Getting Scientific With Religion: A Darwinian Solution… Or Not?

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Introducing non-Darwinian mind as a *nonaptation* (raw materials of evolution) I argue that Darwinian mind evolved from non-Darwinian mind through the evolution of desire and aversion. The subject position within Darwinian mind is Darwinian self and is inherently selfish. However the cathexis whereby the subject prioritises motivations of desire and aversion is not an inherent property of mind. Instead it is proposed to be an adaptation, a predisposition to respond to pleasant/unpleasant sensations with desire/aversion. This explains why self-sacrifice and disengagement from desire/aversion are the *sine qua non* of serious commitment to the spiritual path, i.e. Darwinian self and desire/aversion are two sides of the same coin and erosion of one is erosion of the other. Thus, through self-renunciation and suspension of desire/aversion the seeker passes from adaptive selfish Darwinian mind towards nonaptive *selfless* non-Darwinian mind. But Darwinian mind automatically resists this transcendence by intensifying motivations of desire/aversion thereby explaining the extreme difficulties of the spiritual path. A theoretical distinction is made between evolved *Darwinian "morality"* (self-serving "unselfishness"), *"Darwinian" morality* (genuine unselfishness) and *amoral non-Darwinian kenosis* (selflessness). These distinctions make it easy to disentangle scientific and religious jurisdictions on morality with important implications for both religious ethics and science's view of spirituality. All in all, the nonaptive theory of spiritual mind offers a unified solution to age-old problems which have been uncomfortably shifting this way and that in the interstices between biology, psychology, theology and philosophy.

Introduction

The true value of a human being is determined primarily by the measure and the sense in which he has attained liberation from the *self*.

Einstein, 1954

During the "Intelligent Design" saga explanations of religious phenomena as more or less direct products of Darwinian evolution became popular (e.g. Dennet, 2006; Wolpert, 2006). In contrast, this article argues that a core feature of religion, spiritual experience[1], is a *nonaptation*, a term introduced by Stephen Jay Gould and Elizabeth Vrba to refer to a biological feature with no function and consequently no fitness value, a feature which is not a primary product of natural selection (Gould & Vrba, 1982). From this perspective, an evolutionary approach to the nature of mind and spirituality based on a Darwinian definition of *self* is developed.

Gould and Vrba introduced the term nonaptation to emphasize that not every biological feature has a function or is the product of adaptive processes. Using the root 'aptation' to denote a generic biological feature they point out that a new functional feature can arise from a nonaptation being coopted to serve the new function. To the extent that the nonaptation is able to perform its new function without undergoing any selective pressure it is called an *exaptation*. To the extent that the exaptation is optimised by natural selection to perform its function it is called an *adaptation*. Existing adaptations too can be coopted for new functions in which case they are also called exaptations and only become adaptations if they are secondarily shaped by natural selection. Nothing in evolution is *de novo,* only what is already available can be coopted.

Gould and Vrba emphasize the importance of nonaptations as a source of raw material in the evolutionary process:

> *"…the enormous pool of nonaptations must be the wellspring and reservoir of most evolutionary flexibility. We need to recognise the central role of "cooptability for fitness" as the primary evolutionary significance of ubiquitous nonaptation in organisms."* (Gould & Vrba, 1982, p. 12)

[1] The meaning of *spiritual* is defined in the course of this article.

An example they discuss is gene duplication which allows one copy of the gene to perform the original function and the other copy to mutate whereas a mutation in the single original copy would compromise fitness. Initially the duplicate copy is a nonaptation adding no fitness value but it becomes an exaptation if it adds fitness through being coopted for a new function. Thereafter, the exaptation is optimised and is an adaptation. But without the duplication event there is no nonaptive raw material to begin with.

Applying Gould's and Vrba's ideas to mind I argue that mind was first a nonaptation which was recruited in the course of evolution as an exaptation and thereafter shaped by natural selection to become an adaptation. I call mind so-adapted Darwinian mind and propose that spiritual mind lies outside of Darwinian mind and that the line between spiritual mind and Darwinian mind is mutually and reciprocally defined by one core evolutionary principle (self-interest) and one core spiritual principle (selflessness).

Mind as we know it, Darwinian mind, is held to be a self-sustaining psychobiological adaptation wrought from selfless nonaptive non-Darwinian primordial greater mind in the course of evolution. Primordial mind is greater because it is not constrained by Darwinian reproductive-survival imperatives and therefore has more degrees of freedom whereas these imperatives impose a strict narrowing of mental focus, a cathexis, upon motivations of desire for stimuli which promote reproductive-survival and aversion for stimuli which threaten it (Seymour et al., 2007; Reid Montague & Berns, 2002; Konorski, 1967). At the centre of Darwinian mind, is the Darwinian self defined as the subject position in Darwinian mind, i.e. the subject who experiences motivations of desire and aversion. Thus Darwinian mind/self and motivations of desire and aversion are two sides of the same coin.

I then argue that the emphasis on repudiating desire and aversion, on morality (Neusner & Chilton, 2005) and on self-renunciation (Armstrong, 2006) which characterises serious commitment to the spiritual path are aimed directly at undermining and ultimately transcending Darwinian mind/self in order to reach nonaptive non-Darwinian selflessness, and that this is the essence of spiritual endeavour. At the core of this thesis is the assertion that the creation of Darwinian mind/self from nonaptive mind necessitated linking the subject to motivations of desire and aversion. I emphasize that it cannot be assumed that this cathexis, whereby the subject prioritises motivations of desire and aversion before all else (thereby creating Darwinian mind/self) is an inherent property of mind. On the contrary, it is proposed that this link is an adaptation, a product of natural selection.

The nature of this link is proposed to be a biological predisposition reinforced through learning to respond to pleasant and unpleasant sensations with motivations of desire and aversion. For human beings, in varying degrees, it is possible to systematically reject this response pattern resulting in progressive weakening of this cathectic link. However rejection is not easy because it involves de-identifying with both the Darwinian self and with motivations of desire and aversion.

This perspective makes it possible to clearly visualise the mental terrain the subject seeking spiritual advancement must cross in order to pass from mundane Darwinian mind/self to transcendent non-Darwinian mind. In particular it becomes apparent why this transition accords with typical stages and states of mind encountered along the spiritual path. For example, the model accounts for the extraordinary difficulty of finding and walking this path, expressed by Jesus as follows:

> *"Go in through the narrow gate, because the gate to destruction [Darwinian mind] is wide and the road that leads to it is easy, and there are many who travel it. But the gate to life [non-Darwinian mind] is narrow and the way that leads to it is hard, and there are few people who find it." (Gospel of Matthew 13-14)*

The narrowness of the gate and the hardness of the way reflect Darwinian mind's powerful self-protective reflex which resists the subject's spiritual progress through self-renunciation by generating overwhelming motivations of desire and aversion and compelling cognitions of self-interest. These reinforce Darwinian mind/self making it exceedingly hard for the subject to resist succumbing to these adaptive, *self*-sustaining urges. There is extensive evidence for the self's automatic (Moors & De Hauwer, 2006) self-regulatory qualities (Fitzsimons & Bargh, 2004). Examples of Darwnian self's *self*-protective reflex are such instances as the Temptations of Christ and Mara's temptations of Buddha. Both are direct attempts to invoke ego and both occur at the climax of extremely determined and prolonged episodes of self-disciplined ascetic isolation. And of course both spiritual heroes stand firm.

Using this evolutionary approach a sociobiological taxonomy of selfish, unselfish and selfless motivational states is derived that together with neurobiological principles explains various other familiar aspects of the spiritual journey. Most significantly, the model draws a fundamental distinction between Darwinian forms of morality based on evolved unselfish

motivations and spiritually transcendent non-Darwinian amorality (with nonetheless very potent moral side-effects!) based on nonaptive selflessness. In short, it becomes apparent that for transcendence to occur self-sacrifice to a degree that transcends the limits of Darwinian explanation is needed.

Philosophical Considerations

Mind is here defined to include (1) subjectivity or awareness which is the same as consciousness and consists of mental phenomena or mental representations experienced by a subject and (2) subconscious information processing that influences subjective experience and behaviour. My first assumption is that mind has an evolutionary history although I am not concerned about how long this history is. There is sufficient evidence that the mind has been finely shaped by natural selection (Dunbar et al., 2005). My second assumption is the attribution of a causal role to motivations of desire and aversion in the Darwinian scheme of things. This "folk psychology" belief in the causal efficacy of emotions rests squarely upon a philosophical tradition which includes Aristotle and Hume and is most recently articulated by Mele (Mele, 2003).

The idea of non-Darwinian mind can be further substantiated by analogy with non-Darwinian matter. The sum of genotype and phenotype is typically considered to cover all components of organisms. But these terms do not meaningfully apply to basic constituents like carbon, oxygen or H_2O which seamlessly move into and out of the Darwinian (organic) realm without a Darwinian care in the world, so to speak, one way or the other. Scientific monism holds that mind 'emerges' from brain but there is no evidence to support this view over dualist views. Just as non-Darwinian (inorganic) matter is recruited into the organic realm where certain constraints are imposed on it but its intrinsic properties remain absolutely unchanged, so non-Darwinian mind may also be shaped in a similar way. Buddhist reincarnation is based on a similar division: gross consciousness refers to psychical processes, e.g. sensory perception, that are contingent upon the body and subtle consciousness refers to reincarnating mind which does not depend on the body (Luisi, 2008).

The idea of non-Darwinian mind presented in this article is compatible with both monist and dualist perspectives but monism has thus far implicitly assumed that the first mind to emerge was already-adapted Darwinian mind but this need not have been the case. In fact one could argue that short of some kind of intelligent design, this *could* not have been the case. By the

Gould-Vrba definition it is impossible for emergent primordial monist mind to have had any adapted qualities, only nonaptive or at best exaptive ones. And while emergent primordial monist exaptive mind must have had some fitness-enhancing qualities it is exceedingly unlikely that these qualities comprised ecologically functional mappings between distinct motivations of desire/aversion and mental representations of environmental factors promoting/threatening reproductive survival. In other words, emergent primordial exaptive mind most likely did not feature a subjectively discrete embodied self who experienced distinct self-referencing motivations and if it did happen to do so, these motivations were very unlikely to have usefully referenced mental representations of environmental factors good or bad for reproductive survival. Thus while the dualist position makes the idea of non-Darwinian mind explicit, a close examination of emergent monism also provides ample breathing-space for emergent primordial monist non-Darwinian mind.

Darwinian Mind/Self

An entity I'll call the physical self was born when life began because as soon as a living entity however simple, has *needs* where needs are defined as conditions which must be fulfilled to ensure reproductive-survival, the entity stands as separate (self-other) from the environment providing these needs. At some point the physical self acquired mind and we can clearly see the mark of Darwinian evolution on such embodied mind: mental representations of physical stimuli are through the process of natural selection programmed to evoke an *adaptive motivational* or *emotional response* of *desire* for stimuli which promote reproductive-survival and *aversion* for stimuli which threaten it (Figure 1). There is abundant behavioural and neurobiological evidence for a binary (+/-) value system in the vertebrate brain which controls behavioural responses in a global fashion (Seymour et al., 2007; Reid Montague & Berns, 2002; Konorski 1967)[2]. Therefore, to the extent that an animal's behaviour is causally motivated by adaptive feelings of desire and aversion one can conclude that its mind has been so shaped through the process of natural selection and one can call such a mind *Darwinian mind*.

The term *self* is here used as a convenient label for the subject position in Darwinian mind, i.e. the subjective entity motivated by desire and aversion. Because the self so defined only exists in

[2] There is extensive evidence that these two motivational opposites are the expression of several independent neural systems as opposed to a being the expression of opposite ends of a continuum (Panksepp, 1998). Desire is related to the meso-striatal dopaminergic reward system and aversion to several different systems such as pain, fear and disgust pathways. This makes it possible for example to be simultaneously motivated by desire and aversion.

relation to motivations of desire and aversion, it is called the *Darwinian self*. Human beings endowed with language express these adaptive motivational responses as "my" motivations and since these self-centric motivations are the product of natural selection, the human self-conscious self which identifies with them is also recognised at its most basic level as Darwinian self.

Figure 1.

Subjective experience alone does not constitute an adaptation. In this model, only the mapping of ...

Physical stimuli → sensory neurons

onto

Interneurons (brain)

onto

mental representations (+ pleasant / unpleasant sensations)

onto

(i.e. evoking) motivations of desire/aversion

onto

motor neurons (behaviour) *back* → physical reality

… such that the physical organism reacts to physical reality in a way which enhances reproductive-survival amounts to an adapted mind.

Darwinian "Unselfishness"

Characterising Darwinian self as intrinsically selfish[3] is not to say that Darwinian theory cannot account for the evolution of unselfish or altruistic motivations and behaviours. A highly developed body of theory has evolved which successfully accounts for a wide range of such behaviours across an array of organisms from unicells to primates (Sterelny, 2007). Common to all these explanations is the fundamental relationship $\beta b > c$ where c is the cost and b the benefit of the unselfish behaviour in reproductive terms. The inequality represents the degree to which cooperation is worthwhile, i.e. returns greater benefits than costs which depends upon the stability of the cooperative system. The coefficient β is a measure of this stability, of the likelihood that a cooperator is helping another cooperator and not a free-rider or cheat (Henrich & Henrich, 2006). β may take any form that sustains a stable system of mutual benefit. Kin selection refers to those instances where β, the stability of the system, is based on close genetic relatedness (Hamilton, 1964) and there are many examples within the animal kingdom (Wilson, 1980). But genetic relatedness is not a prerequisite for the evolution of cooperative altruism. Any stabilising factor making the value of β high enough will do. A well-accepted mechanism for the evolution of unselfish behaviour among non-kin is reciprocal altruism or 'tit for tat' (Sterelny, 2007).

Emotional Evolution

That cooperation pays such high reproductive-survival dividends makes it a key driving force behind the evolution of social systems. Social groups are better able to detect and defend against predators, share child-rearing duties, pass on cultural knowledge and so on. These social functions required the evolution of novel cognitive abilities (e.g. seeing things from another's perspective) and novel motivational states (e.g. empathy) (De Waal, 2006; Hauser, 2006) which enable the individual to walk the fine line between cooperation and competition with other group members (De Waal, 1996).

[3] In this article the term *selfish* has both technical Darwinian and colloquial meanings. The Darwinian meaning refers to anything the organism does (particularly in the social realm) which objectively enhances its reproductive-survival. This meaning carries no moral judgement whatsoever. The colloquial meaning refers to anything the organism does (particularly in the social realm) which serves its own subjective interests at the expense of others, even if these subjective interests are not in its best reproductive-survival interests. This narcissistic meaning carries an obvious element of moral judgement that here only ever applies insofar as the reader is (understandably) prone to project this meaning onto the exclusively intended Darwinian meaning. The term "unselfishness" in quotes which is used later on, equates to motivational states associated with what ethologists call altruism: cooperative behaviour which ultimately benefits the individual's own reproductive-survival or the genetic elements underlying such behaviour. Unselfishness without quotes refers to genuinely unselfish motivations which have genuinely unselfish behavioural effects, i.e. personal costs may be incurred. These distinctions are discussed in detail later on.

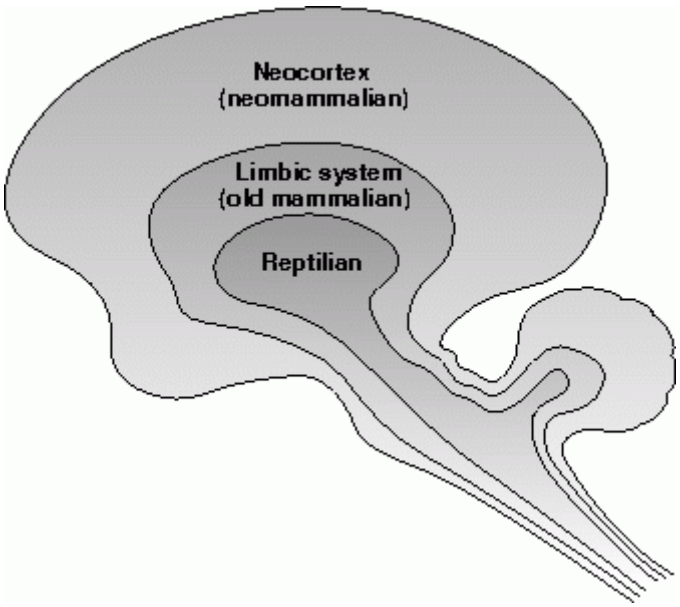

Figure 2. The triune brain (Maclean, 1990) illustrates the evolution of successive levels of brain and behavioural complexity from reptiles through early mammals to later mammals. (image from www.dericbownds.net/bom99/Ch03/Ch03-3.gif)

There are basic emotions and social emotions associated with different levels of brain organisation. Panksepp (1998) has demonstrated how minute regions of the midbrain within the oldest 'reptilian' part of the mammalian brain (Maclean, 1990) (Figure 2), orchestrate highly stereotyped basic emotional behaviours of fear, rage, separation distress, exploratory and sexual urges, and the expression of pleasure and pain. But mammals, especially social mammals and in particular primate sociality required the evolution of novel motivational states (e.g. '*tit-for-tat' requires loyalty, child-care requires empathy, social development requires youthful social play*) (De Waal, 2006). Specialised social or moral emotions[4] (Tangney et al., 2007) therefore evolved which help the individual manage cooperative opportunities and various other social relationships. While these emotions are also behaviourally expressed via the reptilian brain, higher regions of the paleomammalian or limbic brain (Maclean, 1990) are responsible for their orchestration (Panksepp, 1998).

The "Russian doll" model (De Waal, 2006) shown in figure 3 conveys how these more sophisticated emotional capacities evolved (in evolutionary time) and develop (in a single life-time) from simpler forms. Emotional contagion (the automatic spread of a basic emotional attitude such as fear or excitement) between individuals forms the psychobiological basis of empathy (the automatic mirroring in one individual of another individual's emotional state).

[4] Also called social instincts (Richerson & Boyd, 2005) or moral sentiments (Adam Smith, 1759).

Empathy which is a self-centred experience is in turn the platform for sympathy, the capacity to distance oneself from the empathic experience and see things from the other individual's point of view. Much like the Russian doll model, neuroimaging investigations in humans have identified many higher limbic (paleomammalian) and neocortical (neomammalian) brain regions (Figure 2) involved in these more complex emotions. Recently discovered mirror-neurons for example are neurons that fire automatically both when the organism is performing an action or when it is observing another individual perform the same action, thereby providing a neurobiological mechanism for empathy (Iacoboni & Dapretto, 2006).

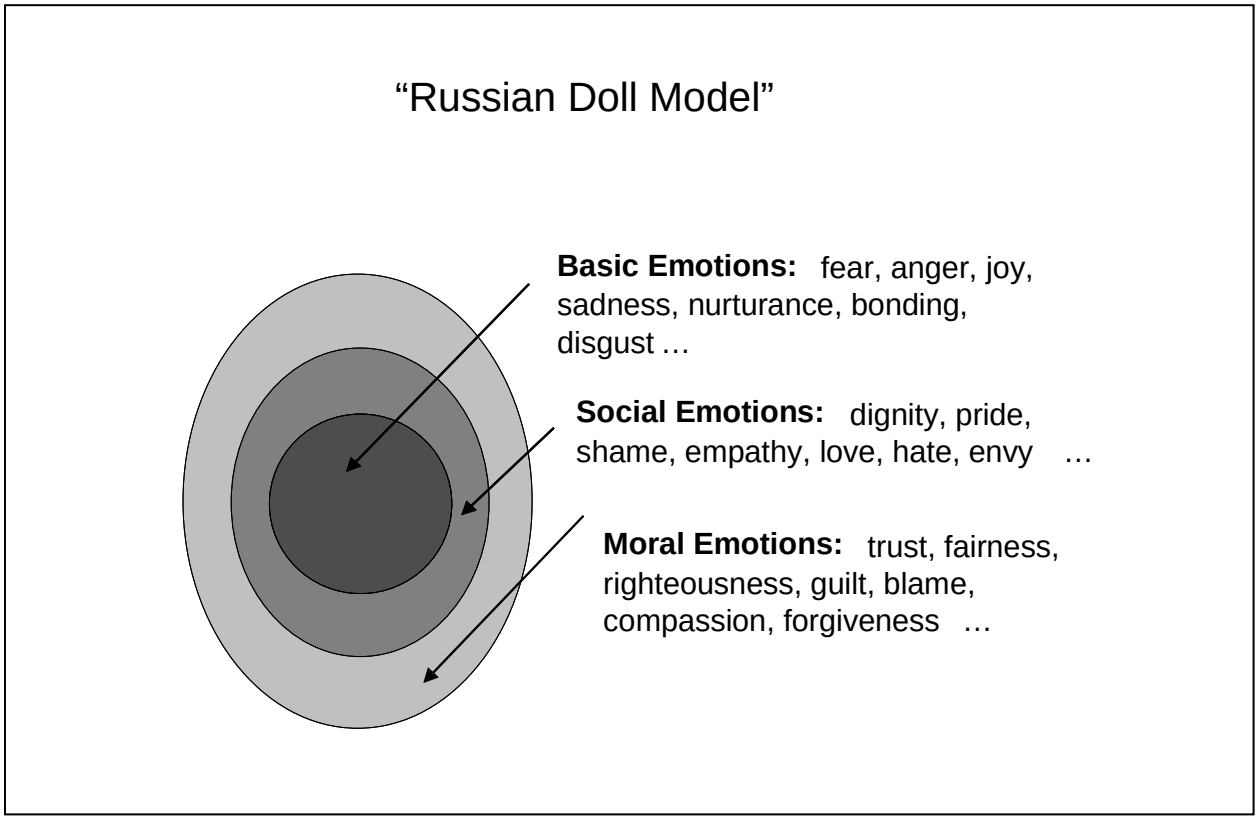

Figure 3. The "Russian Doll" model illustrating how more sophisticated emotional capacities evolved (in evolutionary time) and develop (in a single life-time) from simpler forms (De Waal, 2006).

The condition $\beta b > c$ however makes it plainly evident that moral emotions are self-serving[5] and the mind so shaped is clearly Darwinian in nature. This conclusion must however be qualified by the understanding that evolutionary theory distinguishes between distal and proximal causal mechanisms. Distal causation refers to the reproductive calculus whereby the fittest survive irrespective of the actual proximal mechanisms (bodily structures, motivations and behaviours) which render them fittest. It is therefore possible for an organism under a given set of proximal circumstances to experience subjective (i.e. genuine or sincere) unselfish motivations ($\beta b_{subj} < c$) even if it is ultimately or objectively behaving in its own self-interests ($\beta b_{obj} > c$). From now on the combination ($\beta b_{subj} < c$, $\beta b_{obj} > c$) will be written as "unselfish" to denote its paradoxical subjective/objective properties and also to signal its place as well within Darwinian mind/self.[6]

Primordial, Nonaptive, Non-Darwinian Mind.

The mappings described in Figure 1 are for the most part 'hard-wired' by natural selection as evidenced by the fact that every species, to the extent that its behaviour is causally driven by motivations, likes and seeks what is good for it and dislikes and avoids what is bad for it. These mappings are under the influence of many genes and for all the right (i.e. adaptive) mutations to accrue takes time. It is therefore highly unlikely that primordial mind comprised such a chain of adaptive reward-mediating and punishment-mediating mappings. It is more likely that primordial mind was nonaptive, comprising a form of subjective awareness which does not necessarily resemble any of the kinds of adaptive awareness occurring within Darwinian mind (e.g. visual awareness, temperature awareness, hunger awareness, loving or hating awareness etc. which are all of clear functional ecological and social importance). Nonetheless primordial mind must have had some property which when coopted in a particular way added fitness thereby constituting an exaptation. Thereafter the action of natural selection further shaped this exaptation to adaptively connect sensory input to motor output via motivations of desire and

[5] The 'selfish gene' or gene-centric view of evolution holds that segments of genetic material ('genes') are the fundamental units of evolution and that phenotypes are merely the gene's means of reproductive survival (Sterelny, 2007). This view, both popular and highly controversial in the latter decades of the 20th century, does not however impact on the present discussion at all. It makes no difference to the argument being developed here whether Darwinian mind/self (which is a mental phenotype) enhances its own reproductive-survival (i.e. is selfish) through selection at the individual level (so-called self-serving, meaning 'whole organism'-serving) or through selection amongst a population of selfish genes contributing to its existence (gene-serving) because both entities, the individual organism and the genes upon whose expression Darwinian mind/self depends, depend upon Darwinian mind/self for reproductive-survival.

[6] Pleasant feelings can become maladaptively uncoupled from their ecological targets to become an over-riding subjective reward in themselves (e.g. drug addiction, cf. spiritual narcissism below).

aversion thereby creating self-serving (i.e. *self*-sustaining and *self*-reproducing) Darwinian mind.

Escaping/Transcending Darwinian Mind

Organisms incapable of rational thinking are locked into their desire/aversion mappings, into their Darwinian minds. However humans to varying degrees, are able to exercise a rational point of view, a meta-self capable of seeing Darwinian mind/self for what it is, i.e. a mental program constantly generating emotions of desire/aversion which drag, pull and push the individual hither and thither for adaptive ends. The meta-self corresponds to Mele's discussion of *"human action par excellence"* which encompasses a desire to act for superior reasons, high rationality, high self-control, etc. (Mele, 2003, p. 231) and is defined here as that part of the mind which is able to choose how strongly to identify with Darwinian mind/self.

Turning now to religion, we observe that genuine selflessness is a hallmark of spiritual advancement across all major religions (Armstrong, 2006; Ellis, 2000; Ferrer, 2002, 2006). Renunciation of self-interests and the placing of others' needs above one's own is arguably the *sine qua non* of serious commitment to the spiritual path. So repeatedly insistent are the various scriptures with teachings of selflessness in its various forms of forgiveness, charity, self-sacrifice for others and self-sacrifice for God that its central importance to attaining and maintaining spiritual states of mind is unmistakable. In the Old Testament God tested Abraham's devotion and obedience by instructing Abraham to sacrifice his only son Isaac, his 'only' Darwinian hope[7]:

> *"Take your son," God said, "your only son, Isaac, whom you love so much and…*
> *…offer him as a sacrifice to me." (Genesis 22)*

From the Quran:

> *"He who pardons (the evil done to him) and reforms himself, will receive his reward from God." (42/40)*

And Jesus famously taught:

[7] Apart from Ishmael who in God's eyes doesn't seem to count.

"If anyone slaps you on the right cheek, let him slap you on the left cheek too." (Gospel of Matthew 5. 38)

…emphasising that the self- centred "eye for an eye, tooth for a tooth" response of revenge only reinforces Darwinian self.

Furthermore, the following two teachings of Jesus are a direct transgression of the two most fundamental priorities of Darwinian evolution, viz. ensuring one's own survival and the survival of one's offspring:

"Whoever tries to gain his own life will lose it; but whoever loses his life for my sake will gain it." (Gospel of Matthew 10. 39)

"Whoever loves his son or daughter more than me is not fit to be my disciple." (Gospel of Matthew 10. 37)

Nor did the Buddha mince his words:

"Even if bandits were to sever you savagely with a two-handled saw, he who gave rise to a mind of hate towards them would not be carrying out my teaching." (Kakacupama Sutra 9)

Such extreme teachings of self-sacrifice are simply not reconcilable with evolutionary theories of unselfishness or with Darwinian mind/self. There is nothing in these statements or vignettes satisfying the requirements of kin selection or reciprocal altruism. It is therefore proposed that the nonaptive mental territory beyond the borders of Darwinian mind/self, beyond the rule of natural selection is the province of spirituality, but not as will later be discussed necessarily the home of religion.

Kenosis and Morality

It is helpful at this point to be more specific about what is meant by spirituality. William James, in *The Varieties of Religious Experience* defines *"mystical states of consciousness"* (spiritual states here) by four phenomenological features, all of which must be present (pp. 329-30):

Ineffability:

"The handiest of the marks by which I classify a state of mind as mystical is negative… that no adequate report of its contents can be given in words… it must be directly experienced…".

Noetic quality:

"They are states of insight into depths of truth unplumbed by the discursive intellect. They are illuminations, revelations, full of significance and importance… and as a rule they carry with them a curious sense of authority for after-time."

Transiency:

"Except in rare instances, half an hour, or at most an hour or two, seems to be the limit beyond which they fade into the light of common day… when faded their quality can but imperfectly be reproduced in memory; but when they recur it is recognized; and from one occurrence to another it is susceptible of continuous development in what is felt as inner richness and importance."

Passivity:

"Although the oncoming of mystical states may be facilitated by preliminary operations… which the manuals of mysticism prescribe; yet when the characteristic sort of consciousness once has set in, the mystic feels as if his own will were in abeyance, and indeed sometimes as if he were grasped and held by a superior power."

Returning to the question of radical self-sacrifice so evident in the scriptural passages quoted above, in his comments on the ineffable nature of mystical states James points to his frequent

reliance on *via negativa* (Ferrer, 2006) to describe what cannot be adequately conveyed by words. The similarly negative interrelated notions of selflessness and non-Darwinian mind resonate strongly with James' use of the negative which recurs in the following passage:

"To this dialectical use by the intellect, of negation as a mode of passage towards a higher kind of affirmation, there is correlated the subtlest of moral counterparts in the sphere of the personal will. Since denial of the finite self and its wants, since asceticism of some sort, is found in religious experience to be the only doorway to the larger more blessed life, this moral mystery inter-twines and combines with the intellectual mystery in all mystical writings." (pp. 361-2)

To illustrate his point he quotes from many sources, one of them Jacob Behmen:

"… The treasure of treasures for the soul is where she goeth out of the Somewhat into that Nothing out of which all things may be made. The soul here saith, I have nothing, for I am utterly stripped and naked; I can do nothing, for I have no manner of power… … and so sitting down in my own Nothingness, I give glory to the eternal Being …

… In Paul's language," James continues, *"Only when I become as nothing can God enter in and no difference between his life and mine remain outstanding."* (p. 362)

The purpose in quoting James here is to reinforce the centrality of the negative concept of selflessness to transcendence and particularly to focus on his comment about the '*mysterious'* element of negation in both the intellect's attempt to grasp the transcendent as well as *'in the sphere of the personal will'* where negation in the form of '*denial of the finite self and its wants'* is held as inescapably necessary to transcendence. The latter of these instances of negation is for James the *'subtlest of moral counterparts'* to the former. James ends with the observation that the moral mystery inter-twines with the intellectual mystery in all mystical writings. At this point James reaches an impasse seemingly unable to further elucidate the mystery[8].

Darwinian mind/self (DM/S) and non-Darwinian mind (NDM) unlike Behmen's *Somewhat* and *Nothing* are embedded within well-defined philosophical, evolutionary, psychological, neurobiological and (as later discussed) physical constructs which together form a very clear cross-disciplinary framework from which theoretical distinctions between precise concepts of

[8] James goes on for another two pages adding nothing of note and then brings the chapter to a brisk end.

unselfishness, selflessness and morality can be derived. To do so in a manner with practical relevance, to bring things down to earth so to speak, it is helpful to look at James' psychological description of transcendence as it occurs in real persons. Of particular interest is the emphasis James places on a fundamental discontinuity inherent in the transition from the mundane to the divine:

"There is thus a conscious and voluntary way and an involuntary and unconscious way… and we find both ways exemplified in the history of conversion, giving us two types, … the volitional type and the type by self-surrender respectively…

…In the volitional type the regenerative change is usually gradual, and consists in the building up, piece by piece, of a new set of moral and spiritual habits. But there are always critical points here at which the movement forward seems much more rapid." (p. 185)

"… and in the great majority of all cases, when the will has done its uttermost towards bringing one close to the complete unification aspired after, it seems that the very last step must be left to other forces and performed without the help of its activity. In other words self-surrender then becomes indispensable." (p. 186)

The indispensable need for self-surrender James speaks of can be understood in terms of the properties of DM/S and NDM.

The volitional gradual building up of new moral and spiritual habits might be thought to occur by wilfully inhibiting selfish urges and sincerely aspiring to truly unselfish ways. The problem with this 'moralistic' approach as James calls it, is that one soon reaches a limit imposed by cognitions, emotions and sensations of self-interest, i.e. DM/S begins to strongly resist βb tending towards being less than c. While it is possible for the meta-self to cognitively override this limit this will not lead to transcendence from DM/S because at deeper levels through its self-protective reflex, DM/S begins to resist and is therefore as likely being reinforced as broken down:

"Official moralists advise us never to relax our strenuousness. "Be vigilant, day and night," they adjure us; "hold your passive tendencies in check; shrink from no effort; keep your will like a bow always bent." But the persons I speak of find that all this conscious effort leads to nothing but failure and vexation in their hands, and only makes them two-fold more the children

of hell they were before... Their machinery refuses to run at all when the bearings are made so hot and the belts so tight." (p. 104)

If this were not the case, the voluntary incremental method would on its own be enough to achieve the goal. But as James writes *"denial of the self and its wants"* is the only way. So what's the difference between on the one hand inhibiting selfishness and promoting genuine unselfishness and on the other hand denying the self and its wants?

The first method is pitting one aspect of DM/S against the other ("unselfishness"[9] vs selfishness). The combination of evolved so-called moral emotions ($\beta b_{subj} < c$) discussed earlier and the ultimately self-serving results of helping or cooperating with others ($\beta b_{obj} > c$), i.e. what has so far been called Darwinian "unselfishness" will now be designated *Darwinian "morality"* (the quotation marks denoting the fact that these motivations *feel* to the subject and can *appear* to others as genuinely unselfish but are ultimately selfish). But when a self-conscious cognitive element is added such that the subject identifies *with* the subjectively genuinely unselfish motivations which constitute one face of Darwinian "morality" *and actively* identifies *against* the objectively selfish aspects of Darwinian "morality" the latter transforms into "*Darwinian" morality.* This term refers to genuine motivations to act morally even at personal cost ($\beta b_{obj} < c$) and the use of Darwinian indicates that these motivations still derive from evolved Darwinian "unselfishness" ($\beta b_{subj} < c$) but the reversed placement of quotation marks now denotes departure from the strictly Darwinian realm (i.e. $\beta b_{obj} < c$ is incompatible with Darwinian principles).

The basic difference being that an individual with Darwinian "morality" will act in its own interests whenever the opportunity presents itself. For example assuming one individual has a tit-for-tat relationship with another individual and the first individual finds highly valued food without the other knowing even though it is nearby. Under Darwinian "morality" the first individual will not share the food if it can do so without compromising the tit-for-tat relationship whereas "Darwinian" morality requires the first individual to share the food with its tit-for-tat partner. Sharing is facilitated by persuasive emotions of empathy, rewarding feelings of kindness and righteousness and by the aversive moral emotion of guilt if it does not share. James' voluntary moral-betterment way entails practicing "Darwinian" morality. The terms moral/morality are henceforth reserved for these two categories of Darwinian "morality" and "Darwinian" morality so as to unambiguously point to the evolved nature of their motivational

[9] As already discussed objectively "unselfish" motivations can *feel* genuinely unselfish.

properties and explicitly differentiate them from the category of amoral non-Darwinian kenosis that is next introduced.

The second method is what James calls *"self-surrender"* which by the logic of this article amounts to eroding and ultimately removing DM/S altogether. The ancient Greek term for this was kenosis, meaning "emptying of the self" (Armstrong, 2006). However, neither James' term self-surrender nor kenosis indicate how exactly one is to surrender or empty the self. It is here that the current model in defining the self as DM/S, as the evolved subject experiencing evolved motivations of desire and aversion, offers a novel contribution because as earlier discussed DM/S and desire/aversion are two sides of the same coin. Suspension of desire/aversion is therefore the primary mechanism for surrendering the self. However this cannot take the form of rejecting the objects of desire/aversion or even of rejecting desire/aversion per se' because this itself is aversion. Instead the emphasis must be on the other side of the coin, on the *subject* rather than the *object* and entails a neutral-minded cognitive attitude towards motivations of desire/aversion (equanimity) *together with* inwardly-directed self-erasure or non-identification with Darwinian self.

The crucial point here is that kenosis defined as equanimity towards desire/aversion premised upon non-identification with Darwinian self is about dissolving Darwinian self in order to reach selflessness which is not the same as even genuine unselfishness ("Darwinian" morality) which still references Darwinian self in the form of evolved prosocial emotions such as empathy, compassion or guilt. James clearly suspects something of deep significance in the inter-twined *negative* intellectual-moral mystery surrounding spiritual transcendence but he is unable to say what this is. I venture that the *"the subtlest* [negative] *moral counterpart"* James intuits pertains to a distinction between "Darwinian" morality high in desire and aversion and non-Darwinian amoral kenosis high in equanimity.

In DM/S the subject's involuntary identification with the entity experiencing desire/aversion is here proposed to be a biological predisposition and one that is massively and incessantly culturally, linguistically and biologically self-reinforced. But this does not mean that it is irreversibly hardwired. The human meta-self, the rational agent capable of seeing DM/S for what it is, has the choice to adopt a cognitive attitude of equanimous kenosis defined as effortful neutral-minded disengagement from desire/aversion plus de-identification with Darwinian self. Such refusal of the subject to respond in the bio-culturally predisposed way will no longer reinforce DM/S but there will however be no immediate transcendence of DM/S towards NDM

because of resistance from DM/S which at a deeper motivational level is still firmly in control. But through a mechanism soon to be explained, sustained voluntary effortful kenosis will sooner or later result in a sudden quantum leap of transcendence that is experienced as *"self-surrender",* as *revelation* or *satori,* or as *"being wrought upon on by an external power"*. When this occurs the *effortful largely cognitively generated kenosis mindset* suddenly becomes *effortless heartfelt kenosis*. The now passive mind is suddenly (albeit transiently) imbued with an ineffable noetic sense of self-transcendence accompanied by distinct and unusually strong motivations of generosity, compassion, moral purity and a feeling of liberation from the normal concerns of the ego. To the extent that the subject is now passively selfless/kenotic DM/S has given way to NDM.

James understands well the passive quality of post-transcendent heartfelt *"anti-moralistic"* self-surrender which for him precipitously follows pre-transcendent wilful moral betterment:

"Under these circumstances the way to success, as vouched for by innumerable authentic personal narrations, is by an anti-moralistic method, by 'surrender' ... Passivity, not activity; relaxation, not intentness, should be now the rule. Give up the feeling of responsibility, let go your hold, resign the care of your destiny to higher powers, be genuinely indifferent as to what becomes of it all, and you will find not only that you gain a perfect inward relief, but often also in addition, the particular goods you sincerely thought you were renouncing. ... Something must give way, a native hardness must break down and liquefy; and this event (as we shall abundantly see hereafter) is frequently sudden and automatic, and leaves on the Subject an impression that he has been wrought on by an external power." (pp. 104-5)

The words *'be genuinely indifferent'* in this passage indicate also that James appreciates the necessity for equanimity in order that a native hardness breaks down. But notably for James this happens suddenly and automatically and his explanation at the level of conscious effort is limited:

"A man's conscious wit and will, so far as they strain towards the ideal, are aiming at something only dimly and inaccurately imagined. Yet all the while the forces of mere organic ripening within him are going on towards their prefigured result, and his conscious strainings are letting loose subconscious allies behind the scenes, which in their way work towards rearrangement; and the rearrangement towards which all these deeper forces tend is pretty surely definite, and definitely different from what he consciously conceives and determines. It

may consequently be actually interfered with (jammed, as it were, like the lost word when we seek too energetically to recall it), by his voluntary efforts slanting from the true direction." (p. 187)

"*What then must the person do?"* asks James, *"He must relax, " says Dr. Starbuck, -- "that is, he must fall back on the larger Power that makes for righteousness, which has been welling up in his own being, and let it finish in its own way the work it has begun..."* (p. 188)

In short James describes an effortful moralistic ("Darwinian" morality) incremental process punctuated suddenly by an involuntary *"anti-moralistic"* self-surrendering transcendent experience or 'conversion' which quite quickly (after several hours at most) diminishes in intensity but leaves a permanent moral mark. But James gives no good explanation for there being active moralistic conscious and passive anti-moralistic subconscious processes. The best he is able to do is draw mechanical (overheated machines) or cognitive (jammed thoughts) analogies which lack theoretical substance. Nor does he give any explanation why there should be an unconscious *"larger Power that makes for righteousness"* that spontaneously *"wells up"* and "*works its way towards rearrangement"* and eventually *"bursts forth"* unaided, if the imperfect conscious self will just get out of its way. More specifically James sees only two ways to get rid of *"undesirable affections"* . Either:

"an opposite affection should overpoweringly break over us" or *"by getting so exhausted with the struggle that we have to stop,-- so we drop down, give up, and don't care any longer. …Our emotional brain-centres strike work, and we lapse into a temporary apathy ... So long as the egoistic worry of the sick soul guards the door, the expansive confidence of the soul of faith gains no presence. But let the former faint away, even but for a moment, and the latter can profit by the opportunity, and, having once acquired possession, may retain it."* (pp. 189-190)

It is here with a *"faint[ing] away"* of the ego through sheer apathetic exhaustion that James again comes close to the idea of kenosis. He even refers to a *"Centre of Indifference"* (p. 190) which is the antithesis of the self-centric voluntary moralistic struggle to reach the goal. But this centre of indifference which leads to self-surrender arises for James not through a consciously held attitude of equanimous kenosis but through quite the opposite – emotional exhaustion from the effort required to continually uphold "Darwinian" morality while desisting from Darwinian selfishness. But in some cases the self-surrender breakthrough never comes - all the willed emotional effort simply causes the system to seize up or jam. James' explanation for this:

… Starbuck seems to have put his finger on the root of the matter when he says that to exercise the personal will is still to live in the region where the imperfect self is the thing most emphasized…

In other words, the subject's wilful efforts to identify with "Darwinian" morality only serve to elicit reflex resistance from the selfish aspects of DM/S which become further entrenched and thereby increasingly immune to breakdown by direct moralistic attack. βb will simply not yield to c. A more poetic statement of this is given by Masters and Houston (2000/1966) in their book entitled *The Varieties of Psychedelic Experience* where they describe a case of what they consider to be an authentic LSD-induced religious experience. The subject is a highly intelligent psychologist with a rich, complex imagination who describes his life in vivid symbols as a mythic battle between good and evil. The striking thing here is how he identifies himself with Lucifer, with his selfish, *"evil"* DM/S, i.e. he is completely honest; he simply cannot accept that he must surrender himself to God:

"Concerning his "conflict with God," S said that he found himself impelled by a basic instinct of survival to fight against God. Should I be overthrown in this, then my I *would be gone. To preserve itself my* I *must wage war against God. Once I give in, I am subject to God. …Either I meet God on equal terms, or I cannot meet him at all. I feel like a terribly battered boxer who gets knocked down again and again but keeps on getting up and coming in for more punishment. I am a battleground of the most titanic forces."* [10] (p. 276)

S's pact with evil can be seen as a desperate effort by DM/S to prevent kenosis in a mind already at some level very close to it:

"All my life I have been trying to cut loose from something at the bottom of myself [DM/S] *that prevented me from going where I wanted to go and also from knowing what I wanted to know. What I wanted to know was essentially God* [kenosis, NDM]*"* (p. 292)

Aided by a series of guided LSD sessions S gradually comes to realise that his entire life, all his sordidness and neurotic suffering, has been nothing but the acting out of his ego's resistance to self-surrender.

[10] Philo interpreted the story of Cain and Abel as the struggle between love of self and love of God (Armstrong, 2008, p.51).

"*Yet he still wonders whether freedom from problems at the expense of giving himself over to the "other side" could be worth the price? … God has no right to force such a choice upon man"*. (p. 281)

Nevertheless, one by one S cuts away from his *"evil roots"* and eventually meets God without feeling diminished in any way. Once a militant nihilist who kept seedy company and felt an outsider to the human race, S became strong, happy and very at home in the world. He felt *"fully human, a bona fide member of the species"* (p. 298). A year after his encounter with God, S still felt *"transformed"* and his behaviour was changed for the better[11].

From the "jammed" pre-transcendent perspective of DM/S, kenosis was anathema to S and he was fortunate to find LSD and use it wisely to "unjam" himself. It is easy to see how he may have struggled on and on, perhaps never finding relief, an extreme case of those who *"find themselves two-fold the children off hell"* stuck in a moral battle between good and evil, or less dramatically and more accurately between selfishness and selflessness.

Morality and Spirituality: A Neural Disinhibition Hypothesis

In those cases where self-surrender does happen, James introduces a neural-level explanation:

"Man's extremity is God's opportunity" is the theological way of putting this fact of the need of self-surrender; whilst the physiological way of stating it would be, "Let one do all in one's power and one's nervous system will do the rest." pp. 187-188.

In partial in agreement with James, the neural correlates of selfish and "unselfish" Darwinian mind are here hypothesized to reciprocally inhibit each other, with the neural correlates of selfish Darwinian mind usually dominating but allowing the neural substrates of "unselfish" Darwinian mind, Darwinian "morality", to be expressed whenever there are opportunities which satisfy $\beta b_{obj} > c$. Now as already mentioned when the meta-self introduces and maintains an attitude of equanimous kenosis DM/S is initially only mildly challenged by relatively superficial

[11] James observes that not all which arises from the subconscious has spiritual value and he uses the criterion of *enduring* 'moral helpfulness' (e.g. p. 28, p. 211, p. 214, pp. 228-9) to sort the psychopathological chaff (e.g. automatisms, p. 222) from the authentic spiritual wheat.

motivations and cognitions of kenosis which it resists with ease. But if the meta-self continues with sustained effortful equanimous kenosis DM/S's resistance sooner or later inevitably fails, i.e. a 'quantum' of DM/S finally gives way. Crucially, at the neural level *it is only the selfish aspects of DM/S which need fail - the neural substrates of prosocial motivations of DM/S are relatively compatible with NDM because they put others' wellbeing before the self.* The mind so unbalanced is now overrun by the disinhibited hyper-expression of the neural substrates of prosocial motivations.

It is therefore wilfully sustained equanimous kenosis rather than emotional exhaustion from extreme moral exertions per se' that directly leads to failure of the habitual selfish response; and the ensuing flood of prosocial motivations which characterise this failure are here attributed to the disinhibition of prosocial motivations born of thoroughly Darwinian processes. The major implication stemming from this analysis is that "Darwinian" morality has been mistaken for kenosis and morality (sensu latu) may in fact be somewhat incidental to transcendent spirituality. That is notions of morality, in various shades, have been derived from the spectrum extending from self-preserving Darwinian selfishness, through "unselfishness" (Darwinian "morality"), through genuine unselfishness ("Darwinian" morality), to selflessness/kenosis (non-Darwinian amorality). All of these positions have been regarded as moral but none more so than morality associated with advanced spiritual accomplishment that is here proposed to be nothing more than the unavoidable consequence of the spiritual journey, the disinhibited expression of lesser, lower "unselfishness", the neural by-product of selflessness. In order to distinguish the moral effects of post-transcendent kenosis from "Darwinian" morality, the former shall be called kenotic "morality", where morality denotes the Darwinian origin of the prosocial effects of kenosis and the quotes signal the amoral non-Darwinian mindset giving rise to these effects. This model therefore distinguishes between four entities:

- Darwinian "morality" (self-serving "unselfishness", $\beta b > c$),
- "Darwinian" morality (genuine unselfishness, $\beta b < c$) and
- Kenotic "morality" (the disinhibited moral consequences of amoral kenosis).
- Amoral kenosis.

Kenosis is not morality. Kenosis is an amoral intra-personal intra-psychical process which in relative form gives rise to kenotic "morality" that is subjectively similar to both Darwinian "morality" and "Darwinian" morality but in more extreme forms is subjectively and objectively distinct. After all, all major spiritual traditions maintain that the ultimate reality/deity is

unknowable, veiled (Armstrong 2008), yet all agree that behind this noetic veil, beyond DM/S deep within NDM, there is neither good nor bad - human notions of morality simply do not apply.

For James then, there is little in the way of theoretical or experiential continuity between the mental states before (active/volitional, moral, emotional and neural) and after (passive/involuntary, anti-moralistic, mystical and subconscious) transcendence. Equanimous kenosis on the other hand more readily straddles the border between pre- and post-transcendent phases. Pre-transcendent cognitive kenosis is perfectly in keeping with James' voluntary active pre-transcendent phase because pre-transcendent cognitive kenosis is an attitude of *active passivity* whatever arises in the mind is passively observed and not identified with as self, nor judged as good or bad. The active element in this is the hugely demanding mental vigilance, discipline and commitment required to maintain neutral detachment from and passivity toward whatever arises in the mind, to refrain from being swept up by the habitual efforts of DM/S to suck the subject into its adaptive motivational imperatives. And when transcendence happens, the spontaneous flooding of the mind with disinhibited prosocial motivations, alien in intensity and purity, in conjunction with sharply diminished self-referencing contributes to the subject's "*impression that he has been wrought on by an external power"* (pp. 104-5). This heartfelt kenosis is (just as it is for James) passively and effortlessly experienced. In contrast to James' voluntary-active/involuntary-passive split, the current model is characterized by a strong element of passivity or *via negativa* both prior to (*actively* maintained equanimity towards the objects of desire/aversion and 'no self') and after (spontaneous diminution of ego and *effortless* non-reactivity to the usual objects of desire/aversion) transcendence. In short, the current model explicitly teaches *via negativa* on both sides of transcendence.

Quantal transcendental shifts therefore involve a superposition of DM/S and NDM, the former waning and the latter waxing with progressive spiritual development. The seeker must proceed through any number of cycles of, in James' language, volitional and self-surrender phases. Progress therefore is never smooth but discontinuous, cyclical and step-wise. In terms of the current model this is due to repeated episodes of sudden collapse of egoistic resistance following sustained periods of wilful kenosis wherein the neural substrates of selfish DM/S are again weakened until they suddenly give way. The meta-self's effortful maintenance of largely cognitive kenosis (as opposed to its moralistic approximation, "Darwinian" morality) prior to transcendence segues into passive effortless heartfelt kenosis after transcendence. Although as discussed below the attainment of absolute kenosis is possible, before this stage is reached, each

cyclical transition from mundane DM/S to transcendent NDM is only relative. The shift however is quantal - an unambiguous change of perspective.

In summary, the moralistic approach can in some cases bear fruit when it climaxes in equanimous kenosis via apathetic exhaustion, a collapse of a quantum of DM/S, and the arising of a *"Centre of Indifference"*. In other cases however the *"sick egoistic soul"* (DM/S) is merely entrenched by moralistic attack. Kenosis therefore and not morality is at the heart of transcendence. James in emphasizing active 'moralistic regeneration' and passive 'indifferent anti-moralistic self-surrender' has a strong intuition of the fundamental importance of equanimous kenosis, and when the crunch comes, of the blocking effect of moral striving in spiritual transcendence. James must also be credited for emphasizing the latter's allowance of only *negative* descriptors. But he fails to accurately identify the role of the negative element in the pre-transcendent phase, i.e. James' *"subtlest moral counterpart"* to the "*use by the intellect, of negation as a mode of passage towards a higher kind of affirmation"* is an inadequate account of the role of equanimous kenosis *prior* to transcendence. For James, *"... when the will has done its uttermost…it seems that the very last step must be left to other forces… "* . According to NDM theory on the other hand, since desire/aversion and the 'self' are two sides of the same coin the mechanism of self-erosion is, *from the beginning*, *wilful* equanimous kenosis: self-surrender, not morality per se', is what must be willed and morality will inevitably follow.

Equanimous kenosis stands in contrast to DM/S with its objective reproductive-survival calculus ($\beta b > c$) and its subjective selfish/"unselfish" motivational components and it is only to the latter evolved entities that moral emotions can be scientifically traced. Even rarified "Darwinian" morality (genuine unselfishness) does not equate with non-Darwinian kenosis (selflessness) but only approximates, camouflages and conceals it. This dissociation is starkly evident in those who make inordinate sacrifices for what they believe is right, but make no claim to nor show any sign of spiritual transcendence.

Neurobiological Considerations

The neural disinhibition hypothesis can be generalized to account for other core aspects of transcendent spiritual experience. For example, Darwinian prosocial transactions require trust/faith to counter doubts/fears thereby tilting the individual towards making a cooperative investment. Disinhibited non-Darwinian mind is therefore expected to be suffused with intense unopposed trust/faith offering an explanation for the sense of unshakeable conviction, belief or

'Truth' encountered during and enduring long after deep spiritual experiences. In a well-known study by Kosfeld et al. (2005) a single dose of the prosocial neuropeptide hormone oxytocin increased trusting behaviour in an economic game played by men. Almost half (45%) of the men in the oxytocin group showed maximum trust, whereas in the placebo group maximum trust was observed in only 21% of the subjects. The prosocial features of transcendence are therefore, in this sense, reducible to neurobiology.

But as already argued, unselfishness does not make for spiritual transcendence, selflessness does. Can anything be said of the neural correlates of DM/S, NDM and equanimous kenosis as the bridge between them? Recent neuroimaging discoveries reveal a stable pattern of bilaterally symmetrical neocortical fMRI activity when the mind is at rest not performing any specific mental task. Engagement in a specific mental task (e.g. a working memory task) triggers pronounced down-regulation of this network which has therefore been labelled the 'default mode network'. Remarkably, activity in the default mode network correlates with several modes of spontaneous or cued thought which strongly suggests a connection between the default mode network and Darwinian mind/self. These thought modes include autobiographical memory, envisioning the future, theory of mind (thinking about others' minds) and moral reasoning. Most strikingly from the viewpoint of this article, the common factor uniting these various thought types is the self-referential/self-representing element that is always involved (Buckner et al., 2008). There is other neuroimaging evidence supporting the default mode network as a neural correlate of DM/S. Pagnoni et al. (2008) quoting the classical (kenotic) Zen meditation instructions given below report decreased default mode network activation in experienced Zen meditators versus inexperienced controls.

''Think of neither good nor evil and judge not right or wrong. … bring to an end all desires, all concepts and judgments … If a thought arises, take note of it and then dismiss it.'' (p. 1, shortened)

The results of this Zen meditation study show a negative correlation between default mode network activity and equanimous kenosis suggesting differences between the neural correlates of NDM and DM/S.

Nevertheless the neocortical default mode network described in humans, and also in monkeys and chimpanzees (Vincent et al., 2007; Rilling et al., 2007), should not be considered to be the complete neural correlate of DM/S. Self-referential mental correlates only equate with DM/S if

motivations of desire or aversion are what are being self-referenced, and the cortical default mode network is certainly not the main neural correlate of either desire or aversion. As seen earlier, the core neural elements of desire and aversion can be traced back to the primitive 'reptilian' midbrain (Panksepp, 1998; Panksepp and Northoff, 2009). There are however several major anatomical connections and functional interactions between sub-cortical desire/aversion pathways and the cortical default mode network (Mobbs et al., 2007; Panksepp, 1998). The two largest and most important interfaces between these systems are the meso-cortical dopaminergic reward-seeking "desire" system which courses from the 'reptilian' mid-brain to the medial prefrontal cortex; and the amygdala, the brain's number one threat-detecting "aversion" system. A detailed consideration of the sub-cortical correlates of DM/S is beyond the current scope but there is substantial evidence for motivational systems involvement in the self (for reviews see: Northoff & Panksepp, 2008; Northoff et al., 2006; Panksepp and Northoff, 2009). For example De Greck et al. (2008) found identical fMRI signal time-courses in both sub-cortical and cortical components of the reward system during a reward task and a self-relatedness task involving the identical stimulus set. On this basis these authors actually propose that the self is in fact based on reward. Although the picture is somewhat more complex with respect to negative emotions there is extensive evidence of overlap and/or interaction between both cortical and sub-cortical self-referential and aversion systems (Northoff et al., 2006; Northoff & Panksepp, 2008). The self-representation/self-referencing default mode network is therefore only able to support one aspect of DM/S and motivational input from sub-cortical desire/aversion systems is necessary to complete the picture. The neurobiological evidence therefore supports the core theoretical notion of desire/aversion and the self being two sides of the same coin.

Before concluding this section there is one loose end from James' account of transcendence to tie up. There are several statements such as those on pages 187-188 of James' "*Varieties*" quoted above which emphasize a powerful intrinsic tendency of the mind to make its own way towards liberation. The current model offers a simple physical explanation. Organisms are meta-stable dissipative structures far from thermodynamic equilibrium (Nicolis & Prigogine, 1977) which in plain language means that energy must be constantly consumed to maintain the structural complexity of organisms/adaptations. Without energy-demanding maintenance highly ordered adaptive components rapidly begin to fall apart. In short, entropy increases spontaneously along a gradient running from *adaptation* to *exaptation* to *nonaptation* until only raw materials are left. Painstakingly evolved DM/S is therefore constantly in danger of breaking

down into nonaptive NDM, a tendency which can account for James' observations of an inner subconscious power silently and independently ever-keening towards transcendence[12].

Absolute Kenosis: The Nonaptive Qualities of Spiritual Selflessness

But is neural disinhibition the whole story? Ultimately the spiritual journey climaxes in liberation from all aspects of the self because spirituality in its fully fledged form is here proposed to be the state of complete selflessness or "no self" which is amoral, beyond good or bad, beyond words, beyond even the senses, beyond any Darwinian reality whatsoever. Such states are well-documented in many traditions e.g. the *orison of union* meditation in Christianity and *nirvana* in Buddhism and there is compelling evidence that these states are indeed totally transcendent[13]. For example James is unequivocal about the shutdown of all normal sensibilities:

" …in certain cases imagery may fall away entirely, and in the very highest raptures it tends to do so. The state of consciousness becomes then insusceptible of any verbal description. Mystical teachers are unanimous as to this. Saint John of the Cross… describes the condition called the 'union of love,' (which, he says, is reached by 'dark contemplation.') In this the Deity compenetrates the soul, but in such a hidden way that the soul –

James now quoting St John of the Cross:

"…finds no terms, no means, no comparison whereby to render the sublimity of the wisdom and the delicacy of the spiritual feeling with which she is filled.... We receive this mystical knowledge of God clothed in none of the kinds of images, in none of the sensible representations, which our mind makes use of in other circumstances. Accordingly in this knowledge, since the senses and the imagination are not employed, we get neither form nor impression, nor can we give any account or furnish any likeness, although the mysterious and sweet-tasting wisdom comes home so clearly to the inmost parts of our soul…. This is the peculiarity of the divine language. The more infused, intimate, spiritual, and supersensible it is,

[12] Given the neuroimaging findings regarding the self and this entropy model it is not difficult to see how NDM theory is susceptible to experimental investigation.
[13] Absolute kenosis or 'no self' is a fundamental axiom of Buddhism (Snellgrove 2002, p. 98).

the more does it exceed the senses, both inner and outer, and impose silence upon them…." (pp. 352-3)

James then quotes Saint Teresa's description of the orison of union:

"In the orison of union, the soul is fully awake as regards God, but wholly asleep as regards things of this world and in respect of herself. During the short time the union lasts she is as it were deprived of every feeling, and even if she would, she could not think of any single thing. … In short, she is utterly dead to the things of the world and lives solely in God. … "Thus does God, when he raises a soul to union with himself, suspend the natural action of all her faculties. She neither sees, hears, nor understands so long as she is united with God." (p. 354)

Finally with apt brevity James provides the Buddhist account:

"Higher stages still of contemplation are mentioned - a region where there exists nothing, and where the meditator says: "There exists absolutely nothing," and stops. Then he reaches another region where he says: "There are neither ideas nor absence of ideas," and stops again. Then another region where, "having reached the end of both idea and perception, he stops finally…"

"…This would seem to be, not yet Nirvana, but as close an approach to it as this life affords." (pp. 347-8).

Such spiritual experiences neural disinhibition does not explain. These ineffable states of consciousness do not depend upon the Darwinian sensory channels of sight, sound, touch etc. which are so obviously adaptive. Neither do they resemble any of the evolved adaptive emotions discussed above and no adaptive value is evident in them. On the contrary, the physical body becomes useless:

"In the condition called raptus or ravishment by theologians, breathing and circulation are so depressed that it is a question among the doctors whether the soul be or be not temporarily dissevered from the body… Many ecstatics would have perished but for the care taken of them by admiring followers." (pp. 357-8)

Together with cessation of normal bodily function, the personal sense of self and all traces of normal cognitive activity also disappear. These deeply transcendent experiences are clearly quite distinct from disinhibited prosocial feelings. The subject is apparently devoid of all traces of DM/S and the remaining mind offers nothing whatsoever in the way of Darwinian fitness. Such a mind is compatible with the notion of nonaptive non-Darwinian mind.

These ultimately transcendent experiences are within the present model partially accounted for by two factors. Firstly, Darwinian mind must be constantly alert to danger and ever ready to generate discordant or uncertain feelings of aversion. There is however no reason for nonaptive non-Darwinian mind to feel discordant or uncertain. Secondly, Darwinian mind/self constructs boundaries between self and other which imbues every self-conscious individual with a sense of separateness. Deep or complete erosion of Darwinian mind/self is therefore expected to be accompanied by the evaporation of feelings of discordance, uncertainty and separateness thereby at the very least allowing for opposite feelings of peace, love, oneness and certainty characteristic of spiritual experience.

But allowing for feelings is not the same as generating feelings so where do these ultimate spiritual feelings come from? As argued above the earliest manifestation of nonaptive mind implies the presence of some mental qualities which are not the product of natural selection and hence are non-Darwinian by definition. And while some of the qualities often associated with spiritual experience are hypothesised above as being the unopposed disinhibited expression of prosocial Darwinian mind, *others may go in the opposite direction*. Transcendent feelings of profound peace, harmony, oneness and love are conceivably primary properties of nonaptive primordial mind that have been all but banished from Darwinian mind/self. After all, a subject experiencing such feelings has no incentive to pursue arduous adaptive programs for comparatively trivial rewards. This idea gels with myths of paradise lost such as the banishment of Adam and Eve from Eden for succumbing to Darwinian motivations of desire.

The obvious objection to this argument is that ascribing positive qualities to non-Darwinian mind contradicts the frequent reliance until now on *via negativa* as fundamental to transcendence. But this problem is readily resolved by virtue of another fundamental feature of transcendence. *Coincidentia oppositorum* refers to the archetypal feeling of completeness and oneness characteristic of the transcendental turn wherein *"things that seemed separate and even opposed coincide and reveal an unexpected unity"* (Armstrong, 2008, pp. 5-6).

James in discussing the paradoxical negative/positive qualities of transcendence describes something very similar to *coincidentia oppositorum*:

"We pass into mystical states from out of ordinary consciousness as from a less into a more…. We feel them as reconciling, unifying states. They appeal to the yes-function, more than the no-function in us… the unlimited absorbs the limited and peacefully closes the account. Their very denial of every adjective you may propose as applicable to the ultimate truth … is to be described by 'No! no!' … though it seems on the surface to be a no function, [it] is a denial made on behalf of a deeper yes." (p. 360)

Clearly while one must stick to the *via negativa* to enter into transcendent states, these states are not devoid of content. In keeping with James and with Ferrer (2006) who emphasises the plurality of transcendental ultimates yet hold firmly to selflessness as key to transcendence, NDM begins precisely where DM/S ends but ends we know not where.

To conclude, the accounts of St John and St Teresa imply the reality of mental states which leave all traces of Darwinian mind behind. Both temporarily cross a line beyond which all normal biological sensations, emotions or cognitions cede way to the ineffable sweetness of divine grace. The tantric teacher Lama Yeshe describes the same phenomenon:

"…if we contemplate deeply and continuously enough upon the formless clarity of our own mind, it is possible to stop perceiving the forms, sounds, smells, and so forth that come to us through the doors of our senses. As these sensory experiences subside… we become aware of an upsurge of ecstatic, blissful energy from within …spontaneously…open[ing] the way for us to experience expansive, liberated, and all-encompassing states of consciousness." (*Introduction To Tantra*, p. 80.)

Evidence from different traditions that the ultimate spiritual heights involve profound self-transcendence hand-in-hand with complete breakdown of familiar adaptive mind such that the subject is released into a much wider blissful spiritual space lends credence to the existence of NDM as being this space and to the NDM model of spirituality.

Kenosis, Morality and Practical Spirituality

As already mentioned DM/S strenuously resists kenosis and so sooner than later a profound struggle ensues between the meta-self and DM/S and since DM/S is essentially selfish this *seems* to be a moral struggle. In other words as seen above it is not the "unselfish" prosocial motivational components of Darwinian mind/self that take up arms against the meta-self because at a subjective level these are not an obstacle to kenosis. These motivations in fact feel well-aligned with the moral values, expectancies and transcendent goals of the subject. To ultimately transcend DM/S the subject will have to de-identify with these motivations and values as well, but for the time-being they do not impede progress. The selfish motivations of DM/S are however going to kick and fight from the start and their selfish nature quickly and easily triggers a conflict between evolved selfish and unselfish motivations. From the perspective of kenosis however, the struggle has nothing to do with morality at all. Whatever arises in the mind in the form of desire/aversion arises from Darwinian mind/self and should not be identified with or reacted to. In contrast to the over-heated effortful moralistic struggle described by James, the kenotic attitude is to remain as calmly neutral-minded as possible. Needless to say as DM/S resists, things *will* become overheated but instead of interpreting the struggle as a battle between good and evil, the subject must not react and must only ever identify with what is *not* ("this is not I"), with *via negativa*. A cognitive attitude of equanimous kenosis must always be actively maintained as much as possible.

Nevertheless, the self-referencing habit of the mind is such that the pre-transcendent struggle between DM/S and the meta-self *feels* intensely personal and morally loaded. Equally, the disinhibited prosocial motivations experienced in the acute post-transcendent phase evoke very strong motivations to maintain personal moral purity and kindness, thereby colouring this phase with compelling moral overtones. But kenosis per se' is theoretically amoral emphasizing passivity/negativity, equanimity, 'no self' and ultimately transcending the earthly/social realm altogether. The practical effects of kenosis however are *very* moral: as long as a kenotic attitude prevails, any selfish impulses which includes all urges to harm others in any way will not be acted upon but simply observed, and without self-judgement either. Furthermore, the subject who is well-established in kenosis but is not in a state of absolute kenosis (which is anyway always only transient) *will* be moved by disinhibited prosocial motivations of compassion for others in distress and may well decide to act on these feelings to help alleviate their suffering. Thus passive kenotic "morality" can result in active kenotic "morality" but it is always first passive. In contrast, disinhibited prosocial motivations alone without kenosis, i.e. a mind prone

to being overwhelmed by subjectively genuine unselfishness will generate reflex prosocial actions that may in fact be harmful to others because the protagonist cannot act with optimum objectivity. The subject who acts first from a kenotic standpoint and only second from a prosocial standpoint is far more likely to be effective in helping others.

That some traditions or theories fail to distinguish all or some of the moral categories summarised on page 24 may be because the early stages of the spiritual path are only crudely kenotic. But as the subject works their way more and more deeply into NDM the difference becomes crucial: Firstly, there are ever-deeper layers of selfish DM/S to transcend (the self is multiply-encoded in the brain). Secondly, as compatible with kenosis and transcendence as they may seem, even prosocial motivations derive from DM/S and are therefore motivationally self-referential and the subject who continues to identify with them, who continues to be automatically (however subtly) swayed by these impulses, has not fully escaped DM/S. Therefore, within the current model the spiritual purpose of renunciation of desire/aversion is not because these motivations are "bad" but because their undisciplined presence sustains Darwinian self and its domination of the mind. Similarly, the spiritual purpose of practising genuine unselfishness is not because it is "good" but to undermine the iron grip of self-serving Darwinian self on the mind.

Kenosis is also an invaluable touchstone for diagnosing in oneself or others such waywardness from the path as spiritual materialism (where spiritual practice feeds rather than starves the ego, all the right words are said, all the right rituals are observed but there is no heartfelt kenosis (Trungpa, 1973) and spiritual narcissism (seeking the highs which spiritual practices can induce without outward benefits for others (Ferrer, 2002). Wherever there is genuine kenosis these concerns evaporate but where there is not, they stick.

Many people adhere to and progress along the path without leaving their social and occupational roles. Here cognitive kenosis and heartfelt kenosis can work in concert. The fruits of this partnership are two-fold: interiorly they in turn cause and inspire further spiritual progress and externally they manifest in kenotic "morality". The latter may be largely passive or it may be more active as many cases across the spectrum of religious history testify. It is therefore very surprising to discover that by some accounts religions seem not to require even "Darwinian" morality, let alone kenotic "morality". In *Altruism in World Religions*, William Scott Green concludes that the definition of altruism consistently applied in each chapter of this comparative work *"violates many, if not most, of the categories of the religions considered here"* (Green,

2006, pp.193-194). The definition of altruism in this case requires that *"action for the welfare of others can have only a neutral or negative consequence on the actor"* (Neusner & Chilton, 2006, p. xiii), i.e. that $\beta b_{obj} \leq c$. From this one concludes that religious altruism in the sense used by Green above is no different to Darwinian "morality" where $\beta b_{obj} > c$. How can this be reconciled with the unambiguous radical kenosis found in religious texts; how is the epicenter of religious morality within the realm of Darwinian "morality" and the field of spiritual self-sacrifice in the realm of kenotic "morality"? The simple answer is that it cannot. There can be Darwinian "morality" or even "Darwinian" morality without kenosis but there cannot be any spiritual progress towards nonaptive selfless non-Darwinian mind without at least some letting go of Darwinian self, without relative kenosis. Kenotic "morality", i.e. disinhibited Darwinian prosocial motivations is morality born of serious spiritual endeavour. Religious morality without kenosis is hollow religion and Greene's findings suggest that religious morality falls short. This is no doubt why Ellis (2000) sees room for more kenosis in *"all religious traditions… …with a strong element of self-sacrifice as an essential ingredient"*. Stronger kenosis is for Ellis inextricably related to deeper religious ethics (Ellis, 2000; Ellis & Ellis, 1997).

There is nevertheless no getting around the fact that kenosis is a hard pill to swallow and it is not that surprising that many traditional religious interpretations concur with S that *"God has no right to force such a choice upon man"* and consider kenosis unsuitable for the masses who are at best expected to practice Darwinian "morality" (Nuesner & Chilton, 2006). Non-Darwinian mind (practicing kenosis towards full selflessness) being only for saviors and saints.

Sensations and the Mechanism of Kenosis

The creation of Darwinian mind/self from nonaptive mind necessitated forging a link between the subject to motivations of desire and aversion. It cannot be assumed that this link, whereby the subject prioritises motivations of desire and aversion before all else (thereby creating Darwinian self) is an inherent property of mind or was a property of primordial nonaptive embodied mind. On the contrary, it is proposed that this link is an adaptation involving sensations. Any sensations which a primordial embodied subject experiences within nonaptive mind would have no intrinsic Darwinian meaning, i.e. sensations, pleasant or unpleasant may come and go without evoking any motivational (adaptive or not) response. Darwinian mind on the other hand depends upon the subject's identification with the Darwinian self which amounts to interpreting pleasant and unpleasant sensations as motivations of desire/aversion. But if the

meta-self supervenes and the subject does not identify with the Darwinian self and does not interpret and respond to sensations evoking motivations of desire/aversion, these motivations have nothing to act on. Darwinian mind/self will respond to this intrusive influence of the meta-self by intensifying sensations (along with emotions and cognitions) in order to *force* the subject to respond. But if the subject remains resolute, neither identifying with nor reacting to sensations relating to desire and aversion, these sensations will have no effective Darwinian self to impinge upon. There will be no motivational traction. The tendency of the subject to identify with Darwinian self and to respond to pleasant and unpleasant sensations with motivations of desire/aversion is a biological predisposition that is repeatedly self-reinforced but not irreversibly hardwired. Sustained refusal of the subject to respond will lead to extinction of the conditioned response and in time weakening and extinction of the unconditioned instinctual[14] response as well (Hart, 1987).

Darwinian self takes itself and its motivations of desire/aversion very seriously. Refusal to do so amounts to self-negation or self-sacrifice which does not come naturally, is very hard to do and may even be fatally dangerous under conditions where the subject's life is threatened. But the spiritual seeker must endure this difficulty and risk this danger which are in fact only meaningful within the Darwinian context. Within nonaptive greater mind the subject has no difficulties or issues of life and death. Arguably, it is only the interpretation of sensations by Darwinian self in terms of desire and aversion with their adaptive life and death consequences that imbues them with their motivational force. Outside the Darwinian framework sensations do not necessarily impinge upon the non-Darwinian subject with the same seemingly inescapable motivational quality as they do on the Darwinian self. The hugely subjective nature of pain perception supports this idea (Beauregard, 2007; Villemure & Bushnell, 2002; Chen, 2001).

Conclusion

NDM theory constitutes a novel derivation of selfless mind from evolutionary and psychological first principles that exactly matches the phenomenology of self-sacrifice (equanimity and kenosis) widely considered indispensable to spiritual transcendence. This congruence offers an explanation as to why self-sacrifice is crucial to transcending highly constrained positivist self-centric 'closed' adaptive mind space towards freely expansive negativist selfless 'open'

[14] The term instinct is here defined as a behavioural or mental activity which arises spontaneously within its natural biological context and is refractory to ordinary learning processes.

nonaptive mind space, as well as why this is so difficult, without drawing on any spiritual beliefs. When this explanation is mapped onto spiritual transcendence, existing ideas about the latter, especially the role of kenosis, are neatly accommodated and in places clarified in terms of the new model which has greater explanatory power. The greater explanatory power of NDM theory flows from its seamless connection to primary theoretical principles in five major disciplines: philosophy (motivation, agency, ethics), psychology (the self, states of consciousness), Darwinian evolutionary theory (non-aptation, emotional evolution), neurobiology (affective neuroscience) and physics (thermodynamics). As such NDM theory provides a fresh unifying and parsimonious scientific account of old phenomena. In particular it broadens the margins of consciousness while questioning the importance of conventional self-centric consciousness. The relationships between evolved prosocial emotions, morality and religion are also scrutinised in a new way.

The distinction between wilful "Darwinian" morality and wilful non-Darwinian amoral kenosis may be somewhat subtle but the arguments which form the substance of this article render negativist equanimous kenosis or *"denial of the self and its wants"* perfectly distinguishable from positivist moral "*voluntarily built-up regeneration"* . Specifically, James has no difficulty distinguishing self-surrender from moralistic aspirations but, short of emphasizing its connection to a "moral mystery" inter-twined with an "intellectual mystery" along the same *via negativa*, he fails to say exactly what self-surrender is or how exactly to accomplish it. James gets so far as to jettison moral betterment in favour of a centre of indifference but sees this as part and parcel of a sudden involuntary moment of self-surrender consequent to emotional exhaustion from moral exertions as opposed to a sustained premeditated cognitive attitude. What seems to have eluded him is the subtle theory and far, far more subtle but nonetheless *active* practice whereby equanimous kenosis, defined here as neutral-mindedness towards temptations of desire/aversion and studied non-identification with the common self, constitutes a systematic and logical albeit inordinately self-exacting passage from ordinary/Darwinian to spiritual/non-Darwinian states of consciousness. James' *"subtlest moral counterpart"* is quite simply nothing other than equanimous kenosis and the distinctions between selfishness, "unselfishness", genuine unselfishness and amoral selflessness/kenosis (with nonetheless potent moral side-effects) which have been precisely characterised and quantified in sociobiological cost-benefit terms and divide mental space into 'positive' Darwinian mind/self and 'negative' non-Darwinian selflessness zones throw new light onto James' otherwise authoritative qualitative analysis of the transcendental phenomenon.

James eventually confronts the question of whether psychologising and neurologising spiritual experience in the way he does, does not exclude "the Deity"? His answer, in part, to this question is as follows:

"... something ideal, which in one sense is part of ourselves and in another sense is not ourselves, actually exerts an influence, raises our centre of personal energy, and produces regenerative effects unattainable in other ways." (Postscript pp. 447-8)

NDM theory on the other hand holds that transcendence entails something which is part of our subjective makeup but is explicitly *not* part of our *selves*. But NDM is not merely a label for *'something ideal beyond ourselves'*. In particular, although NDM is congruent with the *via negativa* which encompasses passive kenotic "morality" and is beyond good and bad, it also sheds at least a little new light on the possible evolutionary and psychological dynamics of these ineffable positive qualities which raise our *"centre of personal energy, and produce regenerative effects unattainable in other ways"*. That is, while these personal energies and regenerative effects are undeniably good, NDM theory distinguishes two kinds of good. On the one hand there is regular earthly self-referencing moral goodness attributable to the prosocial aspects of DM/S that are during transcendence hyper-expressed in an intensified, purified way due to disinhibition rather than to directly contacting a source of transcendent goodness beyond the self. This however is not to say that another kind of good, the profoundly peaceful/blissful/loving amoral ineffable goodness of extreme kenotic transcendence which is not attributable to DM/S does not exist as a primary feature of NDM. This also does not mean that the goodness of DM/S may not be some kind of filtered version of the goodness of NDM but equally it does not mean that it is. Short of absolute kenosis, subjective experience is always conditioned by DM/S and those somewhat rare but credible reports of absolute kenosis suggest that pure NDM is truly beyond all Darwinian experience and description. As already mentioned there is good reason for DM/S to banish the intense satisfactions of NDM from subjective experience and this alone is sufficient to explain why NDM in its purer forms cannot be adequately appreciated by DM/S and the difference between them cannot be adequately described in words. But this does not mean NDM cannot be scientifically investigated. Apart from neuroimaging approaches anyone curious or sceptical of the NDM theory of spirituality has only to practice equanimous kenosis to put it to the test (Varela & Shear, 1999).

In sum, NDM theory reverse-engineers the common self, discovering that the latter and motivations of desire/aversion are two sides of the same coin. Spiritually inspired

self-renunciation therefore entails disengagement from desire/aversion but morality alone cannot achieve this, self-sacrifice or kenosis is necessary. But self-preserving Darwinian mind/self tenaciously repels kenosis by ramping up potent motivations of desire/aversion. This dynamic tension reflects the ever present yet ever elusive spiritual dimension of the human psyche and explains the persistence of religion.

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