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Intelligent Design Psychology and Evolutionary Psychology on Consciousness: Turning Water into Wine

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From the titles of some recent evolutionary psychology publications on the mind, one could get the impression that the mystery of consciousness has been solved, but serious questions and doubts persist. Many scientists have deep reservations about Darwinian theory. Some of these scientists promote the Intelligent Design movement, which has received recent attention from scholars in biology, biochemistry, mathematics, philosophy, and theology. Intelligent Design theory both challenges the naturalistic evolutionary account of life and proposes an alternative scientific research program. Its aim is to investigate the natural world for evidence of divine causes and to detect the patterns or fingerprints of an intelligent designer. The implications of this theory for the field of psychology are examined, and a new field, a Christian version of Intelligent Design Psychology (IDP_C) is proposed. The article then briefly compares the psychological implications of IDP_C with its chief rival, a naturalistic version of evolutionary psychology (EP_N), in relation to consciousness and self-consciousness, including why these phenomena provide serious difficulties for EP_N, while at the same time providing positive support for IDP_C. Both approaches are examined for their comparative abilities to describe, explain, and predict various facets of human persons that center on consciousness and self-conscious emotions.

According to a naturalistic evolutionary account all things, from single cell organisms to human beings to the physical universe, evolved via natural processes. What we see in nature can be explained adequately and fully without appealing to anything nonphysical or supernatural. This account, widely held in academia, has provided the guiding paradigm for numerous fields of scientific study over many decades. If some phenomenon is unexplained or mysterious, like apparent design in biology or human consciousness, it is simply deemed: currently unexplained, but nonetheless naturalistic in origin. Although evidence for a naturalistic account of life has been proffered in fields such as biology and biochemistry for years, only recently have psychologists begun to explain seriously human behavior strictly on the basis of evolutionary principles. Known as evolutionary psychology (EP), this field has seen tremendous growth over the last decade, with numerous books, journals, and articles being published. Seeking to explain all aspects of human behavior from a Darwinian perspective, EP proponents have been successful at getting their views acknowledged (see Grace, 2001; Rose, 2000). Many believe EP will revolutionize the way we currently study human behavior, and a few even believe that a major paradigm shift for all of the social sciences has already begun (Buss, 1995; Cosmides & Tooby, 1992).

Perhaps the greatest test for this new field of EP will be how it responds to one of psychology's oldest mysteries: the phenomenon of human consciousness. EP has initiated a full frontal attack on the study of the human mind using a Darwinian adaptionist approach, and a computational perspective prominently advocated by Fodor (1983). Although critics question the utility of these approaches, proponents point to the progress and success that comes from utilizing their methodology. In fact, from the titles of some recent EP publications on the

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mind, one could get the impression that the mystery of consciousness has been solved. For example, Pinker (1997) titled his book *How the Mind Works*; Barkow, Cosmides and Tooby's (1992) influential text is called *The Adapted Mind*, and Dennett (1991) called his book *Consciousness Explained*.

But serious questions and doubts persist. Consciousness remains tantalizingly elusive, and no one (not even Pinker himself) seems convinced that EP has come anywhere close to solving this enigma. EP has cast its lot with strong physicalism, thoroughly dependent on a naturalistic Darwinian account of the emergence of the mind, and wedded to natural selection and adaptation as the key explanatory mechanisms. In taking such a position, EP has painted itself into a difficult corner, and must soon answer some difficult and ominous criticisms if it is to survive.

Recently, a few scientists have called into question the appropriateness of a Darwinian naturalistic account being applied to the field of psychology. Evolutionists such as Gould (2000), and Rose and Rose (2000) have referred to EP as "one of the most pervasive of present-day intellectual myths" (Rose & Rose, 2000, p. 1). The harshest critics are evolutionary biologists and some philosophers of science who recognize the implications that are inherent in EP's theoretical and meta-theoretical perspectives, and the inappropriateness of using biological concepts, such as adaptations, to explain the human mind and behavior (e.g., Smith, 2000). Within the field of psychology, critics have also called into question the assumptions and methodology of EP (e.g., Looren de Jong & Steen, 1998; and others as found in the same issue).

On a different and broader front, the Discovery Institute in the fall of 2001 published the following statement: "I am skeptical of claims for the ability of random mutation and natural selection to account for the complexity of life. Careful examination of the evidence for Darwinian theory should be encouraged" (Discovery Institute, 2001). Over 100 scientists have signed support for this statement (see appendix for the full list.) Many of these scientists have deep reservations about Darwinian theory, and many have published critical findings and reviews (e.g., Behe, 1996; Wells, 2000). Others have proposed rival scientific accounts, such as Intelligent Design (e.g., Dembski, 1998a, 1998b).

It may strike the reader as odd that we would mention this statement and make reference to the list of its signatories on two grounds: the strength of our case should be weighed by its intrinsic merits, not by counting votes, and we have politicized the issue by mentioning the document and those who signed it. We offer two responses. First, our mention of these facts is not a substitute for arguing our case; it is a prelude to it. Second, it is an important prelude for the following reason. Some readers, especially those outside the theistic camp, may be so shocked to hear that anyone would question the adequacy of a naturalistic evolutionary explanation of a phenomenon alleged to be within its purview that they may simply set aside a serious consideration of the case to follow. Obviously, we cannot undertake a critique of naturalistic evolution here, but by locating our arguments against the backdrop of a larger intellectual movement for which there is considerable academic momentum, we hope to vouchsafe a hearing for the case to follow.

The reality is that while EP proponents such as Dennett (1991), Pinker (1997), Barkow, Cosmides, & Tooby (1992), and others may have made progress in defining the issues and in presenting a more coherent naturalistic view of the concept of consciousness, they have not "explained" consciousness, nor satisfactorily illuminated how the mind works. And lest it seem a straw-man tactic, or an unfair standard by which to judge any field (who has yet been able to explain consciousness?), it should be noted that EP has set such a standard for itself. They claim that all human behavior is predicated on a human nature that was formed around a half million years ago during the Pleistocene era, and that this nature has undergone little change since. Our minds were designed by evolutionary forces during our early commonly shared history on the vast savannas, and to understand the Pleistocene epoch and the forces at play at that time is to understand human nature today. According to Buss (1995), all manifest behaviors depend on these underlying psychological mechanisms.

To their credit, what EP proponents have accomplished, and what this paper will attempt as well, is to demarcate clearly the various positions, detail the main critical issues and assumptions, and carefully and thoughtfully examine the evidence for explaining the existence, nature, and functioning of the human mind.

The purpose of this article then is (a) to explore what a Christian version of Intelligent Design is, how it might inform psychology, and how it compares

with a naturalistic version of EP; (b) to describe briefly the key challenges and issues in the field of consciousness, and define the mysteries surrounding it; and (c) to explore why mental states are not identical to physical states, and hence why consciousness is problematic for EP and the challenges it holds for an IDP_C approach. Finally, there will be a brief discussion of self-conscious emotions, and how an IDP_C approach may offer the most effective explanation for them.

What IDP_C is and How it Compares with EP_N

In addition to the scientists who signed the Discovery Institute statement, the scientists and philosophers who compose the Intelligent Design (ID) movement have themselves called into question the fundamental assumptions of Darwinian evolution. Critical of the assumptions of a naturalistic approach to science (i.e., naturalism), many in this movement have been successful in providing an alternative perspective. These critics include Philip Johnson (UC Berkeley; author of *Darwin on Trial* and *The Wedge of Truth*), Michael Behe (Lehigh University; author of *Darwin's Black Box*), and William Dembski (Baylor University; author of *Intelligent Design*). The Intelligent Design movement has focused much of its energy on both exposing the naturalistic and scientistic leanings and assumptions of Darwinian evolution, and presenting a competing research program based on the notion of an intelligent designer. The ID approach is concerned with similar historical questions, inferences, and explanations. Both EP and ID postulate antecedent causal events or event scenarios to explain the origin of present phenomena (Myers, 1994).

Design arguments. The most famous use of a design argument is the 19th century theologian William Paley, who utilized a design argument to prove the existence of God by noting the complexity of biological organisms. He argued that only a grand designer could bring about such complex things (i.e., the watchmaker analogy). Charles Darwin, on the other hand, saw a natural mechanism that was blind and unconscious (i.e., the blind watchmaker analogy). The difference is on the emphasis of the power of blind, historical forces to shape an organism's structure and function, versus the creative activity of God. By most accounts Darwin won, and the design argument faded away. Recently, however, some scientists have revived and improved it (e.g., Dembski, 1998b). By separating out naturalistic philosophy from science, the ID movement shows how searching for intelligent design is a legitimate exercise for scientists, and how intelligent design can be empirically detectable.

It is, of course, possible to adopt a version of theistic evolution as a viable media between naturalist evolutionary theory and intelligent design modes of explanation, either as a general account of the appearance of living things, or as an account of the appearance of living structures with the exception of consciousness itself. For three reasons, we shall not consider theistic evolution. For one thing, the essence of intelligent design is not about the process by which a postulated designer brought about an artifact. Rather, it is about the empirical detectability of the products of intelligent design and the relative merits of a design hypothesis versus a strictly naturalistic explanatory model. Thus, so long as an advocate of theistic evolution sided with the epistemic commitment that ID advocates—and many do not—then theistic evolution would be a version of intelligent design and fall within at least part of our characterization of intelligent design psychology to follow.

Second, we need not explicitly interact with versions of theistic evolution according to which (a) strictly naturalistic processes are epistemically adequate to explain all the relevant data at a certain level of reality, and (b) theological "explanations" are strictly complementary to naturalistic ones. This is because our case to follow, if successful, provides a defeater for both naturalistic and theistic evolution of this sort.

Third, many advocates of naturalistic evolution see theistic evolution as an intellectually weak and uninteresting compromise with little or no explanatory power. Even though we agree with these thinkers, more importantly, the widespread existence of this position justifies an article that directly responds to it. After all, providing a critique of and alternative to one intellectual perspective may be quite successful even if one does not address all the remaining views relevant to that limited focus.

Design arguments today. According to Dembski (1998b), ID is a theory for detecting and measuring informational pathways induced by intelligent causes that presupposes neither a creator nor miracles. It relies on reverse engineering objects that have been shown to be designed. Dembski's (1998b) specified complexity and Behe's (1996) irreducible complexity are given as examples. Within biology it

is a theory of origins and development, claiming "that intelligent causes are necessary to explain the complex, information-rich structures of biology" (Dembski, 1998b, p. 106).

Dembski (1998b) states that design can be inferred when both complexity and specification are established. He claims that whenever we attempt to explain some event, including human behavior, we utilize distinct modes of explanation. The main modes used to explain phenomena scientifically are deterministic natural laws (necessity) and chance processes. Dembski notes that we also routinely use the mode of design, that is, identifying events and actions that are premeditated and purposeful, and attributing them to an intelligent agent. In order to recognize intelligent agency, Dembski (1998b) states that three things must be observed: choosing, ruling out other choices, and specification.

Investigative strategies, such as reverse engineering, are potentially similar for both EP and IDP. This approach allows for the identification of the standards for recognizing special design—economy, efficiency, complexity, precision, specialization, and reliability. Good engineering solutions to adaptive problems point to special design, and if humans are in fact products of an intelligent designer, then we should be able to find evidence for such hardwiring.

This new approach to the field of psychology (IDP) rests on a number of key philosophical features. Moreland (2001) has provided a more detailed comparison between these two rival paradigms, so only a few salient points shall be mentioned here. We are interested here in comparing a Christian version of IDP with a naturalistic version of EP.

The central features of IDP$_C$ and EP$_N$. The central features of a Christian approach to IDP (IDP$_C$) are:

1. God exists and is a personal spirit. As such, He is an immaterial, spiritual substance that exemplifies mental properties, including different properties of consciousness such as various sensations, thoughts, beliefs, desires, and volitional choices that constitute the intrinsic nature of God's own conscious life. As an immaterial substantial person, God is a self-reflective center of consciousness, an "I." Moreover, God is a free moral agent with various moral and virtuous attributes. As a person and moral agent, God has self-awareness, a self-concept, and various second order mental states that He may direct on His own mental states or His own self (e.g., He may think about His own thinking, have beliefs about His beliefs, be aware of His own "I").

2. Whereas animals have souls, the human soul is unique in being created in the image and likeness of God. Thus, humans bear a relevant similarity to God in so far as both are kinds of persons. Humans, therefore, are spiritual substances with bodies, they are unified, enduring "I's," and they possess libertarian freedom and exhibit teleological behavior. Also, they have an essential nature—human personhood—which grounds membership in the natural kind "humankind." Various human conscious states—(e.g., sensations, thoughts, beliefs, desires, and volitions) are intrinsically constituted by irreducible, uneliminable mental properties. Humans have first-person points of view, including first person introspective knowledge of their own selves and conscious states just as God has. And like God, humans have the sorts of second order mental states (e.g., self-awareness, self-consciousness) required to be a person and a moral agent.

3. Though fallen, humans still have moral faculties and engage in moral actions. In these moral actions, an IDP$_C$ model will distinguish four things relevant to their moral assessment: a motive, an intent, a means, and a consequence. A motive is why one acts. An intent is what act one actually proposes to perform. The intent answers the question: "What sort of act was it?" The means is the way an agent purposely carries out his or her intention. Finally, the consequences are the states of affairs produced by the act. In order to engage in moral actions and develop a sense of one's self as a moral agent, humans must be able to form second order mental states about their own motives, intentions, means, character traits, and consequences. For example, a creature cannot repent, unless it can think about its own thinking. Similar points could be made about the role of second order states of consciousness in an IDP$_C$ depiction of the nature and purpose of the moral life and moral agents.

Although an IDP$_C$ advocate may see consequences as part of the relevant factors for assessing an action, results are less important than the intrinsic features of the act itself. Given this observation, along with the IDP$_C$ claims that objective morality is a fundamental feature of reality and that human persons were created to be holy, virtuous beings, IDP$_C$ predicts the following regarding human moral action: Regardless of other purposes or consequences that moral action may procure for moral agents, human persons will have a deeply ingrained, strong tendency to be preoccupied with the intrinsic value of their

moral actions both in their own self-understanding as moral agents and in the way they desire others to take them as moral agents. Among other things, they will not be preoccupied with the reproductive advantages to themselves or their group that obtain as a consequence of their moral actions. Professed moral relativists will find it extremely difficult to live as consistent relativists and will, instead, tend naturally to treat their own cherished moral rules as intrinsically correct, absolute truths.

Features of EP_N. Naturalistic evolutionary psychology (EP_N) is based on the belief that humans share a universal evolved brain architecture, composed of functionally specialized computational devices that solved early adaptive Pleistocene-type problems. The aims of this movement are to promote the discovery of how these adaptive problems and their solutions explain current cultural and social phenomena. The major tenets of EPN are a heavy reliance on an adaptationist approach, modeled from evolutionary biology, an emphasis on the modularity of the brain, and a belief in the universality of human nature.

According to Buss (1999) four premises form the basis of EP_N:

1. All manifest human behaviors depend on underlying psychological mechanisms, defined as information-processing computational devices, instantiated in brain wet-ware.

2. Evolution by adaptation and natural selection are the only known causal processes capable of creating such complex organic mechanisms.

3. Evolved psychological mechanisms are functionally specialized to solve adaptive problems that recurred for human ancestors over the vast expanse of evolutionary history.

4. The human mind/brain consists of a large number of these functionally specialized and integrated evolved mechanisms, each sensitive to particular forms of contextual input.

These four commitments may fruitfully be placed against the following backdrop:

1. The EP_N depiction of humans must be plausible in light of, and at home with, the general naturalist set of ontological commitments and the naturalist story of how all things came about. Three features of the naturalist etiological account are of importance for understanding EP_N. First, all change is to be understood in terms of efficient event causality according to which some causal event x is the cause of some effect y just in case there is a (probabilistic or deterministic) law of nature that subsumes x and y. Given x and that law of nature, y is the effect that follows. All causal transactions are mechanistic. Moreover, all change must be understood to obey the Physical Causal Closure principle (PCC): Every physical event that has a cause has a physical cause. In tracing the causal ancestry of any physical event, one need never leave the level of the physical.

Second, the naturalist story must be understood as an expression of physicalism. Although there are different versions of physicalism, naturalist Kim (1996) advocates the following proposition that defines minimal physicalism and the minimum ontological commitment to which all physicalists should subscribe.

> The Dependency Supervenience Thesis (DST) : Mental properties supervene on physical properties, in that necessarily, any two things (in the same possible world or in different possible worlds with the same laws of nature) indiscernible in all physical properties are indiscernible in mental properties. Moreover, what mental properties an entity has depend on and are determined by its physical properties. (Kim, 1996, pp. 9-13)

DST implies that the psychological properties that occur in the world are fixed by and dependent on the physical properties of that world. Thus, bottom/up dependency characterizes the relationship between a human person's physical and mental states.

From point 1, it becomes obvious that prior to the appearance of living things, there was no teleology, no agency, no value, no mental states, and arguably, no unified substances above the level of fundamental physics. EP_N must analyze human persons in a way that is at home in their etiological story, and that is not *ad hoc* and does not beg the question relative to IDP_C.

2. The various brain mechanisms relevant to human behavior in general, and rational and ethical behavior in particular, are what they are because they aided (or at least did not hinder) their possessors in adapting to recurring problems over the long course of evolutionary history in feeding, reproducing, fighting, and fleeing. This in turn, aided their possessors in the struggle for differential reproductive advantage.

EP_N would seem to imply a consequentialist evolutionary ethical understanding of moral action, specifically, a view of moral action as a means to reproductive success. Moreland (2001) has defended this claim elsewhere, so a defense will not be undertaken here. Suffice it to say that we agree with evolutionary naturalist Michael Ruse

(1989) who notes,

> Morality is a biological adaptation no less than are hands and feet and teeth. Considered as a rationally justifiable set of claims about an objective something, ethics is illusory. I appreciate that when somebody says 'Love thy neighbor as thyself,' they think they are referring above and beyond themselves. Nevertheless, such reference is truly without foundation. Morality is just an aid to survival and reproduction . . . and any deeper meaning is illusory. (pp. 262-269)

Thus, EP_N would seem to predict that human moral agents would not be interested in or preoccupied with the illusory intrinsic rightness or wrongness of intents, motives, virtues/vices, moral rules, and moral acts. Rather, those agents should be interested in and preoccupied with the reproductively advantageous consequences of intents, motives, and so forth.

Further, EP_N would seem to be in a difficult position with regard to the existence of the mind. The ontological commitments of EP_N and the naturalist story of how all things came to be create certain imponderables. Some of these questions that continue to baffle the physicalist, according to Pinker (1997), include the self, consciousness, free will, meaning, knowledge, and morality. Foremost among them is consciousness in the sense of sentient states, as according to Pinker "they give us a sense of bewilderment, of intellectual vertigo" (p. 559). What then is consciousness, this aspect of the mind that is so bewildering?

Defining Consciousness

For many thinkers, such a fundamental idea as consciousness is a frustratingly elusive and nebulous concept. Long considered the "crown jewel" of psychology, this ineluctable phenomenon is both easy and difficult to define. A simple definition is an inner state of sentience to which a subject has direct, private, first-person access. At a simple level consciousness grounds the ability to discriminate stimuli, report information, to monitor internal states (self-knowledge), or to access information (access-consciousness). These abilities form what Chalmers (2001) calls important but easy problems of consciousness, in that "there is much that is not understood about them, but the problems of explaining them have the character of puzzles rather than mysteries" (p. 3).

At the other extreme is the so-called "mystery" of consciousness: given the non-physical nature of phenomenal awareness or sentience, how did consciousness arise and how does it interact with matter? It is the phenomenal awareness, with phenomenal properties (or qualia), raw feelings, first person, present tense, subjective experiences that we all know very well. But of all the topics in psychology, the origin of consciousness as currently understood is perhaps the most complex and puzzling. Polkinghorne (1998) recently stated that consciousness is the most astonishing development in all of cosmic history. Pinker (1997) writes that sentience is an imponderable, perhaps unsolvable problem like the enigma of free will: "Sentience and will are different. Far from being too complicated, they are maddeningly simple—consciousness and choice inhere in a special dimension or coloring that is somehow pasted onto neural events without meshing with their causal machinery" (p. 562). It took 562 pages for Pinker (1997) to arrive at this conclusion in his book *How the Mind Works*.

This "pasting onto" implies a close association between experience and the brain, where a physical system with physical properties "yields" states of experience. Chalmers (2001) asks "But how and why do physical processes give rise to experience? Why do not these processes take place 'in the dark,' without any accompanying states of experience? This is the central mystery of consciousness" (p. 3). Chalmers (1996, 2001) offers excellent summaries of the philosophical debate concerning consciousness, including materialistic solutions, non-materialistic solutions, and non-reductive solutions.

Naturalist Colin McGinn (1999) claims that the arrival of consciousness borders on sheer magic because there seems to be no naturalistic explanation for it: "How can mere matter originate consciousness? How did evolution convert the water of biological tissue into the wine of consciousness? Consciousness seems like a radical novelty in the universe, not prefigured by the after-effects of the Big Bang; so how did it contrive to spring into being from what preceded it?" (pp. 13-14).

The "mystery" of water turned to wine. The claim that consciousness is mysterious is an ambiguous one. If the assertion is that the origin of consciousness is mysterious, then that is true based on some worldviews (e.g., evolutionary naturalism) but not on others (Christian theism). However, if the assertion is that the nature of consciousness itself is, in some way or another, unclear or beyond description, then the assertion seems false. As we shall see shortly, we all know very much about the nature of consciousness from simply having it and attending to it.

It may well be that, because consciousness eludes description in physical terms, it is incapable of being accurately characterized by those who approach it with a commitment to evolutionary naturalism. Further, it may well be that providing detailed accounts of the structure of consciousness and its relationship to the ego on the one hand and the brain/body on the other is difficult and a source of wonderment. But none of this means that people are somehow confused or in a fog about the nature of consciousness itself. Some may think that such a fog exists because they are committed to the idea that if you cannot define something by analyzing it into its constituent parts, then the thing in question is epistemically opaque. But this posture represents a mistaken notion of definition. All attempts to define one thing in terms of other things must at some point reach a stopping point on danger of an infinite regress or a web of internally related definitions that are cut off from the world. The proper stopping point for regressive definitions are primitive facts that are defined ostensively, by pointing to examples of the thing being defined. Whether one is trying to define physical entities or mental ones, at some point ostensive definitions will need to be employed.

Having said this, it is possible to give examples of conscious states and offer a characterization of some of their features. The method to be followed will be an irreducibly first-person approach: a reader should be able to agree with or dissent by simply attending to his own conscious states. The various properties/states that constitute the conscious lives of various animals, humans, angels, and God are immaterial, mental properties and states. Moreover, these mental properties are kind of identifying properties (i.e., they tell us about the kind of thing that has them).

Before we proceed, we should say something about the relation of identity. Let x and y stand for any entity whatsoever. If x is identical to y, then whatever is true of x is true of y and vice versa. Moreover, if x is identical to y, then, necessarily, x is identical to y; it is not possible for x not to be y. We believe that mental states (consciousness) are not identical to anything physical. As substance dualists, we cheerfully embrace mental/physical causal interaction and functional dependence. If something happens to the brain, memory loss occurs; if a person persists in anxious thoughts, brain chemistry changes. But none of this says anything at all about *what mental states themselves are*. Something is what it is in virtue of its intrinsic constituents (e.g., its properties, potentialities, and parts) and not in virtue of what caused it or what must be present for it to function.

This formulation means that while a mental state may very well have a corresponding physical "representation" (i.e., neural pattern) this representation is not a facsimile. Mental states themselves exemplify uniquely mental properties and are in no way physical states, irrespective of the presence of correlated brain states. Mental states are characterized by their intrinsic, subjective, inner, private, qualitative feel or texture made present to us by first person introspection. For example, a pain is a certain felt hurtfulness. In no way can mental states be intrinsically described accurately by physical language (e.g., the language of physics, chemistry, or common sense physical descriptions) even if we can study the brain and find out the causal/functional relations between mental and brain states. (Such physical descriptions rely on 3rd person perspectives, and usually entail using technology like a PET scan to view neural patterns.)

Mental images and other states. There are at least five different kinds of mental states. A *sensation-perception* is a state of awareness or sentience, a mode of consciousness, such as a conscious awareness of sound, color, or pain. A visual sensation like an experience of a tree is a state of the soul, not a state of the eyeballs. The eyes do not see. They detect and encode physical energies, transforming them into neural messages. I (my soul) see with or by means of the eyes. The eyes, and the body in general, are instruments or tools the soul uses to experience the external world. Some perceptions are experiences of things outside me like a tree or table. Others are an awareness of other states within me like pains or itches. Emotions can be thought of as a subclass of perceptions and, as such, they are forms of awareness of things. I can be aware of something angrily or lovingly or fearfully.

The flow of these mental images or states is called a thought. A *thought* is a mental content that can be expressed in an entire sentence and that only exists while it is being constructed or thought. Thoughts can be true or false and they are about things (e.g., the thought that Kansas City is a great place to live is about Kansas City). Some thoughts logically imply other thoughts. For example "all dogs are mammals" entails "some dogs are mammals." If the former is true, the latter must be true. Some thoughts do not entail, but merely provide justifica-

tion for other thoughts. For example, certain thoughts about evidence in a court case provide justification for the thought that a person is guilty. A thought is not the same thing as the sentence used to express it. "Es regnet" and "it is raining" are very different sentences, but they both express the same thought. Further, a person can think without using language. If this were not so, a maturing infant would never be able to learn language itself because the infant would not be able to think until a language mysteriously arose within the infant. Finally, sentences are sense perceptible and publicly accessible realities. Oral sentences have sound characteristics and written ones have shape, color, etc. But the thought expressed by the sentence is invisible and in the mind of the speaker.

A *belief* is a person's view, accepted to varying degrees of strength, of how things really are. If a person has a belief (e.g., that it is raining), then that belief serves as the basis for the person's tendency or readiness to act as if the thing believed were really so (e.g., he gets an umbrella). Thus, beliefs are not dispositions to behave, but are the grounds for such dispositions. At any given time, one can have many beliefs that are not currently being contemplated. Beliefs are not the same as thoughts. A person has many thoughts he or she does not believe and many beliefs that are not currently being thought. Thoughts exist only while they are being thought, but we have many beliefs not currently being contemplated.

A *desire* is a certain felt inclination to do, have, avoid, or experience certain things. Desires are either conscious or such that they can be made conscious through certain activities, for example, through therapy. An *act of will* is a volition or free choice, an active exercise of power, an endeavoring to do a certain thing, usually for the sake of some teleological end or goal, which is the reason for the sake of which a person acts freely.

Mental states do not equal physical states. In general, mental states have some or all of the following features, none of which is a physical feature of anything: Mental states like pains have an intrinsic, raw conscious feel. There is a "what-it-is-like" to a pain. Most, if not all, mental states have intentionality (i.e., they are of or about things). Mental states are inner, private, and known by first person direct introspection. Any way I have of knowing about a physical entity is available to everyone else, including ways of knowing about my brain, but I have a way of knowing about my mental states not available to others—through introspection.

Mental states are constituted by what philosophers call self-presenting properties. I can only be aware of the external, physical world by means of my mental states, but I need not be aware of my mental states by means of anything else. For example, it is by way of a sensation of red that I am aware of an apple, but I am not aware of the sensation of red by way of another sensation. The red sensation makes the apple present to me by virtue of my having the sensation; but the sensation also presents itself directly to me without another intermediary. This understanding is what is meant by saying that a mental state is a self-presenting property.

Mental states are necessarily owned and, in fact, my mental states are necessarily such that there is no possible world where, for example, this very pain of mine could have been owned by anyone else. Someone else could have a pain just like this one, but he could not have had this very pain itself. However, no physical state is necessarily owned by anyone, much less necessarily owned by me.

Some sensations are vague. For example, a sensation of a distant object may be fuzzy and vague, but no physical state is vague. Some sensations have the property of being pleasurable or unpleasurable, but nothing physical has these properties. A cut on the knee is, strictly speaking, not unpleasurable. It is the pain event caused by the cut that is unpleasurable. Mental states can have the property of familiarity (e.g., when a desk looks familiar to me), but familiarity is not a physical property of something physical. In short, because mental states have these features and physical states do not, we conclude that mental states are not identical to physical states.

Why Consciousness Itself is a Problem for EP_N and Confirmation for IDP_C

There are two main problems that consciousness presents to advocates of EP_N: (a) The very existence of consciousness is an inexplicable, *sui generis* brute fact for EP_N, but it is very much at home and, in fact, predicted from IDP_C; and (b) the intrinsic nature of conscious states is irrelevant to evolutionary development on an EP_N model and, in fact, evolutionary selection is blind to the nature of consciousness. We shall only gesture at the first difficulty because our main concern in this article is with the second claim. The main issue here is quite

simple: According to EP_N, prior to the appearance of sentient creatures, there were only strictly physical objects, properties, and processes. Everything that has come to be is in some way or another, an aggregate of physical parts that resulted from strictly mechanical, physical processes. There were no values, purposes, free actions, or teleological ends prior to the emergence of sentient creatures. Now, if one begins with strictly physical objects, and derives more complicated structural arrangements of physical objects by way of purely physical processes, it is hard to see from where immaterial entities could come.

Several naturalists have acknowledged the problem. For example, naturalist Paul Churchland notes:

> The important point about the standard evolutionary story is that the human species and all of its features are the wholly physical outcome of a purely physical process. . . . If this is the correct account of our origins, then there seems neither need, nor room, to fit any nonphysical substances or properties into our theoretical account of ourselves. We are creatures of matter. And we should learn to live with that fact. (Churchland, 1984, p. 21)

Churchland puts his finger on two reasons the naturalist should opt for strong physicalism—there is neither need, nor room for anything else. Regarding need, it appears that he means that everything needed to explain the origin and workings of human beings can be supplied by physicalist causal explanations. Regarding room, entities do not come into existence ex nihilo, nor do radically different kinds of entities emerge from purely physical components placed in some sort of complex arrangement. What comes from the physical by means of physical processes will also be physical. As Peacocke and Gillette (1987) put it:

> I find it very hard to see why that functional property [consciousness] coded in a certain complex physical structure requires a new entity to be invoked, of an entirely different kind, to appear on the scene to ensure its emergence. How could something substantial, some substance or some other entity different in kind from that which has been evolved so far, suddenly come in to the evolutionary, temporal sequence? (p. 55)

Quotes like this could be multiplied. The simple fact is that there is turmoil today in philosophy of mind precisely because the discipline is dominated by physicalists who just do not know what to do with consciousness. As naturalist John Searle admits,

> How is it that so many philosophers and cognitive scientists can say so many things that, to me at least, seem obviously false? . . . I believe one of the unstated assumptions behind the current batch of views is that they represent the only scientifically acceptable alternatives to the anti-scientism that went with traditional dualism, the belief in the immortality of the soul, spiritualism, and so on. Acceptance of the current views is motivated not so much by an independent conviction of their truth as by a terror of what are apparently the only alternatives. That is, the choice we are tacitly presented with is between a 'scientific' approach, as represented by one or another of the current versions of 'materialism,' and an 'unscientific' approach, as represented by Cartesianism or some other traditional religious conception of the mind. (Searle, 1992, pp. 3-4)

However, even if we grant, for the sake of argument, that EP_N could adequately account for the sheer existence of conscious mental states, it seems that EP_N lacks the resources to provide any account at all for why the various intrinsically different types of mental states arose, or to provide a role for those different types of states in the struggle for reproductive advantage. As B. F. Skinner (1990) noted just before his death, "Evolutionary theorists have suggested that 'conscious intelligence' is an evolved trait, but they have never shown how a nonphysical variation could arise to be selected by physical contingencies of survival" (p. 1207).

The main problem is that, as far as adaptive selection processes are concerned, organisms are black boxes to evolution. What happens inside those organisms is not only irrelevant, but also completely hidden from view until a body movement is manifested. Only then is there something to select under the conditions of feeding, fighting, reproducing, or fleeing. Mere know-how is all that matters, and skill, propositional knowledge (i.e., knowledge that some proposition like "Red is a color" is true) and knowledge by acquaintance (i.e., knowledge of something by being aware of it; e.g., being aware of a red ball) simply drop out of sight and, along with it, consciousness itself. Moreover, even if some conscious state is causally responsible for some behavioral output, on the basis of the causal closure and supervenience principles, it will not be in virtue of its intrinsic affective or semantic features, but in virtue of its extrinsic relational/causal features that the conscious state will be at all relevant. As far as evolution is concerned, the mental state is *whatever* is causally responsible for the "correct" body movement, nothing more, nothing less.

Alvin Plantinga had developed arguments to show not that evolutionary naturalism, including EP_N, is false, but that even if it is true, it is still "irrational" to believe it (Plantinga, 1993). He begins by pointing

out that, according to naturalistic evolutionary theory, human beings, their parts, and cognitive faculties arose by a blind, mindless, purposeless process such that these things were selected for solely in virtue of survival value and reproductive advantage. If our cognitive faculties arose this way, then their ultimate purpose—assuming they have one—is to guarantee that we *behave* in certain ways (i.e., that we *move* appropriately in feeding, fleeing, fighting, and reproducing so that our chances of survival are enhanced). From this perspective, beliefs, and certainly beliefs that are true, take a hindmost role if they play any role at all. Thus, naturalistic evolutionary theory gives us reason to doubt that our cognitive systems have the production of true beliefs as a purpose or that they do, in fact, furnish us with mostly true beliefs.

But someone could object to this argument in the following way: Surely an organism with trustworthy sensory and cognitive faculties would be more likely to survive than those without those faculties and, thus, the processes of evolution would select for trustworthy faculties and make their existence likely. According to Plantinga (1993), this is not so. That is, the probability that our faculties would be reliable, given the truth of evolutionary naturalism and the existence of the faculties we possess, is either (a) very low indeed, or (b) something about which we should remain agnostic. What is Plantinga's basis for these positions? Evolution is likely to select behavior that is adaptive, but we cannot say the same for faculties that produce true beliefs because, given evolutionary naturalism, at least five different scenarios regarding our beliefs (or those of a hypothetical creature or, say, a monkey) and our noetic faculties are possible and cannot be ruled out.

First, evolutionary processes could produce beliefs that have no causal relationship whatever to behavior and, thus, no purpose or function. In this case, evolution would select for adaptive behavior, but beliefs would be mere epiphenomena, entities that "float on top" of physical states in an organism with no purpose or function. Beliefs would not cause or be caused by behaviors and, thus, would be invisible to evolution. We can add a further point to Plantinga's argument here. Given evolutionary naturalism, it is not clear that beliefs, or indeed, any conscious states at all are required for survival. Zombie organisms whose causal inputs went straight from bodily inputs to outputs without running through conscious intermediaries would provide the outputs necessary for adaptive selection. So beliefs themselves seem entirely superfluous to evolution.

Second, evolution could produce beliefs that are effects but not causes of behavior (in option one, beliefs were neither). In this case, beliefs would be like a decoration and would not be a part of a causal chain leading to action. Waking beliefs would be much like dreams are to us now. As Jaegwon Kim (1998) has argued, given the EP_N principle of the causal closure of the physical and the supervenience of the mental on the physical, there is no room for mental states such as beliefs to have causal power. Thus, if beliefs exist, they are causally impotent epiphenomena with no relevance to evolutionary struggle, resulting from behavior but not causing anything.

Third, evolution could produce beliefs that do have causal efficacy (i.e., they are caused by and, in turn, cause behaviors), but not in virtue of what they essentially are as beliefs, that is, not in virtue of their semantics or mental contents, but in virtue of the physical characteristics or syntax that are associated with (or are part of) them. Plantinga (1993) illustrates this point with a person who reads a poem so loudly that it breaks a glass, but this causal effect is not produced by the meanings or contents of the poem (they, like beliefs in this third option, are causally irrelevant), but by the sound waves coming from the reader's mouth.

Fourth, evolution could produce beliefs that are, in fact, causally efficacious syntactically and semantically in virtue of their content, but such beliefs and belief systems could be maladaptive (maladaptive systems such as being an albino can be fixed and the organism can survive) in at least two ways. First, beliefs could be energy expensive distractions causing creatures to engage in survival enhancing behavior but in a way less efficient and economical than if the causal connections producing that behavior bypassed belief altogether.

In support of Plantinga's point, some scientists have argued that the possession of rational abilities (e.g., belief processing systems) can be a disadvantage because such systems require increased information-processing capacities associated with the nervous system and this is a reproductive liability prenatally (such a system requires a longer and more vulnerable gestation period) and postnatally (it takes longer to raise and teach the young). Second, beliefs could directly produce maladaptive behavior, but the organism could survive anyway, perhaps due to other overriding factors.

Finally, evolution could produce beliefs that are causally efficacious in virtue of their contents and that are adaptive. However, in this case we can still ask: "What would be the likelihood that the noetic faculties producing such beliefs would be reliable guides to having true beliefs?" Not very high, says Plantinga (1993), and to see why, we need to note that beliefs do not produce behaviors directly; rather, entire sets of beliefs, desires, and other factors (e.g., sensations, acts of will, or persons themselves) are among the things that produce behavior. Plantinga invites us to consider Paul, a prehistoric hominid whose survival requires that he display various types of tiger-avoidance behavior (e.g., fleeing, hiding). Call these behaviors B. B could be caused by Paul's desire to avoid being eaten plus the true belief that B will increase his chances of avoiding such a fate.

However, indefinitely many other belief-desire systems could easily produce B as well, even if they contain false beliefs (and wrong desires or inaccurate sensory experiences). For example, perhaps Paul likes the idea of being eaten but always runs away from tigers, looking for a better prospect because he thinks it unlikely that the tiger before him will eat him. Or perhaps he thinks a tiger is a large, friendly pussycat and wants to pet the tiger before him, but also believes the best way to pet it is to run away from it. Or perhaps he confuses running toward it with running away from it. All of these belief-desire sets would get Paul's body in the right place so far as survival is concerned, but most of them will not need to contain true beliefs to do so.

To elaborate on Plantinga's point, from an evolutionary perspective, organisms are black boxes insofar as their beliefs, desires, sensations, and willings are concerned. Organisms that move the right way (for survival purposes) given the right circumstances, need not have true beliefs about or accurate sensations of the world around them. Thus, the possession of trustworthy faculties that regularly produce true beliefs is not required by the demands of survival. This is especially true when it comes to the ability to have true beliefs about abstract issues or to engage in intellectual theorizing (e.g., philosophical reflection, scientific theorizing, and so forth) including the ability to argue for or against evolutionary theory itself. These abilities go far beyond what would be required within the constraints of reproductive advantage and survival.

Each of the above five scenarios is possible. Given no further evidence either way about the reliability of our cognitive equipment, the likelihood that those faculties would be reliable would either be very low or something we would simply have to be agnostic about, given evolutionary naturalism and the faculties that we have. Thus, evolutionary naturalism serves as an undercutting defeater that removes our grounds for trusting in the reliability of our noetic equipment. Plantinga likens this scenario to a case where a person enters a factory, sees an assembly line carrying apparently red widgets, and is then told that these widgets are being irradiated by various red lights that make everything look red. A given widget before the person could still be red, but the person would have no grounds for believing this. She has an undercutting defeater for such a belief.

In sum, we have seen two main reasons why consciousness itself is a problem for EP_N, but it is very much at home in and predictable from IDP_C. According to the latter, God Himself is an immaterial spiritual substance with various mental states and He created human persons to be like him in this regard. He also created human faculties to function properly in their environment to gain true, justified beliefs about reality. And while humans are fallen, and their faculties do not function the way they were originally designed to function, nevertheless, those faculties are not effaced on an IDP_C view. Consciousness and its various forms, along with mind/matter interaction are basic, *sui generis* entities for IDP_C, but they are odd and without explanation in an EP_N model.

Proponents of EP like Pinker (1997) admit as much. He states that he has no idea what sentience is, and that "the computational theory of the mind offers no insight" (Pinker, 1997, p. 146). For him it may simply be the "other side of the coin" from access consciousness, hardly an insightful theory. Dennett (1991) tries to explain simply consciousness away, and denies that it even exists. Carter (1999) reviewed the main points made by Dennett, concluding that he not only denies the reality of the stream of consciousness, but the reality of the unified self, failing to present a credible evolutionary account of human intelligence. Similar criticisms abound for all other EP "findings" on this topic.

Smith (2000) concludes that in spite of the failure of EP to account for the mind:

> EP wants to call the mind-explaining game over and to declare itself and its team the winners. Contrary, however, to its portrayal of the scene, the remaining questions in cognitive science are not just technical, a matter of working out the details of a program that all enlightened practitioners endorse. Quite

the reverse: The field is exceptionally active at all levels–conceptual, empirical and methodological–and also both diverse and volatile, with new disciplinary configurations and domains of research opening up virtually continuously, and significant ideas and connections being developed on all sides. (p. 167)

A Sentient Challenge for IDPC

So what is the task for an IDP_C approach to the study of consciousness? According to some, reverting to a "homunuclus" creature will result in guaranteed disdain. How does such an approach avoid the "ghost in the machine" criticisms? Assuming dualism for some is tantamount to giving up (e.g., Dennett, 1991), and any reasoning of this sort is not worth knowing, according to others (e.g., Pinker, 1997). He feels that religious explanations, like the spark of the divine, self as soul, etc., "pile equally baffling enigmas on top of the original ones" (p. 560). Claims such as these often amount to little more than rhetorical expressions of bias. This issue here is not science versus the unscientific, truth versus faith, or the intellectual versus the religious. A better starting question is this: "Do intelligent design theories (versus evolutionary psychology theories) provide a theoretical framework for the study of the human mind and behavior that is heuristically valuable and provides better explanatory and predictive power?" The topic of consciousness, including our capacity as humans for self-conscious emotions and reflection, allows for comparison of these two approaches.

Consciousness, Self-Awareness, and Emotions

An intriguing aspect of self-awareness comes from the Oxford English Dictionary (1989) which defines consciousness as "internal knowledge or conviction; knowledge as to which one has the testimony within oneself; esp. of one's own innocence, guilt, deficiencies, etc." Although not all forms of consciousness involve self-awareness, the latter is a crucial aspect of human consciousness. Natsoulas (1998) describes how this particular definition of consciousness relates to self-awareness (every instance of consciousness as defined above basically involves self-awareness.) An insightful argument is made by Natsoulas on the relationship between consciousness and guilty awareness of wrongdoing. He cites C. S. Lewis in the drawing out of this idea:

> . . . A person cannot help thinking and speaking of himself as, and even feeling himself to be (for certain purposes), two people, one of whom can act upon and observe the other. Thus he pities, loves, admires, hates, despises, rebukes, comforts, examines, masters or is mastered by, "himself." . . . he is privy to his own acts . . . a witness against you, a potential blackmailer, one who inflicts shame and fear. (Natsoulas, 1998)

This relationship between self-awareness and emotions may provide a starting point for a theoretical framework that is heuristically valuable in the investigations undertaken by intelligent design psychologists. Why are humans and not other animals self-conscious in this sense of the word? What is the functional role of consciousness and guilt in human behavior? How has it been transmitted, modified, etc. over time? Do other animals show these self-conscious emotions?

Self-Conscious emotions. Many researchers have examined the relationship between emotions and self-awareness, including Parker (1998). The focus is on two distinct categories or classes of emotions: the self-conscious emotions (SCEs) and non-self-conscious emotions (NSCEs). The 7 NSCEs include fear, surprise, anger, happiness, sadness, disgust, and interest, and they develop early in infancy. The first 5 on the list are thought to be shared with other mammals, and the last 5 are known as "social" emotions (i.e., aroused by interactions with others). These 7 also all have direct facial expressions associated with them.

SCEs differ in many ways from NSCEs. They include guilt, embarrassment, pride, envy, shame and jealousy. According to Parker (1998), they are exclusively human, lack specific facial expressions, develop later (age 2 or 3), and are associated with concepts of good and bad.

Irreducible complexity. Further, SCE's appear to be an example of Behe's (1996) irreducibly complexity. Their occurrence, according to Parker (1998) depends on mental reflection, self-awareness, and awareness of social standards, which in turn depend on language and certain cognitive capacities that develop later, suggesting that they "have not been strongly phylogenetically ritualized for social communication" (p. 110). Socialization processes and selection seem inadequate to account for these emotions. However, Parker's evolutionary model proposes that the development of SCEs relies on a social selection model, in which SCEs were favored by sexual selection, kin selection, and parental manipulation. These emotions were favored because "they facilitated direct and indirect socialization and enculturation into values that serve the genetic interests of

parents, mates, kindred, and authority figures" (Parker, 1998, p. 129).

An Intelligent Design Approach to SCEs

Are there any historical event scenarios that might explain the origin of SCEs from an intelligent design perspective? The Old Testament book of Genesis describes the origination of these emotions as occurring not at creation, but when the first humans ate from the tree of the knowledge of good and evil. Previously instructed not to eat from this tree, Adam and Eve disobeyed, and immediately after eating they recognized that they were naked (i.e., shame, embarrassment) and hid when they heard God coming (i.e., guilt). These emotions were tied to the newly acquired ability to recognize right from wrong, and to differentiate between good and evil. This new capacity was not part of the original design, and using EP terminology it may be an example of a spandrel. (Recall that spandrels are "left over" structural features that did not result from adaptations, but they arose as side consequences of other features, and presume to include "modern" things like reading, writing, art, and religion). For the first time an understanding of good and evil existed in their minds, and this new cognitive awareness is what we now recognize as our unique capacity for self-consciousness. This new self-consciousness experienced in Eden has been passed down for all future generations according to the theological doctrine of original sin. It appears to be what C. S. Lewis (as cited by Natsoulas [1998]) was referring to in the quote above:

A person cannot help thinking and speaking of himself as, and even feeling him to be (for certain purposes), two people, one of whom can act upon and observe the other. Thus he pities, loves, admires, hates, despises, rebukes, comforts, examines, masters or is mastered by, "himself."…he is privy to his own acts…a witness against you, a potential blackmailer, one who inflicts shame and fear.

Transgression of function and spandrels. The legacy is such that all humans are now endowed with this self-awareness, for better or worse, though not part of the designer's original intent. While self-awareness is multifaceted, and seems to include some positive consequences for humans, such as increased self-understanding and knowledge, it appears to come with a cost. Perhaps many of the SCE's that humans experience were the price paid. Does this cost qualify as a "transgression" in Dembski's (1998) model, resulting in poor functioning with negative consequences? (Recall from Dembski that "design implies constraints . . . transgress those constraints and the object functions poorly or breaks" [1998, page #]. That there is something wrong with the moral nature of man is unquestioned, as every known religion acknowledges. This drift toward moral deficiency is what many religions, including Christianity, call sin. The non-religious individual, while not referring to it as "sin," recognizes the universality of what Immanuel Kant called this uniquely human "radical evil" ("das radikale Bose"). It seems most appropriate to classify most SCEs as byproducts of, rather than functional consequences directly resulting from, the transgression of design.

If we were to find someone without this SCE awareness, what would they act like, and could their behavior illuminate the role of self-awareness? A person without this self-awareness capacity would show no SCEs, though could show the full range of NSCEs if he/she interacted at any level with other people. Their life would be characterized by not only a lack of guilt, embarrassment, pride, etc., but also would be characterized by a lack of enculturation and socialization in general. Individuals considered antisocial are possible candidates.

Life before this awareness entered the world (in the garden) gives us another possible glimpse into this "non self-awareness, non self-conscious emotions" world, though it is fairly brief. Perhaps the most intriguing example comes from the life of Jesus of Nazareth, who Christians claim was not only the Son of God, but also sinless. His life (though an N of 1) does provide an opportunity to venture a few tentative hypotheses. First, if Jesus was sinless, is there biblical evidence of Him experiencing NSCEs, but not SCEs? An examination of the biblical text seems to imply this: He is reported to have experienced anger, happiness, sadness, disgust, and interest. And while Jesus was clearly self-aware and knew good from evil, there is no recorded evidence (incomplete as the texts may be) of him experiencing any SCEs, such as guilt, pride, or shame (emotions many Christians equate with sin).

Summary of IDP$_C$ approach to SCEs. Processing these ideas through an intelligent design filter leads to some possible directions for future study. Many animals, including man, have been designed with a capacity for NSCEs, including some forms of self-conscious awareness (i.e., great apes and objective awareness). However, no paleontological, archeo-

logical, or comparative developmental approaches show conclusive evidence for SCEs occurring in any non-human species (see Parker, 1998). It is expected that psychosocial and biological constraints hardwired into human brain structures associated with SCEs will be found, with no precursors identifiable in non-human species. In all cultures those individuals who show a lack of such emotions (i.e., guilt, embarrassment, and shame) should have manifest behavioral psychopathologies that every society would label as potentially harmful. In addition, these hardwired constraints would still be found in individuals from severe backgrounds in which normal socialization did not occur (e.g., feral children).

Finally, these SCEs are exceedingly complex and efficient, and should be found to be so well organized and engineered that chance and adaptation may be effectively ruled out as plausible explanations. For evolutionists, SCEs are probably best operationalized as spandrels, by-products of the complex human brain, rather than specific adaptations. However, for IDP_C their irreducible complexity points to a designer. Hence, evidence should be found that SCEs depend on higher cognitive capacities that have no known preexisting adaptations, like reflection, self-awareness and awareness of social standards, and language. The complexity involved in processing guilt (both godly and worldly sorrow) at the personal, spiritual, and interpersonal levels, including the components involved in relationship reparation (e.g., seeking forgiveness, repentance, shame, etc.) also point to irreducibility. EP_N as a theory has difficulty accounting for such phenomena, given the general naturalist set of ontological commitments and the naturalist story of how and when such mental structures could have been formed.

Conclusion

Evidence is still needed to validate the utility of an IDP approach to the study of human behavior, with much more work necessary. Evidence from studies on SCEs, and consciousness in general, should serve as challenges and possible starting points for an intelligent design psychology. We must respond to and critique EP findings that propose an evolutionary account for the capacity of self-consciousness in humans, and for their denial of its existence. We must sift through the vast data bases from fields like psychology, neuroscience and philosophy, employing Behe's irreducible complexity arguments or Dembski's complexity-specification criterion, and ultimately create a programmatic research plan. This enterprise would involve reformulating current data and findings that were made using an explicitly theistic approach, making predictions (including counter-intuitive ones), and designing new studies which would supply causal evidence.

Some helpful evidence may come from the examination of the physical make-up of the brain, such as how the complex module structures have appeared fully developed with no gradual approximations in our nearest relatives. The massive space devoted to our large frontal and prefrontal lobes is unprecedented in the animal world, and appears correlated to our self-conscious capacity. However, with most scientists (and Christians) divided over the basics of the structure of the mind or soul, designing instruments to detect it will need a substantial infusion of time and effort. Certain recent discoveries in other fields (chaos theory and quarks, etc.) of slippery, "invisible" or hard to detect phenomena have benefited from massive intellectual, monetary, and institutional (academic) support. Those of us interested in utilizing a design approach in psychology have a long way to go before such resources and results can be matched. Explaining the "mystery" of consciousness, where the physical interacts with the mental, where we turn water into wine, is psychology's reining enigma. Yet, there is evidence that the phenomena of sentient consciousness and self-conscious emotions, elusive and bewildering to many in EP, may ultimately adhere better and even give up its secrets to an intelligent design approach.

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APPENDIX
A Scientific Dissent on Darwinism

Sept. 24, 2001

"I am skeptical of claims for the ability of random mutation and natural selection to account for the complexity of life. Careful examination of the evidence for Darwinian theory should be encouraged."

·Henry F. Schaefer: Director, Center for Computational Quantum Chemistry: University of Georgia
·Fred Sigworth: Professor of Cellular & Molecular Physiology - Graduate School: Yale University
·Philip S. Skell: Emeritus Professor of Chemistry: NAS member
·Frank Tipler: Professor of Mathematical Physics: Tulane University
·Robert Kaita: Plasma Physics Lab: Princeton University
·Michael Behe: Professor of Biological Science: Lehigh University.
·Walter Hearn: Ph.D. Biochemistry - University of Illinois
·Tony Mega: Associate Professor of Chemistry: Whitworth College
·Dean Kenyon: Professor Emeritus of Biology: San Francisco State University
·Marko Horb: Researcher, Deptment of Biology & Biochemistry: University of Bath, UK
·Daniel Kubler: Assistant Professor of Biology: Franciscan University of Steubenville
·David Keller: Associate Professor of Chemistry: University of New Mexico
·James Keesling: Professor of Mathematics: University of Florida
·Roland F. Hirsch: Ph.D. Analytical Chemistry - University of Michigan
·Robert Newman: Ph.D. Astrophysics - Cornell University
·Carl Koval: Professor, Department of Chemistry & Biochemistry: University of Colorado, Boulder
·Tony Jelsma: Professor of Biology: Dordt College
·William A.Dembski: Ph.D. Mathematics - University of Chicago:
·George Lebo: Associate Professor of Astronomy: University of Florida
·Timothy G. Standish: Ph.D. Environmental Biology - George Mason University
·James Keener: Professor of Mathematics & Adjunct of Bioengineering: University of Utah
·Robert J. Marks: Professor of Signal & Image Processing: University of Washington
·Carl Poppe: Senior Fellow: Lawrence Livermore Laboratories
·Siegfried Scherer: Professor of Microbial Ecology: Technische Universität München
·Gregory Shearer: Internal Medicine, Research: University of California, Davis
·Joseph Atkinson: Ph.D. Organic Chemistry – Massachuetts Institute of Technology: American Chemical Society, member
·Lawrence H. Johnston: Emeritus Professor of Physics: University of Idaho
·Scott Minnich: Professor, Department of Microbiology, Molecular Biology & Biochemistry: University of Idaho
·David A. DeWitt: Ph.D. Neuroscience - Case Western University
·Theodor Liss: Ph.D. Chemistry - Massachuetts Institute of Technology
·Braxton Alfred: Emeritus Professor of Anthropology: University of British Columbia
·Walter Bradley: Professor Emeritus of Mechanical Engineering: Texas A & M University
·Paul D. Brown: Assistant Professor of Environmental Studies: Trinity Western University (Canada)
·Marvin Fritzler: Professor of Biochemistry & Molecular Biology: University of Calgary, Medical School
•Theodore Saito: Project Manager: Lawrence Livermore Laboratories
•Muzaffar Iqbal: Ph.D. Chemistry - University of Saskatchewan: Center for Theology the Natural Sciences
•William S. Pelletier: Emeritus Distinguished Professor of Chemistry: University of Georgia, Athens
·Keith Delaplane: Professor of Entomology: University of Georgia
·Ken Smith: Professor of Mathematics: Central Michigan University
·Clarence Fouche: Professor of Biology: Virginia Intermont College
·Thomas Milner: Assistant Professor of Biomedical Engineering: University of Texas, Austin
·Brian J.Miller: Ph.D. Physics - Duke University
·Paul Nesselroade: Associate Professor of Psychology: Simpson College
·Donald F.Calbreath: Professor of Chemistry: Whitworth College
·William P. Purcell: Ph.D. Physical Chemistry - Princeton University
·Wesley Allen: Professor of Computational Quantum Chemistry: University of Georgia
·Jeanne Drisko: Assistant Professor, Kansas Medical Center: University of Kansas, School of Medicine
·Chris Grace: Associate Professor of Psychology: Biola University

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APPENDIX *(continued)*

·Wolfgang Smith: Professor Emeritus - Mathematics: Oregon State University
·Rosalind Picard: Associate Professor of Computer Science: Massachuetts Institute of Technology
·Garrick Little: Senior Scientist, Li-Cor: Li-Cor
·John L. Omdahl: Professor of Biochemistry & Molecular Biology: University of New Mexico
·Martin Poenie: Associate Professor of Molecular Cell & Developmental Biology: University of Texas, Austin
·Russell W.Carlson: Professor of Biochemistry & Molecular Biology: University of Georgia
·Hugh Nutley: Professor Emeritus of Physics & Engineering: Seattle Pacific University
·David Berlinski: Ph.D. Philosophy - Princeton: Mathematician, Author
·Neil Broom: Associate Professor, Chemical & Materials Engineeering: University of Auckland
·John Bloom: Associate Professor of Physics: Biola University
·James Graham: Professional Geologist, Sr. Program Manager: National Environmental Consulting Firm
·John Baumgardner: Technical Staff, Theoretical Division: Los Alamos National Laboratory
·Fred Skiff: Professor of Physics: University of Iowa
·Paul Kuld: Associate Professor, Biological Science: Biola University
·Yongsoon Park: Senior Research Scientist: St. Luke's Hospital, Kansas City
·Moorad Alexanian: Professor of Physics: University of North Carolina, Wilmington
·Donald Ewert: Director of Research Administration: Wistar Institute
·Joseph W. Francis: Associate Professor of Biology: Cedarville University.
·Thomas Saleska: Professor of Biology: Concordia University
·Ralph W. Seelke: Professor & Chair of Department of Biology & Earth Sciences: University of Wisconsin, Superior
·James G. Harman: Associate Chair, Department of Chemistry & Biochemistry: Texas Tech University
·Lennart Moller: Professor of Environmental Medicine, Karolinska Institute: University of Stockholm
·Raymond G. Bohlin: Ph.D. Molecular & Cell Biology - University of Texas
·Fazale R. Rana: Ph.D. Chemistry - Ohio University
·Michael Atchison: Professor of Biochemistry: University of Pennsylvania, Vetinary School
·William S. Harris: Professor of Basic Medical Sciences: University of Missouri, Kansas City
·Rebecca W. Keller: Research Professor, Department of Chemistry: University of New Mexico
·Terry Morrison: Ph.D. Chemistry - Syracuse University
·Robert F. DeHaan: Ph.D. Human Development - University of Chicago
·Matti Lesola: Professor, Laboratory of Bioprocess Engineering: Helsinki University of Technology
·Bruce Evans: Associate Professor of Biology: Huntington College
·Jim Gibson: Ph.D. Biology - Loma Linda University
·David Ness: Ph.D. Anthropology - Temple University
·Bijan Nemati: Senior Engineer: Jet Propulsion Lab (NASA)
·Edward T. Peltzer: Senior Research Specialist: Monterey Bay Research Institute
·Stan E. Lennard: Clinical Associate Professor of Surgery: University of Washington
·Rafe Payne: Professor & Chair, Department of Biological Sciences: Biola University
·Phillip Savage: Professor of Chemical Engineering: University of Michigan
·Pattle Pun: Professor of Biology: Wheaton College
·Jed Macosko: Postdoctoral Researcher - Molecular Biology: University of California, Berkeley
·Daniel Dix: Associate Professor of Mathematics: University of South Carolina
·Ed Karlow: Chair, Department of Physics: LaSierra University
·James Harbrecht: Clinical Associate Professor: University of Kansas Medical Center
·Robert W. Smith: Professor of Chemistry: University of Nebraska, Omaha
•Robert DiSilvestro: Ph.D. Biochemistry - Texas A&M University
•David Prentice: Professor, Department of Life Sciences: Indiana State University
•Walt Stangl: Associate Professor of Mathematics: Biola University
•Jonathan Wells: Ph.D. Molecular & Cell Biology - University of California, Berkeley
•James Tour: Chao Professor of Chemistry: Rice University.
•Todd Watson: Assistant Professor of Urban & Community Forestry: Texas A&M University
•Robert Waltzer: Associate Professor of Biology: Belhaven College
•Vincente Villa: Professor of Biology: Southwestern University
•Richard Sternberg: Postdoctoral Fellow, Invertebrate Biology: Smithsonian Institute
·James Tumlin: Associate Professor of Medicine: Emory University
·Charles Thaxton: Ph.D. Physical Chemistry - Iowa State University