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INTELLIGENT DESIGN PSYCHOLOGY AND EVOLUTIONARY PSYCHOLOGY: A COMPARISON OF RIVAL PARADIGMS

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The purpose of this article is to flesh out some details of the ideas at the core of the Intelligent Design movement as they apply to the field of psychology and to compare intelligent design psychology (IDP), specifically, a Christian version of IDP (IDP_C), with its chief rival, evolutionary psychology (EP), specifically, a naturalistic version of EP (EP_N). After providing some preliminary remarks about scientific research programs and scientific theory assessment, I shall sketch out some of the details of IDP_C and contrast it with EP_N. Along the way, I will draw out various explanatory or predictive issues relevant to comparing the two, and provide an occasional critique of EP_N.

William Dembski has reminded us that the Intelligent Design movement has a four-pronged approach for defeating naturalism: (1) A scientific/philosophical critique of naturalism; (2) A positive scientific research program (i.e., intelligent design) for investigating the effects of intelligent causes; (3) rethinking every field of inquiry infected by naturalism and reconceptualizing it in terms of design; (4) development of a theology of nature by relating the intelligence inferred by intelligent design to the God of Scripture. (Dembski, 1998, pp. 28-29). The purpose of this article is to flesh out some details of the approach as it applies to the field of psychology and to compare intelligent design psychology (IDP), specifically, a Christian version of IDP (IDP_C), with its chief rival, evolution-

ary psychology (EP), specifically, a naturalistic version of EP (EP_N). After providing some preliminary remarks about scientific research programs and scientific theory assessment, I will sketch out some of the details of IDP_C and contrast it with EP_N. Along the way, I will draw out various explanatory or predictive issues relevant to comparing the two, and provide an occasional critique of EP_N.

PRELIMINARY REMARKS ABOUT SCIENTIFIC RESEARCH PROGRAMS AND THEORY ASSESSMENT

Generally speaking, a scientific research program is a family of scientific theories existing through time that in one way or another are united in such ways that include: sharing a common domain of phenomena to be explained, a common metaphysical picture of what causes empirical phenomena, or a common form of scientific explanation deemed to be acceptable (Moreland, 1989, chapter 6; Laudan, 1977, chapter 3). For example, a commitment to atomism as opposed to field theory may be taken to illustrate a research program.

So understood, two important things follow. First, a research program should be specified by a particular incarnation to be descriptively accurate, empirically testable and explanatorily powerful. For example, atomism has been specified by various models throughout its history (e.g., inert Newtonian corpuscularianism, dynamic corpuscularianism, the Thomson atom, the Bohr atom). Second, research programs are generally harder to falsify than a particular theory that specifies it because if the specific theory is falsified, it does not follow that the research program is thereby falsified. It may well be that an alternative specification should be formulated.

By way of application, ID is properly understood as a research program with various ways of specifying

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ing it. In this article, I will provide a characterization of one version of a Christian specification of ID. Applied to psychology, I will call this theory IDP_C . While I think that IDP_C is actually true, the reader should keep in mind that there are alternative formulations of IDP besides IDP_C . Similarly, I will compare IDP_C with a naturalistic version of EP, viz., EP_N . It is beyond the scope of my purpose to address attempts to develop complementary, theistic evolutionary approaches to psychology, though I have raised certain difficulties for this project elsewhere (Moreland & Rae, 2000).

The role of prediction in scientific theory formation and assessment is widely misunderstood (Moreland, 1989, chapter 2). Assuming a realist philosophy of science, two features of a scientific theory that are of greater importance than prediction are descriptive accuracy and explanatory power. It is critical that a theory accurately comport with the phenomena within its range of description. Descriptive accuracy is of fundamental importance to a theory, even if that theory provides no explanations of or predictions about phenomena. Though I am not an evolutionist, it is clear that for decades, evolutionists have claimed support for their theory because it allegedly comported well with what was observed; they made this claim even in the face of great debate, doubt about the explanatory mechanisms of evolution, and even – as is often true in the historical sciences – a shortage of predictions.

All things being equal, one should accept a theory with greater explanatory power, even if the theory's explanations do not generate predictions. For example, different explanations about the death of the dinosaurs may be judged on their ability to handle the historical data even if none generates any predictions. So, while predictive success is indeed an epistemic value to be applied to weighing a theory, it is generally not as important as descriptive accuracy and explanatory power.

Finally, an important aspect of the predictive aspects of a theory are proscriptive generalizations, implications of what will not be the case if the theory is true. Proscriptive generalizations usually provide more straightforward falsification conditions for a theory than do positive predictions of a theory because failure in this latter case can be handled, within limits, in ways that avoid accepting the falsification of the theory; however, falsification is harder to avoid when proscriptive generalizations turn out to be false.

An important factor in scientific theory acceptance is whether or not a specific paradigm has a rival. If not, then certain epistemic activities (e.g., labeling some phenomenon as basic for which only a description and not an explanation is needed) may be quite adequate not to impede the theory in question. But the adequacy of those same activities can change dramatically if a sufficient rival position is present. There are two issues involved in adjudicating between rival scientific theories relevant to the comparison of IDP_C and EP_N . The first is whether to take some phenomenon as basic or as something to be explained in terms of more basic phenomena. For example, attempts to explain uniform inertial motion are disallowed in Newtonian mechanics because such motion is basic on this view; but, an Aristotelian had to explain how or why a particular body exhibited uniform inertial motion. Thus, what may be basic to one theory is derived in another.

The second issue is the naturalness of a postulated entity in light of the overall theory of which it is a part. A postulated entity should be at home with other entities in the theory. Some entity (e.g., a particular thing, process, property, or relation) is natural for theory T just in case it bears a relevant similarity to other entities; this particularly applies to core, central entities that populate T. An entity should fit in with and resemble naturally the other entities depicted as real by a theory.

Moreover, given rivals R and S, the postulation of e in R is ad hoc and question-begging against advocates of S if e bears a relevant similarity to the appropriate entities in S – e in this sense is “at home” in S – but fails to bear this relevant similarity to the appropriate entities in R. For example, suppose theory S explains phenomena in terms of discrete corpuscles and action by contact, while R uses continuous waves to explain phenomena. If some phenomenon x was best explained in corpuscularian categories, it would be ad hoc and question-begging for advocates of R simply to adjust their entities to take on particle properties in the case of x . Such properties would not bear a relevant similarity to other entities in R and would be more natural and at home in S.

To illustrate, at the end of the nineteenth century when J. J. Thomson discovered the electron, there was a debate between German and British scientists over the nature of electricity, the former favoring an aether wave theory and the latter a particle view. Now, a certain phenomenon discovered by Michael Faraday was easy to explain on a particulate view but

not on a wave theory. He discovered that in electrolysis experiments, the amount of product liberated was proportional to the amount of electricity introduced into solution, and the same amount of electricity liberates masses of product proportional to discrete chemically equivalent weights. It would have been ad hoc and question-begging in light of what was known at the time for German theorists simply to announce that for this particular phenomenon, waves suddenly exhibit particle phenomena.

Naturalness is relevant to assessing rivals by providing a criterion for identifying question-begging arguments or ad hoc adjustments by advocates of a rival theory. Naturalness can also be related to basicity by providing a means of deciding the relative merits of accepting theory R that depicts phenomenon *e* as basic, versus embracing S, which takes *e* to be explainable in more basic terms. If *e* is natural in S but not in R, it will be difficult for advocates of R to justify the bald assertion that *e* is basic in R and that all proponents of R need to do is describe *e* and correlate it with other phenomena in R as opposed to explaining *e*. Such a claim by advocates of R will be even more problematic if S provides an explanation for *e*.

For example, suppose that R is Neo-Darwinism and S is a version of punctuated equilibrium theory. Simply for the sake of illustration, suppose further that R depicts evolutionary transitions from one species to another to involve running through a series of incrementally different transitional forms except for some specific transition *e*, which is taken as a basic phenomenon (e.g., the discrete jump from amphibians to reptiles). S pictures evolutionary transitions in general, including *e*, as evolutionary jumps to be explained in certain ways that constitute S. In this case, given the presence of S, it would be hard for advocates of R to claim that their treatment of *e* is adequate against S. Phenomenon *e* clearly counts in favor of S over against R.

These insights about basicity and naturalness may be used to enrich our understanding of recalcitrant facts and periods of paradigm crisis. Some purported fact is a recalcitrant one for a theory T if that fact resists being adequately described, explained, or predicted by the ontological and epistemological resources central to T. In this sense, a recalcitrant fact is an anomaly for a theory. Two signs that a theory is facing a set of recalcitrant facts are (a) the theory deals with those facts by taking them as basic sui generis facts not at home with the central aspects of

the theory, and (b) advocates of the theory engage in a growing number of ad hoc, question-begging theory adjustments to save it from falsification by those recalcitrant facts.

When a theory faces a growing set of recalcitrant facts, it may be said to have entered a period of crisis. Typically, such a period is characterized by a multiplication of rival theories none of which adequately deals with the recalcitrant facts. If these rival theories are all specifications of the same research program, then it is usually safe to say that the research program is a degenerative one and it may well be time to consider an alternative research program. As I hope to show below, a number of apparent facts about the nature of human persons are recalcitrant facts for naturalistic versions of evolutionary psychology. Thus, it is time to consider an alternative research program; IDP, especially IDP_C, is the most reasonable candidate for that alternative.

THE CENTRAL FEATURES OF IDP_C

In characterizing a research program or a theory that specifies it, one must lay out the core ontological and epistemological/methodological commitments of that program or theory. Space considerations do not permit a defense of the truth or rationality of these commitments, or a defense as to why they are included. Fortunately, such a defense has been given elsewhere (see references to follow) and, in any case, it is not required when one is simply laying out one's model. The following is a list of some of those commitments that characterize IDP_C:

IDP_C Ontological Commitments

1. God exists and is the creator/intelligent designer of the cosmos. (Moreland, 1994; Craig, 1994). God is the fundamental being in reality in the sense that He could exist without the cosmos existing and the cosmos owes its coming-to-be and continued existence to God. God's creative activity includes a combination of direct primary causal miracles and indirect secondary causality in which natural entities, such as processes or laws, are employed to accomplish a Divine purpose. Among other things, God's creative activity is an expression of creative playfulness.

2. God is a personal spirit and, as such, he is an immaterial, spiritual substance who 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 conscious, an I, and He knows things from His own irreducible first person point of view. Among other things, from points 1 and 2 it follows that mental entities are more fundamental in reality than are physical entities. It also follows that spirit (for current purposes, mind or soul)/matter causal interaction is a basic, *sui generis* fact.

3. God's free actions are to be characterized by agent causal versions of libertarian freedom. According to this account of divine or human free will, a person exercises free will when he or she has the power to act freely (e.g., to raise one's hand), exercises that power while retaining the ability to refrain from doing so, and is the ultimate cause and absolute originator of the act. Motives and other factors may influence a libertarian free act, but nothing can cause it to happen besides the agent's own exercise of freedom. A free act that is caused by something besides the agent himself is a contradiction in terms.

This informal characterization of agent causal versions of libertarian freedom may be stated more precisely and formally. In general, person P exercises libertarian agent causation, and freely and intentionally brings about some event *e* just in case (a) P is a substance that has the active power to bring about *e*; (b) P exerted his power as a first mover/first cause (i.e., an "originator" of change) to bring about *e*; (c) P had the categorical ability to refrain from exerting his power to bring about *e*; (d) P acted for the sake of a reason which served as the final cause or teleological goal for which P acted. Taken alone, 1-3 state necessary and sufficient conditions for a pure voluntary act. Propositions 1-4 state necessary and sufficient conditions for an intentional act. In this sense, teleology is a fundamental form of (final) causality and it cannot be reduced to or replaced by efficient causality. A final cause is a teleological end, purpose, or goal for the sake of which something happens. An efficient cause is that by the means of which something happens (Moreland, 1997).

4. God exemplifies various intrinsically valuable properties (e.g., various rational properties such as wisdom, truthfulness, cognitive excellence), moral properties (e.g., fidelity, kindness, holiness), and aesthetic properties (e.g., complexity and simplicity, integration of personality, artistic creativity). Among other things, from points 1 and 2 it follows that

value properties are more fundamental in reality than are physical properties.

5. Animals and humans have souls, but the human soul is unique in being created in the image and likeness of God (Moreland & Rae, 2000; Hasker, 1999; Swinburne, 1997). Thus, humans bear a relevant similarity to God in so far as both are kinds of persons. Humans are, therefore, spiritual substances with bodies; they are unified, enduring I's; they possess libertarian freedom and exhibit teleological behavior; and they have an essential nature—human personhood—which grounds membership in the natural kind "humankind." Various human conscious states—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.

6. Information is a fundamental and irreducible feature of the world and it comes in at least two forms, mental and non-mental. Mental information, such as the contents of thoughts, beliefs, theories, and so forth is identical to propositions (a single thought) or various combinations of propositions (e.g., one's view of the Reformation) (Willard, 1984, pp. 166-186). In the basic sense, a proposition is the content of sentences/statements and thoughts/beliefs that is true or false. So understood, a proposition is not a physical entity nor is it to be identified with a sentence or statement used to express it (Swinburne, 1997).

Non-mental information is the irreducible or specified complexity exhibited by some whole in the internal relations among the parts, properties or processes of that whole (Dembski, 1999; Behe, 1996). Roughly, irreducible complexity is a characteristic of some whole, such as an animal, that obtains just in case the parts, properties, or processes of that whole (a) gain their identity in that whole by the relations, especially functional relations, they stand in to the other parts of the whole or to the whole itself; and (b) cannot function without the others parts, properties, or processes of that whole. On an IDP_C model, information can neither be reduced to a combination of simple order and randomness nor generated by such a combination. As William Dembski says, "... all reductionistic attempts to explain information in terms of something other than information will have to go by the boards. Information is *sui generis*. Only information begets information." (Dembski, 1999, p. 183).

On an IDP_C model, because God exists ontologically prior to the cosmos, mental information existed ontologically prior to non-mental information in the cosmos. More importantly, the structure of mental information in God's mind, and in human minds when they think God's thoughts after Him, is isomorphic with the non-mental information that constitutes various wholes (e.g., human beings) in the cosmos. The intuitive notion of isomorphism is that two structures are isomorphic just in case their various aspects mirror or in some other way correspond to each other. For example, consider speaking into a tape recorder. For each distinguishable unit of sound, there is a distinct configuration of magnetized tape. Strictly speaking, the sounds are not literally in the tape, but there is a structure in the tape that is isomorphic to the structure of the sounds spoken into the tape recorder.

More formally, two structures, S_1 and S_2 are isomorphic just in case:

- i. For every non-relational part of S_1 , there is precisely one non-relational part of S_2 , and conversely;
- ii. For every relation of S_1 there is precisely one relation of S_2 , and conversely;
- iii. The parts of S_1 which correspond to S_2 stand in the relations of S_1 to each other which correspond to the relations of S_2 , and conversely. (Grossmann, 1992, pp. 48-51)

Applied to information, IDP_C entails that there should be an isomorphism between divine and human theories, beliefs, and thoughts and the intentional objects and states of affairs in the world to which those theories and so forth refer. The correspondence theory of truth is one aspect of this isomorphism and it finds a natural place in the ontology of IDP_C, as does the notion that human mental activity should be able to uncover the mind independent, deep informational structures in the world.

7. Given the characterizations above of divine/human libertarian freedom, a certain analysis of action, including moral action is most at home in IDP_C. To clarify this analysis in the case of moral action, consider two people, Jack and Jill, who spend an afternoon with their grandmother. Jack, motivated by love for his grandmother, intends to show kindness to her by spending the afternoon visiting with her. As a result, Jack's grandmother is cheered by the company. Jill, motivated by greed, intends to secure a place in her grandmother's will by spending an afternoon visiting with her, and Jill is

successful in hiding her intention from her grandmother. As a result, Jill's grandmother is cheered by the company.

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. Jack's motive was a feeling of love, Jill's was greed. An intent is the act that one actually performs. The intent answers the question: What sort of act was it? Jack's intent was to show kindness towards his grandmother and he performed an act of kindness. Jill's intent was to secure a place in the will and her act was one of attempting to secure that place. The means is the way an agent purposely carries out his or her intention. Jack and Jill each perform the same means, namely, each spends the afternoon visiting with the grandmother. Finally, the consequences are the states of affairs produced by the act. In each case, the grandmother was cheered up.

On an IDP_C model, the end does not justify the means and it is appropriate to assess the intrinsic moral worth of means as well as ends. The same thing may be said for motives and intentions, but according to IDP_C, the latter are more important than the former. Why? An intention is the key factor in deciding what sort of act a particular action is and, thus, the intention is what places the act in the relevant class of acts that is defined by a certain act type. Motives are also important, but they are more relevant to the assessment of the character of the moral actor than of the moral nature of the act itself.

Finally, while an IDP_C advocate may see consequences as part of the relevant factors for assessing an action, they 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 they obtain as a consequence of their moral actions.

8. The world is not the way it was originally designed to be. Thus, there is evil, disteleology, dysfunction in the world and not everything is a reflection of the way things were designed to be.

IDP_C Epistemological/Methodological Commitments

9. The first person point of view, including information gained about one's own conscious states and one's own ego from first person introspection, is a generally reliable source of knowledge and justified beliefs. Moreover, there is no intellectual pressure to reduce or eliminate the first person point of view in favor of the third person perspective. Indeed, the first person perspective is primitive relative to the third person perspective. In general, though not always infallible, human persons have direct, private access to their own mental states and mental selves. Strictly material objects may be exhaustively described and known from a third person perspective, but not human persons. On the assumption that among the things psychology studies are the nature of mental states and the self, psychology will never be able to get away from relying on the first person introspective reports of human persons. Knowledge gained by studying the brain and body movements of human persons will never exhaust what can be known about them and, methodologically, the information gained from such third person approaches will be subject to first person reports for their validation and interpretation. This is applicable even if those reports derive not from the subjects of a study, but from the first person knowledge of the researcher (Madell, 1981).

10. There is no pride of place given to a bottom/up approach to scientific research according to which (a) macro-properties/behaviors of macro-wholes supervene on, emerge from and are dependent upon the physical-chemical parts, properties and structures at the micro-level; and (b) mechanistic explanations of macro-properties/behaviors are formulated in terms of factors at the micro-level. According to IDP_C, living organisms, including human persons, are substances and, as such, are primitive wholes and not mereological aggregates.

More generally, advocates of IDP_C will prefer the Great Chain of Being model of reality according to which the world consists in a descending order of substances (God, angels, human persons, various animals, plants, chemical elements, subatomic enti-

ties, and so forth). At each level, especially at and above the level of animals, entities at that level are irreducible wholes constituted by their own essences (e.g., being human) with their own laws of development and functioning. By contrast advocates of EP_N will embrace the standard complementarity model according to which reality consists in an ascending order of wholes from subatomic entities to human persons, with all wholes above the level of physics amounting to aggregates composed of parts at lower levels and with higher level wholes depending on what happens at the level of physics for their existence, nature and behavior. Thus, according to IDP_C, while bottom/up explanations may be appropriate on a case-by-case basis, holistic top/down causal explanations will also be fruitful, especially at the level of psychology.

11. Advocates of IDP_C will embrace both event causal/covering law explanations for phenomena as well as irreducible personal explanations for phenomena (Moreland, 1998a; Swinburne, 1997, chapter ten). Event causation is a model of efficient causality widely employed in science. Suppose a brick breaks a glass. In general, event causation can be defined in this way: an event of kind K (the moving of the brick) in circumstances of kind C (the glass being in a solid and not liquid state) occurring to an entity of kind E (the glass object itself) causes an event of kind Q (the breaking of the glass) to occur. Here, all causes and effects are events that constitute causal chains construed either deterministically (i.e., causal conditions are sufficient for an effect to obtain) or probabilistically (i.e., causal conditions are sufficient to fix the chances for an effect to obtain).

Associated with event causation is a covering law model of explanation according to which some event (the explanandum) is explained by giving a correct deductive or inductive argument for that event. Such an argument contains two features in its explanans: a law (universal or statistical) of nature and initial causal conditions.

Because IDP_C employs divine and human libertarian agent causation, it is open to them to employ a form of personal explanation that stands in contrast to a covering law model. To understand this form of explanation, we need to look first at a distinction that is part of action theory: the difference between a basic and non-basic action. To grasp the difference between a basic and non-basic action, note first, that often more than one thing is accomplished in a sin-

gle exercise of agency. Some actions are done by doing others (e.g., I perform the act of going to the store to get bread by getting into my car and by driving to the store).

Basic actions are fundamental to the performance of all others but are not done by doing something else. In general, S's Φ -ing is basic if and only if there is no other non-equivalent action description 'S's Ψ -ing' such that it is true that S Φ -ed by Ψ -ing. My endeavoring to move my arm to get my keys is a basic action. A non-basic action contains basic actions that are parts of and means to the ultimate intention for the sake of which the non-basic action was done. To fulfill a non-basic intention, I must form an action plan: a certain ordered set of basic actions that I take to be an effective means of accomplishing my non-basic intention. The action plan that constitutes going to the store to get bread includes the acts of getting my keys and walking to my car.

In my view, an action is something contained wholly within the boundaries of the agent. Thus, strictly speaking, the results of an action are not proper parts of that action. A basic result of an action is an intended effect brought about immediately by the action. If I successfully endeavor to move my finger, the basic result is the moving of the finger. Non-basic results are more remote intended effects caused by basic results or chains of basic results plus more remote intended effects. The firing of the gun or the killing of Lincoln are respective illustrations of these types of non-basic results.

With this in mind, a personal explanation (divine or otherwise) of some basic result (e.g., someone's finger pointing to an object) brought about intentionally by a person will cite the intention for the sake of which the person acted (e.g., to locate a missing purse), the basic power the person exercised (e.g., the power to move one's index finger) and the reason why the person so acted (e.g., to help a friend locate her missing purse).

Again, suppose we are trying to explain why Wesson simply moved his finger (R). We could explain this by saying that Wesson (P) performed an act of endeavoring to move his finger (A) in that he exercised his ability to move (or will to move) his finger (B) intending to move the finger (I). If Wesson's moving his finger was an expression of an intent to move a finger to fire a gun to kill Smith, then we can explain the non-basic results (the firing of the gun and the killing of Smith) by saying that Wesson (P) performed an act of killing Smith (I³) by endeavor-

ing to move his finger (A) intentionally (I¹) by exercising his power to do so (B), intending thereby to fire the gun (I²) in order to kill Smith. An explanation of the results of a non-basic action (like going to the store to get bread) will include a description of the action plan.

Because (but not only because) advocates of IDP_C are free to employ both event causal/covering law and personal explanations, they will eschew methodological naturalism as a requirement for scientific explanation (Moreland, 1994, chapter one).

12. Advocates of IDP_C are free to employ irreducible teleological explanations and are under no pressure to provide etiological or other reductive accounts of functional explanations (see below). Among other things, providing a reason explanation will be taken to cite, not an efficient cause of action, but the end or goal for the sake of which the action was performed. This, in citing a reason to explain why someone performs some behavior, one is not citing the cause of the behavior—the agent himself is the cause—rather, one is citing the goal or teleological end for the sake of which the behavior was performed. In general, the “because of” locution in cases of the form “Person P did x because of y” will be taken in teleological, not efficient causal ways such that y is an end not an efficient cause.

Advocates of IDP_C will also explore the world in light of their commitment to the existence of proper function understood in an irreducibly normative way. In general, to say that x properly functions to do y (the heart properly functions to pump blood, conscience properly functions to alert one to transgression of objective morality), is to say that x functions the way it ought to function. This, in turn, is to say that x functions the way it was intentionally, purposively designed to function by God. Moreover, to say that x is dysfunctional, is to say either that x functions the way it ought not function and, in turn, the way it was not designed to function or that x fails to function the way it ought to function and, in turn, fails to function the way it was designed to function. In the explication of EP_N below, it will become apparent that this notion of proper function is not available to advocates of EP_N.

13. For advocates of IDP_C, there is no need to seek current or ancestral adaptive functions in light of the demands for differential reproductive advantage, for various psychological properties, processes, and so forth. According to IDP_C, there is now and has been since the fall a struggle for survival, so

there may well be a reproductive advantage to be found for some psychological properties or processes. But these will be the exception rather than the rule. In general, IDP_C advocates will describe and analyze various aspects of human psychology in terms of the spiritual, moral, and familial purpose for the sake of which they were designed to function and in terms of the fall, and the sinful disruption it has brought. According to IDP_C, the need to transcend, express creativity, and exert will are among a small set of factors at the heart of human behavior and functioning, and pride and a desire to control/dominate others and God are near the very heart of human dysfunction. Thus, IDP_C predicts that factors at the heart of religious and moral issues, especially those revolving around creativity and will, will be keys to human flourishing and dysfunction. According to IDP_C, it will be features that constitute the nature of divine and human persons, (e.g., thoughts, beliefs, sensations, desires and volitions, especially as they figure into religious and moral aspects of life) which are the main driving force behind individual psychology and social, cultural development.

14. Because the fundamental being (God) is a spiritual substance with conscious mental states, and human persons are created in His image, the fundamental categories of psychology—thought, belief, sensation, emotion, desire, purpose, volition—and various combinations thereof are taken to carve the world up at the joints (i.e., to pick out really existing kinds of things in the world, just as being hydrogen or being oxygen do). These categories amount to genuinely existing, intrinsically describable natural kinds of properties that constitute the theory independent world.

In this sense, IDP_C implies that psychology should be defined not primarily as a study of behavior, and certainly not primarily as a study of the brain and its mechanisms related to behavior, but as a study of the soul/self and the different aspects of consciousness intrinsic to it. The study of the brain and of behavior are relevant in the derivative sense that information derived from such study is an aid to the understanding of the self and its various conscious states. Thus, IDP_C implies a resistance to attempts to reduce or replace intrinsic descriptions of the self and its conscious states, for functional, operational descriptions of the self and conscious states, though the latter may be helpful as tools for understanding the former.

In general, on an IDP_C approach, psychology is not reducible to nor replaceable by neuroscience and, indeed, the traditional, fundamental categories of psychology provide greater insights into the nature of human persons than do the physical categories of chemistry, physics, biology, and neuroscience. These physical categories are most helpful in providing information about causal relations between the self and consciousness and the brain and body. As we will see shortly, while there is great confusion among scientists about the precise nature of reductionism, EP most naturally implies either a reduction of psychology to neuroscience or a replacement of the former by the latter. Further, IDP_C implies that issues surrounding the unity and agency of the self will be prominent as keys for understanding human functioning and dysfunctioning (Duvall, 1998; Meisner, 1986, 1993; Moreland, 1998b).

THE CENTRAL FEATURES OF EP_N

In this section, I will provide a sketch of some central features of EP_N as an expression of philosophical and methodological naturalism taken as a worldview (See Craig & Moreland, 2000). So understood, EP_N combines a naturalist worldview and evolutionary theory with current formulations of psychology. EP_N is an entire approach to psychology, a way of thinking about the discipline such that principles and commitments derived from naturalism and evolutionary biology are put to use in doing psychological research. According to Buss (2000, pp. 277-278), four premises form the basis of EP_N:

1. Manifest behavior depends on underlying psychological mechanisms, defined as information-processing devices instantiated in brain wet-ware.
2. Evolution by selection is the only known causal process 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. Human psychology consists of a large number of these functionally specialized and integrated evolved mechanisms, each sensitive to particular forms of contextual input.

These four premises were not formulated in a vacuum and, indeed, they may be properly understood only against the backdrop of the ontological

and epistemological/methodological commitments of EP_N and its main rival, IDP_C . Since the main contours of IDP_C have already been presented, the broader EP_N backdrop remains to be characterized.

EP_N Ontological Commitments

1. The naturalist ontology must be consistent and at home with the naturalist story of how all things came to be. As naturalist Frank Jackson points out, the naturalist has a fairly standard story, told in the language of chemistry and physics, of how all things have come to be and the naturalist must find a way of making a place for all entities he/she takes to be real by relating them to that story and showing how they are at home in it (Jackson, 1998). Call this story the Grand Story. The details of the Grand Story are not of importance here. Suffice it to say that, beginning with some Big Bang scenario and a contingent set of laws of chemistry and physics, the rest of the story will be related to these starting points.

Three features of the Grand Story 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, not in the sense that they only involve action by contact and not forces, such as attraction and repulsion, but in the sense that they are non-teleological, efficient causal transactions. 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. As naturalist David Papineau (1993) correctly observes, PCC captures the naturalist commitment to the completeness of physics:

I take it that physics, unlike the other special sciences (e.g., psychology), is complete, in the sense that all physical events are determined, or have their chances determined, by prior physical events according to physical laws. In other words, we never need to look beyond the realm of the physical in order to identify a set of antecedents which fixes the chances of subsequent physical occurrence. A purely physical specification, plus physical laws, will always suffice to tell us what is physically going to happen, insofar as that can be foretold at all.

Second, the Grand Story must be understood as an expression of physicalism. While there are differ-

ent versions of physicalism, naturalist Jaegwon Kim (1996) has stated three propositions that define minimal physicalism, the minimum ontological commitment to which all physicalists should subscribe:

1. The Supervenience thesis: 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.
2. The anti-Cartesian principle: There can be no purely mental beings (e.g., substantial souls, God) because nothing can have a mental property without having a physical property as well.
3. Mind-body dependence: What mental properties an entity has depend on and are determined by its physical properties.

For our purposes, we may collapse point 3 into point 1. So understood, the supervenience thesis implies that the psychological properties that obtain 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.

Finally, the Grand Story is most naturally taken to imply that all wholes, from planets and galaxies to frogs and humans, are physical systems of separable parts standing in various relations to one another and which exhibit varying degrees of structural complexity.

2. 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 bottom level of the hierarchy. EP_N must analyze human persons in a way that is at home in the Grand Story and that is not ad hoc and does not beg the question relative to IDP_C . Six features of the ontology of human persons relevant to our topic most naturally follow from these considerations; these features have been embraced by the vast majority of naturalists.

First, human persons are not unified I's at a point in time or enduring I's through time. As naturalist critic Geoffrey Madell notes, "a conception of reality as comprising nothing but assemblies of physical elements must confront the materialist with the obligation to explain what it could be for some arbitrary element of that reality to be me..." (Madell, 1988, p. 7). This is one reason why notions such as

the self or ego, especially when taken to express the unity and endurance of the person, tend to drop from sight in an EP_N view. Thus, Cosmides and Tooby speak for most advocates of EP_N when they claim that in keeping with a physicalist depiction of humans, psychology studies the brain and its relationship to behavior, and the human brain is a “collection of reasoning and regulatory circuits that are functionally specialized ...” (Cosmides, Tooby, 1998, p. 3).

Second, human action will be understood in compatibilist and not libertarian agent causal terms. Regarding the rejection of libertarian agent causation, naturalist John Bishop frankly admits that “the idea of a responsible agent, with the ‘originative’ ability to initiate events in the natural world, does not sit easily with the idea of [an agent as] a natural organism ... Our scientific understanding of human behavior seems to be in tension with a presupposition of the ethical stance we adopt toward it” (Bishop, 1989, p. 1).

Below we will look at some of the epistemological/methodological commitments of EP_N. But an important point about those commitments should be mentioned here. Naturalist Thomas Nagel correctly observes that the naturalist rejection of libertarian agent causation derives not only from physicalism, but also from a naturalist commitment to the third person point of view as the proper approach for gaining knowledge of reality:

Something peculiar happens when we view action from an objective or external standpoint. Some of its most important features seem to vanish under the objective gaze. Actions seem no longer assignable to individual agents as sources, but become instead components of the flux of events in the world of which the agent is a part...The essential source of the problem is a view of persons and their actions as part of the order of nature. (Nagel, 1986, p. 110)

According to compatibilism, human actions are happenings, parts of causal chains that lead up to them. While there are different versions of compatibilism, it is fair to say that, on an EP_N model, a free action is one that is governed by natural law and, in general, to say that some person performed an act freely is to say that the act (e.g., raising one’s hand to vote) was caused in the right way by of a chain of events leading up to it from the person’s own relevant mental (i.e., brain) state (e.g., the desire to vote and a belief that raising one’s hand is a means of satisfying that desire) which was, in turn, caused by factors (i.e., environment, but especially, brain mecha-

nisms selected for in the struggle for reproductive advantage) out of the person’s own control.

Third, in the literal sense, human action is not teleological. Rather, human action turns out to be body movements that are the end products of non-teleological, efficient causal chains of events that begin in the human organism’s environment, run through the physical structures inside the organism, and on to a bodily output.

It is sometimes thought that a teleological and efficient causal description of a sequence of events express complementary perspectives from different levels of description. But as naturalist critic William Hasker and naturalist John Bishop have shown, this is true in a fairly innocuous sense but false in an important sense (Hasker, 1999, chapter three; Bishop, 1989, pp. 32-38). Granting what an advocate of EP_N cannot deny, namely, that any particular bit of human emotion, thought, or behavior can be given an entirely mechanistic explanation in terms of sequences of physical, event causes, one can always adopt an “intentional stance” and describe that sequence “as if” it exhibited teleology.

But strictly speaking, such an intentional stance is false, especially when offered as a causal explanation of human action. For one thing, no event can be given more than one complete and independent causal explanation. If this were possible, then causal overdetermination would be required. In causal overdetermination, two causes are each completely adequate to produce an effect such that if one cause were absent, no difference would be made. Most scholars have taken causal overdetermination to be false and, indeed, unintelligible.

Second, given the EP_N principles of the causal closure of the physical and the supervenience of the mental on the physical, there is simply no work for a mental cause or a teleological cause. Since a human action is, in principle, capable of a complete causal explanation in mechanistic terms, the presence or absence of a complementary teleological explanation will make no difference at all to the causal history of the universe. The only way psychology can retain irreducible teleological explanations is to understand them in some sort of anti-realist, non-causal way.

Fourth, advocates of EP_N will reject both irreducibly teleological and normative understandings of human functioning because they do not harmonize with evolutionary naturalism. For example, nat-

uralists Joshua Hoffman and Gary Rosenkrantz claim:

... Aristotle's account [of natural function and teleology] does not provide a naturalistic reduction of natural function in terms of efficient causation. Nor do characterizations of natural function in terms of an irreducibly emergent purposive principle, or an unanalyzable emergent property associated with the biological phenomenon of life, provide such a reduction. Theistic and vitalistic approaches that try to explicate natural function in terms of the intentions of an intelligent purposive agent or principle are also nonnaturalistic. Another form of nonnaturalism attempts to explicate natural function in terms of nonnatural evaluative attributes such as intrinsic goodness.... We do not accept the anti-reductionist and anti-naturalistic theories about natural function listed above. Without entering into a detailed critique of these ideas, one can see that they either posit immaterial entities whose existence is in doubt, or make it utterly mysterious how it can be true that a part of an organic living thing manifests a natural function.... [T]he theoretical unity of biology would be better served if the natural functions of the parts of organic life-forms could be given a reductive account completely in terms of nonpurposive or nonfunctional naturalistic processes or conditions. (Hoffman, Rosenkrantz, 1997, pp. 98-99)

Accordingly, modern scientific descriptions of living organisms and their development offer reductive accounts of teleology and natural function that usually go something like this:

- (a) The function of X is Z.
- (b) X does A in order to Z.

So stated, (a) and (b) make reference to teleology and natural function and this is as it should be according to the substance position. On the substance view we embrace, the function of the heart is to pump blood. The heart moves in such and such way in order to pump blood. Note that a heart is internally related to the other parts of the circulation system (a heart is whatever functions to pump blood in this system) and, thus, the whole system (and, eventually, the whole organism) grounds and defines the heart. Further, the heart does what it does in order to reach some end. Now a popular natural reductive account reduces (a) and (b) to something like this:

- (c) X was a cause of Z in the past and its having been a cause of Z in the past causes X to be there now.
- (c') X has the function of doing Z if and only if item X is now present as a result of causing Z.

(c) and (c') say the same thing and they are examples of what is called the aetiological account of teleological notions like design, purpose, and function. For example, the heart (X) was a cause of pumping

blood (Z) in the past and its having been a cause of pumping blood (Z) in the past causes the heart (X) to be there now. This account gets rid of genuine function and teleology and replaces them with an evolutionary account of the existence of body parts and activities along with a reduction of final causality (i.e., that for the sake of which something happens) to efficient causality (i.e., that because of which something happens).

Fifth, on an EP_N view, there most likely is no such thing as human nature understood as the essentialist claim that there is some range of properties that all and only humans share and that grounds their membership in the natural kind "being human." Darwin's theory of evolution has made belief in human substances with human natures quite implausible. As E. Mayr has said:

The concepts of unchanging essences and of complete discontinuities between every *eidos* (type) and all others make genuine evolutionary thinking impossible. I agree with those who claim that the essentialist philosophies of Aristotle and Plato are incompatible with evolutionary thinking. (Mayr, 1970)

This belief has, in turn, lead thinkers like David Hull to make the following observation:

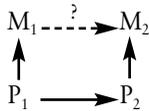
The implications of moving species from the metaphysical category that can appropriately be characterized in terms of 'natures' to a category for which such characterizations are inappropriate are extensive and fundamental. If species evolve in anything like the way that Darwin thought they did, then they cannot possibly have the sort of natures that traditional philosophers claimed they did. If species in general lack natures, then so do *Homo sapiens* as a biological species. If *Homo sapiens* lack a nature, then no reference to biology can be made to support one's claims about 'human nature.' Perhaps all people are 'persons,' share the same 'personhood,' etc., but such claims must be explicated and defended *with no reference to biology*. Because so many moral, ethical, and political theories depend on some notion or other of human nature, Darwin's theory brought into question all these theories. The implications are not entailments. One can always dissociate '*Homo sapiens*' from 'human being,' but the result is a much less plausible position." (Hull, 1989)

The sixth feature of human persons that follows most naturally from EP_N is that both the existence and causal powers of the various states of consciousness should be denied. Regarding the existence of consciousness, naturalist Paul Churchland claims:

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 why the naturalist should opt for strong physicalism—there is neither need nor room for anything else. Regarding need, I take it he means that everything we need 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. Thus the sheer existence of consciousness is a problem for EP_N.

Moreover, if the existence of conscious states is embraced, then an advocate of EP_N will have a difficult time avoiding an epiphenomenal depiction of conscious states according to which they are caused by or emerge from the brain, but they are themselves causally impotent (See Kim, 1998, pp. 37-56). To see why this is so, consider a person getting a drink of water. Now according to the causal closure principle, the cause of the person getting the drink is a relevant brain state. If so, what does the mental state of feeling thirst contribute? If it is a real mental state distinct from the brain state, there appears to be no room for it to affect anything, because the relevant



brain state is the adequate cause. More generally, consider the following diagram:

The diagram depicts a sequence of two mental states and two brain states. Let us ask what the cause of M_2 is. If we wish to allow for mental causation, we may say that M_1 is the cause of M_2 . However, according to the EP_N principle of supervenience, M_2 supervenes and is dependent upon P_2 . Thus, if M_1 is to be the cause of M_2 , it will have to cause M_2 's subvenient base, P_2 . But the EP_N principle of the causal closure of the physical requires that P_1 be the adequate cause of P_2 . Moreover, M_1 itself exists in dependence upon its subvenient base, P_1 . Thus, assuming the falsity of causal overdetermination, we see that there is no room in EP_N for mental to physical causation (M_1 causing P_2) or mental to mental causation (M_1 causing M_2). The sequence of mental events running through a person's consciousness is like a series of causally impotent shadows.

While they may not be familiar with the argument just given, Cosmides and Tooby seem to grasp that epiphenomenalism follows from EP_N: "The brain is a physical system whose operation is governed solely by the laws of chemistry and physics. What does this mean? It means that all of your thoughts and hopes and dreams and feelings are produced by chemical reactions going on in your head." (Cosmides & Tooby, 1998). The best way for an EP_N advocate to avoid the problem of epiphenomenalism is to identify conscious states with brain states. In this way, conscious states can retain causal power because they just are brain states. Unfortunately, this move amounts to a denial of consciousness, as it appears to first person introspection.

3. 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, which in turn, aided their possessors in the struggle for differential reproductive advantage. The details of his case cannot be presented here, but Alvin Plantinga has argued that securing true, warranted beliefs is not relevant to the struggle for reproductive advantage and, in fact, EP_N is self refuting because it provides a defeater for reason itself, including a defeater for any rational argument for EP_N (Plantinga, 1993).

In my view, Plantinga's argument is a good one, but it is especially strong in those areas of rationality that are quite far removed from the demands of reproductive advantage. This may be why EP_N advocates often select phenomena that are closely tied to reproduction, such as male sexual jealousy, to generate and test their hypotheses. However, this selection of phenomena is itself question-begging against IDP_C. After all, it would be very difficult to offer anything besides a fairly simplistic just-so evolutionary story in attempting to relate to the struggle for reproductive advantage the sorts of epistemological, aesthetic, and ethical cognitive and intuitive faculties relevant to holding alternative views of the Enlightenment, doing abstract philosophy, ethics, and theoretical science, or to offering a defense of EP_N. So far as I know, no advocate of EP_N has performed a study or offered a hypothesis to address the question: Precisely how did the mechanisms that are involved in forming, testing, and evaluating EP_N vis-à-vis IDP_C address the specific, repeated long-

term adaptive problems associated with successful reproduction?

In addition to rational behavior, 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. As evolutionary naturalist Michael Ruse (1989) 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.

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. It could be responded that it may well be the case that, although illusory, objectivist deontological and virtue theory ethical beliefs on the part of moral agents would have more reproductive advantage than would accrue if those agents held to an evolutionary, consequentialist theory. Thus, evolutionary processes may select those mechanisms that tend to produce (illusory) objectivist deontological and virtue ethical beliefs in moral agents.

However, such a claim would be difficult to prove and, in any case, it would have a disastrous implication for evolutionary ethics considered as a moral theory, namely, it would seem to suffer from what is called the publicity objection. To be adequate, a moral theory must provide moral principles that can serve as action guides that inform moral situations. Most moral situations involve more than one person and, in this sense, are public situations. Thus, moral action guides must be teachable to others so they can be publicly used principles that help us in our interpersonal moral interactions. According to the evolutionary consequentialist argument under consideration it may be immoral to teach others to embrace evolutionary ethics because that would not promote reproductive advantage. It would promote reproductive advantage for people to believe (falsely) in objectivist deontological or virtue ethical theory. Thus, it could be immoral for one to go public and teach

evolutionary, consequentialist ethics to others and, if so, this would violate one of the necessary conditions for a moral theory, namely, that it be teachable to others. It may be that EP_N advocates are unconcerned about the ethical implications of their view, but to the extent that they are concerned, the publicity objection would seem to present a serious problem for EP_N proponents.

There is another problem with the claim that evolutionary processes may select those mechanisms that tend to produce (illusory) objectivist deontological and virtue ethical beliefs in moral agents because those beliefs would be reproductively advantageous. Richard Swinburne has argued that if beliefs, and the mechanisms needed to form and sustain them, are the result of mere evolutionary processes, then organisms, including humans, would not be able to distinguish these two sorts of propositions: (P) All crocodiles are dangerous. (Q) Normally crocodiles are dangerous. (Swinburne, 1997, p. 208; cf. chapters 11 and 12).

This is because P (a genuine universal proposition) and Q (an approximate generalization) have the same behavioral implications regarding reproducing, fleeing, fighting, and feeding. Evolutionary processes would not be able to select mechanisms for distinguishing P type from Q type propositions (the distinction is invisible to processes that select discriminatory mechanisms solely with respect to reproductively advantageous behaviors). Moreover, since Q type propositions contain less empirical content and do not apply as far beyond sensory stimuli as do P type propositions, Q type propositions are simpler and all that would be required for reproductive advantage. Thus, given EP_N , one would expect organisms to employ Q type and not P type propositions.

Now, argues, Swinburne, a deontological moral belief is one that is universalizable, that is, it is a P type proposition that applies to all relevantly similar cases. For example, all people in this circumstance should keep their promises. Only if an organism can form such universal judgments can it possess a deontological sense of moral duty and only then can it experience a conflict between moral duties or between a moral duty and a desire of some sort. By contrast, Swinburne uses the term "wanton" for an organism that has no sense of duty at all, but only acts to satisfy his own desires. The only conflict the wanton knows is that between two or more desires he cannot simultaneously satisfy (e.g., to eat more and lose weight). He knows nothing about duty.

If Swinburne's arguments are correct, then EP_N would seem to predict a world in which humans are wantons. What is not at issue is whether humans are indeed merely wantons in that, because they understand moral duty and conflicts involving moral duty, they cannot be depicted as such. What is at issue is whether EP_N has the intellectual resources to avoid implying a wanton world. In my view, EP_N does not have those resources and it is both ad hoc and begs the question against IDP_C simply to readjust the most natural implications of EP_N when they tend to falsify EP_N and are nicely explained in light of IDP_C .

EP_N Epistemological/Methodological Commitments

4. It should be obvious that EP_N advocates will adopt methodological naturalism and seek event causal explanations either by starting with an adaptive problem and generating hypotheses about evolved psychological mechanisms considered as adaptive solutions or by starting with observed psychological phenomena and generating hypotheses about the adaptive problem they might have evolved to solve. Moreover, EP_N implies that the focus of study will be the brain, along with various processing mechanisms and their relationship to body movements. Among other things, this means that various mental phenomena such as agency, the subject/object relation, the relationship between one mental content and another mental content, and intentionality will be reduced to efficient causality. As Post points out, "A scientific or naturalistic account of [human beings and their mental states] must be a causal account." (Post, 1991, p. 121).

Further, EP_N implies a third person approach to research that will have little or no room for the first person perspective. Speaking of the EP_N conception of objective reality, Thomas Nagel observes that if "one starts from the objective side, the problem is how to accommodate, in a world that simply exists and has no perspectival center, any of the following things: (a) oneself; (b) one's point of view; (c) the point of view of other selves, similar and dissimilar; and (d) the objects of various types of judgments that seem to emanate from these perspectives" (Nagel, 1986, p. 27). Because reality is objective, says the naturalist, the best way to study the mind (i.e., brain) is to adopt a third person perspective. The objectivity of science requires this approach. Moreover, a complete, physical description of the world will only need

to utilize third person descriptions. This is because physical facts are able to be captured entirely from a third person point of view without reference to any first person perspective. Put differently, first person descriptions do not express irreducible facts and thus are either reducible or eliminable.

5. It may come as a surprise to many psychologists, but on an EP_N view, the discipline of psychology itself should either be reducible to or eliminated in favor of biology and, ultimately, of chemistry and physics. As EP_N advocates Cosmides and Tooby admit, on an EP_N view, psychology becomes a "branch of biology that studies (1) brains, (2) how brains process information, and (3) how the brain's information-processing programs generate behavior. Once one realizes that psychology is a branch of biology, inferential tools in biology—its theories, principles, and observations—can be used to understand psychology" (Cosmides & Tooby, 1998, p. 3).

What Cosmides and Tooby apparently fail to realize is that the "theories, principle, and observations" of biology employ no distinctively psychological concepts whatever. Notions referring to beliefs, desires, intjection, having a self representation, (and "being an inferential tool"!) and so forth simply drop from sight, especially when one notes that if evolutionary naturalism is correct, biology itself will increasingly be reduced to or replaced by chemistry and physics. On the basis of EP_N , philosophers such as Paul Churchland promote eliminative materialism, roughly, the view that in light of advances in neuroscience, the common sense mentalistic categories of psychology, such as the ones just mentioned, will turn out to be like the notion of phlogiston, namely, discarded remnants of an abandoned theory (Churchland, 1984). This is not good news for those who think that mental notions are essential to the discipline of psychology. But it is precisely EP_N considerations that have lead Churchland and others to adopt eliminative materialism.

Of course, not all or even a majority of EP_N advocates accept eliminative materialism, and I suspect that Cosmides and Tooby would be among the dissenters. But many psychologists fail to grasp that, while EP_N may not require eliminative materialism, the only way to avoid it and stay squarely within the commitments of EP_N is to accept some form of reductionism regarding psychology. The reason many do not see this is that there is confusion about just exactly what reduction itself is.

There are six different forms of reduction relevant to our present concerns, five of which will be listed here and a sixth will be mentioned shortly: (a) *individual ontological reduction*: one object (a macro-object like the person) is identified with another object (for example, the brain); (b) *property ontological reduction*: one property (heat) is identified with another property (mean kinetic energy); (c) *linguistic reduction*: one word or concept (*pain*) is defined as or analyzed in terms of another word or concept (*the tendency to grimace when stuck with a pin*); (d) *causal reduction*: the causal activity of the reduced entity is entirely explained in terms of the causal activity of the reducing entity; (e) *theoretical or explanatory reduction*: one theory or law is reduced to another by biconditional bridge principles, usually associated with Nagel-type reductions. Terms in the reduced theory are connected with terms in the reducing theory by way of biconditionals (if and only if) which serve as the grounds for identifying the properties expressed by the former terms with those expressed by the latter. For example, if one takes color terms to be coextensional with wavelength terms, then one can claim that colors are identical to wavelengths. In this way, explanatory reduction is the first step towards ontological property reduction.

EP_N requires individual ontological reduction because of its rejection of immaterial substances. It also requires causal reduction in virtue of its commitment to the causal closure of the physical, the supervenience thesis, and bottom/up approach implied by these two commitments.

When psychologists claim that they are non-reductive physicalists they usually mean that they reject either property ontological reduction that follows from explanatory reduction or linguistic reduction. Property ontological reduction, for example identifying a mental property such as being in pain with a physical property such as having such and such C fibers firing, is widely believed to have failed because of the problem of multiple realization: Several different organisms (e.g., humans, dogs, Vulcans) could all be in a pain type state while being in vary different sorts of brain type states, so a pain type state cannot be identified with a brain type state. Given this problem, the argument goes, neither explanatory nor property reduction succeeds.

Does the argument from multiple realizability save psychology from property reduction on an EP_N view? Probably not. One can still formulate mental/physical biconditionals to serve as the

grounds for property identity that are relativized to different species. Such biconditionals would take on this form:

$$S_i \leftrightarrow (M_i \times P_i)$$

This proposition expresses a species relative biconditional that can be read as follows: For some species S_i (e.g., a Vulcan, dog, human), if something is a member of that species, then it will be in mental state M_i if and only if it is in brain state P_i. This means local, species reductions will be possible. Human psychology will be reducible to human neurophysiology, dog psychology to dog neurophysiology, and so forth.

A different way to deal with mental states is to treat them as functional states. In this way, a mental state, such as pain, is defined totally independently of the state's intrinsic features made evident to first person introspection (e.g., being hurtful, throbbing) and, instead, is defined as the property of having some property that plays a certain functional role. For example, being painful could be defined as having some brain state or other that is caused by pin sticks and that causes a sense of self pity and the body movements of grimacing and shouting "Ouch!" As with behaviorism, functionalism is consistent with the denial of consciousness and, indeed, the intrinsic features of mental states are simply irrelevant as far as their functional characterizations are concerned.

This functionalist move appears to be the favored strategy for EP_N advocates, and while it does prevent a linguistic reduction of psychology to neuroscience, it does so at a price, and the cost can be made clear by describing a sixth form of reduction called *functional realization reduction*. This reduction is accomplished in two steps. Step 1: Functionalize the mental property. For example, the mental property of being in pain is identified with a property of having some physical property or other that plays the right role in the organism, for example, by being that physical property that is caused by pin pricks, toothaches, etc., and which causes the organism to grimace and desire relief. Step 2: Identify the property that plays the correct role mentioned in step 1 with a physical property. Step 2 requires that the only properties that realize functional roles are physical properties. This is similar to requiring that only some sort of physical hardware can be the realizer of functional roles specified in computer software. In this way, the functionalist requires that each time a

human, Vulcan, dog, or turtle is in pain, that particular pain event must be taken as identical to a physical event in the brain and nervous system. Thus, pain is reduced to/identified with some physical event or other, even though it remains impossible to state necessary and sufficient conditions for the type of brain event to which the type of mental state is reduced. Moreover, what makes the individual physical event a pain event is not the physical event's intrinsic features. Rather, it is a pain event because it plays the right role in the organism.

In this way, functionalism prevents the linguistic reduction of psychological terms to neuroscience terms because psychological terms such as "introjection," "having a self concept" and so forth, are mere artifact terms such as "being a table" that neither carve the world up at the joints nor play a role in causal explanations. The causal behavior of an organism will be fixed by its distinctive chemical and physical properties, not by the functional interpretations placed on that organism. As Kim has argued, this sort of functional reduction of psychology implies an epiphenomenal view of the mental precisely because it is the intrinsic physical features of the brain that cause an organism's body to move, not some second order extrinsic functional description of the organism (Kim, 1998, pp. 29-37).

The simple fact is that consciousness and mental properties and states, along with the psychological categories used to describe and explain them are just not at home in an EP_N view. If EP_N is correct, the only way to save psychology from elimination or various forms of reduction is to take its "explanatory" categories as arbitrary, functional notions that are causally impotent. As Geoffrey Madell (1988) notes, [T]he explanatory categories we use in describing human action and experience seem to be irreducible to the categories employed in the physical sciences. If the materialist is right to claim that reality consists in assemblies of elementary particles, we should naturally expect that the explanatory categories employed in the physical sciences should prove adequate to deal with the whole of reality, including that of human experience. Yet it seems clear, on the face of it, that intentional notions don't correspond to physical categories, that they don't pick out natural physical kinds, and that they betoken a mode of understanding quite distinct from that of the physical sciences.

What Madell observes is at home in and, in fact, predictable from IDP_C. This is what we would expect if human persons are made in the image of an Immaterial Substantial Spirit. Many facts about human persons should be recalcitrant facts for EP_N,

and anyone who is familiar with the last sixty years of philosophy of mind should understand the claim that physicalism is in a period of paradigm crisis (Searle, 1992). But if EP_N is correct, then psychology itself may well have to go. Thus, it is more than ironic that EP_N advocate David M. Buss triumphantly proclaims that evolutionary psychology is a fulfillment of Darwin's dream that his theory would place psychology on a new foundation and open up to it new fields of research (Buss, 2000, p. 280). In fact, it may well be that Darwinism and EP_N are the cure that killed the patient.

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