. Thus, we have the identity statement: "Water is H_2O," with H_2O representing the nature of water. Herbert Feigl, U.T. Place and J.C.C. Smart applied this reduction to the mind-body problem, asserting that a mental state—as a thing and not as a concept—is nothing other than a brain state (Place 1956) (Feigl 1958) (Smart 1959). These thinkers' method was to demonstrate that there is nothing contradictory in the statement "mental states are brains states" and then point to the simplicity of the identity theory, simplicity in the sense of positing fewer entities in the universe. Since the simplest theory is the superior theory, the identity theory should be accepted. Both Place and Smart are careful to note that their theory does

not state that talk about mental states is talk about brain states. Thus, their theory is about an ontological reduction and not an analytic reduction. Water and H_2O do not *mean* the same thing even though they are in fact the same ontological object. Identity theorists also assert that the statement "mental states are brain states" is not a logical necessity, that is a *de dicto* necessity (a property of language), and thus an analytic truth, but a *de re* necessity (a property of the world), and a contingent truth.

Jaegwon Kim asserts in his article "The Mind-Body Problem after Fifty Years" that after the short lived hypothesis of the Mind-Body Identity Theory[4], physicalism became the assumed stage of the mind-body discussion and the task for theorists would become fitting the mental into the assumed physicalist framework (J. Kim 1998). Most contemporary theorists accept that the universe is thoroughly physical—non-mental—with mentality as an anomaly.[5] This is physicalism, the ontological theory holding that everything in the universe is either physical or has a physical foundation.

In "Is Consciousness a Brain Process?" U.T. Place initiates the change by stating that

"cognitive concepts" such as "knowing," "believing," "understanding," "remembering,"

[4] See U.T. Place, "Is Consciousness a Brain Process?", *British Journal of Psychology* 47/1 (1956), 44-50; J.J.C. Smart, "Sensations and Brain Processes," *Philosophical Review* 68 (1959), 141-56; Herbert Feigl, "The 'Mental' and the 'Physical'", in *Minnesota Studies in the Philosophy of Science*, vol. II, eds. Herbert Feigl, Grover Maxewell, and Michael Scriven (Minneapolis: University of Minnesota Press, 1958).

[5] It is rather strange that the physical is considered the basic material of the universe since it is through the mental that we, as conscious beings, have access to the universe. In fact, the physical seems to be available to any conscious being only through a veil of consciousness. One would think that the most natural question would be how to fit the physical into a universe that is fundamentally mental, as Russell asserts in his Problems of Philosophy. Russell, Bertrand, (1912). *Problems of Philosophy*, Oxford, NY: Oxford University Press, pg. 11. Galen Strawson's paper 'Realistic Monism', in which he argues for a panpsychist account of conscious experience, distinguishes between two types of physicalism, real physicalism and physicSalism. Real physicalism accepts the reality of conscious experience and understands that conscious experience is the beginning of a realist theory of what there is. PhysicSalism is the article of faith that physics can provide a complete explanation of all concrete reality. PhysicSalism, according to Strawson, opposes real physicalism unless it is supposed that physics can capture the full essence of conscious experience.

and "volitional concepts" such as "wanting" and "intending" can all be explained by appeal to behavioral dispositions. In Place's article have an early, albeit misguided, division between what comes to be called a-consciousness, that data within a system that is available for the purpose of reasoning, and p-consciousness, subjective experience, or between tractable problems and truly hard problems (Place, 1956, pg. 44) (Block 2002) (Chalmers 1995). For Place the easy problem is dealt with in terms of Logical Behaviorism, but we address the same problem with our contemporary cognitive science and neuroscience in saying that science can explain the intellect, calculative intelligence, and so forth. What is still left unexplained and which therefore becomes the focus of the mind-body debate is consciousness. This is Chalmers' 'hard problem' of consciousness: subjective experience. The easy problem for Chalmers (and note the similarity to Place's terminology) is: "the ability to discriminate stimuli, or to report information, or to monitor internal states, or to control behavior" (Chalmers 1995, 200). Chalmers himself calls these the 'easy' problems because there is no mystery behind their nature and Physicalist doctrines, i.e. Cognitive Science, Functionalism and Eliminative Materialism, can provide an account of these various mental states (Chalmers 1995).

If we compare the mind in the mind-body problem displayed by Place, Nagel, Chalmers, and Block with earlier theorists, such as Descartes for instance, it is easy to see the change in topics. Descartes claimed that the mind and the body are two substances complete in themselves and independent of each other in their existence and function. There is nothing mental in the physical and nothing physical in the mental. If one examines Descartes' The Discourse on Method and The Meditations on First Philosophy, one finds a concept of mind that is thoroughly, though not exclusively, cognitive. For

Descartes, the mind is what calculates, judges between stimuli, is responsible for volitional and language behavior, understands, and perceives (Descartes 1641/2003, 27). What makes a mind what it is, on pain of inexistence, is thinking, not consciousness. Further on in the second chapter of The Meditations on First Philosophy, Descartes clarifies that this "thinking thing" is "a thing that doubts, understands, affirms, denies, is willing, is unwilling, and also imagines and has sensory perceptions" (Descartes 1641/2003, 28). Descartes' wax argument at the end of the second meditation displays that the mind discriminates between stimuli (Descartes 1641/2003, 32). Finally, in the Discourse of Method, Descartes argues that the two qualities that signify a mind-full entity are language and complex problem solving, each of which falls into the category of 'easy questions' according to Chalmers (Descartes 1641/2003, 56-57).[6]

Both dualism and identity theory consider the mind as an entity. Functionalism challenges this assumption, asserting that a mental state is a functional relation between stimuli and an organism's behavior. The function of a thing is what that thing does. If we apply functionalism to the mind-body problem, the mind is the function of the brain. Pain is a functional state of an organism, resulting from tissue damage as the input and pain-behavior as the output. A common way of imagining the functionalist theory of the mind is that of a computer. Computers were made, from the simplest abacus to the Apple

[6] At VI, 56-57, Descartes poses the possibility of philosophic zombies and explains why philosophic zombies are an impossibility. An entity without a mind cannot communicate via language and would lack the ingenuity that humans display. Descartes' differentiation between mindful entities and automatic entities rests on his observation of these two entities and an analogy between himself and other humans. Compare this to the difference between the Sphex ichneumoneus Daniel Dennett describes in his book Elbow Room; The Varieties of Free Will Worth Wanting. Here Dennett describes a wasp that, no matter how many times her task is interrupted, operates purely on some instinctual programming (pg. 10-11). Not only does the wasp lack language, the wasp cannot solve problems and perhaps does not even understand that there is a problem at all. The behavior of this sphex can be explained purely by a functionalist program, for what the sphex lacks—conscious behavior—is just what the functionalist explanation cannot provide an account of.

iPod, to perform functions. Computers receive input, process that input according to a set program, and, depending on the input and program, provide an answer as their output. The mind is what the particular program does, taking information and transforming that information into behavior.

The shift from the intellect to consciousness is fully apparent in some of the most influential objections to functionalism. The objections demonstrate that, given that functionalism is normally conceived as embodied in a physical system, functionalism and physicalism fail to account for the qualia, the *felt* aspects, of experience. Two examples are Ned Block's "Chinese Nation" objection (Block 1991, 215) and Frank Jackson's *Knowledge* objection (Jackson 1991). These thought experiments are objections to functionalism and physicalism not merely because the quale of experience is left out of these two theories, but because the two theories assert that consciousness is not the mark of the mental—what makes a mental state a mental state—but that a mental state is a mental state because of the functional state of the event in question. For the functionalist, a mental state is a mental state because it fulfills a function program. The functionalist tries to demonstrate that the mark of the mental is functional operation and the representationalist tries to demonstrate that the mark of the mental is an intentional state. For the representationalist, by contrast, a mental state is what it is because it represents the world or is about something.

Ned Block's "Chinese Nation" objection demonstrates that an organizational system, such as all the people of China, could be functionally similar to the functionalist's conception of the human mind and yet lack subjective experience or the quale of experience (Block 1991). To demonstrate this, Block constructs a thought

experiment in which the Chinese people act as the physical instantiation of the functional system of a human mind. If one investigates the inner working of the "Chinese Nation" functional system, one will not discover the subjective experience that human beings enjoy. Thus, it is plain to see that functionalism leaves something important out of a theory of the mind, namely consciousness.[7] Conscious experience is our most intimate quality of our mental life. To leave it out leaves out something that is central to the nature of mentality.

Frank Jackson has us envision a scientist who lives in a black and white world (Jackson 1991). This scientist is named Mary. Mary knows all the physical explanations of vision. So, when Todd views a red tomato, Mary can give a complete physical explanation of the light waves absorbed and reflected by the surface of the tomato and what goes on when the light reaches Todd's eye, and the accompanying synaptic firing. Now, Jackson asks us to imagine that Mary is released from her black and white prison. When Mary sees a tomato outside of her prison, she perceives the redness for the first time, and learns something new. From this Jackson asserts that something new is learned and so physicalism does not give a complete explanation of the conscious experience. So, functionalism and physicalism fail to account for something quintessential to mental life. One would expect that if a mental state were essentially a functional state or a physical state, then Mary would be able to conceptualize Todd's phenomenal experience of redness. However, the only way for Mary to know Todd's experience is through

[7] There are, of course, objections to Block's argument. However, the validity of the argument is not important to my project. It suffices to show that the problem of consciousness serves as an obstacle to a strong theory.

phenomenal experience. This shows that the essential nature of a portion of, if not all, mental states is something other than a functional or physical state.

The move from cognition to consciousness takes place as a result of the various objections to functionalism and to other incarnations of physicalism. Physical theories are able to explain cognition, or are at least sufficiently on their way so that confidence is justified. But what is left—consciousness—is a true conundrum. The issue arises from the aberrant nature of consciousness. It simply does not fit within the physicalist system. Science deals in external relations, and consciousness is an entirely internal experience.[8] Science can speak about anatomy, chemicals, neurotransmitters and so forth, but it cannot describe or understand what an adolescent *feels* when kissing someone for the first time, an experience that is quintessential to the human experience. This is why theorists attempt to change the nature of the question of consciousness, converting it from p-consciousness to a-consciousness. It is an attempt to transform that aberrant phenomenon into something with which we have had explanatory success.

1.2 Converting Consciousness into the Not-Consciousness

Jaegwon Kim asserts that the mind-body problem is the problem of accounting for the emergence of consciousness in a fundamentally non-conscious world, fitting the mental into an assumed physicalist system, or closing the explanatory gap (J. Levine 1983). Emergence refers to complex properties or entities developing out of basic

[8] There has been a general movement to exclude part of psychology from the scientific community precisely based on the fact that that part of psychology has internal experience as its object. The aspect of psychology the scientific community recognizes as science is external relations, i.e. neuroscience and physiology. The area of psychology that studies internal experience has been termed "folk psychology" and is now generally thought scientifically suspect if not altogether false. What is a valid object of psychological study to the scientific community are the external relations of neuroscience.

properties or entities, such as the generation of liquidity out of micro-properties such as H_2O and other molecules. The physicalist must either develop a theory of emergence that works or eliminate the mental all together. Developing a theory of emergence, explaining how the mental originates out of the physical, would explain just how the mental *is* physical. Yet, there is a significant difference between explaining how liquidity, heat, lightening, or digestion originates from their more basic constituents. After all, liquidity, heat, lightening and digestion are in the same ontological category as H_2O molecules, the motion of molecules, electrical discharges and the various internal organs of a living creature. But, our experience of our mental nature seems to have a different quality than our experience of our physical nature. The "explanatory gap", a phrase coined by Joseph Levine, signifies just this problem of an adequate theory of the emergence of consciousness from physical constituents. No matter how thoroughly the various *non-conscious* theories of mind explain or explain away consciousness, there is something that is always left over that the various theories cannot explain.

The most influential theories on the nature of the mind—Functionalism, Representationalism, Eliminativism—remove consciousness as the mark of the mental and replace it with a property that belongs to what Chalmer's calls the 'easy problems' of consciousness, namely making the mark of the mental a functional state, a representational state, or baldly denying the existence of consciousness altogether like Churchland's eliminitivism. These theories seek to close the explanatory gap and solve the problem of emergence by shifting ontological categories or denying the ontological category of the mental completely, which is eliminitivism. Let us call this the *Method of Conversion* (MC). One last issue to notice about these various theories is that they are all

thoroughly physicalist. These theories are conceived assuming that the universe is entirely exhausted by physical facts without recourse to mental facts.

We have discussed functionalism, highlighting that the functionalist holds that a mental state is the functional relation between stimuli and the behavior of a system. The functionalist has several different responses. She may deny the importance of consciousness, yet not consciousness' existence, regarding the mental life of an entity, making consciousness *epiphenomenal*, causally impotent in an organism's behavior. Functionalists have also asserted that entities such as the "Chinese Nation" simply are not implementing the correct functional system. Related to these responses is William Lycan's rejoinder to circumvent objections like Block's *"*Chinese Nation". The "Chinese Nation" does not represent the actual state of the functional mind for it leaves out the mind's teleological nature such an example does not have the right evolutionary purpose and history. Finally, regarding the explanatory gap, functionalists will assert that there is an unbridgeable gap, but the gap is insignificant in relation to a complete theory of mental states. As the examples above show, the functionalist tactic is to deny the importance of consciousness, to deny that a theory of the bat's mind is incomplete without accounting for 'what-it-is-like-to-be' a bat or understanding consciousness as a functional relation. Again, the functionalist's basic assertion that what is essential to a mental state is its functional relation within the organism's behavior.

Functionalism conceives the mind as a processor of stimuli in order to produce behavior that meets the conditions of satisfaction for a particular organism. Another theory with the same basis as functionalism though cashed out in slightly different terms is *Representationalism*. The theory is an adaptation of functionalism and retains the

functionalist doctrine that an organism's behavior results from a functional relation. Yet representationalism describes the functional relation in terms of symbol processing. So, the mind is a symbol processor, which means that a mental state is what represents a state of affairs with another symbol, much like the intentional powers of language. Possessing a particular mental state, say the belief that (*a*) the cat is on the table, is to have a symbol or series of symbols representing the proposition or meaning of (*a*) processed in whatever system in the mind processes beliefs. Beliefs are one half of the process which determines the behavior of an organism. The other half is the system that processes an organism's desires, which amounts to an organism's having a symbol representing (*b*) wanting the cat off the table. The mental states (*a*) and (*b*) combine to produce the organism's behavior which results in removing the cat from the table.

Having beliefs, desires and other mental states is a matter of possessing a symbol that expresses the reference to some state of affairs beyond itself. Such reference requires postulation of a vocabulary of symbols. Jerry Fodor calls this vocabulary a 'language of thought' (1975). How the mental apparatus applies this language reflects the meanings, the semantic relations, of the symbols, but the mental apparatus does not use the meanings of the symbols. In fact, theorists hold that the symbols and the meanings expressed by those symbols do not hold an intrinsic connection. The apparatus reflects the various meanings entirely by principles of the language's syntax. Thus, the mind is a symbol processor, applying sentences in the language of thought without comprehending the meanings of those symbols. The meaning of the symbol is due to the external world and how an agent applies that symbol.

The representational theory of mind easily fits the mental into the material world and the mind-brain relation. Fodor uses a computer paradigm to explain the place of the mental in the world. Mental states and brain states are related in a mode similar to the relationship between computer programs and computer hardware. The hardware executes—realizes—programming, but the programming is not reducible to the hardware. Mental states and brain states are the same in that brain states realize mental states. Mental states cannot be reduced to brain states for just the same reason that programs are not reducible to the hardware that implements them. [9]

1.2.1 Michael Tye's PANIC Theory of Phenomenal Consciousness

One need not study the representational theory of mind long to recognize that these theorists reconfigure the mind to fit into a physicalist framework by establishing the mark of the mental as a representational state. Just like functionalism, however, representationalism's obstacle is accounting for consciousness. Take for example Michael Tye's PANIC theory (M. Tye 1995). The PANIC theory accounts for consciousness by referring to what Tye refers to as the phenomenal content of an organism's experience.

The cognitive activities depend upon representational content, according to Tye. The cognitive capacities have as objects sensory representational content, or sensory

[9] If mental states admitted of reduction to brain states, the various mental states would not be able to transcend a particular physical organ. One of the flaws of reductionism is the strict physical identity of a mental state. Mental states that we intuitively conclude are shared by different organisms and perhaps even artificial life (machines with artificial intelligence) could not be the same because of a strict identity between mental states and brain states. To have shared mental states between organisms and artificial life would require each organism to possess the same physical state. The attractiveness of functionalism and representationalism is its principle of non-reductionism or multiple realizability: the fact that a mental state can be instantiated in multiple physical foundations.

symbols. These sensory symbols are the input that an organism cognizes. These sensory representations are products of the stimuli the organism acquires through contact with the external world. In stimuli there are non-sensory representations. Tye locates the quale in the interim between the non-sensory representation and the formation of sensory representations and the quale is identical with *phenomenal content*, or PANIC: Poised Abstract Non-conceptual Intentional Content (M. Tye 1995, 137). This phenomenal content is within the external stimuli that affects an organism and produces beliefs and desires.

Tye's PANIC theory sweeps qualia into what Ned Block calls "access consciousness." Phenomenal content certainly are not directly manipulated by cognitive faculties, but the nature of phenomenal content is representational. This is the same nature of the content of access conscious states. The 'what-it-is-like,' under the PANIC theory, equates to having a phenomenal concept (M. Tye 1995, 166). What the Mary in Frank Jackson's objection did not know amounts to lack of the phenomenal concept of red and the inability to apply that concept in the external world (M. Tye 1995, 174).

1.2.2 Eliminative Materialism and Radical Conversion

Eliminative Materialism is a global usage of Mental Conversion (MC). As stated before, MC is the tactic of explaining phenomenal mental states and the emergence of these mental states from a physical foundation by re-interpreting or reducing those states into non-phenomenal states. Eliminative Materialism does not merely seek to convert phenomenal consciousness into access consciousness, as in the previous theories we have discussed. Eliminative Materialism (hereafter EM) seeks to convert the entire framework

of the mind-body dialogue into an entirely scientific framework, thereby removing propositional attitudes from the discussion.[10] The mind-body debate, according to eliminitivist's assessment, is founded upon a faulty theory, namely *Folk Psychology,* (hereafter FP) sometimes called *common sense psychology.*[11] Eliminativists seek to expose FP's faults in order to elicit the theoretical community's rejection of FP and the adoption of a theory that conforms to the principles and nature of the contemporary scientific theories in other fields, by which eliminativists mean Neuroscience. The problems that arise in the traditional mind-body debate result from adherence to FP.

Proponents of EM take the discussion of the nature of the mind to be dominated by two and only two[12] theoretical frameworks—science and FP—that attempt to chronicle a consistent and meaningful story about the human body, development, society and behavior. Neuroscience, biology, evolution, and physiology—to name a few—constitute the scientific framework, explaining and predicting human behavior through reference to chemicals, synapses, neurotransmitters, hormones, and physiology. Folk Psychology is constituted by *mental concepts*: beliefs, desires, pains, pleasures, emotions, and intentions, explaining and predicting human behavior by positing a mind. The majority of the human population, perhaps excluding eliminativists, employs FP to navigate the human and animal world. The majority holds that minds, or at least mental states—whatever the nature of these states—are valid ontological entities. Positing these

[10] This is apparent in S.P. Stitch's book *From Folk Psychology to Cognitive Science: the Case Against Belief* where he argues that a theory of propositional attitudes like belief and desire is not required for a science of the mind. As support he points out that semantics is not necessary for an explanation, a prediction or the coordination of verbal behavior, and non-verbal behavior.

[11] Paul Churchland calls FP 'pre-scientific' in his article *Folk Psychology* in On The Contrary (1998), casting FP as an antiquated and naive theory.

[12] It seems fairly obvious that eliminative materialists consider FP and EM to be the only candidates for general theories covering the debate on mind. They merely argue against the elimination of FP and the elimination of any theory, such as functionalist dualism, that employs the concepts and laws of FP.

entities is a way of understanding and interacting with others successfully by ascribing mental concepts to them as the cause of behavior. So, FP is a theory about minds and EM is not.

Eliminative materialism is an elegant solution to the mind-body problem. One of the main tasks in the crafting of a successful answer to the mind-body problem is explaining how mental states emerge from physical states. The troubling aspect of the problem, which invites MC, is that the mental and the physical are assumed to be two different ontological categories. If consciousness is taken as the essential element of mental states, then consciousness seems opposed to the physical. What better way to avoid providing an answer to the difficult and elusive problem of emergence than to eliminate the emergent altogether? Note this is not reducing consciousness to some physical state, for reduction actually affirms the existence of the mind. According to EM, there is nothing to reduce. When one asserts that one believes, one says nothing, in fact, for there is no referent for the term 'belief.'

Since Paul Churchland's work is central to EM, I shall focus on his arguments. Folk Psychology, Churchland asserts, is a poor theory; it does not do its job. Poor theories in science have one of two fates: elimination or reduction. Science, and even society, in fact, is a history of the elimination or reduction of one theory for a better one.[13] So, Churchland asserts that if neuroscience and physiology can produce a theory that explains and predicts human behavior better that FP, then FP should be reduced to neuroscience or replaced completely. Folk Psychology, Churchland asserts, is like the

[13] Society exhibits this principle by the advancement of theories like civil liberties, democracies, communism etc. Better theories on how to govern replace worse theories. Human history can be seen as the continual replacement of theories about human social life.

case of replacing the hypothesis of demons causing illness with bacteria theory. There are simply no such things as minds and mental states, like there is no such thing as demons. Thus, just like demon-talk was eliminated from medical practices, talk of minds and mental concepts should be eliminated from the discussion of human behavior, according to Churchland.

Churchland's arguments aim to show that FP is false, and thus should be eliminated in future discussion of the nature of the mind and consciousness. Churchland offers three arguments supporting this assertion. The first insists that FP fails to explain and predict human behavior in several areas of human activity. There are some successes, but there are many mental phenomena that FP does not explain, namely, mental illness, creative imagination, the differences of intelligences between individuals, the phenomena of sleep and dreaming, and human learning process (Churchland 1981, 73). The second argument shows the infertility of FP. Folk Psychology's explanation of human behavior is effectively identical to the FP of the ancient Greeks. If FP were a complete theory it would have no need to expand and improve. Finally, FP is incompatible and isolated from the other explanatory frameworks within which people operate (Churchland 1981, 75). The mental concepts of FP are valid only within FP. Folk Psychology concepts are out of place when discussing biology, quantum physics, and neuroscience.

Consciousness is the obstacle facing a full physicalist account of mentality, whatever definitive form this takes. Most physicalist theories attempt to overcome the consciousness obstacle by 1) converting consciousness into something of an oddity, such as functionalism or representationalism. Doing so disregards just how important

consciousness is to the human experience. Or 2) theorists attempt to transform consciousness into a purely cognitive state, to show that the hard problem is in fact merely an easy problem. This approach is laudable. If something is difficult to explain, turn it into something that is easy to explain. But this approach has a hidden assumption. Physicalism assumes that the mental is a nomological danglee, an oddity in the universe. Taking the mental as an oddity an anomaly in a given system fuels the complex systems of explanations and excessive reactions such as EM. This assumption I term *mental specialism*, and it is only by rejecting this assumption that a full explanation of mentality will develop.

1.3 Specialism

We have discussed above how the mind in the mind-body problem has shifted from mind as cognition to mind as consciousness. We have further shown that the preferred technique to address the mind-body problem is the MC (mental conversion), in various guises, so that the task has become one of converting consciousness into cognition. The final element in the modern mind-body debate is *mental specialism*. Specialism itself is an ontological meta-theory—a theory about theories—that avers that within the fundamental categories of the universe, namely the physical and the mental[14], one or more of the categories is an aberration or a nomological danglee, an entity that does not fit within an assumed system or a theory in which one category is given

[14] The two categories of entities in the universe are usually restricted to the physical and the mental. Because I am not asserting that the physical and the mental are fully inclusive categories, positing additional categories does not seem warranted. The closest that one gets to a system with additional categories seems to be the ontological status of universals and numbers. For the sake of brevity I shall be glossing over the question of universals and numbers as a categorical constituent of the universe.

preference over the other.[15] George Berkeley's subjective idealism is an example of *physical specialism*, because the category of the physical just does not fit within Berkeley's system. Physical objects have no place within subjective idealism.

Physical specialism is a rare ontological position. The norm is the mind as a nomological danglee. As we saw in the efforts of functionalists, representationalists, and eliminativists, consciousness is considered the anomaly within the theory of mind. Consciousness is considered a non-fundamental feature of the universe, and if it is not eliminated as an ontological category, it must in some way emerge from something that is essentially non-conscious. The traditional and current mind-body debate (excluding subjective idealism) assumes the misfit status of the mind.

When one's system is incompatible with consciousness and one assigns consciousness the status of misfit, the mind-body problem arises, because it is only at this point that the mind becomes something mysterious that requires a special explanation. Take, for example, liquidity and solidity. At the surface, molecular microstructures do not exhibit either state. Yet, liquidity and solidity, while a difficult problem, are not a hard problem in the sense of a Chalmer-hard problem because liquidity, solidity and the molecular microstructure are part of the same system. If liquidity and solidity were considered an anomaly of one explanatory system, then the situation would qualify as a Chalmer-hard problem. The theoretical attachment to mental specialism is the culprit that prevents an adequate solution to the mind-body problem, and in particular the emergence problem. The mind-body problem does not arise from conceiving the nature of the mind

[15] A theory of this sort is Baruch Spinoza's parallelism. Each physical object has an idea, so ideas are just as profuse as physical objects, but the physical is given dominance in Spinoza's theory.

in a particular way (though ascribing to certain interpretations of mind may generate various difficulties).

The various contemporary theories of mind generally subscribe to a physicalist world-view and it is for this reason that these theories subscribe to mental specialism. Physicalism entails mental specialism. Physicalism is the doctrine that everything in the universe is either physical or explained by something that is physical. Anything in the universe that appears to be non-physical is merely an appearance—it is actually physical is some more basic aspect. Contemporary physicalist theories entail mental specialism, given how the "physical" is conceived. The first characterization of what "physical" refers is "non-mental". These two concepts are usually thought of, if not officially designated as such, as synonymous. The official designation of "physical" is that which is studied by the physical sciences, e.g. physics, astrophysics, chemistry, biology, or neuroscience. Such a designation allows for the inclusion of scientific phenomena such as gravity that are left out from bare materialism, the doctrine that all that exists is matter. Of course, the official designation of "physical" leaves out the entities of supernatural-based religion, ethics, sociology, psychology, and the mind (unless these entities can be shown to originate from a physical foundation which is MC). So, in the very conception of physicalism is the notion of mental specialism, for the mental is some sort of aberration to the very nature of the universe and is an obstacle to a complete scientific description of reality, even if the mental is broadly conceived as a physical manifestation. This is because the brain is a "special" organ, an organ that is an aberration of matter. The same holds for any entity that emerges from the brain. Physicalism asserts that the physical is the dominant expression of matter in the universe. Even with the identity

theory mental specialism is entailed (Feigl 1958) (Place 1956) (Smart 1959). So, physicalism entails mental specialism, and so any theory that subscribes to physicalism also entails mental specialism.

Mental specialism will not be considered a problem by most physicalists, for to consider mental specialism a problem is to consider the physicalist framework itself a problem to be overcome. This faith in physicalism stems from several sources. First, our intellectual culture is predominantly physicalist or scientific. So, the onus of proof rests with those who reject mental specialism or alter physicalism. Second, the causal closure principle is the foundation of physicalism. The argument is that every physical phenomenon that has a cause has a physical cause. According to our experience, mental events cause—at least some of the time—physical events. Thus, the mental, in order to be efficacious in the universe, must in some way be physical. The mental must be an aberration, because it is outside of the causal chain. Third, physicalism and the methods of natural science have successfully explained much of the universe. Thus, physicalists assert, it is safe to assume that methods of natural science should guide our ontological foundations. Natural science has accrued quite a reputation and would seem to be the highly reliable.

These three physicalist commitments support the acceptance of mental specialism. Mentality, in particular p-consciousness, is made into a nomological danglee that needs to be converted into a physical property or a property acceptable to physicalism. Such an act is accomplished by accepting a theory of emergence or by converting the nature of mentality into something that complies with the principles of physicalism. It is here that the most difficult objections against the physicalist project lie, namely the qualia and

intentionality objections, which aim to show that physicalism cannot accommodate these two mental phenomena. These two objections have their strength only in the physicalist commitment to mental specialism. So, mental specialism is *the* problem with physicalism, and the solution is not to employ MC, but rather to broaden the conception of physicalism by rejecting mental specialism.

1.4 Panpsychism

Any physicalist account that takes consciousness seriously subscribes to a form of emergentism.[16] How the physical generates the mental has become known as the generation problem (W. Seager 1995, 272).

Rejecting mental specialism entails the acceptance of the following four positions. First, (1) the mental is a fundamental and ubiquitous feature of the universe. Second, (2) the mental is ontologically independent of the basic physical constituents of the universe, so that emergence and supervenience theory is false. This position will be charged with

[16] Eliminative Materialism does not escape the generation problem. Eliminative Materialism claims that FP is a false theory, though FP itself may be false and that neuroscience and physics will provide a complete theory of the phenomena previously known as the mind. But, what makes the explanation of consciousness a "hard" problem is that consciousness and other mental states remain a distinct ontological category, despite the efforts of eliminativists. Combine this with mental specialism, and theorists still have the generation problem. Even if FP is eliminated, any other theory will still have a "hard" problem, because the phenomena will still remain. Perhaps the theoretical system of pains and sensation is wrong—but the phenomena that FP sought to explain remains. Eliminating a theory does not eliminate the entity that the theory sought to explain. Let us call this the Elimination Fallacy in which elimination of the theory is thought to eliminate the phenomena that the theory sought to explain. So let us grant that pain-theory or pain-talk—how we make sense of the events accompanied and seemingly produced by damage to a biological organism—is false. The phenomena previously known as pain still does not appear to act like physical damage, for this even can arise without physical damage, can be altered through meditation orhypnosis, the quality of the pain can change, and the phenomena previously known as pain can change due to concentration. Finally, as noted by Saul Kripke in *Naming and Necessity*, one knows the phenomena previously known as pain by what was previously known as the *feel* of that phenomenon. This phenomenon is known subjectively, not objectively. Physical events are known only objectively. Physical damage does not act in any of the ways that the phenomena previously known as pain does. So, the two events seem distinct. Thus, eliminativists still have strange phenomena to explain, especially since neuroscience and physics are completely in the realm of the objective and the relational.

espousing a form of substance dualism. This consequence need not follow, however, for independence does not entail separate substances or properties. Nor does independence entail an inability to interact. I employ the term "independent" not in the sense of "separate" or "fundamentally distinct" but "free from external control" and "not contingent on something else." Thus, interaction is possible. Further, the charge is that the mental is ontologically independent from *basic physical constituents of the universe*. But independence does not entail that the mental has a physical—"physical" in the sense of a scientific entity—presence of some sort. Obviously this sort of entity does not have to be an ontological substance like a rock, chair, atom, or electron. As stated earlier there is a possibility for a physicalist conception of panpsychism—that what is mental is physical in that it is studied by the sciences but is not dependent on the physical. I have in mind entities like numbers. Third, (3) given the second position, the physicalist worldview is incomplete. Obviously if the mental possesses the sort of independence of described in (2) and occurs throughout the universe (1), then the physicalist theory that treats everything either as physical or supervening on the physical must be false, and so the physicalist cannot explain the mental exclusively through a physical explanation. It follows from (3) that EM is incompatible with the denial of mental specialism, panpsychism. It does not follow that FP is true. Folk Psychology may in fact be as false as EM. A panpsychist theory may in fact be a third option independent of FP and EM. Recent work in quantum physics, as Seager notes, hints that the physical story may be incomplete without consciousness, and so physics may need to be altered by creating at least an altered form of quantum physics. So neither physical systems nor psychic systems are going to be adequate for a complete account of our universe (W. Seager

1995, 284). Fourth, (4) complex occurrences of mentality, such as consciousness, arise out of basic mental constituents of the universe. Or, basic constituents of consciousness merge to give rise to more complex mental entities (W. Seager 1995, 284 & James 1983, 158). If the mental is an independent entity from the physical, not originating from the physical, then complex mental occurrences in the universe must emerge from something. Note that this is not the same problem that plagues physicalism, the generation problem. Rather this emergence is analogous to the phenomena of complex physical entities, like diamonds, from basic physical entities, such as atoms. This mental-mental emergence is a difficult problem, but by no means *Chalmer-hard*.

Rejecting specialism amounts to the affirmation of panpsychism. Panpsychism is understood to be constituted by propositions (1) through (4) taken in unison. John Searle calls panpsychism an absurd theory without a shred of evidence in its support (1997, 50). David Skribina suggests that Searle mistakenly interprets panpsychism to assert that all things, such as rocks, docks, clocks, and atoms, have *human consciousness* (2003, 5). This view is obviously false, yet this sort of interpretation is needed for a panpsychist theory (PT henceforth) to be *absurd*. It is clear that PT is neither unreasonable nor illogical. There are actually quite logical reasons for accepting that the mental, in a basic, atomic sort of mentality, is as fundamental to our universe as mass, motion, and other fundamental physical entities. Yet, Searle's misinterpretation raises the right questions, namely, just what is the nature and level of mentality that is fundamental to the universe and just what does the panpsychist mean by "fundamental?" Part of the answer depends upon how one takes the nature of "mental." If the essential nature is consciousness, then the nature of psychism will be consciousness. But if one takes the conscious/non-

conscious division seriously, then the basic constituent could be a non-conscious aspect. If one denies non-consciousness mentality, then "psychism" will be consciousness, but not necessarily human, animal, or sea slug consciousness. If the nature of the mental is intentionality or representational states, then consciousness need not be a fundamental aspect of the universe but rather an emergent quality of intentional states, or *information*.[17] The hard problems of consciousness would not need to be answered to arrive at an understanding of the mind. The mind could be understood in terms of non-mysterious properties. But, whatever the specific nature of psychism, one does not have to take that which is ubiquitous to be human consciousness. Obviously this is true if psychism is colloquial in terms of information, for information occurs on a continuum, and different bits of information combine for greater bits of information. So, the basic constituent that is the psychic element can be proton-like: simple entities that combine to result in more complex entities.

By "fundamental" I mean that the mental is an irreducible element of the universe, required for a complete understanding of the universe. The mental is part of the nature of the universe. I also adopt William Seager's description of "fundamental": the mental is not dependent on any physical description and the mental has its own causal efficacy (1995, 279). Seager's description is entailed by the four principles of panpsychism discussed above. An entity could hardly be a fundamental element of the universe if that entity could not affect the universe through its own powers. This does not mean that the fundamental element affects the world through powers resembling the

[17] Whatever the specific nature of the mental that fills the content of a panpsychist account of the mind, it is possible that several problems will remain for the theorist to explain. For example, the explanatory gap may remain for the panpsychist, depending on the specifics of the theory. I claim that panpsychism will avoid the problem of emergence, not necessarily the aggregate problems of the mind-body debate. However, the panpsychist will need to provide a solution to these traditional problems.

powers of human mentality. The fundamental entity will more than likely have little resemblance to the causal powers of human, or even animal, mentality. As stated earlier, Searle's absurd-panpsychism is not the hypothesis presented in this article. Rather, these fundamental mental entities are responsible for at least a portion of human capacities and are unlikely to be the sole foundation of those capacities.

Panpsychism, like naturalism and physicalism, is not a definitive account of the mind. Rather, panpsychism is a meta-theory that connects the mental and physical realms into one cohesive whole. Any panpsychist must further formulate a positive theory of mind. It is possible to note some general characteristics of this positive theory. First, the mental will have a fundamental place in reality and will be a basic building-block of reality. Second, neither the physical nor the mental will have a preferred ontological status. This effectively rules out mental emergence from the physical and physical emergence from the mental. Finally, a successful explanation of the universe will require reference to both the mental and the physical.

1.3 Conclusion

I have endeavored to show our current understanding of consciousness and the likeliest answer before theorists, namely panpsychism. We can understand that the core problem that physicalism faces is the generation problem, the problem of explaining just how consciousness is produced by something that is essentially non-conscious. Physicalism has not been able to bridge the gap between physical facts and phenomenal facts. I have asserted that the generation problem originates not from individual definitive theories of the mind, but from the worldview I dubbed *mental specialism*.

While the term "mental specialism" is new, the concept is not and has been commented upon several times before. However, it has not been commented upon as a definitive trend in the philosophy of mind. The solution to the generation problem is found by rejecting *mental specialism* and not by forever developing measures designed to circumvent and deny the multitude of objections posed by advocates of consciousness. Rejecting mental specialism is in fact adopting panpsychism, the worldview that the mental (however one conceives of that term) is as fundamental and ubiquitous as the physical.

There are three difficulties facing the panpsychic theorist. The first is the prejudice that most theorists hold for this world system. Theorists see panpsychism as something supernatural and fail to recognize the scientific and rational support that has been emerging on the side of panpsychism for centuries. The second problem is that there are various objections that must be dealt with definitively. William Seager describes four major objections to panpsychism: the combination problem, the completeness problem, the no sign problem and the non-mental problem (1995). The final objection comes from Peter Carruthers and Elizabeth Schechter. It is an objection not only to panpsychism but to physicalism as well, the *explanatory gap problem.* Before any panpsychist theory will even be entertained, it is necessary for a panpsychist to account for these five objections. The third problem is that the panpsychist must develop a concrete theory of mind that both fits with the current world view and can be demonstrated as a better explanation for the phenomena at hand.

The first objection is the combination problem and Seager considers this the most difficult problem facing a panpsychist account of the mind (1995, 208). He is correct.

The combination problem is the core issue of panpsychism and will determine the fate of any panpsychist theory. As stated before, a panpsychist will be forced to accept that complex mental states, such as human consciousness, emerge from more basic (proto-conscious) elements. William James' challenge is that it is "logically unintelligible" to hold that consciousness sums, or elements of consciousness combine to create higher and more complex forms of consciousness. A conscious thought, in whatever sense, is a full thought—not a thing of parts: it is indivisible.[18] In short, as complete states they are simply not the sort of thing that can combine. James colorfully illustrates this by suggesting the following thought experiment: Divide the words of a sentence between a corresponding number of individuals. Have the individuals all think their particular word. Arrange these individuals in any way possible as closely as possible; the words will not combine to form a whole coherent thought. James states that feelings and emotions are the same, they do not combine to form new, more complex and higher forms (James 1983, 160 & W. Seager 1995, 280). So, James rejects the necessary principle of panpsychism that complex mental states result from the combination of less complex, more basic mental states or properties.

Panpsychism posits consciousness as a fundamental feature of the universe in order to avoid the physicalism's generation problem. It is here that the completeness problem arises. If consciousness is as fundamental as panpsychists wish to prove, then it is obvious that consciousness should have at least a significant effect on the universe. Seager states that physically indistinguishable systems should display divergent behavior,

[18] This is reminiscent of Descartes' divisibility argument that asserts that the body and soul are different substances, because the body is divisible and the soul is not. Thoughts and mental states are, no matter how simple, fully mental states and complete in themselves.

at least occasionally (1995, 280). Or, in other words, physicalism should not be able to account for everything that goes on in the universe; our sciences should be incomplete. However, I wish to point out at this point that the completeness objection is flawed because it looks for *human behavior* in the other constituents of the universe. Seager states, "I thankfully don't have the additional worry about [my car's] failing to start even when there is absolutely nothing mechanically wrong with it but just because it 'feels like' staying in the garage today! (1995, 281)." This complex desire is analogous to the desires of a complex animal. The point is clear: whatever the nature and behavior of this fundamental consciousness, there is no guaranty that it will exhibit the complex behavior of insects. This does not answer the objection, however. In a panpsychist universe there should be something that is beyond the physical sciences. But, when looking for this "something", we must not fall into the trap of looking for human behavior from rocks and docks.

Seager calls the no-sign problem and the not-mental problem the 'simplest' objections to panpsychism (1995, 282). The no-sign problem is the issue of finding evidence of a nonphysical aspect of the basic constituents of the universe. This is related to the completeness problem, for obviously if there was evidence of a nonphysical aspect of the universe—evidence of something that the physical sciences could not account—our physical sciences would not be complete. The not-mental problem raises the objection that even if there was some sort of phenomenon that theorists denote as mental in the universe, how does one justify categorizing that phenomenon as mental? This objection is about the justification of denoting a phenomenon as a *mental* phenomenon. Even if one argues a priori (and Seager does not do this) that there are only two

categories in the universe that are both defined as mutually exclusive—whatever is mental is essentially non-physical and whatever is physical is essentially non-mental—a theorist could not argue that since a phenomenon does not appear to be physical it must be mental. A defense would still be required to explain *why* phenomenon should be denoted as mental rather than physical if the phenomenon is merely inexplicable within the physical system.

The final objection that faces a panpsychist theory also faces a physicalist theory, the *explanatory gap problem*. Peter Carruthers and Elizabeth Schechter ask whether proto-consciousness can explain macro examples of consciousness, or whether macro-experientiality can be reductively explained in terms of micro experientiality (2006, 36). The point is important, for if panpsychism cannot answer this question then do we gain anything? The answer is no. Carruthers and Schechter argue that nothing can be known about the basic particles that comprise consciousness. All other explanatory systems can be explained by reduction to less complex constituents, and it follows that this is what we should look for in a panpsychist account. Any explanation will require knowledge of the constituents that are being explained. Carruthers and Schechter ask a final question: Does panpsychism, if everyone was committed wholly and fully to it, completely solves the problem of other minds and the conceivability of Australian zombies or even regular zombies (2006, 36)? Carruthers and Schechter obviously believe that it does not. The problem of other minds remains, and Australian zombies remain conceivable.

Thirdly, a concrete panpsychist theory of mind must be developed, for panpsychism is not only a theory of mind but also a theory about reality. It is in this third task that the nature of the psychic ultimates must be settled. The greatest hope for a

concrete panpsychist theory of mind will come from the work of quantum physicists like Goa Shan, David Bohm, and Stuart Hameroff[19] and from neuroscientists working on information integrations applications to consciousness, namely Giulio Tononi, Olaf Sprons, and David Balduzzi.[20] Any theory (at least since roughly the 1950's) will take place within the bounds of science. This does not mean that a successful theory of mind will be required to be physicalist or depend upon the physical. Science will, however, have a crucial part to play in any theory of mind. So, any supernatural or immaterial substantial account of the mind will be rejected. Luckily, panpsychist entails neither supernaturalism nor substance dualism.

The tasks before the panpsychists are clear but seem impossible. Though so is explaining mental properties that have been a priori set up as, dare we say, a miracle in a physical system? In the very least mental properties are but an aberration. Panpsychism is in much the same standing as physicalism. Physicalism is plagued by what seem intractable objections, to the point that eliminating the mind altogether is an attractive alternative. Theorists of the mind are not in a position to ignore any possibility.

[19] See: Shan, Goa, A Possible Quantum Basis of Panpsychism, in NeuroQuantology; Bohm, David, A New Theory of the Relationship of Mind and Matter, in the Journal of the American Society for Psychical Research; Hameroff, Stuart, 'Funda-Mentality': is the conscious mind subtly linked to a basic level of the universe?

[20] See: Tononi, Giulio and Sporns, Olaf, Measuring Informatikon Integration; Balduzzi, David and Tononi, Giulio, Integrated Information in Discrete Dynamical Systems: Motivation and Theoretical Framework; Tononi, Giulio, An Information Integration Theory of Consciousness; Tononi, Giulio, "Consciousness as Integrated Information: a Provisional Manifesto."

Chapter Two
The Compatibility Between Naturalism and Panpsychism

2.0 Introduction

A viable panpsychist theory cannot merely be a matter of faith, a doctrine of mysteriousness, or a result of a purely semantic argumentation. The investigation into reality and the investigation into the nature of the mind have been heavily influenced and directed by science – especially physics, quantum physics, and neuroscience. Neuroscience has revealed more about our minds than two millennia of semantic argumentation and faith. *Any viable theory of the mind must not contradict the findings of science or the major tenets of science.* Endorsing this assertion is my motivation for demonstrating that panpsychism cannot be merely dismissed as incompatible with naturalism—that in fact empiricism and naturalism are compatible with panpsychism. Panpsychism has to be part of the scientific world, not merely exist beside it; otherwise it should be jettisoned with the flotsam and jetsam of armchair philosophy. My argument is intended to demonstrate that a panpsychic theory of mind is an equal candidate in the mind-body debate and will offer valuable insights into the nature of this debate. For this theory to receive serious consideration by the scientific and philosophic community, however, it must be shown to be compatible with naturalism.[21] Naturalism is a philosophical movement which holds that nothing exists beyond the natural universe.

[21] It is not necessary that panpsychism is the only doctrine that is compatible with naturalism. All that is important is the possibility that panpsychism is one of perhaps many naturalistically compatible theories. So it is irrelevant whether property dualism or substance dualism are also compatible with panpsychism. Their compatibility will not entail that panpsychism is incompatible with naturalism. Of course these theories have problems of their own, i.e. property dualism faces the generation problem or falls into epiphenomenalism or substance dualism is ultimately a supernatural doctrine with serious issues concerning mind-body interaction.

Here I will defend the compatibility of panpsychism and naturalism, demonstrating that panpsychism cannot be disregarded a priori on the basis that it is unscientific or supernatural. This conclusion will thus lead us to my main assertion: that panpsychism is a plausible research approach in the mind-body debate.

Before proceeding I need to clarify our topic. At this point I am not arguing for a particular panpsychic theory of mind, like the type-type identity theory, token-token identity theory, or eliminative physicalism. I argue that naturalism is compatible with a general panpsychic meta-theory. A distinction often is made in panpsychist theories is between a general metaphysical panpsychist theory and a panpsychist theory of mind. The former is a theory about reality and the latter about a particular class of existents—namely, those properties with minds in whatever degree. Physicalism is a similar general metaphysical theory of reality, and the identity theory is similar to a particular panpsychic theory of mind. The identity theory assumes and requires physicalism as a general metaphysical theory. The former concerns the nature of reality and its ultimate constituents. The panpsychist theory of mind assumes a panpsychist theory of reality, but concentrates on explicating a psychic theory that covers any existent that can be said to have a mind, on describing the nature of the mind and its constituents, and on resolving the basic issues confronting every psychic theory. These issues include the proper way to distinguish between entities having and not having minds, overcoming the various classic problems challenging the various theories of mind – such as the nature and possibility of mental causation, for example – and responding to objections particular to the panpsychist theories, such as the combination problem and the accusation of being

unscientific.[22] The purpose of the general metaphysical panpsychist theory is to lay the foundation for the development of a satisfactory panpsychist theory of mind which adequately accounts for and unifies our scientific observations and intuitions with our phenomenal intuitions concerning reality.

2.1 Specific Details of Chapter Two

I shall first discuss the four exhaustive constituting claims of panpsychism (2.2 Panpsychism**).** I shall stress the difference between a panpsychist theory in its most abstract formulation (i.e. concerning reality) and more concrete theories, like particular panpsychist theories of mind. The viability of a panpsychist theory of reality is not necessarily linked to a viable panpsychist theory of mind. Next I shall offer a brief interpretation of naturalism in a broad sense (2.3 Naturalism)**.** In a brief discussion of naturalism, I describe its two central convictions: the methodological conviction and the ontological conviction. The former states that the proper method, thought not the only method, of investigating reality is via the natural sciences, and the latter states that natural sciences are the authority on what is real. Despite the various conceptions of naturalism, there appears to be a central core of assertions that any naturalist accepts. My presentation of naturalism shall exclude a discussion of these various core claims. I employ the core claims of naturalism in the body of my main argument, and so shall leave a discussion of naturalism's core claims until then. In my interpretation I merely

[22]I shall offer a solution to the combination problem in chapter 3; meeting the charge of being unscientific is the topic of the present chapter.

provide the most general account of naturalism, which in part follows Michael Rea's conception of naturalism as a research program (2002 & 2007).[23]

Next I discuss and offer a solution to two primary objections to the compatibility of panpsychism and naturalism (2.4 Primary Objections to the Compatibility of naturalism and Panpsychism), which are the assertion that panpsychism is a supernatural doctrine, and that panpsychism entails that science is necessarily incomplete, meaning that science is fundamentally *wrong* about reality. To refute the supernatural objection, I note that my version of panpsychism is thoroughly natural and does not require recourse to supernaturalism. The incompleteness objection is an ontological objection; it is about the authority of the sciences on what exists. The objection does not claim that the natural sciences have been wrong about reality in the past, but rather it pertains to the contemporary natural sciences. This objection depends on the assumption that today's science universally or significantly holds mental specialism to be true. I reject this assumption – and thus the objection which requires it – by citing the feasibility of the Copenhagen Interpretation of quantum mechanics, which enables panpsychism to fit in with the contemporary natural sciences without massive revision.

Next I offer a plausible position of the most likely standard central concept (or essential attribute) of naturalism and, from this, that: *a conclusion about reality is only defended to the extent that its application fits with what science does and discovers*. I call this the "*defensibility thesis"*. Then, I develop a method to glean core naturalistic concepts from non-core concepts (2.4 A Method for Determining the Core Dispositions

[23] I shall refer to the core claims of naturalism as 'dispositions' instead of 'claims." I accept Michael Rea's conception of naturalism as a research program with various dispositions to the inquiry of reality. These dispositions I understand to be the core claims of naturalism.

of Naturalism). The next step of my argument is to establish a way to separate the core dispositions of naturalism from dispositions merely amiable with naturalism and incompatible dispositions. By "core disposition" I mean a disposition that cannot be denied that simultaneously holds naturalism's central concept, the defensibility thesis. Panpsychism, I hold, must be compatible with the core disposition of naturalism and not dispositions merely amiable with it. This is because some amiable dispositions contradict other amiable dispositions, but are still considered dispositions of naturalism. The method I propose is simple: I claim that any disposition which can be denied without simultaneously denying the central disposition of naturalism – the defensibility thesis – is not a core disposition. Any disposition that can be true or false, or that science determines to be true or false, is merely an amiable disposition of naturalism. Anything that cannot be true unless the defensibility thesis is rejected is incompatible with naturalism.

Finally I shall offer my main argument. I examine the core dispositions that a naturalist must accept and then demonstrate the compatibility of naturalism's core dispositions with the four constituting claims of panpsychism (2.5 Vollmer's Core Thesis of Naturalism)**.**[24] I apply this method to the six core dispositions of naturalism proposed by Gerhard Vollmer in his article *"Can Everything Be Rationally Explained?"* (2007). While I do not recognize Vollmer as *the* authority on naturalism, his article provides an excellent basis on which to found my method to distinguish core and non-core dispositions of naturalism. It could be asserted that other dispositions should be

[24] Giehard Vollmer provides a discussion of the core dispositions—dispositions any naturalist is obliged to accept—in "Can Everything Be Rationally Explained Everywhere in the World?" (2007). I shall follow his list of necessary dispositions of naturalism with little deviation.

examined that Vollmer fails to include in his list. However, the issue at hand is not that Vollmer's list is exhaustive but that any proposed disposition can be tested and determined to be either core or non-core. Then these other dispositions, if suggested to be core dispositions, can be examined as to their compatibility with panpsychism. Thus, while I do assert that panpsychism will be tested against the most likely core dispositions of naturalism, it may be the case that other scholars will propose further dispositions to test panpsychism against. Regardless, we have a method to determine naturalism's and panpsychism's compatibility that we can employ at any time new dispositions are proposed. I am convinced that whatever new disposition is proposed, panpsychism will be found to be compatible with naturalism.

Vollmer's theses are: 1) metaphysical minimalism; 2) a realist view of reality; 3) the superiority of the scientific method; 4) the primacy of an inanimate matter-energy ontology or physicalism; 5) reductionism – the claim that all complex properties are constituted from more basic simple particles, which entails the rejection of supernatural properties or causes; 6) human cognition does not go beyond nature (I do not discuss this disposition since by naturalizing panpsychism I demonstrate that human cognition does not go beyond nature).

Metaphysical minimalism (and a prohibition against supernatural agencies, though this is dealt with in a different section) is the only core disposition of naturalism, because denying it denies the authority of science. Realism, reductionism, and physicalism are dispositions that science rules over, and all can be denied while holding the essential concept of naturalism. Since naturalism is taken to be characterized by its core dispositions, and panpsychism is taken to be entirely comprised by its four

constituting claims, demonstrating the compatibility between the core dispositions and the four constituent claims is sufficient to demonstrate the compatibility between panpsychism and naturalism to be true.

The most difficult naturalist disposition to reconcile with panpsychism is the physicalist account. While I argue that the physicalist account is not a core disposition of naturalism, due to its importance to the naturalist community, I shall reconcile the physicalist account with panpsychism utilizing theories of Robert Hanna and Michelle Maiese (2009). In its current form, the physicalist account cannot be reconciled with panpsychism, because physicalism entails mental specialism, a doctrine that contradicts panpsychism. Thus, I shall revise the physicalist account so that mental specialism is no longer and thus reconcile the physicalist account with panpsychism. But I shall weaken the physicalist account as little as possible, because panpsychism is largely a physicalist doctrine. While there is general agreement in the literature that physicalism is not a core disposition of naturalism (although science could well determine that physicalism is wrong), physicalism is still considered the major part of naturalism. Because of the special status of this disposition, I offer a more in \-depth discussion aimed at reconciling between physicalism and panpsychism.

Constituting the matter-energy primacy thesis, according to Vollmer, are three claims: matter-energy is the only fundamental property in the universe, there are only matter- energy causes, and mentality exists because of matter-energy. I proceed by establishing the possibility of a dual physical-mental causation. I establish this by locating an example of mental causation that can fit with a minimally modified physicalism, which I accomplish by adopting much of the work of *Embodied Minds in*

Action by Robert Hanna and Michelle Maiese (2009). The key is rejecting the standard interpretation of casual closure—that is, fundamentalism—which holds that fundamentally physical properties necessarily exclude any sort of intrinsic connection with fundamental mental properties (2009, 273-274). Fundamental physical properties thus can share an inherent connection with fundamental mental properties. This is called mental-physical property fusion. This allows for physical events to have both mental and physical properties instantiated in those events. This property fusion allows for dual mental-physical causation, with mental properties adding their own (though perhaps slight) impetus. The causal efficacy of Hanna and Maiese's property fusion allows for a robust panpsychism and a minimally weakened physicalism. My method is simple: First I shall determine the core naturalistic dispositions, by which I mean the dispositions that are necessary aspects of naturalism (I understand naturalism to be completely constituted by its core dispositions). Then I shall demonstrate that panpsychism does not contradict these core theses.

2.2 Panpsychism[25]

Panpsychism, in the sense employed in this paper, is a meta-theory regarding the basic structure of reality. It states that reality is composed of both mental and physical properties and that those mental properties are as fundamental as physical properties.[26] The formulation of panpsychism employed in this paper comes from the rejection of *mental specialism*.[27] As we have seen, this theory currently dominates the mind-brain

[25] A more in-depth discussion of mental specialism and panpsychism can be found in chapter one.
[26] I do not equate 'nature' with 'physical' nor does 'not-material' mean "non-physical" or "non-natural."
[27] I discuss mental specialism in depth in chapter one.

problem debate, holding that mentality is an aberration in the universe. It is the attachment to mental specialism that produces some of the most basic and intractable problems within the mind-brain debate, such as emergentism. However, if we reject mental specialism, then we can claim that the mental is a basic constituent of the universe, and it is this basic constituent that produces consciousness. Thus we reach the four tenets of panpsychism, which are: 1) the mental is a fundamental property that permeates the universe; 2) the mental is ontologically independent of matter, which entails that the mental cannot be fully explained via the basic physical constituents of the universe; 3) following tenets (1) and (2), the physicalist worldview requires expansion to include the fundamentality of the mental; and 4) higher forms of mentality, such as consciousness and thought, arise and are explained, *at least in part*, by the basic *mental* constituents of reality.

By "the mental as a fundamental property of the universe." one should not understand a fundamentalism of the mental (Hanna and Maiese 2009, 299-300). The opposite would be physicalist fundamentalism, the doctrine that fundamental physical properties can have, not an intrinsic, but only an accidental connection to the mental. Thus, though it is a fundamental property, the mental may possess a basic or intrinsic connection to something physical. The connection that I have in mind here is like the one that obtains between DNA and a person, say for example Nazareth Long. The DNA strand is physical and has an intrinsic connection to Nazareth Long, but that DNA strand is not sufficient to identify Nazareth with that strand, since that strand could have produced Nazareth Wrong instead of Long. There are multiple possibilities within the strand. It is also conceivable that there could be differences within a DNA strand, say via

genetic therapy, so that Nazareth Long remains who he is while having a given genetic strand altered every few years, to the point that a significant portion of the DNA changes, yet Long remains Long. Panpsychism does not depend on the idea that fundamental mental properties cannot have an inherent bond with fundamental physical properties. Mental independence in no way entails an ontology comparable to substance dualism. Panpsychism is neither a doctrine of substance dualism nor necessarily a doctrine of property dualism. Panpsychism leaves open the possibility that particular mental and particular physical properties are inherently and fundamentally bonded in such a way that certain atoms have a corresponding mental property as equally fundamental to reality. This connection itself is fundamental and ontologically necessary, though not cognitively necessary, which means that one can think about the mental and physical properties separately, although they are in fact unable to be separated ontologically. Further, the nature of the two is complementary.

Two terms, "fundamental" and "independent", require further explanation. First, I adopt William Seager's conception of "fundamental": a property or class that is independent of another property's or class' description and that possesses its own causal efficacy (Seager 1995). Inferred from the fundamentality of the mental is the irreducibility of mental to physical. The mental is part of nature, but it affects the world through its own powers. This statement does not entail that these causal powers are identical, or even similar to, the powers of human mentality. Nor does it entail that these fundamental properties are the *sole* foundation of human capacities—this is unlikely. What it does entail, however, is that these fundamental properties are responsible for a *portion* of an agent's capacities. Second, I do not employ "independence" in the sense

used in the second tenet as “ontologically separate” or “fundamentally distinct”, but merely of “free from external control” and “not contingent on some other property”. The mental is not a different substance from the physical even though mental properties are fail to be determined by physical properties and fail to emerge from physical properties.

A panpsychic theory of mind will first and foremost specify the nature of the mental. For our present purposes that is not required, just like the specific nature of “physical” is not required for a physical theory of the universe. Development of a panpsychic theory of mind will be offered later. One issue that a panpsychic theory of mind does not need to account for is how the mental occurs in the universe. As stated before, the current climate of the mind-body debate assumes that the mental is not a fundamental part of reality but comes from something essentially non-mental or else does not exist at all. What a panpsychist theory of mind must explain is how complex expressions of mentality—for instance, consciousness, awareness’ or cognition—arise from more basic forms of mentality, like a mental fundamental particle such as an atom. Of course, one could assert that full-fledged consciousness is the basic nature of mentality. This position produces further difficulties, because it is not a necessary part of a panpsychist theory of reality. A panpsychist theory of reality need not affirm any particular mental property higher than the basic proto-mental property to account for reality. This is similar to the fact that a physicalist theory of reality does not need to affirm any particular higher physical property than atoms to provide a physical account of reality.

2.3 Naturalism[28]

The core conviction of naturalism is that , which I assume to be: 'a conclusion about reality is only defensible if it fits with what and how science discovers and is not categorically removed from empirical (dis)confirmation.' I call this the 'defensibility thesis.'[29] All naturalists adhere to the authority, but not to the absolutism, of science (Clarke 2009). This is the *methodological conviction* of the naturalist project. There is a corresponding *ontological conviction* following the methodological conviction, which states that science is the conclusive authority on the ultimate structure of reality. If the methods of science reach the true conception of reality, then the concepts and theories of science must tell us what is real.[30] Ontology is, then, completely directed by science. Just what *is* real (e.g. mental properties or numbers) is a matter of dispute, but what is not a matter of dispute is the defensibility thesis. In whatever characterization of naturalism is offered, these two convictions appear as the core. But caution is needed. Just what counts as "science" is disputed.[31] Science may be the conclusive authority of truth and reality, but this does not entail any particular results, nor does it mean that truth and reality cannot be reached via some other avenue. It only means that regardless of whatever avenues of inquiry are employed those avenues cannot exceed the bounds of science and can place no restrictions on scientific findings.

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[28] Naturalism is a philosophical thesis and not a scientific one. The central concept and the core dispositions are thus determined a priori. Naturalism is thus taken as a research disposition, a way of approaching reality rather than a metaphysical thesis as such. So the central concept here is assumed on the basis that said concept allows for adequate separation between natural and non-natural thesis.

[29] Hereafter I refer to "natural science" as "science". By "natural science" I denote the sciences that are considered as relevant to the naturalist project. Reference to other non-natural sciences will be denoted appropriately.

[30] This does not entail that other methods cannot reach the same conclusions by other investigatory methods.

[31] See (Gasser and Stefan 2007).

2.4 Primary Objections to the Compatibility of Naturalism and Panpsychism

Most naturalists would classify panpsychist theories as supernatural theories, and since one of naturalism's most dearly held principles is an embargo against supernatural properties and explanations, panpsychism contradicts naturalism. I follow Barry Stroud's understanding of "supernaturalism", namely, "the invocation of an agent or force that somehow stands outside the familiar natural world and whose doings cannot be understood as part of it" (Stroud 2004, 23). The prohibition against supernatural properties eliminates properties with 'free-causation': causation that contradicts the law of conservation of energy. This includes a prohibition against transcendent properties and authorities such as gods, miracles, and any sort of extra-sensory cognitive power, such as clairvoyance or divine illumination. So, the charge that panpsychism is a supernatural doctrine accuses panpsychist theorists of positing authorities, causes, and powers outside the realm of nature. This is not to say that *immaterial properties* are synonymous with supernatural properties. John Dupré notes that "there are of course perfectly respectable immaterial property concepts, numbers, or hypotheses, for example—but souls and such like are not the right kinds of things to be immaterial" (Dupré 2004). The major difference between naturalist and supernatural senses of "immateriality" is that entities which are "immaterial" in the supernatural sense of the word, such as souls, are considered to be causally efficacious outside of the realm of science (Dupré 2004). Thus "outside of nature" means unable to be observed, detected, or studied via empirical or scientific methodology. Any causes with such features would be immaterial in the supernatural sense of the word. For instance, a miracle would be a

supernatural cause, since its existence cannot be proven or studied scientifically. Panpsychism as I describe it is not a supernatural doctrine, such as Descartes' substance dualism. The "mental" in the panpsychist doctrine—whatever its nature will turn out to be—will need to meet the following requirements in order to be acceptable: 1) the mental will need to be observable, at least indirectly; 2) empirical evidence supporting its existence is required; and 3) the mental's causal efficacy *must* fall within the law of the conservation of energy. If panpsychism turns out to be a supernatural doctrine, then panpsychism must be rejected.

There is a rather more sophisticated objection. If one subscribes to panpsychic ontology, then science is fundamentally mistaken about reality and requires revision. Since naturalism holds the defensibility thesis, science requires no such revision; science is basically a complete view of reality.[32] Thus, the objection goes, panpsychism is incompatible with naturalism. But, the objection is not a *methodological* objection. The objection does not state that panpsychism holds that the scientific method—collecting objective (i.e., third-person evidence available to anyone) data through observation and experimentation, and formulating and testing theories based on that objective data—is fundamentally flawed. The objection is that science is missing a part of reality, a fundamental property that is necessary for a complete understanding of the universe. It is thus an *ontological objection*—that naturalism is mistakenly assuming *mental specialism*: the mental as a supplementary aspect of reality.[33]

[32] This attitude towards panpsychism was developed from objections to panpsychism discussed by William Seager and Sean Allen-Hermanson (Panpsychism 2005).
[33] See Chapter One.

I will venture a possible solution to the ontological objection to panpsychism, namely that science does not universally or even significantly hold mental specialism. Quantum mechanics (QM) is a remarkably successful theory. It is reported that no prediction made from quantum mechanics has failed; it is a perfect system viewed pragmatically (Rosenblum and Kuttner 2006). QM holds that quantum properties are produced by conscious observation. I refer to the Copenhagen Interpretation of quantum mechanics, which requires wave function collapse, a debated theory which holds that the results of a wave function are a relation between a superposition of states and something observed consciously. We must be cautious of relying too much on the Copenhagen Interpretation as it is a debated theory's but it is safe to say that it requires the mental to be something more important than in physicalism's standard ontology. QM enters more and more into our conception of reality, applying increasingly to the 'macro-world.' QM is vital to an understanding of reality and it is a strong possibility that QM supports rejecting mental specialism under the Copenhagen Interpretation. It is an adequate, though not definitive, rejection of the ontological objection to panpsychism.

2.4 A Method for Determining the Core Dispositions of Naturalism

Naturalism is associated with a remarkable number of diverse claims, claims not always compatible but often considered essential to naturalism itself. For instance, Steve Clarke claims that naturalism and the supernatural are in fact compatible (2009). If such variance can occur even among naturalists, a method to distinguish "core dispositions" of naturalism from "non-core dispositions" is necessary to determine a working account of naturalism. The obvious application of this project is to determine the dispositions of

naturalism that must be compatible with panpsychism. The phrase "core disposition" I understand to mean "necessary disposition," a disposition that cannot be denied while holding naturalism's central concept, with the understanding that some dispositions may be compatible with naturalism while not necessary to naturalism, or contingent upon the sort of universe within which naturalists position themselves. "Necessary disposition" also implies that the contrary disposition is incompatible or contradictory with naturalism. Thus, a core disposition of naturalism is such that naturalism can retain its central concept.

The key to the method I propose is to utilize naturalism's central concept: *a conclusion about reality is only defended to the extent that its application fits with what science does and discovers*. I call this the '*defensibility thesis*.'[34] It is through this central concept that we will be able to demonstrate what dispositions or themes are central to naturalism. Any disposition that cannot be denied without denying naturalism's central concept is a core disposition. Following this, any disposition or system containing a disposition that contradicts that core concept is necessarily rejected by naturalism. Dispositions or a system containing a disposition that neither contradicts nor is necessary for the core concept of naturalism is compatible with naturalism. Compatible dispositions may be varied and different for each thinker. The apparent variation between naturalists largely depends upon the choice between compatible dispositions. So, I am applying an old distinction in philosophy, a distinction made by Plato, Aristotle, Aquinas, and Descartes: namely, the distinction between essential and

[34] This phrase does not imply that the natural sciences are the only way to learn about reality or to discover truth. The phrase only entails that the natural sciences and the results of the other modes of investigation must be consistent.

accidental properties. Some dispositions of naturalism are part of the essential nature of naturalism, and some dispositions merely do not contradict the essential nature of naturalism. Theories and ontological hypotheses are not required to be compatible with accidental dispositions, only with the essential dispositions of naturalism.

As stated above I take the essence of naturalism to be the defensibility thesis. This central concept does not restrict modes of investigation, only the results of that investigation. All results from any method of investigation must be consistent with science. This is clearly distinct from scientism which holds that the natural sciences are the only viable method for inquiry into reality. It is entirely possible that I am incorrect in assuming the central concept of naturalism to be the above formulation. This is, however, irrelevant. What is at issue here and of greatest import is the method of determining the core dispositions of naturalism. If the central concept is, say, anti-supernaturalism, then panpsychism should be tested against this thesis. What is shown here is not that panpsychism is consistent with a particular central concept or a certain core disposition, but that a *scientific panpsychism* is possible. This discussion removes one hurdle to that endeavor. As stated above, there are even arguments that seek to show that naturalism is compatible with supernaturalism. If naturalism is recast as a supernatural doctrine, then by all means let us re-test panpsychism. But given any characterization of naturalism, I demonstrate a way to determine whether panpsychism can be rejected a priori due to its conflict with naturalism.

Let us examine this method. So, the central concept describes how reality should be investigated and what property we should accept as real. If we hypothetically allow supernatural properties and explanations, we can easily demonstrate that anti-

supernaturalism is a core disposition of naturalism. If supernatural properties and explanations, i.e. miracles, are accepted, then this would be something science cannot defend as either true or false. There would be properties beyond the ken of science and there would be truths that were not defended by science. Properties and entities would be added to one's ontology without consideration of science, the most reliable mode of determining the nature of reality. This clearly contradicts naturalism's central concept. So, it is clear that one cannot hold naturalism's very core without also affirming anti-supernaturalism.

Naturalists commonly believe that the universe is primarily matter-energy in composition. This disposition is obviously consistent with the naturalistic attitude, since this disposition also requires no supernatural properties. The question is whether this disposition, which we can call the physicalist account, is a core disposition of naturalism or merely compatible with naturalism. Does denying the physicalism disposition invalidate naturalism's central concept? I shall argue it does not. The central concept is the defensiblity thesis. So, the constituents of reality, whether physical, material, energy, or immaterial, are there for science to defend. Science is our most reliable path to truth. The universe does not fix the nature or methodology of science. The universe exists indepedently of science and of humanity. But science's role is the most authoritative and reliable method to discover the nature of the universe. The scientific method is not validated or invalidated by any commitment to a particular ontological theory. The truth of the scientific method does not depend on one's ontologcial commitments. It is through science that one develops ontological hypotheses. Thus, the nature of the universe, whether physical or panpsychic, is a truth that science defends and not

something that establishes the veracity of science. A matter-energy conception of the universe is something that science determines to be true or not. So, the physicalist disposition is not a core disposition of naturalism. A hypothesis may be contrary to the physicalist dispostion and still be an acceptable hypothesis of science and naturalism.

2.5 Vollmer's Core Thesis of Naturalism

Vollmer lists six core theses of naturalism.[35] These theses are: 1) metaphysical minimalism; 2) a realist view of reality; 3) the superiority of the scientific method[36]; 4) the primacy of an inanimate matter-energy ontology or physicalism; 5) reductionism, which asserts that all complex properties are constituted from more basic simple particles, and rejects supernatural properties or causes; 6) the claim that human cognition does not go beyond nature (Vollmer 2007, 40). The sixth thesis asserts that any solution to the mind-brain problem must cohere with the tents of naturalism. I shall not cover this disposition, since this is the topic of this dissertation. I have discussed the disposition of anti-supernaturalism in the section Primary Objections to the Compatibility of Naturalism and Panpsychism (2.4) and so shall not revisit these dispositions. The most complicated discussion will involve harmonizing the matter-energy ontology and panpsychism, so I shall deal with this discussion at the end of this section. In the preceding discussion I demonstrated that since the physicalist account is not a core disposition of naturalism, demonstrating the compatibility of panpsychism and this disposition may not be

[35] I have combined two of Vollmer's core thesis, namely a prohibition against supernatural entities and miracles.

[36] I shall not revisit this theme because it was discussed in the section: 'Primary Objections to the Compatibility of Naturalism and Panpsychism' in chapter 2, section 2.4.

technically necessary. However, I grant that the physicalist account is a deeply-seated disposition within naturalist circles and so does require further analysis.

2.5.1 Metaphysical Minimalism

The failure of the Vienna Circle and the Logical Positivists demonstrated that the empirical and theoretical sciences cannot proceed without some metaphysical assumptions (Vollmer 2007, 29). Naturalism cannot be hostile towards metaphysical assumptions, but must accept them to a certain extent, though metaphysics and empirical science must be clearly distinguished.[37] The 'extent' of acceptance is what is necessary to investigate reality and to increase the pool of knowledge (Vollmer 2007, 29). Assumptions about properties, principles or theories are employed only as needed for science to proceed. It is a main assertion of naturalism that metaphysics must fit into the scientific conception of the world and should not seek to go beyond this conception. Further, it only includes a metaphysics open to rational criticism following the standards of non-contradiction, value of explanation, self-applicability, freedom of arbitrariness, intellectual economy and high productivity (Vollmer 2007).

It seems quite clear that a minimal metaphysics is a core assumption of naturalism, even if one discounts supernatural metaphysics—that is, metaphysics investigating properties and causes from without the universe, e.g. Plato, Aristotle,

[37] I have changed the tone of Vollmer's discussion slightly. Vollmer's language is descriptive rather than the normative tone that I employ. The reason is simply due to the fact that there are several different concepts of naturalism and many differing degrees of naturalism. Quine's naturalism seems as hostile towards metaphysics as A.J. Ayer's logical positivism. Thus, and I would venture that Vollmer would agree, his article describes what is necessary for a naturalist stance to investigate reality and remain consistent with itself. Vollmer asserts that the naturalist does not consider metaphysics to be inferior to empirical science, but I do not see how such a view of inferiority can be avoided. Metaphysics is certainly not given an equal role to empirical science as metaphysics is to be employed only as a facilitator to scientific research.

Augustine and Thomas Aquinas, Descartes. Given a large role in the investigation of reality, metaphysics would rival and nullify science as the final defense of a conclusion about reality. Entailed from the core thesis of naturalism is the assumption that science sets limits upon other disciplines, metaphysics included. To allow a role for metaphysics to determine science, like Descartes' First Philosophy, would contradict naturalism.

We should begin by noting that science and scientific theories are a type of metaphysical inquiry. Metaphysics is characterized as the inquiry into the nature of reality—what exists and the nature of these existents (Inwagen 1998). Science, though it proceeds empirically, certainly is an inquiry into the nature of reality. Yet Vollmer clearly assumes a strong distinction between metaphysics and empirical science. This statement seems to imply that theoretical sciences, such as quantum mechanics and mathematics, are metaphysical endeavors. It is unclear whether Vollmer places the theoretical sciences under the category of metaphysics, but we can gain an understanding of what Vollmer means by metaphysics if we investigate the concept of "empirical science." The basis of empirical science is the scientific method: testability via direct or indirect objective observation. Thus, the metaphysical assumptions of which Vollmer speaks must refer to properties, principles, and laws that cannot be tested via direct or indirect observation, or properties, principles, and laws that are arrived at through *a priori* reasoning.[38] This is borne out by the description that Vollmer gives of the rational

[38] What is remarkable is how prolific a priori reasoning of this sort is within empirical science. For instance, realism, materialism, and physicalism, according to these standards, are metaphysical principles. Causation, the causal closure principle, and induction are metaphysical assumptions. There is no direct or indirect evidence for any of these assumptions. Science itself is based upon these assumptions, but it is true that without these assumptions science could not occur and could not investigate reality. Vollmer's term 'minimal metaphysics' is misleading. It is not that there are few metaphysical assumptions; there are in fact a multitude of such assumptions. Rather science must remain as the final truth-sayer, and parsimony must reign for science to proceed.

criticism that checks the metaphysical assumptions of naturalism—namely non-contradiction, value of explanation, self-applicability, freedom of arbitrariness, parsimony, and high productivity. If a panpsychist theory is to be compatible with naturalism, it must be consistent with the requirements of the metaphysical assumptions that Vollmer outlines above.

The first question one may ask is whether panpsychism is completely a priori, completely empirical, or a mixture of the two. Gao Shan in his paper "A Possible Quantum Basis of Panpsychism" offers an argument supporting the truth of panpsychism based on revised quantum physics (2005). He asserts that the universe is not complete without consciousness. Thus, consciousness is part of the physical schema of the universe. According to Shan, a basic principle of revised quantum physics is that non-orthogonal single states cannot be distinguished. However, Shan demonstrates that a conscious agent can distinguish said states, even though the standard physical measuring device cannot. So, matter without consciousness cannot distinguish what matter with consciousness can. However, if consciousness was reducible to or emergent from matter, or was matter itself, then the conscious agent should not be able to distinguish non-orthogonal single states. If consciousness is reducible or emergent, then the conscious being must follow the same rules and protocol as matter. Since this is not the case, consciousness is neither reducible nor emergent. If emergence and reduction are off the table, then the only option left is that consciousness is a fundamental feature of the universe. This implies that the present physical theory is incomplete and that consciousness needs to be included as a fundamental feature of matter and part of a

theory right at the beginning, which means that mental specialism must be rejected (Shan 2005, 3).

Shan does not directly perceive consciousness or any other sort of mental property as a fundamental aspect of the universe. His observation is via effects, which he then explains by affirming consciousness as a fundamental aspect of the universe. He posits a property that explains phenomena, as would any empirical scientist. Rosenblum and Kuttner state, "The quantum experiment [the two-slit or box pairs experiment, such as Shan's experiment above] is thus objective evidence for consciousness. Evidence, of course, is not proof. But the quantum experiment is the only objective evidence for consciousness" (2006, 186). We have reason, then, to suspect that the panpsychist theory is not wholly a priori. Note that this does not prove that panpsychism is metaphysically required for science. However, it is still a possibility to be further considered. What can be seen is that panpsychism does not contradict the minimal metaphysics of naturalism because it is not merely first philosophy but also the subject of quantum physics.

2.5.2 Maximum Realism

Vollmer holds that human beings are dependent on the universe for their existence. Space, time, matter, and evolution are real properties independent of consciousness. This allows for the quantum mechanics observation principle. The naturalist maximizes objectivity and allows only for a minimum amount of subjectivity (Vollmer 2007, 71). This is not a core disposition of naturalism because, whether idealist

or realist, one could still hold true the defensibility thesis.[39] Our understanding of the nature of the universe may change, but science as the most reliable method of investigation remains unchanged.

A panpsychist can agree with each of Vollmer's points. It is the mental, whatever its nature turns out to be, that is fundamental to the universe, not the human being nor the human mind. Humans can most certainly be considered to be dependent on a universe that can exist without them, but the mental may still be fundamental to the universe despite this fact. Space, time, matter, and evolution can be just as real for the panpsychist and independent from consciousness. It must be remembered that the "mental" of panpsychism does not mean pan-consciousness or pan-experientialism. The panpsychist does not assert idealism.

2.5.3 Evolutionary Naturalism

Contemporary naturalism explains the complex phenomena of reality utilizing an evolutionary paradigm. Thus, modern naturalism is an *evolutionary naturalism* (Vollmer 2007, 34).[40] Complex phenomena have been most succesfully explained through reference to their development from less complex, more basic and simple phenomena, for example biologial systems are best explained by citing chemical systems and these chemical systems by quantum systems (Vollmer 2007, 34-36). So, the evolutionary paradigm is a methodological dispositon, dictating how reality should be explained. According to this paradigm, reality is composed of various levels of phenomena, each

[39] George Berkeley was an Idealist and yet an empiricist. There is no a priori reason that an Idealist could not embrace Naturalism's central concept.
[40] Emphasis Vollmer's.

lower level consisting of smaller and more basic phenomena and systems. Each level has its structure and powers due to the structure and powers of the levels beneath it (Hanna and Maiese 2009, 316).

At this point the truth of the evolutionary paradigm is not in question. The question is whether the central concept of naturalism could be true if the evolutionary paradigm were false. Although the veracity of the evolutionary paradigm is determined by the standards of science, the paradigm does not in turn influence those standards. Granted, other scientific hypotheses may be rejected due to their incompatibility with the evolutionary paradigm, but this does not grant the paradigm authority over science and the scientific method. The evolutionary paradigm is something science has defended rather than something needed to be true for science's *authority* (in terms of defensibility) for the investigation of reality. If the evolutionary paradigm had influence over the pursuit of truth, then science would be the servant of its hypothesis.

Panpsychism agrees with and supports the evolutionary paradigm. The fourth tenet of panpsychism entails that complex mental systems come from less complex and more basic mental systems. This proposition entails the acceptance of the evolutionary paradigm. Higher-order mental properties evolve out of more basic lower-order mental properties; the higher-order mental phenomena are explained by reference to lower-order mental phenomena. So this disposition is compatible with panpsychism. One may argue that the combination of mental systems into more complex mental systems is impossible and thus that panpsychism has to hold that mental systems cannot and do not evolve. The

combination problem is one of the major problems facing a panpsychist theory of mind.[41] If the combination problem is insolvable then a panpsychism is necessarily at odds with the evolutionary paradigm, but this problems may well be solvable. It also follows from tenet four that the panpsychist ontology will be layered, though not exclusively *physically* layered.

The tension between panpsychism and the evolutionary paradigm arises when the paradigm is combined with the physicalist account. This combination makes explanations valid only if the explanation utilizes simple physical particles. Panpsychism certainly adheres to an explanation of systems in which complex mental properties (such as consciousness) are explained by less complex mental properties, and are even partially explained by less complex physical properties. What panpsychism must deny is that complex mental processes can be exclusively explained via less complex physical properties.

2.5.4 Primacy of Inanimate Matter-Energy

The universe in which we are situated is constituted primarily by matter-energy (Vollmer 2007, 33). There are no other substances that are either needed to explain the universe nor are there any other substances to be found in the universe. So, we have a physicalist universe where causation is primarily due to the causal efficacy of material-energy systems. Any other system, such as a function system, derives its causal efficacy entirely from the material-energy system which instantiates that functional system (Vollmer 2007, 33). The existence of mental phenomena as such is not denied under the

[41] As I summarized in chapter one. See Seager, 1995

physicalist account, only mental phenomena as incorporeal properties. Mental phenomena are conditions and processes of material-energy systems, such as the central nervous systems of various life forms (Vollmer 2007, 33). So, anything that is in the world is primarily composed of matter-energy systems and has its causal efficacy due primarily to a matter-energy basis. The only properties that have a substantial efficacy—that is, an existence in its own right—are matter-energy systems (Vollmer 2007, 34).

There are three claims constituting the principle "primacy of matter-energy." First, matter-energy is the only fundamental property in the universe. Consequently, facts about matter-energy will thoroughly exhaust our facts about the universe. Second, if there is any sort of effect in the universe, it is due to a physical cause. So, there is only physical-physical and possibly physical-mental causation, but never mental-physical causation. Finally, mental phenomena only exist because of physical systems. So, mental phenomena cannot be fundamental to the universe and are not required for a complete account of the universe, and thus are not ontologically independent of matter-energy. The primacy of matter-energy, which I shall call the physicalist account, is a form of mental specialism, and thus the physicalist account cannot be compatible with panpsychism. However, it is possible to preserve the spirit of physicalism and reject mental specialism, thus allowing for compatibility between a weakened physicalism disposition and panpsychism.

My first step shall be to establish the possibility of a dual physical-mental causal efficacy. Independent causal efficacy is the essence of ontological independence and of a property's fundamentality. If the mental has an effect on a property, in some way, independent of physical systems, then explanatory and ontological independence of the

mental follows. If an event, e_2, *is* caused by a prior event, e_1, independently of another event, e_3, then e_3 does not add to the explanation of the generation of e_2. If e_1 has causal powers outside of e_3, then these powers of e_1 cannot be explained by reference to e_3. Thus, e_1, if it has its own causal efficacy and explanation, is fundamental to the universe. What is not shown is that e_1 permeates the universe. What also follows is that any theory that does not seek an account of e_1 needs to be expanded to include e_1 if a complete account of the universe is to be achieved. Next, I shall explain the possibility of reconciliation between panpsychism and the physicalist account.

2.5.4.1 Causal Efficacy

The understandings of "causal efficacy" and "causal relevance" that I employ in this paper are adopted from Hanna and Maiese (2009). According to this understanding, a singular event e_1 is causally efficacious iff either (i) e_1 is itself a nomologically sufficient simple singular "event cause" of some physical event e_2 or (ii) e_1 is a necessary proper part of e_3, which itself is a nomologically sufficient complex singular event cause of e_2; a property *P* is causally efficacious if and only if *P* is instantiated as an inherent or intrinsic property by events that are causally efficacious; and a physical substance *S* is causally efficacious if and only if *S* is constituted by causally efficacious events and properties (Hanna and Maiese 2009, 291-292). An event e_1 is causally relevant iff either (i*) e_1 is a necessary condition for some event e_3's being a nomologically sufficient cause of some physical event e_2 or (ii*) some correct description of e_1 enters directly into an informative characterization of e_3's being a nomologically sufficient cause of e_2; a property *P* is causally relevant iff some of *P*'s instantiations are causally relevant; and a

physical substance *S* is causally relevant iff *S* is constituted by causally relevant events and properties (Hanna and Maiese 2009, 292).

The physicalist account is intimately connected to the causal closure principle, since it claims that physical events can only be caused by physical events. Thus, if something has a physical effect, that something must be physical or operate via a physical base. So, the physicalist account, in regard to causation, must be weakened if panpsychism is to be compatible with naturalism. Panpsychism does not require that the mental's casual impetus rivals the causal impetus of matter-energy—only that, in some way, mental events have their own causal efficacy in the actual world. Panpsychism is not limited to conscious, intentional minds, as the mental is not exhausted by conscious and intentional events. Thus, to be compatible with naturalism yet retain the core ideas of panpsychism, three principles must be retained: (1) The irreducibility of the mental. (2) The mental's possession of its own causal efficacy or relevance. (3) Preservation of the principle of the conservation of energy. So, mental causation cannot be a system of energy injected from outside of nature. Principle (1) leads one to the conclusion that the mental is non-physical, though this in no way entails that the mental is not-natural, that is, supernatural or contradicting the principle of causal closure, as I have argued above—unless one defends the rather dubious claim that only physical events are natural. Further, it does not necessarily follow that the mental is *immaterial* in the sense of a ghost in the machine, unless one holds only two sorts of things in the universe, immaterial and material properties. Combining this conclusion from principle (1) with principle (2), we are led to the conclusion that a non-physical property has physical effects. Principle (3) establishes panpsychism's status as a natural property, because it is

securely placed within the universe. So, if an example of mental causation can be found that can fit with a minimally modified physicalism, then we have a method that naturalizes panpsychism, moving panpsychism from an exclusively first philosophy thesis to a thesis acceptable to the empirical sciences.[42] Fortunately Hanna and Maiese, in their work *Embodied Minds in Action*, have outlined such a theory (2009).

Hanna and Maiese's solution to the mind body problem is the rejection of the standard interpretation of the causal closure principle (CCP), which they call *fundamentalism*. The fundamentalism interpretation holds not merely that only physical events can cause other physical events, but that fundamentally physical properties necessarily exclude any sort of intrinsic connection with fundamental mental properties (Hanna and Maiese 2009, 273-274). If an event possesses a fundamentally physical property, that event is fundamentally physical, or fundamentally excludes mental properties. Rejection of this interpretation allows adoption of the thesis of *mental-physical property fusion.*[43] The idea is that fundamental physical properties can share an inherent connection to fundamental mental properties; some space-time events are both mental and physical (Hanna and Maiese 2009, 305). Combining property fusion with

[42] The mental causation problem for panpsychists is wider than the traditional problem of mental consciousness concerning phenomenal consciousness, conscious intentionality, intentional agency, and perhaps unconscious mental states. The panpsychist holds that complex macro-psychological state i.e. phenomenal consciousness or intentional agency, like complex macro-physicalist states, emerge from micro-psychological phenomena. These micro-psychological properties are not minds, neither conscious nor experiencing. This is the difference between pan-experientialism and panpsychism. The panpsychic theorist does not necessarily hold that every property in the universe experiences, only that the mental is a fundamental and natural aspect of the universe. Just like the basic physical constituents of life are not alive, the micro-psychological property is not conscious nor intentional. But, the panpsychist is not required to demonstrate that the various levels of mentality have a causal efficacy. If the panpsychist demonstrates the plausibility of one level of mentality, such as conscious experience, determining, through its own impetus, some physical event, and this causation is compatible with naturalism , i.e. does not violate the principle of conservation of energy, then our panpsychist account can be sufficiently settled as naturalized (Hanna and Maiese, 271).

[43] I will refer to mental-physical property fusion as "property fusion."

Hanna and Maiese's interpretation of CCP,[44] and the thesis of *jointly sufficient essentially mental-and-physical causation*, we have a view of mental causation that preserves the panpsychic-fundamentalism (Hanna and Maiese 2009, 297).[45] This view of mental causation preserves mental-physical independence as well as the causality of both the mental properties and the physical properties while respects the principle of the conservation of energy. So, a property has causal efficacy if that property is an inherent property of events that are causally efficacious (Hanna and Maiese 2009, 291-292).[46] Property fusion, Hanna and Maiese's interpretation of CCP and mental-physical causation, allow both mental and physical properties to inhere in a physical event and to become instantiated in reality with that event. A physical event as a whole constituted by both mental and physical qualities. The event is the causally efficacious entity. This event is constituted by at least two properties, a mental property and a physical property. These two properties share a fundamental, intrinsic bond. The event's causal efficacy is a result of its constituting properties: the mental and the physical. These properties entail that each contributes to the causal efficacy of the event, imparting a causal relevance to both properties. Thus as this sort of property, the mental can retain its ontological independence via causation and its panpsychic fundamentality.

[44] Hanna and Maiese's interpretation of CCP is: (i) that only physical events can nomologically sufficiently cause physical events, (ii) that the fundamental physical properties of the natural world do not necessarily exclude inherent or intrinsic connections with fundamental mental properties, and (iii) that it is both metaphysically possible and also actually the case that fundamental physical properties include inherent or intrinsic connections with fundamental properties (Hanna and Maiese 2009, 297-298),

[45] Hereafter mental-physical causation. I refer to the fundamental quality a panpsychist account provides for the mental and physical, namely that both are needed to understand the universe.

[46] See footnote 29.

2.5.4.2 Hanna and Maiese's Argument Contra Fundamentalism

The devil is in Fundamentalism (F), meaning that F's interpretation of CCP prohibits the mental causation of physical events (Hanna and Maiese 2009, 297). To summarize, F's interpretation of CCP is as follows (and I shall follow Hanna's and Maiese's lead and denote this as CCP^F). (1) Only physical events can cause physical events, (2) a physical event is any real occupant of space-time that possesses some fundamental physical properties, (3) fundamental physical properties necessarily exclude inherent or intrinsic connections with fundamental mental properties (Hanna and Maiese 2009, 299). F is constituted by holding both (2) and (3). Hanna and Maiese reject CCP^F (3) and posit Post-Fundamentalism: the possibility of inherent connections between fundamental physical and fundamental mental properties (Hanna and Maiese 2009, 300). Hanna and Maiese offer two arguments to defend their position, which I will call *epistemic uncertainty* and *property fusion possibility*: (1) The epistemic uncertainty argument maintains that there is no justification for holding the truth of F since there is no justification for claiming we know the nature of the physical world, nor is there justification that our current scientific theories have any special truth-making position over any other period's scientific theories (Hanna and Maiese 2009, 301-2). There is simply no satisfactory reason to accept F to the exclusion of other theories except for adherence to a particular dogma. (2) The property fusion possibility argument rests on the plausibility of property fusion. F's position is that property fusion is impossible, but if there are doubts about the possibility of F, then property fusion is possible. There seems to be no justified reason that property fusion is impossible, especially if a

fundamentalist cannot provide a justified account of the nature of the physical. The two fused properties are co-extensive in the sense that they are both inherent structural properties of a given event (Hanna and Maiese 2009, 303).[47] Fused properties are complementary properties, i.e., properties that are not identical, yet are necessarily mutually and equivalently inherent in a spatio-temporal event (Hanna and Maiese 2009, 304). Hanna and Maiese offer the following actual examples of property fusion: The relationship between concavity and convexity; particle-position and particle-momentum in quantum entanglement; DNA-structure and organismic structure in cellular life (Hanna and Maiese 2009, 303-7). The relationships that obtain between these types of properties are contingent in the sense that they could have been otherwise but in fact are not, and although the relata of each of these relations can be separated conceptually, they cannot be separated ontologically. For example, concavity can be conceptualized independently of convexity, but cannot exist independently of convexity, and vice-versa.

The application of Hanna and Maiese's property fusion allows for the compatibility of a robust panpsychism and a weakened physicalism. First, property fusion allows for a robust sense of the causal efficacy of mental properties while preserving the conservation of energy. Property fusion, in Hanna and Maiese's reading, preserves the ontological independence of mental properties from physical properties. Mental properties have their own description which is independent of the physical; one cannot offer a complete description of mentality via physical facts. There are more facts about the universe than physical facts. Under property fusion the mental is a natural,

[47] How the mental is part of an event's structure will be determined by the particular nature of the mental. It is possible that the mental is the intrinsic property of an event to which physical properties are "pinned". Or, if the nature of the mental is information, then the mental could plausibly be asserted to be the "what" the event is and the physical to be substratum that is the "what."

fundamental aspect of the universe, an aspect that is required in order to understand the universe completely. Finally, property fusion requires expansion of the sciences to include mental properties while preserving the status of physical properties (Hanna and Maiese 2009, 304). There is simply more to say about the universe than is expressed by physical facts.

In sum, the panpsychist and the physicalist account still have not yet been reconciled. The physicalist account described before is simply too strong. The "matter-energy primacy disposition" I will call the absolutist disposition (AD), for it describes the universe absolutely without possibility of variation in properties; it says the universe is one thing and that thing alone. Under AD the universe is necessarily homogeneous because AD holds that there is only one type of property in the universe. Hanna and Maiese's argument against Fundamentalism can be applied to AD. Obviously if physicalists do not know the nature of the physical, combined with the possible fallibility of current scientific theories, the blind faith placed in AD seems to be misplaced. If AD is taken, as the name implies, as a disposition for research, then AD is detrimental to research, due to the limits the former places on the latter. The spirit of AD as a research program is to enhance the possibility of positive results for researchers investigating reality. AD seems to be—if not self-defeating—at least overly restrictive to research. So, I suggest that we accept a physicalist account that allows for property fusion, *property fusion physicalism*, which is compatible with panpsychism. Thus we will have a universe-view with the following additions: (1) An ontology founded upon an event

neutral monism.[48] (2) The existence of fundamental mental properties. (3) The existence of fundamental physical properties. (4) Events constituted as a whole by both fundamental mental and fundamental physical properties. (5) Mental and physical properties both have causal relevance via a mutual connection providing for the causal efficacy of a space-time event. (6) Neither physical nor mental facts alone can provide a sufficient account of an event. (7) Both fundamental physical and fundamental mental properties are co-extensive.

So, the universe is not all physical, though part is still significantly physical. But, the object of investigation will not be physical events or properties, but rather events that share mental and physical properties. Current science would not, in a significant sense, be altered, for their object of study still is a significant portion of the universe.

Returning to the matter of aligning panpsychism and physicalism, Vollmer's account of physicalist means that: 1) everything is matter-energy or reduced to matter-energy; 2) there are only physical causes; 3) mental phenomena are fully reducible to matter-energy systems; 4) the existence of mental phenomena depends on matter-energy systems; 5) matter-energy can exist without mental phenomena. Themes 1-5 cannot be compatible with panpsychism, but if mental-physical property fusion is possible, then it is possible to weaken 1-5. So, 6-8 will replace Vollmer's 1-5: 6) the basic ontological property is the event; 7) every event is composed of fundamental matter-energy properties that are co-extensive with fundamental mental properties; 8) causation is between nomologically singular events, and causal efficacy depends upon the whole

[48] "Event neutral monism" equates to an ontology in which there is one basic constituent of reality. This constituent is the "event" and this "event" is neutral or neither primarily mental nor physical, but composed of both mental and physical properties.

event being constituted from fundamental mental and fundamental physical properties. The mental is the inherent structure of a property, that which gives matter-energy definition. The capacities and features of the whole property depend upon both the structure and the matter, including causal efficacy. The mental, like the structure of any property, while not strictly physical, is not immaterial like a Cartesian ghost in the machine. The structure and organization of a property are fully accessible for study by science. If we provisionally understand the fundamental mental properties as the irreducible structure of property, then we have a way of reconciling the physicalist account with panpsychism, because panpsychism posits nothing beyond the ken of science.

2.6 Conclusion

If panpsychism is a viable disposition for research into the fabric of reality, it will meet with Vollmer's requirements for metaphysical assumptions that I outline above in section 2.5.1, *Minimal Metaphysics*. For panpsychism to be a possible scientific assumption, it must be compatible with naturalism. Philosophy – at least in the analytic camp – does not consider supernatural or uneconomic theories about reality viable. However, theories that, through a metaphysical assumption eliminate the phenomena we are most intimate with for the sake of consistency are equally uneconomic. Such theories get rid of too much.

I affirm that panpsychism can fully to explain reality, and I argue that whatever disposition one assumes, that assumption must be compatible with naturalism. I have shown that panpsychism is compatible with naturalism and that this compatibility makes

panpsychism a valid research program for science and analytic philosophy. I have shown the compatibility between naturalism and panpsychism by reconciling the core dispositions of naturalism with the four tenets of panpsychism. The panpsychic disposition is not a supernatural doctrine, nor is panpsychism based upon unreasonable metaphysical assumptions. Panpsychism is compatible with realism and, via the fourth tenet of panpsychism, adheres to an explanatory system based upon holding a layered world ontology. The only alteration required is a weakening of the physicalist account from absolutist disposition to property fusion physicalism. Otherwise, the rest of Vollmer's core dispositions of naturalism are compatible with panpsychism, as I have shown, and thus we have naturalized panpsychism.

If mental specialism is abandoned – as it must be for even a partial solution to the mind-body problem – then a structure of reality that is different from the reality posited by physicalists and eliminativists is required. Yet, such a structure of reality is not as strange as people claim. The rejection of mental specialism neither lands one into a supernaturalism, nor requires one to affirm the sheer mysteriousness of reality. There certainly could be a supernatural panpsychism, but such a doctrine is not necessary or even prevalent in panpsychist theories. It is certainly possible, as I have shown above, to have a natural panpsychist account of reality and the mind. A panpsychist theory would not necessarily invalidate large tracks of established scientific dispositions or require large revisions in scientific thinking. There may be additional principles to consider, but nothing revolutionary or that is not part of science somewhere, as attested in this chapter. To the objection that panpsychism injects purely metaphysical assumptions arbitrarily

and without restraint, one must respond that metaphysical theories must be affirmed, though only when physical theories cannot suffice.

The basic structure of a panpsychic universe is an event neutral monism. There is one basic type of thing in reality, and these are events. Each singular event is composed of both fundamental physical properties and fundamental mental properties. These fundamental properties are coextensive and share an inherent connection. Despite this connection the two fundamental properties are ontologically independent.[49] They keep their identity despite the connection. So, the connection is not one of *mixing*. The connection is mental-physical property fusion. This doctrine obviously rejects the fundamentalism interpretation of CCP, but allows for a robust modified version of CCP that retains the vital roles it plays in science, and it allows a possible resolution of some of the seemingly intractable problems of consciousness.

Property fusion allows for mental causation. Since both mental and physical properties constitute, in their own way, a whole event, both types of properties have, as instantiated in the event, causal power via the causal power of the whole event. As property fusion involves fundamental properties and not higher-level properties, such as consciousness, we are brought to the combination problem: the problem of explaining just how fundamental mental properties come together to form a higher-level mental property.[50] The revised CCP and property fusion entail a layered conception of reality. This layered conception of reality requires an evolutionary paradigm in which more basic

[49] One may justly ask whether the mental and physical properties can exist without each other. It would be premature to attempt to answer this question without first formulating the precise nature of the "mental." This question must be tabled for now, but my suspicion is that this will be a question for empirical science and not for philosophy.

[50] See Goff (2006, 2009) and Strawson (2006a, 2006b).

mental properties combine to form entirely new higher-level mental properties. The combination problem is the topic of the following chapter, in which I offer a non-mysterious solution. Even though the combination problem stems from my commitment to a naturalized panpsychism and the acceptance of mental-physical property fusion, the problem afflicts any panpsychist theory. My solution stems from adhering more closely to science and empirical fact, as well as from a minimum dependence on metaphysical argumentation and assumptions. At all costs, over-reliance on metaphysical assumptions and appeals to mystery must be avoided when addressing the combination problem.

Chapter 3
An Empirical, Non-Mysterious Solution to the Combination Problem

3.0 The Task at Hand

My aim is to naturalize panpsychism. Naturalizing panpsychism will demonstrate that a panpsychism hypothesis can be acceptable to science and is a beneficial research project. In chapter one I showed that the position against panpsychism stems from an unwarranted assumption which I call mental specialism: the assumption that the mental is a false category or an anomaly in the universe. I then developed an account of panpsychism based on what would have to be the case if one rejected mental specialism. It is this account of panpsychism that I accept for my larger project. In chapter two I established that naturalism and panpsychism are compatible. Granted, I use a variation of naturalism, which I believe is fairly standard, though there are many variations. I do not find this problematic' because it is now theoretically possible to demonstrate the compatibility of panpsychism and naturalism, save the most dogmatically eliminativist versions of naturalism. I also demonstrate that panpsychism can be shown to be amiable if not compatible with a minimally restructured physicalism that allows for property fusion between fundamental mental properties and fundamental physical properties. Most importantly, I demonstrate a plausible account of mental causation.

The present chapter arises out of the implications of the last two chapters. Higher-order mental properties, under the version of panpsychism utilized here, emerge from lower-order, more fundamental mental properties. These fundamental mental

properties are proto-consciousness or experiential simples. How this emergence occurs is the combination problem, the major problem facing a panpsychic account of the mind. The issue stems from the accepted nature of an experiential property, namely the "what-it-is-like" (Nagel 1974). Experiential properties simply are not things that can combine or sum and still exist. Combining to become something different entails that the experiential simple, by becoming a different "what-it-is-like," loses its own "what-it-is-like" and therefore ceases to exist. Most solutions end up in doctrines of mysteriousness or vague transcendental arguments that seek to wave the problem away. I offer an empirical solution to the combination problem by basing combination on Giulio Tononi's Integration Information Theory of Consciousness (2008).

I

3.1 The Combination Problem in Recent Literature

3.1.0 *Introduction*

Property fusion is the intrinsic connection between fundamental physical and mental properties. It allows for a viable account of mental causation and entails the emergence of higher-level mental properties from more fundamental properties—that is the *evolutionary paradigm* of reality or *smallism*.[51] *Smallism* is Sam Coleman's term for the evolutionary paradigm (Coleman 2006). Smallism entails the *combination problem* (Coleman 2006, 40). The combination problem is the question of how to provide a sufficient theory of how higher-level mental properties, such as conscious states, emerge

[51] See Hanna and Maiese (2009) and chapter 2.

from fundamental proto-conscious properties. The combination problem is particularly relevant for Galen Strawson's panpsychic theory. The crux of Strawson's argument relies on the unacceptability of *brute emergence*, where there is seemingly no reason for a particular property to emerge from its base. Liquidity emerges from micro-properties that are so constituted to produce liquidity. The fundamental constituents of brute emergence have no such nature to produce its emergent properties. But if brute emergence is rejected, then a transparent non-mysterious account of mental-from-mental emergence is needed. Thus I shall offer an empirical, non-mysterious mental-from-mental emergence solution to the combination problem. My solution is based upon Giulio Tononi's theory of consciousness as integrated information.[52] Naturalized panpsychism holds that information is proto-consciousness: when integrated within a system of appropriate mechanisms, the system is conscious to the degree that the system integrates information.

It could be claimed that mental-from-mental emergence is less unintelligible than mental-from-non-mental (that is, physical) emergence (Strawson 2006a, 250). Given that physical (i.e., non-mental)-from-physical (i.e., non-mental) emergence is accepted in scientific and analytic communities, mental-from-mental emergence is such an anomaly to the predominant worldview that the combination problem gives us sufficient reason to reject panpsychism. Combination is too great a hurdle to be ignored or claimed as an assumption. Panpsychism demands that we accept many assumptions, and if key explanations are not possible, then there are few reasons to accept these assumptions. Further, solutions to the combination problem tend to result in a doctrine of mysterious

[52] See Tononi (2008).

emergence, which is as defeating to panpsychism as the combination problem. If mysteriousness is the solution to the combination problem, then nothing has been solved. We still lack an account of mental-from-mental emergence. The panpsychic hypothesis cannot proceed until an acceptable account of combination is developed.

So, if an empirical, non-mysterious account of mental-from-mental emergence cannot be offered, then panpsychism is simply too counterintuitive to be pursued. Why must such an account be empirical? As a theory panpsychism needs to work within the broad scientific understanding of reality and the empirical systems of comprehension. The days of pure Rationalist armchair philosophy are done. Details of the scientific system or even large tracts of contemporary theory may be critiqued or even rejected, but the scientific understanding of reality and how reality is investigated is thoroughly empirical. Panpsychic theories may be amiable with empirical science, but such amiability could involve mere coexistence where two theories are separate and independent of each other. Science could never falsify or validate such an *amiable* theory. An empirical panpsychic theory, which I call naturalized panpsychism, will make sense within our empirical system and find support there.

3.1.2 Synopsis of the Present Chapter

When H_2O molecules come together, liquidity emerges. Liquidity is a new property due to the summation of the relevant molecules which persist despite the emergence of liquidity. There is nothing mysterious in this emergence. If panpsychism is true, then mental properties must emerge from other, more basic mental properties,

given the truth of evolution.[53] But mental properties are quite different from physical properties. The emergence of higher-level mental properties is not a matter of the *summing* of lower-level mental properties. The nature of conscious experience is its phenomenal feel, say a burning. When the burning feel ends, the experience ends; it is no more. So, if you combine several mental properties, say two burning-experiences, either the two experiences will end and a new phenomenal property will be produced, which means the new property is not composed of the two experiences, or the two experiences will continue and there will be no new experience. Thus, mental properties cannot combine to produce new mental properties. But, for any reasonable panpsychism to be possible mental-from-mental emergence is necessary. This is the combination problem.

The most robust contribution to panpsychic theories has come from the work of Galen Strawson (2006a). Even though heavily influenced by Cartesian philosophy, the panpsychic system that he develops is quite ingenious.[54] But, despite Strawson's ingenuity, this system cannot accommodate mental-from-mental emergence and the combination problem. Philip Goff illustrates this point wonderfully in his critique *Experiences Don't Sum* (2006). Goff attributes Strawson's failure to his adherence to the principle of the transparency of the mental. Strawson objects to Goff's analysis, stating that he does not accept such a principle, which commits one to the view that the subject of experience has full access to the whole nature of its experience. Strawson claims that he is committed only to the "partial revelation" thesis that a subject of experience has

[53] This is not quite true, but the alternative makes for quite a crowded universe. One could posit that every past, presents and future mental property exists whole and self-contained. Each physical system capable of mental states then "participates" with these "universal mental properties." I am unsure whether the combination problem afflicts Gottfried Leibniz's monadology, but I am quite sure that resorting to monadology to avoid the combination problem will not save panpsychism.

[54] And so is Cartesian philosophy.

access only to certain aspects of its experience. But the commitment to the "partial revelation thesis" commits Strawson to pure-panexperientialism: the belief that everything is entirely composed of ultimates which are wholly experiential. Yet, even this move fails to save Strawson from the combination problem, and he resorts to an appeal to transcendental arguments. Goff, in "Can the Panpsychist Get Around the Combination Problem?," proposes a tactic that affirms the question in his title. The panpsychist has to reject mental-from-mental emergence in the form of summing, like liquidity from H_2O, but she can hold that there is a relationship into which mental ultimates can enter that entails new higher-level mental properties. This requires, however, a reliance on the mysteriousness of the particular relationship between mental properties.

If the panpsychic theorist must rely on transcendental arguments or appeals to mystery, then the explanatory value of panpsychism does not advance the discussion of the mind-body problem and must be rejected. What is needed is a scientific solution to the combination problem. This is just what I propose here. My solution utilizes Guilio Tononi's Integrated Information Theory of Consciousness (IITC) (2008). Tononi proposes that consciousness just is integrated information, both the existence of and character of specific conscious states. The character of a given conscious state is a result of the relationships between different mechanisms that process information in a system, say a human brain. So, combination results from one set of neurons communicating with another—thus systems that are part of a larger system. Each system receives input that results in that system entrance into an internal informational state. So, if two burning stimuli (lower-level conscious properties) are received by a system, that system then

enters into another internal informational state. Combination is thus input that results in an internal state of a system.

3.1.3 The Combination Problem, William James, and Recent Applications

The classic formulation of the combination problem comes from William James' *Principles of Psychology*, in which James notes that individual mental properties are distinct entities and, when combined, exist independently in the composition, much like hydrogen and oxygen molecules in H_2O (1983, 162). Any new mental property would be completely novel and independent. Since the full nature of an experience is transparent to the experiencer, the constituting parts of the novel, higher-level experience would still be fully experienced; otherwise the constituting experiences cannot be part of the new higher-level experience. Further, as noted by William Seager and Sean Allen-Hermanson, if there are fundamental mental properties, and it is these fundamental mental properties that combine to produce a higher-level mental property, such as consciousness, then why don't higher-level mental properties combine to constitute an even higher-level experience (2005)? It is James' famous articulation of this objection that inspires Phillip Goff's objection to Strawson.

The following describes how Strawson's panpsychism entails the combination problem. Emergence cannot be brute; any emergent property must emerge from more basic properties that are constituted for producing that emergent property. Consciousness emerging from fundamental physical properties, properties that are in no way conscious, is a case of brute emergence, or a miracle. Such physical properties cannot be constituted to produce consciousness. Thus, we must embrace either material eliminativism or

panpsychism—the belief that there are fundamental properties that are constituted to produce consciousness (Strawson 2006a). Smallism is built into this argument, which Strawson fully admits (2006a, 26). Combine smallism with Strawson's ontological commitment—that each ultimate is itself an experiencing subject and his commitment to the transparency of the mental (TM), and that the nature of an experience is fully disclosed simply by having that experience—and we arrive at Strawson's combination problem (2006a, 26).

3.1.4 Goff's Use of the Combination Problem to Object to Strawson

Philip Goff claims that Strawson merely trades one unintelligible form of emergence for another, describing Strawson's approach as "the emergence of novel 'macro experiential phenomena' from 'micro experiential phenomena'" (2006, 53). For Strawson, ultimates *are* subjects. So, all of the billions of ultimates that compose, say, a bat's brain assemble to constitute an entirely *new* subject of experience. Goff's point is that Strawson has his own emergence "problem" to explain. Emergentists need a physical-experiential explanation; Strawson has to explain the emergence of a new *subject*—the bat—from equally experiencing smaller subjects—bat-constituting-ultimates.

Strawson's argument rests on his commitment to the transparency of the mental (TM) and the denial of the transparency of the physical (TP) (P. Goff 2006, 55). Thus, the fundamental nature of our experience is known to us merely by having that experience. Introspection into one's consciousness reveals a metaphysical reality, consciousness *as it is in itself* (P. Goff 2006, 57). Yet, we are significantly ignorant of

the essential nature of the physical to the point that the doctrine that the physical is fundamentally non-experiential is ontologically unwarranted.[55] TM is necessary for Realistic Monism (RMP), because if the subject of experience does not have a transparent understanding of the essential nature of her experience, that experience may turn out to be physical (P. Goff 2006, 56). According to Goff, the metaphysical reality of our consciousness must be as it appears in our introspection (P. Goff 2006, 58).

According to Goff's critique, Strawson's subjects of experience are simply not the sort of thing that can combine to form a new qualitative subject. A lower-order subject of experience cannot combine to form a new qualitative subject because when the "what-it-is-like" of the lower-subject of experience ceases (as it must if some new qualitative subject of experience is formed) then the subject of experience *ends* and so cannot be a part of anything. So, a lower-order subject of experience cannot constitute a higher-order subject of experience on pain of its inexistence—in short, it cannot be combined (P. Goff 2006). Strawson's commitment to the identification of experience and the corresponding subject of experience is quite clear: "There cannot be experience without a subject of experience. There cannot be a subject of experience without experience". (Strawson, Panpsychism? 2006a, 224) A subject of experience exists only if some experience, whatever that experience may be, exists for it. Strawson holds that there is no ontological distinction between the subject of experience and its experience (2006a192-3). The lack of distinction between the subject and its experience makes the possibility of subjects

[55] I suspect, however, that Strawson is committed to transparency of the non-experiential, that the essential nature of the non-experiential is completely revealed to the observer. As a metaphysical thesis, the assertion "all experiential reality and all non-experiential reality are mutually exclusive" can be founded only if both experiential and non-experiential reality is fully available for our inspection. Otherwise the existence of the non-experiential and the "wholly non-experiential reality" could never be determined to be such (Strawson, Panpsychism? 2006b, 231). This thesis only has value if observation of the experiential and the non-experiential has access to the essential nature of these two realities.

having new or novel experiences difficult to comprehend. If a subject of experience *is* (in the sense of identity) its experience, then the subject has to be a particular experience. Strawson's ultimates cannot change their particular experience and continue to exist. To constitute anything, a lower-order subject of experience needs to retain its own particular experience or "what-it-is-like," regardless of whatever non-essential properties, features, or being it has.

3.1.4.0 Strawson's Mistake of the Superior Intelligibility of Mental-From-Mental Emergence

Goff claims that mental-from-mental emergence is as unintelligible (meaning unable to be understood by us) as brute physical emergence. Strawson replies that both brute emergence and mental-from-mental emergence are in fact unintelligible but that the latter mental-from-mental emergence is in a much better situation than the former brute emergence (2006a, 250). The emergent base from which higher-level mental properties emerge are constituted so as to produce higher-levels of mental properties, unlike mental-from-physical emergence. So, both types of emergence, brute and mental-from-mental, are unintelligible. Mental-from-mental emergence is less so, according to Strawson.

There are two problems with Strawson's claim that mental-from-mental emergence is more intelligible than brute emergence and thus the better choice of the two. First, Strawson is committed to physical-from-physical emergence, like liquidity from water molecules (2006a). Physical emergence is not between physical subjects such as Mary and Fred, but from physical fundamentals such as electrons, atoms and molecules. Explanations of physical-from-physical emergence are different enough from

physical subject-from-physical subject emergence to require an entirely new sort of explanation. If there is an instance of an individual human subject emerging from two other distinct human subjects, such emergence will require a radically different explanation than the physical-from-physical explanation with which we are familiar. This line of thought applies to Strawson's claim as follows: ultimates are subjects of experience and like physical subjects, are discrete entities and are not the sorts of thing that one thinks of combining. For instance, bats and humans are both experiential subjects, though infinitely more complex than Strawson's ultimates. What we know about subjects of experience is that they do not combine. Similarly, two human psyches do not make a third novel psyche. This is part of James' point; psyches are not the sorts of things that combine. If an experiential ultimate were like a string or electron, then mental-from-mental emergence would not be so problematic. The model of emergence with which we have to work is non-subject emergence. To account for "subject of experience"-from-"subject of experience," an entirely new and different model of emergence is needed.

Second, Strawson is simply incorrect that mental-from-mental emergence is in better standing than mental-from-physical emergence. Strawson bases his conclusion on the constitution of the emergent base of mental-from-mental emergence. Liquidity emerges from constituents that are suited to produce liquidity. Mental-from-physical emergence is brute, so any situation in which the emergent base matches the emergent property is more intelligible and thus preferable. Mental-from-physical emergence is in good standing, because it possesses just what mental-from-mental emergence needs: a framework with which to understand emergence itself. Mental-from-physical emergence

exists within a framework of physical-from-physical emergence which has been very successful in providing us with an understanding of our world.[56] This framework includes a successful mode of investigation and explanation. The physical-from-physical emergence tells us how to answer questions and to address mysterious enigmas. Because of the success of standard scientific emergence, we have examples—many examples—of what to look for in a successful explanation of mental-from-physical emergence. If we move outside of this framework, we no longer have examples on which to base our pursuit of an adequate example of mental-from-mental emergence. The explanation of mental-from-physical emergence is nestled within a comprehensive, coherent, and intelligible system. Mental-from-mental emergence has no such system. We have no way to understand it except through metaphor based on physical-from-physical emergence. How physical high-order constructs emerge from physical ultimates provides us with no understanding of how experiential ultimates-subjects constitute higher-order experiential subjects (Strawson 2006a, 7). The ontological framework of experiential ultimates that Strawson gives is far from the evidence needed to back his claims.[57]

[56] In fact, consciousness is, arguably, the only fact of our universe that the traditional reductive model has failed to explain.

[57] Strawson replies to this objection by simply noting that life reduces and experience does not (Strawson 2006a). Of course, this is just what is at stake, and so seems to be a mere restatement of the problem. Strawson holds that consciousness reduces, but experience does not. His strongest point is that experience is universally (or nearly so) held to be an enigma, unlike the problem of life (Peressini n.d.) (Sytsma and Machery 2010). This could be dismissed as a peculiarity of human interest rather than a serious metaphysical issue, however. Life could have been a universal mysterious enigma, just not as popular as the problem of experience.

3.1.4.1.0 Deflecting Goff's Combination Objection, Rejecting the Transparency of the Mental, and the Move to Pure Panexperientialism—Rejecting the Physical

Strawson's solution to Goff's objection is to reject the transparency of the mental. This allows Strawson to hold "partial revelation," a subject is acquainted with certain aspects of the essential nature of a given experience (2006a, 252-253). Thus, a panpsychist that holds only partial revelation or partial transparency can safely say that there is some hidden aspect of experience that combines to form novel higher-level experiences—therefore combination is simply a hidden fact of panpsychism (2006b, 252-253). Once Strawson accepts a doctrine of experiential mysteriousness, he has no basis to classify mental-from-physical emergence but not mental-from-mental emergence as brute, because a physicalist could easily assert the same claim—that there is some hidden aspect of fundamental physical properties that gives rise to consciousness. The only way that Strawson can ensure that the nature of experience is entirely non-physical is to remove the physical as a category of reality.

3.1.4.1.1 Strawson's Argument for "Pure Panexperientialism" and Getting Rid of the Physical

Strawson's argument begins with the thesis that experiential reality cannot be non-experiential reality (2006a, 234-235). Given stuff monism that reality is of one fundamental type, and that reality is experiential and non-experiential, realty is either purely experiential (i.e., pure panexperientialism) or purely non-experiential (i.e., eliminativist) (2006a, 234-246). Given our understanding of reality this result—a reality, without either the experiential or the non-experiential—is intolerable (2006a, 235). The

eventual result is "equal-status fundamental-duality monism" (ESFD), which according to Strawson means: "Reality is substantially single. All reality is experiential and all reality is non-experiential. Experiential and non-experiential beings exist in such a way that neither can be said to be based on or realized by, or in any way asymmetrically dependent on the other" (2006a, 241). According to Strawson, ESFD violates the law of non-contradiction by exhibiting two contradictory states simultaneously. Without rejecting the law of non-contradiction, the monist has two choices for the ultimate nature of reality: eliminitivist or pure panexperientialist. Strawson claims that eliminitivism is not an option for a serious theorist and so adopts pure panexperientialism (2006a, 246). It is important to note, however, that this claim depends upon Strawson's no-radical emergence thesis—or, the rejection of brute emergence. If the no-radical thesis is false, or if mental-from-physical emergence is in fact not radical, then experience in fact becomes reducible to the physical, and Strawson's project cannot begin.

3.1.4.1.2 Strawson's Response to Goff's Combination Problem and Strawson's Move to Mysteriousness

Strawson asserts that TM is a thesis mistakenly attributed to him. Strawson describes TM in his assertion: "In the case of any particular experience, I am acquainted with the *whole* essential nature of the experience just by having it" (2006a, 250-256).[58] Strawson rejects TM in favor for the partial revelation thesis (PR), stating: "in the case of any particular experience, I am acquainted with the essential nature of the experience in

[58] Emphasis mine.

certain respects, at least, just in having it" (2006a, 250-256).[59] TM entails that combination is only a sum of parts, because the subject knows the whole essential nature and all of its constituting parts in their whole nature. So, each ultimate remains fully individual and known while constituting a higher-order experience (2006a, 255). Such ultimates cannot blend to create a novel, higher-order experience. However, if Strawson is correct, PR enables such a blending by denying that a subject necessarily has direct acquaintance with its constituents. We should note that PR makes Strawson an advocate of experiential ignorance, and thus his argument commits him to the belief in the mysteriousness of experience. For him, ultimates seem to be something forever beyond our experience and our investigations.

3.1.4.1.3 Goff's Solution to the Combination Problem, Phenomenal Bonding, and the Mysteriousness of Experience

Goff's solution is not an argument for a panpsychist hypothesis; Goff seems highly skeptical of panpsychism. Goff only proposes a possible solution that a panpsychic may adopt. His solution to the combination problem involves the following commitments: 1) the commitment is a fairly standard panexperientialist tenet, namely that particles experience. It is clear that Goff takes these particles to be subjects of experience. Goff does not seem to take these subjects as "thin subjects", identical and existentially dependent on their experience (Goff 2009, 129-134). The next commitment is that there is a "phenomenal bonding relation which unites the mini-subjects of

[59] Do "certain respects" entail ignorance of experience only in regard to objections made against Strawson's system? Strawson needs to explain how one can be sure of anything regarding one's experience, if there are aspects of one's experience with which one is not acquainted. If it is admitted that there are hidden aspects of our experience, then some sort of criteria is needed to establish that we are acquainted *at all* with the essential nature of our own experiences. Does this entail that there are non-experiential aspects of experience?

experience into 'larger' subjects of experience" (P. Goff 2009, 135). This view leads to a certain amount of mysteriousness and faith.[60]

Under certain conditions, i.e. the hot interior of our planet, when carbon molecules will align in a specific arrangement to produce the higher-order property of crystal-ness when certain conditions arise, groups of H_2O molecules result in the emergent quality of liquidity. Of course, subjects of phenomenal qualities are different. Subjects of experience do not combine to necessarily result in a novel emergent quality. There is no entailment in experience from experience emergence (P. Goff 2009, 130-1). Goff formulates the following principle of experience emergence: No Summing of Subjects (NSS), asserting that it can reasonably be known a priori:

> The existence of a group of subjects of experience, $S_1 \ldots S_N$, instantiating certain phenomenal characters, never necessitates the existence of a subject of experience T, such that what it is like to be T is different from what it is like to be any of $S_1 \ldots S_N$ (P. Goff 2009, 130).[61]

What Goff calls NSS is a truth about subjects of experience and not the phenomenal characters that they have. Subjects of experience are simply not the sort of things that act like carbon molecules. What this does not eliminate however is the possibility that $S_1 \ldots S_N$, instead of merely being grouped together, can enter into a relationship of a certain character that necessitates a higher-order subject of experience. Goff explains further:

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[60] As I noted above (and Goff notes as well), if there is insufficient benefit for this mysteriousness, then the panexperientialist view is simply not warranted. Some would think that the existence of ultimates that are the subjects of experience are too tall of an order to grant. If granting such an ontology doesn't lead to real progress to the mind-body problem, it should be obvious that panexperientialism should be abandoned.

[61] NSS does not depend on TM nor does phenomenal bonding depend on PR. NSS is a truth about the concepts and their relationship, so it is not something derived from experience.

> To put it another way, NSS implies that there is no state of affairs of the form <subject of experience S_1 exists which phenomenal character X, and subject of experience S_2 exists phenomenal character y> which necessitates <subject of experience S_3 exist with phenomenal character z>. But it does not imply that there is not some state of affairs of the form <subject of experience S_1 exists which phenomenal character X bears relationship *R* to subject of experience S_2 exists phenomenal character y> which necessitates <subject of experience S_3 exist with phenomenal character z>. Such a sense of experiences summing is not ruled out by NSS (P. Goff 2009, 132).

"Thus, phenomenal bonding" is different from Strawson's attempted solution to the combination problem. NSS entails that the sort of combination that Strawson requires[62] is impossible. NSS leaves open the possibility that lower-order subjects of experience could enter into a relationship with each other, a relationship that could entail a higher-order subject of experience. Goff does not argue that such a relationship exists or that it needs to. Part of the reason for this is that Goff is not advancing a panpsychist or panexperientialist hypothesis per se, even though his solution advances the panpsychist project.

3.1.4.1.4 Rejection of Mysteriousness and Statement of Method Demonstrating a Non-Mysteriousness Solution to the Combination Problem; How Experiences Sum

Strawson, in Goff's words, has nothing more than faith that ultimates come together to create a novel higher-order experience. Strawson holds that the only argument possible is a transcendental one based on the veracity of smallist panexperientialism (Strawson 2006a, 262). If the only way that experience can be explained under a panexperiential hypothesis is "it must happen somehow", then the metaphysical advantage of panexperientialism fades, and the panpsychist approach is revealed as grandiose "system building" (Strawson 2006a, 262). We need a universe

[62] At least under Strawson's panexperientialism (Strawson 2006a & 2006b).

with much fewer assumptions than a panpsychist requires; in the future, experience will be successfully reduced to the physical. Strawson's weak panexperientialism leaves us with a counterintuitive and rather crowded universe with ultimates as experiencing subjects. If we pursue Strawson's pure panexperientialism, then we have a universe lacking the non-experiential (i.e., the physical), an equally counterintuitive universe. The problem is that Strawson has taken up residence in a small French flat with a comfy armchair, using only First Philosophy to determine the truth of reality. Of course, Strawson would accuse me of embracing a naturalistic tenet and he would be right. I make the assumption that any theory offered to solve the mind-body problem must be confirmed by science. Thus any appeal to mystery or transcendental argumentation must be rejected. Strawson just hasn't given us a theory with that sort of benefit. It is true that panpsychist and panexperiential theorists do not have to worry about where consciousness comes from. This is an essential aspect of my thesis. But when Strawson reaches the position of rejecting the law of non-contradiction (which he is inclined to do) or embracing a thesis of physical specialism or the non-reality of the physical, the explanation of an origin of consciousness is outweighed by the overall cost of the theory.

Science generally rejects the notion that experience is fundamental to the universe. As stated in chapter one, the prevailing worldview is mental specialism—that there are very few entities in the universe that have experience. Panpsychism, while not contradictory to science and naturalism, is neither necessary for either science or naturalism to embrace, nor is it particularly attractive to science or naturalism. If panpsychism is true, then there must be an additional existent in the universe. This existent, under Strawson's ontology, is a subject of experience that is identical to its

experiences. Experience has been famously elusive to science and observation. Thus, panpsychism posits a fundamental existent that is beyond the ken of science. Science must expand to include a fundamental yet hidden aspect of the universe. Yet, according to Goff and Strawson, we cannot know how this fundamental existent allows our higher-order subjective experiences to emerge. The only advantage that I can determine is that we know where experience comes from—despite not knowing how or being able to detect these fundamental existents. It is little wonder that science and naturalism do not rush to embrace this sort of panpsychism—nor do I.

I agree that the above characterization of panpsychism must be rejected. However, there is an acceptable panpsychic hypothetical solution to the mind-body problem that is at least on par with the hypothesis heretofore considered. The answer is a *naturalized panpsychism*, a panpsychism adhering to the naturalistic principles outlined in chapter two. First and foremost, if a panpsychic theory posits entities that are outside the natural world whose actions cannot be understood as part of the natural world, then the theory must be rejected. Panpsychic entities must obey the principle of causal closure. Panpsychic entities must be predictable and accountable within our scientific community. Such entities must be, at least in theory, observable—either indirectly or directly—by science. It will be the task of science to test a panpsychic hypothesis. It is, of course, the place of science and not of first philosophy to determine the validity of a panpsychic hypothesis.[63] Finally, metaphysical commitments must be kept to a

[63] Conformity with a deeply held, competing hypothesis is not an acceptable criterion by with which to judge a panpsychic—or any new—hypothesis. While it is the place of science to ultimately judge the merits of any ontological theory, it is the theorists' ultimate responsibility to ensure that the judgment that science produces is *fair*. Obviously, scientific experiments and investigations are performed by individuals that may be prejudiced against certain hypotheses, especially hypotheses that do not fall within those individual's preconceptions.

minimum, following the rule of allowing substantial advancement toward resolutions of dilemmas or facilitating further investigations into reality. This is the outline of a naturalized panpsychism. So, if possible, a panpsychic theorist needs to provide an empirical solution to the combination problem, or at least a solution conducive to our empirical commitments regarding experience. The success of this proposed solution is not ultimately necessary. If a truly empirical solution is proposed yet fails, the plausibility of an eventual empirical solution increases, and thus the plausibility of a naturalized panpsychism increases.

In the following discussion I shall offer just such a solution to the combination problem, a solution that does not, in the end, rely on any sort of mysteriousness. I will explain the process by which proto-experiences combine to produce higher-order experiences without reference to vague relationships or transcendental appeals. It will be through this solution that I will also delineate the basic features of my panpsychic hypothesis. My solution and my panpsychic hypothesis adopt Giulio Tononi's theory, according to which experience is integrated information (Tononi 2008). However, note that Tononi correlates the amount of consciousness of a system to the amount of integrated information of a system and how that system integrates information. He claims that his theory is consistent with many of our observations regarding the correlation of consciousness with neural processes (Tononi 2008, 216). Tononi denies that his hypothesis is panpsychic (Tononi 2008, 236). Nevertheless, his theory is certainly amiable to panpsychicism. Thus, I maintain that proto-consciousness, the lower level constituent of experience, is information. When information is integrated within a system, we have consciousness, and—potentially—human experience. Tononi's

hypothesis, when suitably explained, will provide us not only with an empirical solution to the combination problem but will eventually provide the basis for a naturalized panpsychism.

3.2 Towards a Naturalized Panpsychism

3.2.0 Important Points from the Preceding Section

The primary finding from our discussion of Goff and Strawson is that any appeal to mysteriousness, faith-based assumptions, or transcendental arguments must be rejected as ultimately unsatisfactory. I assume the naturalist disposition of a minimalist metaphysics, necessary to any adequate philosophic theory, and thus any theory over-burdened with metaphysical assumptions must be rejected. Nevertheless, if a panpsychic theorist cannot offer a clear explanation for the appearance of higher-level mental properties superior to current physical theories, then panpsychism must be abandoned. The reason for this is that panpsychism is not merely an assumption that works within the current scientific conception but entails at the very least the acceptance of a new fundamental property in the universe, thus requiring a modicum of alteration to scientific dogma. If the best that a panpsychist can do is offer either a transcendental argument or resort to a doctrine of mysteriousness, then the panpsychist fails to make any advance on the mind-body problem. Any theory must provide and advance new avenues of debate. Failing this, panpsychism is only a metaphysical dead-end.

I have argued that physicalism assumes mental specialism without any real support, other than that physicalism's systems is built upon it. It is this assumption that leads to the commitment that mental properties emerge from essentially non-mental properties. Mental specialism and panpsychism are both metaphysical assumptions, yet it is panpsychism that challenges the established ontology. It may be true, as David Skribina claims, that physicalism "has made a mess" of the investigation of the mind.[64] It must also be equally admitted that in just about every other area of investigation of reality, physicalism and the naturalist research program have explained more and allowed for more consensus than any a priori investigation. Science's dossier of successes strongly advocates physicalism's plausibility. For this reason, any panpsychic theory must strive for the clarity and standards of an empirical theory. Since any appeals to mysteriousness or reliance on transcendental argumentation are unacceptable to science, they must be unacceptable to the panpsychist, excluding the tenets of metaphysical minimalism.

Next, what is clear is that we must reject the principle of the transparency of the mental (TM) and Strawson's partial revelation thesis (PR), and therefore return to the preferred role of introspection in the investigation of the mind. TM leads to a particularly intractable version of the combination problem. PR either leads to the intuitively implausible *pure panpsychism* or leads to the renewed plausibility of a physicalist account of the mind, in which experience emerges from a physical basis. Thus, neither TM nor PR achieves a new understanding of experience mostly because each blocks an

[64] It is interesting to note that physicalists claim that Cartesian Dualism, the near opposite of physicalism, similarly made a "mess" of the investigation of the mind. Just what is meant by a "mess" is and who makes it is quite subjective.

empirical contribution to the mind-body debate. Finally both TM and PR violate the core concept of naturalism, namely, that science must be the final arbiter on issues on the mind. This must be rejected. If it is introspection that provides insight into the essential nature of experience, then due to its subjectivity, science cannot delve into the nature of the mind, as Thomas Nagel demonstrated (Nagel 1974). Both TM and PR entail that experience can only be investigated via introspection. And PR, which does not lead to pure panpsychism demands a physicalist application.[65]

Third, we must reject ultimates as subjects of experience. This thesis is strongly supernatural and violates the *lex parsimoniae*. First, as I stated in chapter two, I accept Stroud's definition of supernatural, namely any agent or force that stands outside the familiar natural world and whose operations can't be explained as part of the familiar natural world (Stroud 2004). It is one thing to posit a property not currently recognized or accepted by the scientific and analytic community, but it is quite another to posit a property whose existence cannot remotely be understood according to our current conceptual systems. Ultimates, like strings or energy or electrons, have no representational apparatus with which to have experience.[66] If something like a string, having barely any structure, could experience, as Strawson claims, it would be something akin to the miraculous. This is because science could not explain how a subject experiences that lacks any sort of the required complexity for experience. Thus, science

[65] Yet behind TM there is a principle that is responsible for TM's apparent plausibility. There is something we know about experience simply by having it, namely the 'what-it-is-like' of a particular experience. The phenomenal feel of an experience is essential to that particular experience but it is not essential to the nature of experience in general. As a subject of experience one's experience has a particular 'feel', but this feel gives no insight into the experience's origin or its constituents, only into the particular experience's particular character. Introspection will in fact provide valuable information into the character of one's experiences but not to the nature of experience in general.

[66] Sam Coleman makes a similar critique in *Being Realistic: Why Physicalism May Entail Panexperientialism* (Coleman 2006).

could not determine whether something like a string or an electron or even a rock is experiencing, let alone the character of said experience. If it is beyond the ken of science, then it must be abandoned. The situation is even less acceptable if it is asserted that the subject is a *thin* subject of experience, as does Strawson, where the subject and the experience are not ontologically distinct. Subjects that we have experience with are what Strawson calls *traditional subjects*, subjects that are distinct from their experiences (Strawson 2006a, 192-193). This is significant, because we apparently lack the cognitive background to understand, let alone provide a clear exposition, of what it means to have a subject identical to its experience or provide an explanation of how such a subject exists and operates. To accept ultimates as subjects of experience requires commitment to a new category of subject-hood, a category cloaked in mysteriousness and beyond the ken of science. To draw on Strawson, ultimates as thin experiencing subjects might be clear to God's physics, but they just boggle the human mind (Strawson 2006a, 15).

Luckily, Strawson's special subjects are not necessary to posit. Granted, Strawson rightly asserts that experience necessitates an agent; experience is an experience *for* something (Strawson 2006a, 189). If ultimates were an act of experiencing, then some sort of subject-hood for experience would be necessary to posit. But, Strawson wrongly holds that ultimates must be an act of experiencing. Strawson defends panpsychism by rejecting brute emergentism, emergence in which the emergent property has no basis in the emergent base. Let us examine this example of proper emergence offered by Strawson, namely H_2O and liquidity.

> Liquidity is often proposed as a translucent example of an emergent phenomenon, and the facts seem straightforward. Liquidity is not a characteristic of individual H_2O molecules. Nor is it a characteristic of the ultimates of which H_2O molecules are composed. Yet when you put many H_2O molecules together they constitute a liquid in certain temperatures, at least, the constitute something liquid. So liquidity is a truly emergent property of certain groups of H_2O molecules. It is not there at the bottom of things, and then it is there. (Strawson 2006a, 13)

Strawson calls the example of liquidity emergence "shiningly easy to grasp" (Strawson 2006a, 13). What I wish to highlight is that the emergent property of liquidity is not actually present in individual H_2O molecules or its constituents, as Strawson well notes. In any sort of emergence that we can comprehend, the emergent property is not present in the emergent base. What are present are the conditions that will give rise to the emergent property. Note that it is not that the property of liquidity cannot emerge from something lacking the property of liquidity itself. As Strawson says, liquidity is not a characteristic of individual H_2O molecules. So, liquidity does emerge from non-liquidity. Yet he advances an unwarranted assertion that experience cannot come from something wholly non-experiential (Strawson 2006a, 24). Now if he means that experience must emerge from a base constituted in such a way as to produce it, then that is certainly correct and in-line with his examples and known emergence. But the assertion that experience must come from an emergent base that is an experience itself contradicts both Strawson's examples, the description of the desired explanation of experiential emergence, and known emergence. All that is necessary is a properly constituted base, a proto-consciousness. So, positing such a strange entity as Strawson's thin-subjects is unnecessary. What is sufficient is an ultimate that is a proto-experience which combines particularly into complex entities with mechanisms of representation and information-processing. To be clear, I am not asserting that proto-consciousness is a low-level experience on a continuum of experience, but that proto-conscious is merely the building

block of experience that is not itself experiential, much as H_2O is the base of liquidity without itself exhibiting liquidness. These proto-experiential ultimates may in fact be present and be some of the basic, even quantum, constituents of the universe, but fail to produce human or mammal experience unless certain conditions are met, conditions that may even now be described by neuroscience. This panpsychism is consistent with the findings of neuroscience and empirical science.

Finally, we need to reflect on the nature of proto-experience. Our project is to explain the nature of experience itself via proto-experience. The thesis that the "phenomenal feel" is the essential nature of experience has been rejected, as has been the thesis that panpsychic ultimates are "experiencing." Combined with our commitment against mysteriousness, a new explanation of the nature of proto-experience and its relation to experience is needed. This explanation must be as open to empirical investigation as possible. It is clear that this explanation cannot be a reduction to the physical, since our thesis entails that the mental is independent from the physical. Experience exists as its own phenomenon. As a panpsychist thesis, proto-experience must be a fundamental property of reality—that is, it must have its own causal efficacy (described in chapter two) and a description independent of any other fundamental property. It is also clear that proto-experience, though ontologically independent from physical properties, must have an intrinsic connection with some physical property. These two properties, proto-experience and physicality, will be coextensive—that is, unable to be separated in the single space-time event in which they occur—yet they cannot be empirically or logically reduced to one or the other. Explanations of higher-level mental properties must rely, at least partially, on reference to proto-experience.

There is a theory of experience that may meet our needs outlined above. The theory is the identification of consciousness with integrated information (II), or the Integrated Information Theory of Consciousness (IITC), mentioned above (Tononi 2008). The theory is an identity theory. Tononi himself denies that IITC is a panpsychic theory, and while the theory may not perfectly fit our version of panpsychism or specifically meet all of our needs for a panpsychic theory, I will show that IITC is amiable to panpsychism and that Tononi's basic tenets can be successfully developed into a satisfactory scientific panpsychism (Tononi 2008). Thus, in what follows I shall first provide an exposition of IITC. Then I shall discuss: 1) Tononi's position on panpsychism, 2) the compatibility of IITC with panpsychism and how it meets our needs to develop a working panpsychic theory, and 3) application of our expanded panpsychic theory to the combination theory, formulating a solution that avoids the problems that plague both Goff and Strawson.

3.2.1 Exposition of Integrated Information Theory of Consciousness

IITC advances that consciousness just is integrated information (II) (Tononi 2008). Integrated information (II) is the amount of information produced by a complex of elements (Φ) above and beyond the information produced by its parts. More concisely, 1) the quantity of consciousness equates to the amount of II produced by Φ; the quality of consciousness is determined by the set of informational relationships generated within one mechanism (Tononi 2008, 216). Information is the reduction of uncertainty within a given system; reduction of uncertainty is the elimination of alternatives in a given configuration. The more alternatives that are eliminated, the more

uncertainty is reduced and the more information produced. Thus, simple machines have informational states and even some integration in their connections that can solve no-zero Φ, but this simplicity keeps information, low so that it possesses a minimal consciousness or is minimally experiential.[67] Under II, though, simple diodes are conscious to the degree of one bit, which is not even remotely near human consciousness. A human brain involves a vastly greater amount of information, because connections and states are on the order of billions and have vastly greater amounts of alternatives. What is more, the integration of neurons is high such that humans have a much higher quantity of II and a much higher grade of consciousness than simple machines. Further, simple machines may discriminate many alternatives depending on their size, but have only a minimal amount of integrated information. A highly-developed mammal's brain is highly connected, much like a web in which the states of a particular neuron resonates with thousands of other neurons, guaranteeing a high level of Φ (Tononi 2008, 216).

The quality of a particular experience is a result of the set of informational relationships contributing to integration that a system's mechanisms produce. Experiences have a particular quality. Discriminating a particular experience is a matter of picking an experience out of a group of alternatives but distinguishing at once, in a special way, between every alternative. The mechanisms of a neural complex work in conjunction, contributing their own information to the system as a whole, above and beyond the sum of their own information (Tononi 2008, 224). II is produced by these mechanisms generating information. These mechanisms produce information, which the mechanisms contribute in a specific relationship between said mechanisms. A web of

[67] Minimal consciousness is still a higher-order mental property and so is not proto-consciousness.

informational connections exists between a complex's mechanisms. This web Tononi calls "Q-space." Experience is a "shape" in Q-space. IITC holds that this shape determines the quality of a complex's experience. So, the specific ways that the various mechanisms communicate determine the quality of an experience. Different experiences result from different mechanisms communicating in different paths (Tononi 2008, 224-227).

Tononi argues for IITC with two thought experiments, both comparing human conscious systems with unconscious systems: a photodiode and a camera. Tononi uses the example of a photodiode and a human discerning between a lighted screen and a darkened one to draw out the difference between the non-conscious and the conscious. The photodiode can discern when the screen is lighted and when it is not, but it isn't and cannot be *conscious* of the screen's state.[68] The difference is the amount of information that is generated by a human compared to a photodiode. The photodiode generates one bit of information corresponding to the one alternative that it eliminates. But, a higher-order organism like a human being eliminates vastly, perhaps un-calculable, amounts of information. This generates the higher-order consciousness of the human being, why there is "something-it-is-like" at the conscious level. It follows that the degree of experience corresponds to the degree of discrimination a subject is able to perform when interacting with the environment, or with one's own states.

This model seems to fit well with our common-sense view of development within higher-order experiencing species and the continuum of experience from less complex

[68] I wish to draw attention to the fact that I use the term "conscious" rather than "experience", in which I mean that the photodiode cannot have higher-order experience of the screen's state. However, I leave open the possibility that the photodiode has lower-order experience of the type attributed to ultimates.

organisms to more complex organisms. We commonly view the experiential states of later-term fetuses and infants, though existing, to be of a lesser degree or less complex than a developed adult. A developed adult is simply conscious of more things and to a greater degree than a newborn. IITC explains this intuition well. The fetus and newborn have fewer alternatives with which to discriminate between events of their environment. Their mechanisms have a basic ability (due to lack of development) to discriminate and generate information. The degree of consciousness of a sea slug is lower than that of a bat, because the sea slug's mechanisms of discrimination are less developed and a slug has fewer alternatives.

But mere discrimination, thought to be essential for experience, does not account for the subject-hood of experience. A camera, for instance, can discriminate many different events in an environment, but it still lacks consciousness (Tononi 2008, 218). Tononi asks: what is the difference between the camera and an entity that has consciousness? The difference is that the information in conscious entities is integrated, but not so in the camera. The camera does not have a point of view. The camera generates bits of information that are independent of each other, information that lacks integration into a whole, and it does so in a way that the complex has more information that the sum of its parts. In a human being, however, information fits together like a entirely unique puzzle. When information-discriminators connect and discriminate as a whole, integration occurs. Take the cones and rods in an eye, C_n and R_n. Let us consider these nodes as information-discriminators, much like a photodiode. Let us suppose that, like a photodiode, the cones and rods only have two options to discriminate, X or Y. Consciousness arises not from the mere discrimination between X or Y between the

separate cones and rods in C_n and R_n, but from the causal relationships between C_1, $C_{2\ldots}C_n$ and R_1, $R_2 \ldots R_n$ discriminated from the history and full repertoire of a discriminator's possible alternatives. The full repertoire of possible alternatives of discrimination generates high integrated information and hence high subject-hood or experience.

The qualitative "feel" of an experience, the "what-it-is-like" is an aspect of how integrated information is generated (Tononi 2008, 224). First, Tononi must hold that the feel of experience, between more-and-less complex discriminators, is a matter of degree. The quality of experience is a matter of the relationship of information generated by the discriminating mechanism. Within a particular human mental life,[69] a person's memories, sensations, thoughts, beliefs—the entirety of one's psyche—is connected via associations that connect particular mental events with other events. The reason for this connection seems to be, originally, that particular mental events occur together, and thus the association is created by this causal connection of sequence. That the relationships between specific instances of information, to which Tononi refers as generating the qualitative feel of consciousness, are best understood in terms of this association. Thanks to how information is originally acquired and the spatial and temporal connections between different bits of information, and the similarity between the information and other stored information, causal connections are formed. The best evidence for this is that we experience within a web of mental or neural events. It is generating integrated information from this web that produces the quantity and quality of consciousness.

[69] I use this term to denote the entirety of a person's psyche, including memories, sub-consciousness, beliefs, etc.

3.2.1.1 On Any Similarities between IITC and Panpsychism

Tononi's discussion of any similarities between IITC and panpsychism is brief and terse. Tononi understands panpsychism primarily as a doctrine that "holds that everything in the universe has some kind of consciousness" (236). I call this the *All-thesis*. Presumably panpsychists attribute consciousness not just to living things, but also to cars, rocks, socks, frocks, electrons, strings, gravity, mass, violins, and all other existents. While "some kind of consciousness" is vague, it signifies that Tononi confuses panpsychists with panexperientialists like Strawson. Tononi is committed to holding that photodiodes and other like systems that have informational states are, in a miniscule amount at least, conscious (Tononi 2008, 236). Unlike Strawson and other panexperientialists, Tononi requires a functional mechanism for consciousness, a point with which I agree.

Tononi's notes three faults with panpsychism (Tononi 2008, 236). First, it has no conceptual foundation, being merely an avenue to circumvent dualism. So, it is not really a theory in its own right. Second, it offers no guidance when seeking a way to determine what does and does not have consciousness and just what degree of consciousness the former enjoy. Third, panpsychism cannot explain the character of particular experiences. Objections two and three are powerful, because these are two questions that a successful theory of mind must answer. But it is unclear whether Tononi cites these objections to distinguish IITC from panpsychism or to argue against panpsychism itself. Tononi certainly believes that IITC can answer these objections, but if IITC is a form of panpsychism or could be adapted to fit a panpsychic theory, then these objections would

be nullified. So, the real issue separating IITC and panpsychism is the all-thesis. Since the All-thesis is more closely affiliated with pan-experientialism rather than panpsychism, interpreting IITC as a panpsychic hypothesis is plausible.

3.2.1.2 Interpreting IITC as a Panpsychic Theory

My version of panpsychism—naturalized panpsychism (NP)—holds that mental properties are fundamental properties: irreducible properties with their own causal efficacy. These properties appear throughout the universe, but it is not necessary that every single physical property has a corresponding mental property, though every event will have both. There is a possibility that there is a physical property that lacks an intrinsic connection to a mental property. "Fundamental property" does not entail that every single existent has that property, only that the property cannot be explained via some other property, much like gravity cannot be described via mass or electrical charge. Mental properties are also ontologically independent from the basic physical constituents of reality, so mental properties do not depend on physical properties for their nature. Finally, higher-level mental properties emerge from lower-level, more basic mental properties, much as liquidity emerges from H_2O. Mental properties, according to NP, are not equivalent to experiential properties. Experiential properties are certainly a type of mental property. Experiential properties are higher-level mental properties that emerge from proto-consciousness much like liquidity from H_2O. Thus, not every existent, under NP, experiences. So, NP rejects the All-thesis. NP holds that for experience, whether gnat, human, or suitably complex robot, a representational or functional apparatus—the mechanism by which discrimination of alternatives occurs—is

necessary. The representational apparatus, however, is not sufficient. It needs proto-conscious properties for experience to emerge. NP holds that proto-consciousness is information. To spell out this identification I shall first provide an analysis of Tononi's two examples of a photodiode and a camera.

A photodiode is a simple light sensor reacting to the light or dark state of, for example, a luminescent device. In Tononi's example, the photodiode has two possible internal states: light (S) and dark (~S). By "internal" I mean present or occurring within a system—in this case the photodiode—or within one of the parts of a system. These two internal photodiode states respond to the two possible states of the luminescent device external to the photodiode, either light (L) or dark (~L). These two states are external to the photodiode though the photodiode could easily distinguish between its own internal states. The luminescent device and photodiode could occur within a larger system. If L obtains, then within the photodiode S obtains; if ~L, then ~S obtains. I shall denote this relationship as: $(L \rightarrow S) v (\sim L \rightarrow \sim S)$. The internal states of the photodiode will change iff the actual state of affairs change in the world. Prior to the change between states S and ~S, the photodiode is "uncertain" about the actual state of affairs of L or ~L. When the internal state of affairs obtains between S and ~S, uncertainty is reduced, and one bit of information is produced. So, a system distinguishing between one state of affairs rather than another is the reduction of uncertainty and thus production of information. There are only two states within a photodiode that can obtain—light or dark—so it eliminates only one alternative. Systems with robust experience, such as humans, eliminate many more alternatives and generate many more bits of information than a photodiode (218). Producing higher-levels of experience is not merely a matter of combining more

photodiodes. Unless a system of discrimination mechanisms are integrated, high levels of consciousness and subject-hood do not arise. Tononi offers an example of a camera with detectors able to distinguish between $2^{1,000,000}$ alternate states. This equals to one million bits of information (218). The camera is not an integrated system; its information bits do not have a connection between its mechanisms, because its photodiodes are isolated from each other and do not communicate with each other. The brain, as a system, causally interacts, producing an integrated system with subject-hood (219). So, when a particular state obtains, such as ~S, not only are more alternatives eliminated within the system, but also alternatives are eliminated by the system's discrimination mechanisms *en masse*.

The above discussion demonstrates the compatibility of information and proto-consciousness and their provisional identification. First, information is not contingent on a particular physical instantiation. L and ~L are not information states but states of affairs in the world. In the case of either L or ~L, they can be explained by reference to the physical states of their constituents. L and ~L reduce. S and ~S may be distinguished by many diverse systems. Tononi compares the systems of the photodiode and the human in terms of distinguishing between an "on" or "off" state as equivalent, or nearly so (217). The one bit of information is the same. So, between S and ~S, if ~L obtains in the world, then ~S obtains within the system. A particular set of physical constituents is not necessary to reduce the uncertainty of S and ~S to ~S. Some sort of physical instantiation is necessary, but the one bit of information is not contingent merely on a certain physical construction. For instance, let us say that there are four systems watching the luminescent device above: a photodiode, a film with different chemicals

which react to light or darkness, a system that measures wavelengths of light, and a human being. Let us further suppose that a particular state of affairs obtains, ~L. Each of the above four systems react and discriminate between alternatives to reduce the uncertainty of S and ~S to ~S. That bit of information is the same between all four systems. Further, it seems likely, depending on the complexity of a given system, that the physical base of information may change within a system. For instance, a camera that is part of a computer may have multiple types of recording devices with which to convert the information. So, information is not contingent on its particular physical instantiations. Assuredly information needs some sort of physical basis to exist, but its nature is not determined by that base. Moreover, that a physical base is a physical instantiation of a particular bit of information depends more on the bit of information than on the physical base. So as a whole event, both informational property and physical property are necessary. Next, it follows that information cannot be reduced to its physical base. The above four systems have different physical bases expressing the bit of information corresponding to ~S, yet the bit of information is the same. What this implies is that the physical base of information is practically limitless. Merely looking at the physical base will not provide the nature of that bit of information. Not only is reduction of information to a physical base improbable, but a description of information must be given in terms of information and not in some other mode of description. Finally, if we accept the possibility of communicating information either between mechanisms within a particular system or between individual systems, we have also to accept that information has causal efficacy. If a particular bit of information, *I*, is irreducible to its physical base, then the physical base therefore cannot cause another

physical base to instantiate *I*, especially if physical bases are of varying sorts—that is, ranging from sound waves to electrical impulses in the brain or from music on vinyl records to digital recordings. If we hold that the music is the same between the vinyl record and the digital recording, but the particular physical configuration of the vinyl record and the digital recording are different, then there seems to be something over and above the vinyl record that is the music.

Thus, information is a plausible candidate for proto-consciousness. Just how profuse information is in the universe will depend on just how profuse are systems able to discriminate between alternatives, thus reducing uncertainty. So, a system is a system of discrimination that generates information if it answers to the description of a photodiode mentioned above, namely (L→S)v(~L→~S). I venture that (L→S)v(~L→~S) provides both necessary and sufficient conditions for an information system. It does not seem necessary that a system be intended by an agent to be an information system, since this would rule out any natural system, such as a human information system. We also cannot rule out non-living systems as information systems, since that would rule out computers, which are obviously information systems. (L→S)v(~L→~S) can describe many diverse phenomena, phenomena that are not normally considered to be conscious. I hypothesize that (F→G)v(~F→~G) can apply to tree rings, to mechanical devices such as cars and thermostats, to surfaces reflecting and absorbing light, to the ice records of glaciers, to phosphorous compounds and to camera film. Tononi states that his theory "implies that even a binary photodiode is not completely unconscious, but rather enjoys exactly 1 bit of consciousness" (236). "One bit of consciousness" is not any sort of consciousness that can be successfully imagined. Otherwise there would be a point of

view, a subject-hood of one bit of consciousness. But there is no attribution of human qualities to cars and like objects. Human consciousness is not attributed to these objects, but I will suspend this discussion until later. It is enough at this point to conclude along with Tononi that information and information systems are more profuse than isolated corners of the universe (233).

The more important question is whether information is fundamental to the universe. We have shown that information has its own causal efficacy, and that information is independent of any other description, such as a physical description. But, one may object, do we need to include an account of information for a complete understanding of the universe? One may argue that a complete understanding of the universe does not require an account of consciousness since the universe may not have contained conscious existents. The same could be asserted about information. Of course, we could similarly assert that the universe could lack any of its existents, such as strings, mass, gravity, or electrical charge. Our universe, however, *does* include such things as gravity, electrical charge, consciousness, and information. Granted, it is possible that information did not exist and thus would not be necessary for a complete account of the universe.[70] But the point is that information *does* exist. If it cannot be reduced to some other phenomena, then it requires its own account and is a property of the universe in its own right, thus and fundamental.

Tononi discusses II as a fundamental property in much the same terms as I have above. The identification of consciousness with II, Tononi claims, has ontological

[70] In some explanations of the universe, however, the basis of the universe itself is information and so there would be no universe without information (Moyer 2012; Bekenstein 2007).

consequences, and I believe these consequences to be quite deep. II is as fundamental as mass, charge and energy, which seems to entail that II is as basic to the universe or as essential a part of it as mass and the other fundamental properties (233). The typical view of the universe reduces it to the properties of mass, charge, energy, and the other various elements. We see the universe as large complexes of mass, charge, and energy (233). Tononi suggests that the ontological consequences of IITC implies that we see the universe as populated by II, because II cannot be reduced or understood in terms of mere conglomerates of mass, charge and energy. Tononi writes:

> However, if consciousness (*i.e.*, integrated information) exists as a fundamental property, an equally valid view of the universe is this: a vast empty space that contains mostly nothing and occasionally just specks of integrated information (Φ)—mere dust, indeed—even there where the mass charge-energy perspective reveals huge conglomerates. On the other hand, one small corner of the known universe contains a remarkable concentration of extremely bright entities (where brightness reflects high Φ), order of magnitude bright than anything around them (233).

Thus, large concentrations of matter do not necessitate large concentrations of II. II cannot be reduced to mere physical descriptions. Tononi asserts that as long as there are functional mechanisms in a *certain state*, information must exist as II (233).[71] By "fundamental" Tononi holds that II is an essential part of the universe that cannot be reduced to the mere matter of the functional mechanism. To have II is for a mechanism to be in a state that can only be described via reference to information.

[71] Emphasis mine.

3.2.1.2 The Combination Problem and the Integrated Information Theory of Consciousness

Beginning his refutation of the summing of mental states, Phillip Goff writes the following:

> Consider a physical ultimate that feels slightly pained, call it LITTLE PAIN 1. Consider ten such slightly pained ultimates, LITTLE PAIN 1, LITTLE PAIN 2, etc., coming together to constitute a severely pained macroscopic thing, call it BIG PAIN. The pained-ness of each of the ultimates comes together to constitute the pained-ness of BIG PAIN: an entity that feels ten times the pain of each LITTLE PAIN. The severe pained-ness of BIG PAIN is wholly constituted by the slight pained-ness of all the LITTLE PAINS. (P. Goff 2006, 57)

"No-Summing-of-Subjects" (NSS) denies that LITTLE $PAIN_1$, LITTLE $PAIN_2$, etc., sum to necessitate BIG PAIN. NSS leaves open the possibility, however, that LITTLE $PAIN_1$, LITTLE $PAIN_2$ enter into a relationship to necessitate BIG PAIN. Higher-level mental properties are not mere collections of more basic, lower-level mental states. Higher-level mental properties are a result of proto-conscious ultimates entering into a certain relationship with a given system. Articulating this relationship is the solution to the combination problem. This solution is readily available under Integrated Information Theory, which means that combination simply is information integration. IIT identifies consciousness with an "emergent function." An emergent function is not merely an activity of a thing or what a thing does but a function of various components that combine to produce a new property, for example the emergence of liquidity. Behavior is not an emergent function, because behavior is the response of a thing to its environment or to input from an internal source. No new property is produced. Integration brings elements together, and now they function as a system resulting in a new property.

A pain discriminator system (PDS) is much the same sort of mechanism as a photodiode, which is a system that receives input from an external state of affairs (in this case, a chemical state of affairs), discriminates between the inputs to produce an internal state, and then communicates which internal state obtains. The photodiode that Tononi discusses is a solitary system, but it could be easily considered to be a part of a greater system, as in the camera thought experiment. The PDS example like the camera thought experiment, but let us begin with explaining the generation of a LITTLE PAIN (LP).

A PDS has a sensor which responds to the chemical states of a system external to this particular PDS. Thus the system external to the PDS may be part of a larger and more complex system that contains both the PDS and the external system. Let us call the external system Cell A. For simplicity's sake, let us say that Cell A has only two states, chemical state and no chemical state, C and ~C. PDS is designed to respond S_1 when C obtains or S_2 when ~C obtains. S_1 and S_2 is each one bit of information and are integrated into a system, because the actual state of affairs has been distinguished between alternatives. This one bit of information corresponds to one bit of experience. LITTLE $PAIN_1$ can be represented as: $(C \rightarrow S)_1$.

The phenomenal character of LITTLE $PAIN_1$ is determined by the relationships between a system's mechanisms. A complex system such as a person has a multitude of systems which communicate with each other, make connections with each other and distinguish between states of affairs with an inconceivably greater number of alternatives than a mere photodiode or even a PDS. So, PDS_1 discriminates $(C \rightarrow S)_1$, or LITTLE $PAIN_1$. Considering the aggregate of LITTLE $PAIN_1$, LITTLE $PAIN_2$,…LITTLE $PAIN_{10}$, LITTLE $PAINS_{1\text{-}10}$ enter into an information relationship discriminated against

a range of alternatives, A_n, by a range of discriminatory mechanisms, DM_n. It is this act of A_n by DM_n that discriminates LITTLE $PAINS_{1\text{-}10}$ to BIG PAIN .

Tononi notes that damage to different parts of the cerebral cortex will eliminate different properties of a person's overall experience (224). This may support and at least provide a mode of research into the above conception of combination. Consider particular brain damage, for instance the story of a Russian soldier who, after receiving a head-wound that resulted in damage to various parts of his brain, lost all ability to remember (in the normal sense of remember) his past life. His past life was not retrievable consciously. Yet, the soldier could write his biography by hand. Blind-sight patients also seem to support this approach to combination. Blind-sight patients cannot consciously "see" certain aspect of their visual field, yet can, at times, answer visually-based questions about what they are not consciously seeing. If we interpret these instances as certain discriminatory mechanisms failing to enter into information relationships, then in the case of the Russian soldier, the cognitive discriminatory mechanisms and the memory mechanisms could no longer communicate due to damage to the connection between the two—though there remained an information relationship between memory and writing mechanisms. Blind-sight patients likewise are missing information relationships between mechanisms. If this is accurate, a conscious field as a whole is a result of discriminatory mechanisms entering into information relationships, or a result of the account of combination.

Earlier in the chapter I noted that Seager and Allen-Hermanson offer a corollary problem to the combination problem. Granted that higher-level mental properties, such as consciousness, emerge from lower-level mental properties, such as Strawson's

ultimates, why don't higher-level mental properties combine into even higher-level mental properties?[72] At first it would seem that naturalized panpsychism (NP) is not susceptible to this objection, because NP does not posit Strawsonian ultimates—that is, experience that is a subject of experience. NP posits proto-consciousness, ultimates that are so constituted to combine unlike higher-level mental properties that are not so constituted. But this tactic is unavailable, because LITTLE PAINs, higher-level mental properties, combine to give rise to BIG PAIN. Even though neither LITTLE PAIN nor BIG PAIN are subjects of experience, one may reasonably expect an answer to Seager and Allen-Hermanson. However, the problem is only dire if ultimates are subjects of experience, for it would follow that higher-level subjects of experience, such as a person, would also combine. But, according to NP, ultimates and higher-level mental properties are not subjects but properties of an event. Further, NP is committed to the thesis that combination only occurs within specific self-contained systems and not across systems. It is possible to have systems as parts of other systems, but these parts would be configured as parts and are not self-contained. Yet, in a very important sense, NP holds that no mental property of a system is *closed* but may continually expand. The connections of neurons in a human brain are in the billions. A particular informational state may be analyzed, compared and computed in billions of different modes within such a complex system. No *thought* is closed, but n fact possesses vast possibilities to be expanded. If one allows the communication of thoughts between systems and times, the possibilities for new analysis, comparisons, computations, and conceptions are practically infinite. NP allows and explains the openness of mental properties and, I venture, argues

[72] Mental-from-physical emergence does not have this problem because the emergent base is dissimilar from the emergent property. The problem for panpsychism arises due to the similarity of base and emergent. Both should have the same properties, because they are the same sort of property.

against a mere physical association of mental properties, because the possibilities of physical properties are closed.

3.2.2 Possible Objections

3.2.2.1 Objection One: Naturalized Panpsychism is Merely Physicalism by Another Name

One might ask, but isn't this just physicalism? Aren't information and integrated information contingent upon physical states and facts? There is no reason to turn to a pan-theory at all: simply apply IIT to the problem of emergence, and physicalism is vindicated. It would be pedantic of me, perhaps, to point out that such concerns are beyond the scope of this chapter. As it stands I have provided a hypothesis to explain the relationship between ultimates such that a higher-order experiential state emerges. The hypothesis may fail, but my aim was to provide a suggestion for how a pan-theory may address the mysteriousness of Goff's solution to the combination problem. One might ask, why *information* and not just integrated information? Information is a direct and integral constituent of integrated information in addition to certain relation-states. Integrated information just is information in certain relationships. So, if information is an aspect of the universe but not reducible to physical facts, it follows that integrated information has irreducible and thus fundamental constituents. This result is sufficient evidence to claim that physicalism and naturalized panpsychism are not interchangeable. This objection is beyond the scope of my discussion at this time, but I will gesture toward what I consider to be the beginning of an answer.

I think it will be granted to me that a given bit of information can be stored and communicated in many different mediums, such as chemical, magnetic, electrical, optical, crystalline, synapses, vibrations, DNA, bones, tree rings, ice, and earth, to name a few. First, it is perfectly consistent with my hypothesis that experience and consciousness will need some form of physical mechanism. After all, an event is constituted by both a physical and experiential existence. This fact does not entail that physical facts determine facts about consciousness or that consciousness is reducible to the physical mechanism (or that a physical system) or even a given set of physical systems,[73] necessitates conscious states or all aspects of a conscious state. Information seems to possess a certain freedom from physical determination. Consider a certain environmental state of the world, call it Σ. The state of the world Σ is a certain set of conditions, Σ_N. Σ_N is information that is in turn recorded in multiple sources, like tree rings, ice, the bones of animals, soil, etc. Σ_N can eventually be "read" from sources which recorded $\Sigma_{N.}$ Let us call this Σ_I. Granted, some information will be lost but some will not. Even though Σ, the original physical conditions of $\Sigma_{N,}$ is no longer existent, a portion of the information has survived. Now, if physical conditions (i.e. Σ) fully necessitated $\Sigma_{I,}$ then Σ_I could not survive without $\Sigma_.$ In some way, then, Σ_I is not fully necessitated by its physical conditions and is thus in some way unable to be reduced to physical facts.

[73] I refer to disjunctive statements where logical behaviorism attempted.

3.2.22 Objection Two: Information Isn't Fundamental

Anthony Peressini denies that II is "fundamental" and "intrinsic', holding that Tononi's claim is actually that II is an observer-independent (i.e., real) quality (Peressini 17). II does not act like a fundamental property, according to Peressini. He says about II behavior that:

> it is the behavior of higher-level, functional, organizational, relational, or even "emergent" properties. Thus, in a strict philosophical sense, like fitness, II is relational (not intrinsic) and higher-level (not fundamental), though still an objective property (Peressini n.d., 17).

Fundamental properties can be found at all the various levels of reality, while II can be found only at a higher-level where there are complexes. II is a property of complexes but not of the complex's parts, while fundamental properties like mass are present and equal in the whole and in the sum of the parts (Peressini n.d., 17).

The property that I argue to be fundamental, however, is not II or consciousness. II is indeed an emergent property and thus would not be fundamental. Rather, the fundamental property is the proto-conscious, or *information*. So my question is, can we understand information as a fundamental property? I suspect Peressini will answer in the negative, arguing that: if we consider the bit of information produced by the photodiode as $(L \rightarrow S) v (\sim L \rightarrow \sim S)$, it is clear that information is both an emergent property and a relational property. It is also clear that the parts of the photodiode do not have portions of the bit of information of the photodiode system. The photodiode as a given system has the property of information solely due to the interaction of the photodiode with the illuminated screen, though not in the same fashion as liquidity emerging from H_2O. Liquidity requires specific elements. One can also imagine a change in particular

elements without a change in the bit of information. The defining aspect in the rise of the bit of information is the interaction between systems rather than the constituting elements of those systems. (L→S)v(~L→~S) is relational and the operation of complex systems, at least as complex as a photodiode.

But this is not the sense of "fundamental" that is important for my argument. Peressini notes that there are two senses of the term "fundamental": the mass-sense of fundamental and the *fitness-sense* of fundamental. The fitness-sense is fundamental as an explanation is fundamental, in, say, population genetics and evolutionary biology. Fitness is theoretically indispensible or irreducible in the explanation of these disciplines (Peressini n.d., 17). II, Peressini claims correctly, possesses this sense of fundamentality. The issue arises as to whether this sense of fundamental is sufficient for NP. The notion of fundamentality that we have been working with has been that of irreducible properties with their own causal efficacy. Of course, proposition two of NP holds that proto-consciousness is ontologically independent, and this would entail that supervenience if forbidden. Ontological independence equates to non-contingency on the physical, and I have described above why a physical explanation cannot explain information. Proposition one of NP, however, equates to Peressini's claim concerning the fundamental nature of fitness. The sense of fundamental that we seek is in fact irreducible as an explanation of the phenomena of consciousness where causation is taken as explanation. This is just the sense of fundamental that Peressini suggests. But it is clear that NP is not merely an explanatory thesis but an ontological thesis positing the mental as a fundamental property of the universe, as evidenced by propositions two and three of NP. But for my present purposes it is enough to note that, while this is a significant problem with Tononi's

argument, developing an empirical answer to the combination problem can proceed without establishing the fundamentality of information. Thus NP requires a strong ontological sense of "fundamental." Peressini's analysis threatens the NP project, yet I cannot attempt reconciliation here. I shall revisit this objection, and other objections posed by Peressini, in chapter four.

3.2.2.3 Objection Three: Naturalized Panpsychism Cannot Fill the Explanatory Gap

The main problem with physicalist emergentism, according to Strawson, is that their explanation for experience is *brute,* or a miracle. The emergent foundation has no explanatory value when predicting the existence and character of experience. This is an expression of the explanatory gap problem, which is basically that there exists a missing step between a complete description of human physiology and an explanation of experience. An opponent of physicalism, Strawson asserts that the explanatory gap cannot be closed, because the emergent base is considered wholly non-experiential. There is no explanatory gap within other emergent relationships, such as liquidity and H_2O. A complete description of the chemical composition of H_2O molecules and their relationship to each other offers a complete explanation of the liquidity of water. This example of emergence, and others similar to it, are necessary; the emergent foundation entails the existence of the particular property (Carruthers and Schechter 2006, 33). But complete accounts of human physiology do not entail the existence or character of mental properties. There is a disconnect between these phenomenon. The issue is that any physicalist/functional explanation of consciousness seems to be missing some aspect that provides for the necessity of reductive explanations for those inherent properties in the

reductions of water to H_2O. Strawson asserts, as we have discussed prior, that assuming panpsychism, that the emergent base is experiential, solves this problem. But as Carruthers and Schechter argue, Strawson's resort to panpsychism—and any resort to panpsychism—fails to bridge the explanatory gap.

Carruthers and Schechter object to Strawson indirectly by arguing against a weaker and more plausible version of panpsychism. Instead of Strawson's problematic panpsychism in which ultimates are subjects of experience, Carruthers and Schechter evaluate the theory that ultimates are qualia bearing, having properties that are responsible for the phenomenological "feel" of our experience (Carruthers and Schechter 2006, 36). Attacking Strawson directly, Carruthers and Schechter imply, would only concern one unlikely theory rather than panpsychism as a whole. Their first evaluation is that panpsychism can only bridge the gap if the experientiality of ultimates that constitute a higher-order mental property is clearly known (Carruthers and Schechter 2006, 36-37). This seems obvious, especially if we consider Strawson's example of liquidity and reduction. The reason the reduction of liquidity to the properties of H_2O works is due to the transparency of these molecules and their properties. There is no explanatory gap, because we understand all aspects of the emergence. The experientiality of the ultimates is not able to be known via introspection, since we do not have access even to the mere physical properties of the ultimates that constitute us. The only mental properties that we have access to are our higher-level mental properties (Carruthers and Schechter 2006, 36-37).

Carruthers and Schechter claim that even if we grant knowledge of ultimates' qualia, panpsychism still does nothing to bridge the explanatory gap. First, we must note

that when considering successful reductions in science (such as heat to molecular movement, water to H_2O, liquidity to the properties of H_2O, lightning to electrical discharge, or thunder to the expansion of air heated by a lightning discharge) if one understands the properties and reduction, one cannot help but find it necessary to identify the emergent property and the emergent foundation. True, someone ignorant of science and molecular chemistry, or who failed or did not take a basic high school science class may deny that thunder is the expansion of air heated by a lightning discharge and claim that it is angels bowling. But any educated individual you simply cannot deny, even when hearing if for the first time, that every instance of thunder is an instance of air expanding due to a lightning discharge. This is not the case for panpsychic ultimates and higher-order mental properties. There is no entailment that is forced upon us by this reduction, according to Carruthers and Schechter, even if complete knowledge of experiential ultimates is granted. Philosophic zombies—humans that are prefect physical replicas of conscious humans yet are unconscious—are still conceivable because the reduction is incomplete in that it lacks that command of necessity (Carruthers and Schechter 2006, 37-39).

Even though NP is substantially different standard form panpsychism, I admit that NP has not established the necessity to bridge the explanatory gap. But I do not think this is particularly harmful. Observe that I have been offering an a priori discussion. The explanatory gap preys particularly on metaphysical theories—theories lacking in the empirical research that establishes and supports the instances of reduction that we have mentioned. What is going to bridge the explanatory gap, if anything will, will be empirical research like the research that established the reduction of water to H_2O. What

I have done is to offer a hypothesis that may, with empirical research offer new topics for research and discussion, if not eventually bridge the explanatory gap. It is my contention that metaphysical solutions to the explanatory gap will always be doomed to fail simply because the gap is not really between phenomenal and physical concepts, but depends on metaphysical reasoning which produces a hypothesis and empirical research which either affirms or falsifies the hypothesis by showing *why* the hypothesis holds *necessarily*. We should note that if all we had were metaphysical reasoning supporting the reduction of thunder to air expanding to a lightning strike, the reduction would lack the necessity to prevent the thought experiments separating the two phenomena. But I will assert that *if* NP is verified through empirical evidence, then it will have closed the explanatory gap.

3.3 Conclusion

According to NP, which adopts Giulio Tononi's project, consciousness just is integrated information. As will be argued in chapter four, consciousness is identified with subjective experience, something-it-is-like (SIL), and qualitative experience (Q)—all make a qualitative experience a qualitative experience. So, integrated information just is SIL and Q. Integrated information (II) is the amount of information produced by a complex system above and beyond the information produced by its parts. Information is the reduction of uncertainty by a system. So, in any system that reduces any uncertainty, one bit is the least amount of information able to be produced: it integrates information and thus is conscious on par with the number of bits of information produced. More concisely, (1) the quantity of consciousness is equal to the amount of II produced by a system and (2) the quality of consciousness is determined by the set of informational

relationships generated within one mechanism (Tononi 2008, 216). Proto-consciousness, I posit, is information. Information (i.e., proto-consciousness) is fundamental to the universe and is the element that is so constituted to produce full consciousness in complex systems, much like fundamental, micro-level properties are so constituted to produce macro-level properties.[74] The photodiode, as Tononi and as I am committed to it, is conscious to the degree of one bit, or however many bits of information that the system produces. This basic consciousness is nothing like human consciousness. Human brains produce millions of bits of information in a complex system that interacts in the form of information relationships to produce the quale of particular conscious properties.

Information occurs only within the context of a system. While information must have an inherent connection to a physical property, the character of that information is not contingent on the character of the physical property. So, a physical explanation of the system will not provide an explanation of the information occurring within that system. A particular bit of information can only be explained in terms of information. Information has been identified with proto-consciousness, and so the nature of any mental property, in some fashion, will be *information*. Combined with the commitment to event neutral-monism, it follows that some events are constituted by both mental (i.e., proto-consciousness) and physical properties, and some are constituted only by physical properties. The difference between the two—events constituted by physical properties (i.e., simple events) and the mental/physical property constituted events (complex events)—is that latter are *systems* in which information occurs and the former are not.

[74] I heartily concede that the fundamentality of information is a controversial point, but it is such a massive point that I offer only precursory arguments with the intent to pursue the matter further in chapter four.

The nature of information precludes events with only mental properties. This may seem to give the physical priority in the constitution of the universe, but it does not. Even if the physical was given priority, it would not endanger NP. Many fundamental properties, such as mass, gravity, or electrical charge, require an intrinsic connection with physical properties, and some, like electrical charges, are absent in some objects, such as tachyons. So, events, like brains, have mental and physical properties, and some, like rocks, have only physical properties. So, systems are events composed of several fundamental properties, mass, electrical charge, and mental properties, as well as physical properties. Physical properties, thus, are the basis through which fundamental properties occur. It is these fundamental properties that give physical properties definition, or make the physical property this sort of physical property.

How profuse are mental properties in the universe according to NP? Traditional panpsychism holds that everything physical is conscious (this is the all-ness principle). Such a thesis, however is intuitively unpalatable, smacks of supernaturalism, and, I think, would forever make the nature of consciousness beyond the reach of science. First, let us accept the commitment from Peressini and others that consciousness is constituted by a phenomenal quality and a subjective quality, a feel and a self-hood.[75] So, if everything physical is conscious, then everything physical not only experiences a phenomenal quality, such as itchiness, but also has the sense that the itchiness has a "mine-ness." Take a physical ultimate, say a string. As a physical thing, the string is conscious in that it experiences, say itchiness, and that the itchiness has a "mine-ness" or is the strings. Let us grant this position. From this, it is clear that the phenomenal and subjective quality of

[75] Peressini (n.d.), Strawson, (2006a) (2006a), Levine (2001), and Kriegel (2009)

consciousness cannot be due to brains neurons. Nor can the typical organs of sensation have a role, since strings have no sense organs. We are quickly entering the realm of magic where science has no place. Science cannot make sense of sensation without sense organs and nor can selves without a representational apparatus. Let us grant the thesis that consciousness is on a continuum and thus that some physical things have a bare minimum of consciousness. Does this help the traditional panpsychist? No. Let us say we can measure consciousness from one to one-hundred percent. Let us say a human is one-hundred percent conscious. In that case, the string has one percent of consciousness. But to be conscious at all there must be a "feel" and a "mine-ness." So, a human and a string both have the same experience, say the increased gravity and slowed time of a singularity, say *heaviness.* There is the feel of the heaviness and the mine-ness of the experience. The string has one percent of the heaviness and mine-ness that a human does. It is not that the gravity has less pull nor that the experience is less mine of either entity. The experience of the string is not one percent its own and ninety-nine percent the human's. One could say one-percent means that it only has one percent access to its environment, but then why would a human have more? It could not be due to the human's complexity or organs, because the string has one percent access to its environment without any complexity or organs or anything whatsoever. One could suppose that the string is a self-experiencing-self such that the phenomenal feel is the mine-ness and vice-versa—that one percent consciousness is the feel of mine-ness. This is close to Strawson's view on ultimates (2006a). But this view cuts off the ultimate's connection with its environment, at least experientially, from the rest of the universe.

One is naturally moved to ask, if the ultimate has no connection with anything external to it, then how it can combine experientially to form higher-level experiences?

NP rejects the all-ness principle as unscientific and supernatural. Information (i.e., mentality) is system-dependent so that the profuseness of the mental is in proportion to the number systems in the universe. As said earlier, the basic system is: [(L→S)v(~L→~S)]. So, any events that can meet this description will posses mental properties. However, we must note that this does not require commitment to mental specialism—that the mental is an aberration in the universe. In so far that the universe is the type of universe that it is, the mental (that is, at least proto-conscious) has to be a part of it, because the universe given its form due to its fundamental properties, proto-conscious included.

I have offered a combined theory of panpsychicism and II in order to offer a transparent and empirical solution to the combination problem, or how mental properties emerge from constituting mental properties. Constituting mental properties do not mix, sum, or "build" the next higher mental property, but rather mechanisms for discrimination, such as a PDS, when registering different constitutive mental properties, enter into a new internal state that equates to a new mental property. This is integration. This system works due to the intrinsic and non-contingent connection that a mental property has with a physical property to form a space-time event.

The way that I have answered the combination problem, by combining NP with IITC, I have similarly combined the fate of NP with that of IITC, but not the reverse. If Tononi's project fails, NP's solution to the combination problem, at least, fails. Without

a sufficiently empirical solution to the combination problem, NP fails. So much depends on the connection between NP and IITC. An objection to Tononi's theory was mentioned above. This objection states that II is neither a fundamental nor an intrinsic property. Peressini's reasoning was discussed in that section, but it follows that if II is not a fundamental entity, then neither is information. Since proto-consciousness must be a fundamental property (if Peressini is correct) NP cannot connect to IIT. Peressini also objects that Tononi' identification is false, consciousness cannot be identified with II. Tononi confuses the notion of consciousness, conflating qualia and consciousness. At best Tononi offers a theory of the nature of qualia—that is, the qualitative feel of an experience. I am going to take up Peressini's objection in the next chapter. My only wish here is to note the necessity to defend IITC.

Chapter 4
Objections to Integrated Information Theory of Consciousness, Replies

4.0 Introduction

In the last chapter, I offered a solution to the combination problem, which is traditionally seen as the major stumbling block for a successful panpsychic theory. The combination problem highlights the difficulty in positing that higher-level mental properties emerge from foundational lower-level mental properties, or ultimates. Most previously attempted solutions either relied on transcendental arguments or end up in some type of mysteriousness, a claim that a solution necessarily precluded. Earlier I proposed a solution that implemented Guilio Tononi's Integrated Information Theory of Consciousness (ITTC). Consciousness is integrated information, according to Tononi. I argued that within Tononi's framework, identifying proto-consciousness (mental ultimates) with information allows for a mental-from-mental emergence because the ***integrated*** information (which is consciousness for Tononi) emerges from (non-integrated) information (i.e., proto-conscious mental ultimates) because of the integrated structure of the brain. My solution is dependent on IITC, and there are philosophic concerns with this theory, as illustrated by Anthony Peressini in his article "Consciousness as Integrated Infomration: a Provisional Philosophical Critique" (forthcoming).

4.1 Synopsis of the Present Chapter

In this chapter I will first describe Peressini's objections to IITC and their ramifications. I will offer a general summary of Peressini's article. Following a more detailed discussion of Peressini's objections to IITC, I will argue that Peressini's division of qualitative experience and subjective experience is not warranted. I argue that introspection and conceptual distinctions (that is, being able to talk about phenomena as if they are different) are problematic. Such modes of distinction can be made fairly arbitrarily and require some form of criteria to ensure that such distinctions are ontological distinctions and are not fabricated merely for manageability. One can certainly deal with two aspects of a phenomenon, say color qualitative experience and perspective qualitative experience, but that does not mean that there are two different types of experiences as such. Next I show how discussions of qualia are oversimplified, because the focus on only a single aspect of a whole experience—that is a manifold of experience. When experience is considered in its entirety, subjective experience is but seen as a type of qualitative experience.

I then argue that information, and thus proto-consciousness, is intrinsic to a system. I establish information's intrinsic-ness by demonstrating that information meets the basic intuition about the "intrinsic": namely, that if an informational system was in a lonely universe (that is, if it was the only existent), that system would still have information. Then I argue that information is fundamental by utilizing Galen Strawson's argument that emergent experience requires an emergent base that is fundamentally mental (Strawson 2006a). Next I argue that information is fundamental if one considers

its role in the Copenhagen interpretation of quantum physics. Finally I explain that since full-blown consciousness is, in fact, an arrangement of fundamental properties, it has the theoretical and ontological strength to carry IITC's basic propositions.

4.2.0 Tononi's "Ambiguity of Consciousness" and its Ramifications

Peressini's concerns regarding Guilio Tononi's integrated information theory of consciousness (IITC) focus on the concepts of consciousness and qualia, and on whether the IITC uses them in a consistent and plausible way. Tononi is definitely unclear in his use of the term "consciousness" when he states:

> Everybody knows what consciousness is: it is what vanishes every night when we fall into dreamless sleep and reappears when we wake up or when we dream. It is also all we are and all we have: Lose consciousness and, as far as you are concerned, your own self and the entire world dissolve into nothingness (216).

This is the clearest Tononi is in his use of "consciousness." While it is true that everyone is familiar with their own conscious states, this certainly does not help to impart a theoretical understanding. It is not sufficient for a theory of consciousness. Tononi's confusion is not unique in this regard, as Peressini notes (forthcoming, 11). The best Tononi can offer, according to Peressini, is an account of qualia, the qualitative aspects of experience (17).[76] Peressini also questions Tononi's understanding of integrated information (II) and thus of consciousness as a fundamental and intrinsic property. Peressini compares mass and II and finds little congruence between the two (25-30).

[76] When an experiencer has an experience, say the taste of Foldgers coffee in the morning, the way the taste of the coffee appears to one is the coffee quale. Peressini notes the following features of qualia: practically ineffable, non-relational, non-public, and having immediate access for the particular subject (forthcoming , 12). I do not accept the preceding features as characterizing a quale. The feature "non-relational" is not included in other significant philosophy work such as Johnsen (1997) and Tye (2002). I follow Johnsen's characterization of qualia as "*the way things seem to us"*, and agree that no more is needed to understand or state the nature of qualia (1997, 54).

Tononi misunderstands II to be a fundamental property, like mass. II is a relational and higher-level property (27). II, Peressini suggests, is better understood as a property such as *fitness* (26). Fitness has a fundamental *explanatory* role in such phenomena as population genetics and evolutionary biology. Fitness is fundamental in the sense that it is theoretically indispensible or irreducible. So, II is only explanatorily fundamental and still supervenes on lower-level physical properties (27). At this point in his assessment, Peressini abandons IITC and argues that Tononi's best chance for a contribution to the mind/body debate is on the qualia front, namely with an integrated information theory of *qualia* (IITQ). This is Tononi's best bet according to Peressini. However, if Tononi's program is going to work in general, II has to be fundamental in the sense of non-identity or irreducibility to physical properties (27). Peressini explains that this sense of fundamental cannot do the work that Tononi needs it to do for the IITC project, but the comparatively modest project of IITQ has theoretical and empirical promise. IITQ simply does not have the problems that plague IITC. For instance, Tononi simply does not have enough evidence connecting consciousness and II. Further, Tononi unconvincingly characterizes II as a fundamental/intrinsic property, whereas both II and consciousness seem to be emergent properties. This leads to the consequence that consciousness is an indefinite property, a property that will be measured differently depending on the level on which one focuses. Thus, any designation of level of description of the brain as conscious will be drawn arbitrarily. IITQ simply does not have these needs. First, Tononi makes a more convincing case for II as qualia or qualitative experience. Further, since qualia are not quantitative but qualitative, measurements of qualia are not as important as with consciousness. Finally, the theorist

is able to use subjective experience to define qualitative experience, to determine just what "grain size" equates to consciousness. Since measuring the quantity of II is relative to the grain size focused upon, just which level can be pinned as the "level of consciousness" becomes problematic. Without some principle of determination, any level chosen or any amount of II chosen would be chosen arbitrarily.

Naturalized panpsychism could accept Peressini's modification of Tononi's theory. NP and IITQ are reconcilable. By embracing IITQ, NP could still retain its solution to the combination problem. The combination of proto-consciousness with produce qualitative experiences is fully explicable under IITQ. This in itself is a philosophic feat. Further, that II is not fundamental except in an explanatory sense is of no real import to NP, because NP holds that *information* itself is fundamental—not II. NP can hold that the subjective aspect of experience is a different problem from the concern of an NP interpretation of qualitative experience. To tackle the problems separately is not a sign of failure, because a great deal of progress has been made by separating problems into manageable tasks. The real issue, however, is that thus far IITC has done the real philosophic work. One would be justified, so far, to ask, why NP? Why not merely IITC? NP does have an important contribution to this philosophic project, which I shall demonstrate by rejecting Peressini's division of qualitative and subject experience.

As stated above, Tononi is not clear in his characterization of "consciousness." Peressini proposes understanding "consciousness" as "something-it-is-like-to-be"—that is a particular being (forthcoming, 11). Peressini notes two sorts of problems in the pursuit of a theory of consciousness: the problem of what makes an entity a subjective

experiencer (SIL) [77] and what makes a particular state a qualitative state (Q) (12). Peressini presses the importance of keeping the two queries separate. To be precise, Peressini argues that SIL is not the same as Q, that SIL is about the subjective character of consciousness, and qualia is about the qualitative character of consciousness.

The point of Peressini's distinction is that Tononi not only moves between SIL and Q, but also takes the property of being conscious as identical to having Q (forthcoming, 14). Peressini illustrates the equivocation in Tononi's necessary for the identification of consciousness and II. Two reasons are offered in support of II. First, there is a correlation between the amount of II and the presence of consciousness. Second, the qualitative aspects of consciousness can be mathematically modeled so that many properties of conscious experience are captured by the formal properties of the model (14). The latter reason addresses Q, but the former is Tononi's attempt to address SIL, however Tononi confuses SIL and the property of having qualitative states as one and the same property (14-15). As a way to interpret Tononi's account, Peressini suggests that Tononi advances a reduction of SIL to the sum total of all qualitative states experienced at a given time. Since this eliminates or ignores the subjectivity of consciousness, it is unattractive, and Peressini wonders how this approach differs from eliminative materialism (15).[78] The best hope for Tononi's theory is to reduce its scope, changing it from a theory about consciousness to a theory about the nature of qualia (15).

[77] See (Nagel 1974). Peressini abbreviates "something-it-is-like" as SIL(x). I shall use this abbreviation SIL.

[78] See Peressini, endnote #16.

4.2.1 Peressini's Argument for the Move from IITC to IITQ

According to Peressini, Tononi's argument, either: 1) does not directly deal with SIL, by confusing SIL with the property of having qualitative states, or by conflating SIL and Q into one entity, or 2) offers an argument that poorly defends the identification of SIL with II. Either way, without adequately arguing for the identification between SIL and II, IITC fails as a theory for consciousness, but it may be adequate for the identification of Q and II. First, Tononi's argument, reconstructed above, does not support that II equals the subject of conscious experience, but instead that II equals qualia (17). A proponent of Tononi's project would have to offer an account how of having qualia entails a subject of experience. Such a proponent must establish either (a) that II rich complexes are themselves subjects of experience or necessarily part of such a subject, or (b) that there is no entailment between having qualia and being a subject of experience (17). Neither option is promising, nor does Tononi's argument seem to have the strength to establish II rich complexes s subjects of experience.

Pace Peressini, Tononi does offer evidence for the identification of SIL with II in the form of the thought experiments described in my third chapter. I shall not repeat an exposition of those two thought experiments here. Suffice it to say that Tononi hopes to establish his thesis by reasoning that the unity of one's phenomenal experience is irreducible and holistic. For neural systems high in II are irreducible to components and are essentially connected to their components on pain of inexistence. Peressini rightly notes that such argumentation establishes only a limited quantity of awareness and is generally too weak to support Tononi's identity claim (18).

So, Tononi simply does not have the evidence or argumentation to establish consciousness equals II. But he does have a case for identifying qualia with II. Peressini's best reason to reject IITC and to adopt IITQ is that IITQ opens up scientific investigation, much like the successful empirical investigations of the mind have occurred by bracketing off memory and therefore from other topics in the general investigation of the mental. Viewing Tononi's project as IITQ allows for the same sort of bracketing as occurred in the case of memory, possibly allowing for similar advances in qualia, all the while bracketing the question of what makes qualia experience part of a conscious experiencer.

4.2.2 Fundamental and Intrinsic Property Argument for IITQ

Tononi's II proposal reduces consciousness to informational properties and not neurological properties, sidestepping the intuition that qualitative properties cannot be reduced to physical properties. In order for such a reduction to work, Peressini points out, II must be fundamental in at least the sense that II is irreducible to physical properties (27). The best candidate for a kind of fundamentality for II is *explanatory* fundamentality, not the ontological fundamentality that Tononi needs. II simply does not resemble familiar ontologically fundamental properties, for two reasons. First, II is found only at higher-levels of reality in which complexes exist, so II does not exist at lower levels of reality. Traditionally, fundamental properties are understood to exist at all levels of existence, as in the case of mass or electrical charge. Second, II is a relational property, while traditional fundamental properties are not (Peressini, 26). II is best

thought of as a relational, emergent property, because it depends crucially on the relations among components, and on any intrinsic properties of such components (Peressini, 27).

Peressini argues that the real threat to identity of consciousness and II is the relativity of II to the framework one uses to measure II. The same amount of II is not generated on all spatio-temporal measuring scales. When measuring the II of a given system, different answers are obtained at different levels, because the amount of II is relative to the scale of measurement. II is not a definitive property, but a relative one. This undercuts Tononi's project because another explanation must be introduced, which will be the "key" to consciousness, one that defines consciousness as this level and not any other levels. So, any designation of consciousness at this level, without said "key", will be an arbitrary principle demanding further justification (Peressini, 28). These criticisms leveled against understanding consciousness as II are not so devastating for an account of qualia. First, there is support for qualia as non-intrinsic properties.[79] Second, since qualia are essentially qualitative and not quantitative, the multi-level indefiniteness plaguing II as consciousness does not similarly plague an account of II as qualia, because indefiniteness enters only in the attempt to quantify the amount of consciousness (Peressini, 29).

[79] Peressini refers to Johnsen (1997), Nikolinakos (1994), and Tye (2007) in (footnote 24 forthcoming, 38).

4.3.0 Rejecting Peressini's Distinction between Qualitative and Subjective Experience; The "*What it is Like*" Just Is "*What it is Like for Me*"

Before moving on to my objections to Peressini, I wish to make the subject of our discussion clear. First, by "subjective experience" I do not mean a sense of self or a relation of one's self to one's history. Subjective experience is an aspect of other experiences where the experiences are "felt" to belong, but do not specifically belong to a "me" are felt to have a sense of "mine-ness." This phenomenon, I assert, is best understood as a *unity of consciousness*, as something separate it from a sense of "me-ness." I do not deny a conceptual distinction between subjective experience and qualitative experience. One can talk as if these two are separate quite readily, as can one talk about one's psyche and oneself as separate. I make the assumption that merely being able to talk as if two things are separate does not prove that they actually are. Nor does not being able to talk about two things separately demonstrate that there is only one thing. Finally, I assume that while introspection may give us insights into our psyche, before any distinctions may be made by appeal to introspection, there must be some criteria to determine valid and invalid distinctions.

Peressini's main argument against IITC and in support of IITQ centers upon the distinction between qualitative experience and subjective experience. Peressini sums up his position as follows: "The point I am urging both philosophers and scientists to recognize is that the problem of subjective experience (i.e., SIL-consciousness) ought not to be thought of as identical to the problem of qualia" (13). Peressini's assessment depends upon this distinction. Yet the support for this distinction is weak at best. Peressini remarks that, despite the fact that consciousness and qualia are often taken as

one problem, "It isn't obvious that the problem of what makes an organism a subjective experience in Nagel's sense (i.e., SIL-consciousness) and the problem of what makes a state a *qualitative* state (i.e., qualia) are so simply related" (12).[80] Granted, it isn't obvious that the two problems are identical. Yet, if it isn't obvious that they are identical, then it also isn't obvious that they are not. The main support for Peressini's distinction seems to be that he is in good company; he mentions Leopold Stubenberg (1998) (who actually argues against Peressini's distinction) and Michael Beaton (2009). My point is that Peressini makes this distinction with little argumentation, making his distinction arbitrary without something more. Peressini may make an appeal to *introspection*, namely that when we introspect we experience our subjectivity as something different from our qualitative states. This seems to me to lead to an explosion of different problems for investigation. Could we not make a distinction between all sorts of experiences? For instance, visual qualitative states are different from inner bodily qualitative states, sense of equilibrium states, recognitional qualitative states, or qualitative states of well being, sound qualitative states, and sense of self qualitative states: a full blown sense of character and history. I can speak conceptually about my emotional qualitative states without referring to my visual qualitative states. Temporal qualitative states seem to be sufficiently different from visual qualitative states to warrant a new "problem" of experience. My point is that, depending on what a theorist wants, different aspects of experience can be peeled off from each other. Without some sort of criteria to govern the distinctions from introspection, the distinctions seem to be arbitrary or contrived. Peressini could also make an appeal to what the terms mean and suggest that these different meanings imply different referents. There is no evidence that the

[80] Emphasis Peressini's.

terms “qualitative experience” and “subjective experience” refer to the same object. This brings me to my second observation. Mere ability to talk about a phenomenon as comprised of different phenomena does not necessitate that the two are actually different phenomena or problems. Nor does introspection lead to such separateness unless some further criteria are established. No, it may certainly be the case that it is useful to handle consciousness as two problems, qualitative and subjective, but such usefulness does not establish an actual distinction.

Researchers characteristically oversimplify discussions of qualia; they speak of a red quale, a blue quale, etc. even though (unless an individual is locked in an entirely red room without thoughts, textile sensation, the ability to hear—even one’s own bodily processes like pulse—and so forth) qualia never appear so isolated. When considering isolated qualia, which are almost always visual, and SIL, the two seem more distinct than they actually are. Or, the distinction between qualitative consciousness and subjective consciousness does not hold when qualitative states are fully explicated. First, conscious beings (like humans) are experiencing almost the entirety of their lives. True, dreamless sleep may signal a complete loss of consciousness, but this is not a sleeper’s complete experience (Tononi 2008, 216). Sleepers also dream and experience during sleep. A qualitative state of consciousness has an incalculable amount of qualia and is a virtual tapestry of qualia. What types of qualia are there? We can distinguish between external and internal qualia. External qualia are qualia concerning outer objects, like red stop signs and blue walls. External qualia are not necessarily the same as sensations. There are secondary objects, like Tom and Mike, ships and cars, trees and shrubberies. There are also depth-qualia and distance-qualia. There are also time-qualia, but time qualia like

"present-experience", seems to be both external and internal. Anything that appears in a certain way will have a quale. Now, internal qualia are qualia originating from within the limits of a body and of inner thoughts, including various "mental" or "abstract" entities such as numbers and laws of nature. General experiences, such as the experience of experiencing, should be considered internal. It may be impossible to denote all the composite parts of a particular experience, but what is necessary to note is that an experience is comprised of a great deal of qualia, and part of the nature of each of these quale is the fact that the quale has an intrinsic connection to other qualia. No being has a qualitative experience of merely a "red quale," but a qualitative experience is something that is connected at least to internal qualitative composites. To be a subject with a red quale is to be a subject experiencing itself experiencing a red quale. A subject that experiences also experiences experiencing. In fact, the primary qualitative experience will most likely be internal qualitative composites of an experience. It is no wonder that one would take the unity of qualitative experience and the qualitative experience of a unity as at least separate types of qualitative experience which demands a different discussion. It may be useful to peel off a solitary quale for a particular discussion, but the fact of the matter is that a solitary red-quale is not a qualitative experience, but only a small part of an experience. The qualitative state of consciousness is a manifold of innumerable qualia that appear simultaneously as the result of a subject's relationship to the external world, of its relationship to its body, and finally of its relationship to its own mental states or conscious states. All of these composites are interconnected and comprise a qualitative state of consciousness. The red-quale of the stop sign is connected to the shape-quale of the stop sign, to the white-quale of the stop sign, to the green-quale

of the stop sign's post, all of which are connected to the black-quale of the asphalt of the street to the crisp-cool-morning-air-quale to the bodily-chill-quale of the being in the center of a sphere of an experience. When cognized in this way, committing to the statement "subjective states are the sum of all qualitative states" is more believable, though the statement should be, "a subjective state is a qualitative state of a manifold of qualitative states." The key is that qualia are interconnected and interrelated within a qualitative state, and that one particular qualitative state, like a visual qualitative state, is a *mine-ness*, a qualitative state of having a qualitative state.

Neuroscientists who work on the neural explanation of self-consciousness have found that when a limb-movement is initiated in the brain, two signals are sent out: one to the limb and one to another section in the brain (Zimmer 2005, 94-95). The subject's brain compares the sensation of the limb-movement to the signal sent to the brain, which predicts the limb-movement. Sensation and prediction are compared, and if the two are consistent, it has been found that the sensation of 'ownership' arises. When the two are not so consistent, then the limb-movement is deemed to be an alien movement. Ownership of the limb and of the limb-movement is thus deduced from sensations: predicted sensation and perceived sensation. Sensations are traditionally within the category of qualitative experiences. It seems possible that a subjective experience is the qualitative experience of different qualitative experiences (Zimmer 2005, 94-95). So, if a subjective experience is merely the qualitative experience of an organism's qualitative experiences, then there is only the qualitative problem of experience. This means that having qualia is sufficient for SIL, contra Peressini's argument.

Strawson would assert that there is no real distinction between the experience and the subject of experience (2006b, 204). Strawson interprets Descartes as holding that there is no real distinction between a thing and its properties (2006b, 207).[81] Strawson also notes that Immanuel Kant, David Armstrong, and Friedrich Nietzsche share this view (2006b, 196). So it seems that I am in equally good company in my commitment to the identification of qualitative and subjective experience. [82]

Presumably, one could object that the same thing is said of biology and physics: biology is about the inter-connectedness of physical material and thus, according to my argument above, the two disciplines should be handled as the same problem. And yet we need to distinguish biology from physics – they are different concepts, just as Peressini suggests qualia and SIL are different concepts. First, I agree that the distinction between biology and physics is valid, though the goal of science is to eventually explain the entirety of the universe through physics. So, the goal of much of science is to reduce all of the various phenomena to one theory. We should note that between biology and physics there is more than a conceptual and introspective distinction: there are differences in objects and methodology. Further, understanding the reason why the distinction is necessary is important. Is the distinction because the work would otherwise be unmanageable? Or are the two distinguished phenomena in principle unable to be pursued together? My intuition is that the various distinctions in science are due to manageability and to the limits of the researchers rather than to any inherent distinction. My assertion regarding SIL and qualia is a bit different. I assert that subjective

[81] See Kant (1999), A414/B441. Strawson quotes Kant as follows: "In their relation to substance, accidents [or properties] are not really subordinated to it, but are the mode of existing of the substance itself."

[82] For a contemporary defense for the identification of qualitative and SIL experience see Kriegel (2009).

experience is the experience of qualitatively experiencing. For the analogy to hold, biology would have to be how we investigate physics.

4.3.1 The Fundamentality of Information

Peressini argues that integrated information (II) is not a fundamental property. He draws out the non-fundamentality of II through comparison with mass, primarily, I surmise, because Tononi compares the fundamentality of II with that of mass. Mass has the following attributes, which are integral for fundamentality, according to Peressini: first, the mass of a composite is equal to the sum of the mass of that composite's parts; second, mass exists at all levels of reality; finally, mass is a non-emergent property. II, on the other hand, exists only at higher-levels of reality where there are systems of suitable complexity. The amount of II is dependent on the measuring device. The component parts of a system do not posses II. Above all, II is an emergent property (Peressini, 25-27). The important sense of fundamentality, which Peressini notes, is the irreducibility or independence from physical properties, and the informational property's causal efficacy. Peressini clearly holds that II is emergent and lacking in any causal effect. "But," Peressini notes "informational properties are quite likely to be supervenient on the physical properties of the system under consideration, after all it is in virtue of the current state's ability to 'redistribute' the probability distribution of the previous state via the causal properties of the mechanism that it carries information at all" (27-28).

The real threat of Peressini's attack on the fundamentality of IITC is consciousness' lack of definiteness. Depending on the level of measurement under

scrutiny, II admits of different degrees. Peressini writes, "It isn't just that there is a level at which it doesn't make sense to ask about II, but rather that one obtains different (nonzero) answers to how much II is present at different levels/grain sizes" (28). This means that II cannot be the "key" to consciousness, because some other factor has to be brought in to make any judgment as to what level is conscious, or to determine the degree of consciousness at a particular level from being arbitrary. There has to be some additional explanation for the consciousness found at any level.

4.3.1.1 Arguments Establishing Information as Intrinsic and Fundamental

Naturalized panpsychism accepts and endorses Peressini's observations that integrated information (II) is neither fundamental nor intrinsic. NP holds that proto-consciousness, or *information* is intrinsic to a given system's fundamental property of reality. Consciousness is a matter of how information is arranged or integrated. Since information (such as mental ultimates) is fundamental; consciousness is one short level up from the level of fundamentality. While consciousness is not strictly fundamental and intrinsic, as I shall explain, it is strong enough to do the work necessary in IITC.

The distinction between intrinsic and extrinsic properties is a matter of current philosophic debate, though there are some common themes and views. The basic idea of an intrinsic property is a property that is non-relational or a property of a thing, x, that all x duplicates would possess (Seager 2006, 129). Mass for example may be an intrinsic property of x, but x's "position from London" would depend upon circumstances of x's relation to London, and thus would be an extrinsic property. It is not my purpose to enter into the debate of the valid characterization of the terms "intrinsic" and "extrinsic." It

suffices to adopt Seager's characterization of "intrinsic property", namely: a property that a thing would possess even if it were the only thing in the universe (Seager, 141). I shall now demonstrate that *information* is an intrinsic property.

Before we begin, I must first explain the sense of "information" that I use. The issue is not that *all* informational properties of a given system are intrinsic. Nor is the issue whether there are given systems with informational properties. Whether there are systems with informational properties has no effect on the intrinsic nature of information, just as whether there are systems with mass does not alter whether mass is an intrinsic property or not. The question is, if there is a system, and that system is a system with information properties, then are these information properties intrinsic? We are asking whether information, in general, is intrinsic to a system. To rephrase the question more clearly, we are asking whether an *informational system* is informational intrinsically, and not whether none, some, or all instances of information are intrinsic.

Answering this question is not a matter of determining whether a particular bit of information would be possessed by a system in a lonely universe. Nor would it suffice to demonstrate that one needs input from some other source of information. The question is rather, could a information be predicated of a system if that system occurred in a lonely universe? There is a distinction between being an informational system and possessing information or possessing a particular bit of information. Now, being an informational system is being a system capable of reducing uncertainty (Tononi 2008, 217). In chapter three I characterized information as: $(L \rightarrow S) \vee (\sim L \rightarrow \sim S)$, in reference to the thought example of the photodiode discussed by Tononi (217-218). Strictly speaking this proposition does not entail the existence of anything external to the photodiode. The

alternatives discriminated are in fact states of sensation in which nothing external need be entailed. Sensations can be entirely internal, as is demonstrated by cases of hallucinations, introspection, or inner-system observations.[83] So, a given system, such as a human being, can have sensation, or at least introspection and inner-state sensation. So, if any given human existed in a lonely universe, sensation could still exist, as presumably could thinking in general. Further, if there were a human in a lonely universe (assuming a *living and functional* human being) that being would sense and think. Thinking and sensing are part of the very nature of a living and functional human being. Sensation and thinking generates information. So, a living and functional human being cannot help generating information and possessing bits of information. Thus, information in general is intrinsic to the nature of a given information system.[84]

In chapter three we discussed Galen Strawson's argument for panpsychism. The argument ran something like this: the emergence of experience from the fundamentally non-experiential is impossible. Thus, if one accepts that experience really exists, as any serious theorist must, there must be experiential ultimates (such as proto-conscious) from which experience emerges. Thus, proto-consciousness must be fundamental. Any case of actual emergence is from, ultimately, fundamental properties. Further, emergent properties need a fundamental base predisposed for such an emergence. A property does not magically "appear" from fundamental particles without the structure to produce said

[83] The best defense of the intrinsic nature of sensation is Descartes' discussion of thinking in *Meditations on First Philosophy* (1641/2003).

[84] Bertrand Russell argues that the intrinsic physical events' nature is mental events (1927/19920, (1956/1995). Strawson bases much of his recent work on panpsychism on Russell and Eddington (1928). See Strawson 2006 a/2006b. If one accepts the reasoning behind the intrinsic argument for panpsychism, then it will be reasonable, if one combines NP with the intrinsic argument, that information is the intrinsic nature of physical objects. For an excellent discussion of the intrinsic argument for panpsychism, see Seager (2006).

property. The base is the sort to produce a given property. Thus, if experience emerges, then the emergent base has some sort of fundamental property from which experience emerges—otherwise, a miracle has occurred. Now, neither naturalism nor science accepts miracles, so either they must deny experience (embrace eliminativism) or accept fundamental mental properties, proto-consciousness, or ultimates.

Further evidence for the fundamentality of information can be gleaned from quantum physics, in particular from the Copenhagen Interpretation of quantum physics. Before exploring this argument, however, I wish to offer some general remarks upon the term "observation." First, observation is an activity of a conscious system. Shan notes the fact that conscious entities can distinguish non-orthogonal single states while other physical, non-conscious systems cannot (2003, 8). When contemplating the point of view of a camera compared to that of, say, a human, the camera meaningfully lacks a "what-it-is-like" compared to that of a human. The human *observes* while the camera merely *records*. Further, each act of observation likewise is an act of information-gathering. When one observes, one eliminates alternatives, and thus produces information. So, observation is an act of producing information.

As stated before, quantum physics is eerily proficient at prediction—so proficient that it has been correct almost completely, if not completely. That said, John Gribbin has the following to say about the Copenhagen Interpretation of quantum physics: "The Copenhagen interpretation is definitely "right" in the sense that it works; any better interpretation of the quantum rules must include the Copenhagen Interpretation as a working view that enables experimenters to predict the outcome of their experiments—at least in a statistical sense—and enables engineers to design working laser systems,

computers, and so on" (1984, 177). I note this to demonstrate that the Copenhagen Interpretation (CI) cannot be easily dismissed, despite its implications, which are a source of irritation to some theorists. CI holds that subatomic entities such as electrons exist only probabilistically between many superimposed states until determined to be a single state by an act of observation. John Wheeler further hypothesized that reality is participatory, requiring the act of observation and thus consciousness (Ford and Wheeler 1998, 323-344). CI implies that subatomic particles (e.g. the graviton, the thirteen gauge bosons, electrons, leptons, and neutrinos) exist in an actual state due to observation. Now, subatomic particles are the foundation of reality. So, the macro-universe rests upon the micro universe. But the micro-universe exists only due to observation and observation is an act of information production. So, as Wheeler states, the "it comes from the bit" (323).[85] CI implies the fundamentality of information, since fundamental particles require information for their determinability.

4.3.2 The Indefiniteness of Consciousness; a Solution Through Proto-Consciousness

Peressini's modification of the philosophical understanding of Tononi's project (IITQ) offers a solution to the problem of indefiniteness of consciousness, however. IITQ does not have to be fundamental or intrinsic in the strong sense as required for consciousness (Peressini, 29). The above problem is not an issue for a qualia interpretation of Tononi, because quantity is not a term applicable to qualia. The question of where a particular qualitative experience occurs in the spatiotemporal grain size can be settled by appealing to details of subjectivity, since qualia are dependent upon

[85] I have seen this expression in reference to Wheeler and his work, but have found it most notably as the title for Ford and Wheeler's chapter 'It from the Bit' (1998).

subjective experience (Peressini, 29).[86] Peressini's solution only works if qualitative consciousness and subjective consciousness are ontologically separated in such a way that they can be *physically* isolated from each other. If Peressini's discussion is merely one of manageability when dealing with a complex topic or a mere conceptual distinction, then the discussion is only one of conceptual aspects and the inquiry must, as some point, abandon conceptual conveniences and address the actual nature of consciousness. Peressini's distinction, then, has become quite strong. There can be discrete connections between the two, and there must be such connections if theorists are to track qualitative consciousness with subjective consciousness. As properties, they must be distinct. If my discussion is correct, or rather if one accepts my interpretation of Q and SIL, then Peressini's solution will not work, and some other way to determine the grain size of consciousness must be found.

Thus naturalized panpsychism is in a position to contribute something valuable to IITC. NP is able to fix the grain size/level for IITC. NP holds that proto-consciousness (that is, the property that mental properties emerge from) *simply is information*. Information, as has been argued above, is both intrinsic to a system and fundamental to reality. Consciousness, according to IITC, is information arranged in the correct way. So, human consciousness is information in a particular arrangement. As information is fundamental, and consciousness emerges from directly fundamental properties, consciousness would closely resemble *subatomic composite properti**es***, properties of bound states of two or more fundamental properties (such as particles). So,

[86] Note that my discussion above does not contradict this point because subjectivity, as I portray it, is how qualitative experiences are experienced, which is still a problem of qualitative experience. Subjectivity is the experience of an experience.

consciousness is not strictly fundamental, but neither is it strictly non-fundamental, or emergent. As such, consciousness as a directly composite property of fundamental proto-conscious will have the ability to settle the question of the grain size and, generally, to do the work necessary in Tononi's theory.

4.3.3 How NP's Event Monism Accounts for the Subjective Aspect of Consciousness

In chapter two I offered an event-monism conception of reality as a consequence of the account of mental causation that I adopted from Robert Hanna and Michelle Maiese (2009). Causation, it will be recalled, occurs between concrete events. Events are the most basic ontological entities. Events are made up of, at least, mental and physical properties which share a fundamental, intrinsic bond.[87] This was dubbed "property fusion." Property fusion does not occur at the macro-level. In quantum physics' fundamental particles are the basis of the macro-world. Fundamental particles combine to produce macro-level events. Some events have mental qualities, such as consciousness. This is explained by the information-bit sharing an intrinsic fundamental bond with the appropriated fundamental particles arranged in the appropriate configuration, namely integration. Information, like the information on this page, is fused with the fundamental properties of the fundamental, physical properties of the page. Complex systems produce information by reducing uncertainty and thus integrating information (i.e., being conscious).

[87] I leave open the possibility that each event is made up of many different types of fundamental properties, like protons, electrons, gravitons, tachyons, and information. So, "physical" should be taken more as a category of types of fundamental particles that are studied by physics. However, if information is in fact fundamental as I posit then it would make more sense to reject the classes in this sense and talk about information as having fundamental intrinsic bonds with other *specific* fundamental properties.

What should be noted is how NP elegantly solves an criticism in event monism, namely that event monism leaves out SIL. Thomas Nagel argues that Bertrand Russell's conception of event monism leaves out the problem of relating SIL with its physical character (Nagel 2000). NP can provide an account of this relation. First, it must be noted that information, as such, is not a property that is opposed to the physical as fundamental conscious properties are to fundamental not-conscious properties. Information and fundamental physical properties are not contradictories. They work in unison. This co-relation is a well-accepted fact. Information occurs in physical systems, and this fact is not contested. SIL is the arrangement of information in a complex system, or put differently, SIL is what a system does with information. Since it is agreed that simple and complex systems produce information, the NP theorist does not need to explain how information relates to the physical character of the complex system. Then the matter of the particular arrangement of information that produces the quantity and quality of consciousness becomes an empirical question. As for how fundamental properties come together to produce a particular event, all the NP theorist must do is to rely on quantum physics and its account of how micro-properties (i.e., fundamental properties) produce macro-events.

4.4 Conclusion

To meet Peressini's objections I have argued (a) that the problem of qualitative experience and subjective experience are best understood as the same problem, and (b) that information is a fundamental property of the universe despite being a property of a system. The main support for (a) is the arbitrary manner in which Peressini determines

that qualitative and subjective experience are two problems. There are many aspects of experience that may introspectively seem different. There are many aspects of experience that can be talked about distinctly from each other. However, unless Peressini wishes to hold that any aspect of experience that a person introspects as distinct from experience in general or from qualitative experience is ontologically distinct, anything that can be conceived as distinct is ontologically so—two principles that are highly doubtful—separating subjective experience from qualitative experience requires further argumentation, and some sort of criteria for valid and invalid distinctions. Also, traditionally, the two problems are considered the same: there is some neurobiological evidence that supports subjectivity as stemming from qualitative experience, and traditionally qualia are mistakenly simplified as experiences, where instead they are best understood as components of a whole experience. My support for (b) rises from my discussion describing information as applicable to a system, even if that system is situated as the only existing thing in a universe. I argue that information is fundamental by relying on Strawson's argument against brute emergence. Most significantly, I argue that the fundamentality of information is implied by the Copenhagen Interpretation of quantum physics. Thus, the problem of the indefiniteness of consciousness that was invoked by Peressini's argument establishing the non-fundamentality of integrated information is circumvented by identifying information with proto-consciousness, or ultimates, or mental simples. Information is fundamental and intrinsic to a system. Full-blown consciousness, such as that enjoyed by higher-level mammals, is a matter of fundamental proto-consciousness or information arranged in a specific way (that is, integrated). Since consciousness directly emerges from fundamental properties, we can

understand consciousness as a fundamental composite property, much like protons are subatomic (fundamental) composite particles. So we have established that consciousness as such has the theoretical strength that Tononi's account requires.

At this point we are left with this image of the mind: the nature of the mind is *information*, which is a fundamental property of the universe and intrinsic to a given system. Higher-level mental properties emerge from proto-consciousness, perhaps combining via integration as suggested by Guilio Tononi (2008), or perhaps along some other trajectory, maybe biological lines favored by Block, or the global workspace version of Baars. I am not committed to II – it is just one possibility, to be confirmed empirically, and not by we philosophers. Mental properties share an intrinsic connection with physical properties to constitute concrete events. Mental properties do not supervene on or emerge from physical properties. Events cause events, and as both types of properties constitute an event, both have causal efficacy. Consciousness occurs at the grain-size in the brain that it does due to the fundamentality of information. Information is proto-consciousness, and so any mental property must emerge from there. This sets consciousness, at least at the lowest measurement of information, as equal to one bit.

Chapter 5
Naturalized Panpsychism and the Nature of the Mind

In the past four chapters I have argued for the viability of a naturalized panpsychism. This project stems from the idea that consciousness is a fundamental part of the universe and not merely some supervenient property of non-conscious material. The problem with many panpsychic theories is their supernatural implications. I have argued that a naturalized panpsychism is a possibility, because it avoids such implications. I began this agreement by philosophically investigating an assumption of physicalist theories, namely mental specialism. I argued that this assumption is not necessarily a part of science, just as physicalism is not a necessary view of science. Next I argued for the compatibility of naturalism with panpsychism. In chapter three I offered a non-mysterious solution to the combination problem by adopting Guilio Tononi's integrated information theory of consciousness (IITC). In chapter four I defended IITC against a critique by Anthony Peressini. Chapter five, the final chapter, answers two questions. The first question is: What is naturalized panpsychism (NP)? The second is: What is the character of human consciousness according to naturalized panpsychism? I shall conclude with a brief examination of areas that require further investigation and some possible areas that NP may benefit.

5.1 What is Naturalized Panpsychism?

Panpsychism holds that physicalism cannot fully explain the universe. at the same time, physicalism holds that consciousness and the mental in general are anomalies in the universe. Therefore, consciousness is not a property or phenomena in its own right

but is rather just physical (i.e., non-mental) properties configured in different ways. Thus in no real sense is there is a category "mental" according to physicalism. Traditional panpsychism holds that the mental is a fundamental property of the universe. NP agrees with this assessment. What NP does not accept from the traditional panpsychic account is what I termed the "all-thesis." The "all-thesis" attributes consciousness to everything in the universe, or at least everything physical. So, the beams holding up the ceiling of the coffee shop I sit in while writing these words *experience* in some degree and so does the ceiling, the coffee shop, the floor, and my chair. NP rejects the all-thesis as scientifically and intuitively untenable, or at least at the present time. The all-thesis is supernatural because rocks and blocks, atoms and strings, have none of the complex mechanisms thought to be required for consciousness. There are no mechanisms for sensation, for instance. There is no mechanism for memory, etc. The consciousness attributed to all things by the all-thesis is like no consciousness that realistically can be imagined. The relationship between consciousness and a complex system like the human body is, if one embraces the all-thesis, in the end a substance dualism, with consciousness as a Cartesian ghost. The all-thesis implies that consciousness can occur without some sort of functional mechanism, as if consciousness and the body were separate substances. An alternative all-thesis posits consciousness as a feature of the fundamental properties of the universe, e.g., protons, electrons, and strings. NP rejects this assertion as unwarranted. NP posits proto-consciousness as fundamental and intrinsic to the universe, in the same way that mass and electrical charge. Consciousness itself, however, is a higher-level mental property which emerges from proto-consciousness. The difference between traditional panpsychism and NP is that NP seeks to develop its commitments

within the bounds of science rather than through grandiose metaphysical world-building. So, science is the final arbiter of any hypothesis advanced by NP. Naturalized panpsychism is a scientific panpsychism.

Intuitively it may seem that NP contradicts itself, that panpsychism cannot be scientific. This stems from the false impression that science is committed to what I term in chapter one as *mental specialism*, the thesis that the mental is an aberration or anomaly in the universe, that at best the mental emerges from the physical (i.e., non-mental). Physicalism (as traditionally construed) is committed to mental specialism, but science is not committed to such a physicalism. Physicalism is at best a research disposition, a hypothesis with which to investigate the universe; if a better, evolving, non-monolithic research disposition would be found, science would abandon physicalism. So, because physicalism is not intrinsic to science, there is room for a panpsychic research program within the discipline of science.

NP is an alternative research paradigm to physicalism, holding that the physical is not the only category in the universe and that the mental is its own category. NP is comprised of four basic principles.[88] The first is that proto-consciousness is fundamental to the universe, meaning that proto-consciousness cannot be reduced to physical properties, and it possesses its own causal efficacy. The second is that the proto-consciousness is ontologically independent of the physical, or isn't contingent on the physical. The third is that physicalism, by embracing mental specialism, leaves

[88] When I originally formulated these four principles in chapter one I used the generic term "mental." Here I shall use the term "proto-consciousness," for I am not asserting that higher-level mental properties such as the properties of human consciousness are fundamental to the universe or intrinsic to the universe. I assert rather that proto-consciousness is as a fundamental to the universe as are the fundamental properties of physics.

something out of its account of the universe. By accepting the physicalist position, science fails to take into account a vital part of the universe. This vital part is proto-consciousness. One should ask why science has not formerly detected this fundamental category of reality, the "proto-conscious." Actually, science has. NP holds that proto-consciousness is nothing other than *information*. Information is, in fact, an observable—though theoretical—phenomenon, and information theory has been around since 1948, founded by Claude Shannon. What science has therefore missed is the not-so-obvious connection between information and consciousness. Finally, the fourth principle is that higher-level mental properties emerge from proto-consciousness as well as from other lower-level mental properties. The greater part of the preceding chapters has been to develop and to argue for the above four principles. I will offer a brief summary of principles one, two, and four in what follows.

5.1.1 Principles One: Proto-Consciousness is Fundamental & Principle Two: Ontological Independence of Proto-consciousness

In chapter three I identified proto-consciousness with *information*. I adopt large portions of Guilio Tononi's integrated information theory of consciousness (IITC) (2008). IITC is important to NP, for Tononi's hypothesis allows an elegant solution to the combination problem, which is the problem of how to account for the emergence of higher-level mental properties from proto-consciousness. In order for my identification to proceed I held to defend the fundamentality of information, that information properties are irreducible to the physical. Let us consider one bit of information, X, and the physical property it instantiates, Y. First, it is true that information is a property of a system, but it seems equally true that X could be a property of vastly different systems:

neuronal, silicon, vibrations, etc. X is not contingent on any particular physical instantiation. Second, within a system, information changes its physical base from, say, chemical to electrical and back and to chemical, and from one sort of chemical to another chemical. One could offer a sort of token-token identity between information properties and physical properties, since this would seem to allow for such a liberal change in physical properties. Let us agree to such a prospect. So, for example, a given system, Z, has an inner state which carries one bit of information. This one bit of information is instantiated in a hormonal chemical. The chemical composition of the hormone is not identical to the one bit of information. To give an account of the one bit of information, one cannot refer to the physical base of the hormone, only to the alternatives eliminated. A description of the one bit of information can only be given by reference to aspects of information. In other examples of reduction, say heat to molecular movement or liquidity and H_2O, an account of the emergent base provides a full account of the emergent property. There is no explanatory gap; there is simply nothing more to be said regarding the nature of the emergent property but to describe the emergent base. Information is simply not reducible in this sense, at least with respect to physical properties. From this I conclude that information is fundamental and ontologically independent from the physical.

In chapter four I offered two other arguments to establish the fundamentality of proto-consciousness. The first refers back to Galen Strawson's argument against brute emergence. Basically, if one takes brute emergence to be impossible, then the fundamental emergent base for consciousness must have as a component some sort of mental ultimate, or proto-consciousness. When something emerges, what it emerges

from must be so constituted as to produce that property, otherwise you have a miracle. The second argument is to connect information to the Copenhagen interpretation of quantum physics. Observation is necessary for the determination of subatomic particles like electrons. Observation is a case of a system having an information property. Observing electrons and other subatomic particles is similar to the thought experiment of the photodiode discussed by Tononi (217).

In chapter four I also argue that information is intrinsic to a given system. I understand "intrinsic" to be a non-relational part of a system. A test for intrinsic-ness is to discuss the possibility that a given property would still be a property of a given system if that system were in a lonely universe or a universe with a population of only one existent. Any complex system (that is, a system with inner states and the ability to observe these states) would have informational properties. That there are no other entities in the universe would not matter. Of course, this does not mean that information is intrinsic to a simple or to a simple universe.[89]

In chapter two I demonstrate the causal efficacy of the mental by drawing on the theories proposed by Robert Hanna and Michelle Maise in their book *Embodied Minds in Action* (2009). First, Hanna and Maise propose an event neutral monism where the universe is comprised of one type of thing, events. NP adopts this assertion. Some events are comprised of both physical properties and mental properties. The key to

[89] The question that I would ask at this point is to what extent complex systems occurring in *this* universe are intrinsic to *this* universe. After all what exists in *this* universe does not seem to be relational to *this* universe. So, if a property (p) is intrinsic to a property that intrinsic to a universe, is (p) intrinsic to the universe?

Hanna and Maise's system is the rejection of what they call fundamentalism, which is an interpretation of the causal closure principle that fundamental physical properties exclude any sort of intrinsic connection to fundamental mental properties. Thus, it is possible that some fundamentally physical properties can have an intrinsic connection to fundamental mental properties. Hanna and Maise dub this "mental-physical property fusion." This is important, because mental properties now co-determine an event along with physical properties and are thus partially responsible for the causal efficacy of the particular event.

5.1.2 Principle Four: The Emergence of Higher-level Mental Properties from Proto-Consciousness; the Combination Problem

The combination problem has been a major stumbling block for a successful panpsychic theory of mind. Unlike fundamental particles that combine to constitute higher-level physical properties, experiences are not the sorts of things that combine. The nature of an experience is its *qualitative feel*. "Feels" do not combine. One pain-feel plus another pain-feel does not add up to a new pain feel, big pain-feel. Big pain-feel is a novel experience without any sort of constituent pain-feels. If there were a collection of the original pain-feels, then there would merely be the first pain-feel and the second pain-feel but not the new pain-feel, because the complete loss of the characteristic "feel" is the loss of the qualitative experience. So, since combination entails elimination of the feel and thus the experience, experiences do not combine and thus, under a panpsychic theory, psychic properties do not emerge. There are four possible answers to the combination problem that I can determine: 1) Theorists could deny mental-from-mental emergence and posit mental properties with a similar nature to universals and embrace a

participation theory, 2) Rely on a transcendental argument and say that combination must occur because it is necessary for the theory presented, 3) Develop a way of living with the problem. This avenue of argumentation usually appeals to the eventual inexplicability of combination. This is an advance upon the proposals in 1-2, 4) Develop an account of combination that is partially empirical, or relies upon an empirical hypothesis of consciousness. Scientific reductions have produced significant results towards understanding the universe. The fourth proposal seeks to apply scientific reduction as a model for a theory explaining psychic emergence. Possibilities 1-3 fail to provide a convincing account. The first is due to the difficulty in understanding the principle of participation. The problems with the second and third proposals are that both have been tried with little prospect of success. Transcendental arguments and appeals to mystery haven't convinced anyone to accept panpsychism. NP's answer is to adopt an empirical theory, Guilio Tononi's IITC theory, and to use that theory to offer a solution to the combination problem. Tononi asserts that experience or consciousness is integrated information. So, particular qualitative experiences correspond to locations in Q-space that arise as a result of eliminating a vast array of alternatives to reduce uncertainty and produce information. A qualitative state is the information produced by connections (that is, integration) between the various mechanisms of the brain. The informational states of a human brain are highly connected and integrated. So, combination is not based in "summing," but in integration.

5.1.3 Naturalized Panpsychism and Reality

Naturalized panpsychism is not a doctrine of reality but rather a research disposition into reality, a disposition offered as an alteration of physicalism. NP and physicalism are not absolutely contradictory, as demonstrated in chapter two. NP differs from physicalism in the following ways: 1) NP rejects the possibility of the reduction of the mental to the physical; 2) proto-consciousness is a fundamental property of the universe; 3) NP asserts that proto-consciousness is a natural part of the universe much like fundamental particles or properties, so proto-consciousness is one of many fundamental properties of the universe; 4) NP rejects fundamentalism, (that is, the idea that fundamental physical properties and fundamental mental properties cannot share an intrinsic connection); 5) (4) allows that fundamental mental properties and fundamental physical properties co-determine concrete events and so co-determine the causal efficacy of such events.

5.2 The Character of Human Consciousness

In this section I will describe, albeit superficially, naturalized panpsychism's conception of human consciousness. I will discuss what sorts of things are conscious and what sorts of things are not. I will explicate "how much" consciousness such entities have. Then I will describe under what conditions consciousness arises and dissipates. I will also cover how one might tell whether a particular system is conscious or not. I will not discuss further what the nature or mark of consciousness is since it has been thoroughly established as integrated proto-consciousness (i.e., information).

Consciousness, like the production of information, is a matter of degree. Some systems produce only one bit of information, like a photodiode. Some systems, like humans, produce millions of bits of information. A system is conscious in proportion to a system's repertoire of discrimination states (Tononi 2008, 236). A photodiode, therefore, is conscious to the measurement of one bit. There are several interesting implications of this thesis. But first let us discuss just what "grade consciousness" might be like. If we take, for example, qualitative consciousness, conscious gradation would manifest in the array of how things would seem or appear to a system. Take an earth worm, for instance. This system certainly has a repertoire of discrimination states, though a small one compared to the repertoire of a bird or cat. The worm's conscious world is small or has few "quale" that make up its perception. There are few "something-it-is-like" states for a worm. NP and IITC entail that artificial consciousness has been achieved, because there are machines that possess informational states. It also follows that the larger the repertoire of discrimination alternatives, the more conscious these machines and computers are. Of course, this artificial consciousness in no way compares to human consciousness. The sheer number of the discriminations and connections the human brain can make are staggering. Further, there are many different types of information systems in the human brain, such as olfactory, visual, textile, and so forth. However, the most interesting implication is that there is no upper limit, save the limit of the mechanism, to the size of a system's repertoire. So, there is no limit, except hardware, to the how conscious a system could become. There may exist beings that are simply more conscious of reality, seeing and cognizing more than a human ever could. And humans may continue to higher states of consciousness. So, not only are humans

not the height of consciousness, but humans have the potential for a much wider world than the one in which they currently live. The next implication, since level of consciousness equates to the size of one's discrimination repertoire, not all humans are equally conscious. Life experiences—undergoing activities and challenges—and education, personal or otherwise, open oneself up to a multitude of different perspectives and alternatives, increasing one's consciousness and making one's mental life fuller. We know this, of course, but NP and IITC validates this intuition.

How would one describe human consciousness under NP? On one hand there is no "human consciousness," simply due to the fact that there is no set number of discriminatory alternatives that a human being possesses. When we speak of "human" we generally mean "adult human of normal cognitive ability," if I may use the term normal without defending a particular definition. This system will have incalculable alternatives with which to make information discriminations. There are also certain human sense organs, organs that sense only within certain ranges. But such levels of consciousness develop over time. The human infant's world is limited, small. As more connections develop and more information is integrated, their world increases in size. Human consciousness is having a *wide world*. This is a highly metaphorical phrase, but I do not apologize. There may be some animals that are more conscious than some humans, say a chimpanzee compared to a television addict who is a permanent fixture on a couch. So, the term "human consciousness" is misleading. It is best to think only in terms of high, medium, and low consciousness, since there is the possibility of some humans having chimpanzee-level consciousness and some humans that go beyond "normal human" consciousness. For instance, it has been long reputed—and there is now

preliminary scientific evidence to support—that Buddhist monks go beyond the normal human threshold of consciousness to higher states.[90]

Consciousness is only a property of complex systems—systems at least as complex as a photodiode. What is and is not conscious is an empirical question, best answered by biologists, information theorists, and engineers. Bees and wasps, slugs and worms are conscious systems according to NP. Bacteria and viruses may be conscious like a photodiode, but again this is a matter for biologists to discern. But we now have a solid idea of how to look for and measure consciousness. NP offers us a possible non-arbitrary way to distinguish between conscious and non-conscious systems, to determine approximately how conscious is each system is, and, finally, to theorize what their consciousness would, at least superficially, be like. First, any system that contains integrated information will be a conscious system. The system is as conscious as the amount of information produced. How to measure the amount of information produced is a matter for neuroscientists, information theorists, and biologists. But in theory, the amount of consciousness can be measured by the degree of II (that is, integrated information), measured by Q (qualia). But, part of the character can at least be cognized. So, how wide a system's world is in terms of amount of information can be estimated and thus we have a basis for the beginning of understanding, conceptually, if not experimentally, what the conscious world, say, of a worm would be. So, NP can give us a method to understand other radically different systems. Interestingly, we have the beginning of an argument against the unnecessary suffering of animals. Some opponents of animal rights claim that animals do not feel in any significant manner, but NP can

[90] See Davidson (2008).

address this question, and, based on preliminary accounts of II, it seems that animals do have comparable levels of qualia.

5.3 Further Research

I offer six areas that need to be considered more fully. The first is the intrinsic connection between proto-consciousness and fundamental physical properties, or property fusion. The second is the further explication and clarification of co-property causation. The third is the nature of the neutral-monism assumed by NP. The fourth is to further solidify the identification between information and proto-consciousness. The fifth issue is the connection between qualitative and subjective experience and consciousness itself. I argued that at best this distinction is a matter of convenience and not an actual distinction, but my argument is provisional only. The sixth is to argue more fully for the intrinsic-ness and fundamental-ness of proto-consciousness.

While the next and most important project for NP will be to explore the possible solutions that NP could offer to the traditional problems of consciousness (such as inverted spectrum, zombies, intentionality, and the knowledge argument) there are some other aspects of NP that are interesting. The first will be to explore the issue of personal identity over time. Integration of information is the psyche of the system. If personal identity is an issue of the psychology of a system, then personal survival will be an issue of survival of integrated information. The next issue to explore further would be artificial consciousness, by which I mean artificial high-consciousness. NP would seem to support MIT's Cog and Lazlo efforts to develop AI in terms of developing high level of connections within those two systems. Finally, if one takes high levels of consciousness

as the preferred state (and I believe they are) then NP poses some interesting questions about how people live their lives. That there are higher-levels of consciousness available for humanity would seem to lend credence to John Stuart Mill's assertion that there are higher and lower pleasures, the higher being more valuable. Or better yet, NP may provide a ground for a robust Virtue Ethics. The gradation of consciousness may also lend an interesting aspect to virtue theory as a new paradigm of character. Finally, as high levels of consciousness seem to correspond to high levels so of perceived self-determination, NP should explore the possibility that high-levels of consciousness correspond to self-determination, with the intuition that self-determination is a matter of having alternatives for discrimination.

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