

## NEURAL NIRVANA: 'NO MIND' OR OUT ON A LIMBIC?

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Neurotheology, also known as biotheology, is the scientific study of the evolutionary, neurological and psychological structures for the cognitive experiences of spiritual awe, oneness with the universe, ecstatic trance and other altered states of consciousness that are the basis of many religious beliefs and behaviors.<sup>1</sup>

On 14 September 2003, *The Boston Globe* featured an article by Jeffrey Paine, entitled 'The Buddha of Suburbia: The Dalai Lama's American religion.' When Hanif Kureishi created the phrase, *The Buddha of Suburbia*, for his eponymous 1990 novel, he also created a metaphor for the exponential growth of white Western interest in Buddhism in the post-World War Two period, ranging from a profound commitment to its basic tenets to a dilute New Ageist sense of it as a sort of ambient spiritual tranquilizer, exemplified in the proliferation of Buddha figures of all shapes and sizes as garden and lounge room ornaments.

If, for momentary convenience, it is regarded as a religious belief system,<sup>2</sup> and leaving aside the presence of large immigrant populations, Buddhism compares in terms of rapidity of growth with fundamentalist Christianity in Western countries, especially the US and Australia, particularly if both are set beside the decline in membership of traditional Christian churches. Again, although the last fifty years has seen a huge increase in the Islamic populations of the West, this can be seen more as a phenomenon of ethnic immigration as comparatively few white Westerners have converted to Islam, fundamentalist or otherwise.

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<sup>1</sup> <http://encyclopedia.thefreedictionary.com/neurotheology>

<sup>2</sup> William James' working definition of religion as: 'the feelings, acts, and experiences of individual men in their solitude, so far as they apprehend themselves to stand in relation to whatever they may consider the divine,' is useful here, giving as he does the greatest possible latitude to the definition of divine. As he later puts it: 'There are systems of thought which the world usually calls religious, and yet which do not positively assume a God. Buddhism is in this case. Popularly, of course, the Buddha himself stands in place of a God; but in strictness the Buddhistic system is atheistic.' William James: *Varieties of Religious Experience*, London, 1960, 50.

Why the growing popularity of Buddhism? It can be surmised that Buddhism answers a need in Western society for a religious belief system that is not bedeviled (sometimes literally) by the draconian certainties of the various fundamentalisms or prostrated by the labyrinthine bureaucratisms of the established churches; a system that is accepting of individualism while providing a means of transcending the solipsism of the 'I' through a forgiving yet rigorous discipline. There would probably be a general agreement (although possibly violent disagreement) amongst the various Buddhist schools, established churches, temples, mosques and fundamentalist sects with William James' characterisation of the beliefs that are fundamental to the religious life: 1) that the visible world is part of a more spiritual universe from which it draws its chief significance; 2) that union or harmonious relation with that higher universe is our true end; 3) that prayer or inner communion with the spirit thereof, be that spirit 'God' or 'law,' is a process wherein work is really done, and spiritual energy flows in and produces effects, psychological or material, within the phenomenal world, can be seen primarily as evolutionary expedients. The same can be said for its psychological characteristics; 4) A new zest which adds itself like a gift to life, and takes the form either of lyrical enchantment or of appeal to earnestness and heroism; and 5) An assurance of safety and a temper of peace, and, in relation to others, a preponderance of loving affections.<sup>3</sup>

Beautifully summarized, but what if the ultimate goals of the religious memes, which in the West have traditionally been the experience of a Personal God, and in east, experience of Nirvana, both very different ideas, are equally illusory? What if they are both mere emotional and instinctive projections of the self through the lens of different cultures and entirely the result of the chemical convolutions of the brain? What if they are just the nurturing, defensive/offensive animal instincts of the limbic brain hi-jacked by our later-developing human prefrontal lobes?

At this point, and before attempting an answer to those questions, I will return to the subject of Paine's article, which was the implications of the presence of the Dalai Lama, other prominent Tibetan and

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<sup>3</sup> Ibid, 464.

Western Buddhists, neuroscientists, psychologists, and other academics at a conference called *Investigating the Mind*, jointly organized by MIT's McGovern Institute for Brain Research and the Mind and Life Institute. The agenda of the conference was to 'identify the common ground between two powerful empirical traditions, Tibetan Buddhism and behavioral science.' At the conference, the Dalai Lama, echoing the above quotation from the *Dhammapada*, said that, 'Even the subtlest states of consciousness must have some physical base,' and further describing Buddhist beliefs as being 'in a way very similar to the basic scientific standpoint, that the brain is the basis for all events.'<sup>4</sup>

This statement by the Dalai Lama in turn sets my agenda for a brief examination of the implications of what is called neurotheology for understanding both the connections and the great gulf between the widespread growth of both Western Buddhism and fundamentalism. It is salutary to recall what James, in *The Varieties of Religious Experience*,<sup>5</sup> had to say about the diversities of consciousness that can coexist within our minds:

[O]ur normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst about, parted from it by the flimsiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence: but apply the requisite stimulus, and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question – for they are so discontinuous with ordinary consciousness. Yet they may determine attitudes though they fail to give a map. At any rate, they forbid a premature foreclosing of our accounts with reality. Looking back on my own experiences, they all converge towards a kind of insight to which I cannot help ascribing some mystical significance. The keynote of it is invariably a reconciliation. It is as if the opposites of the world, whose contradictoriness and conflict make all our difficulties, were melted into unity. Not only do they, as contrasted species, belong to one and the same

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<sup>4</sup> Jeffrey Paine: 'The Buddha of Suburbia: The Dalai Lama's American religion,' *The Boston Globe*, 14 September 2003.

<sup>5</sup> James: op cit, 374.

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genus, but *one of the species*, the nobler and better one, is itself the genus, and so soaks up and absorbs its opposite into itself.

And, from *The Principles of Psychology*:

Just so we form our decision upon the deepest of all philosophic problems: Is the Kosmos an expression of intelligence rational in its inward nature, or a brute external fact pure and simple? If we find ourselves, in contemplating it, unable to banish the impression that it is a realm of final purposes, that it exists for the sake of something, we place intelligence at the heart of it and have a religion. If, on the contrary, in surveying its irremediable flux, we can think of the present only as so much mere mechanical sprouting from the past, occurring with no reference to the future, we are atheists and materialists.<sup>6</sup>

The work of William James is always a good place to start if one wishes to have something to think hard and deeply about. If, as Whitehead put it, all of Western philosophy is but a series of footnotes to Plato, it could equally be claimed, with some justification, that all psychology and brain science is a series of footnotes to William James.

In Lecture I of *The Varieties of Religious Experience*, James prefaces his subsequent remarks by drawing attention to a distinction made 'in recent books on logic' between two orders of enquiry concerning anything. The first, given in an **existential judgment** or proposition, asks what is the nature of it? How did it come about? What is its constitution, origin and history? The second, a **proposition of value** or spiritual judgment, asks what is its importance, meaning, or significance, now that it is once here?

Following James' illustrious example, I am, in all humility and without inviting any invidious comparisons as to the relative merits of his and my respective accomplishments, taking the former course and handling the phenomena of religious experience 'biologically and psychologically as if they were mere curious facts of individual history,' before entering into any tentative discussion of the second.

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<sup>6</sup> William James: *The Principles of Psychology*, Cambridge, 1983, 8.

James, deciding to focus on the ordinary religious geniuses rather than on the ordinary religious believer, describes religious leaders, perhaps even more than other kinds of geniuses, as subject to abnormal psychical visitations. They are:

[C]reatures of exalted emotional sensibility. Often they led a discordant inner life, and had melancholy during a part of their career. They have known no measure, been liable to obsessions and fixed ideas; and frequently they have fallen into trances, heard voices, seen visions, and presented all sorts of peculiarities which are ordinarily classed as pathological.<sup>7</sup>

Given the existential approach, he states that it is impossible to ignore the pathological aspects of the subject, it being necessary to describe and name them just as if they occurred in non-religious men despite our instinctive recoil from seeing any object to which we are emotionally committed being handled by the intellect, '... as any other object is handled. The first thing the intellect does is to class it along with something else. But any object that is infinitely important to us and awakens our devotion feels to us also as if it must be *sui generis* and unique.'<sup>8</sup>

There is usually an adverse reaction to any assumption or statement that what is of spiritual value is wholly of, 'nothing but,' merely material origins. James calls this 'medical materialism.' He characterizes it as 'the too simple-minded system of thought' that 'finishes up Saint Paul by calling his vision on the road to Damascus a discharging lesion of the occipital cortex, he being an epileptic,' or 'snuffs out Saint Teresa as an hysteric, Saint Francis of Assisi as an hereditary degenerate,' or 'George Fox's discontent with the shams of his age, and his pining for spiritual veracity as a symptom of a disordered colon,' or accounts for 'Carlyle's organtones of misery ... by a gastro-duodenal catarrh' and 'medical materialism then thinks that the spiritual authority of all such personages is successfully undermined.'<sup>9</sup> James then goes on to question how the psychology of his day, finding definite psychophysical connections to hold good, assumes the convenient hypothesis that the dependence of mental states upon bodily conditions must be thoroughgoing and complete.

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<sup>7</sup> James: *Varieties*, op cit, 29.

<sup>8</sup> *Ibid*, 31.

<sup>9</sup> *Ibid*, 35.

He points up the difference in the objective and subjective positions when he says:

If we adopt the assumption, then of course what medical materialism insists on must be true in a general way, if not in every detail ... But now, I ask you, how can such an existential account of facts of mental history decide in one way or another upon their spiritual significance. According to the general postulate of psychology just referred to, there is not a single one of our states of mind, high or low, healthy or morbid, that has not some organic process as its condition. Scientific theories are organically conditioned just as much as religious emotions are ... So of all of our raptures and our drynesses, our longings and pantings, our questions and beliefs. They are equally organically founded, be they religious or of non-religious content.<sup>10</sup>

The implications of this are that to plead the organic causation of a religious state of mind in refutation of its claim to possess superior spiritual value is quite illogical and arbitrary, unless there has been an advance working out of some 'psychophysical theory connecting spiritual values in general with determinate sorts of physiological change.'<sup>11</sup> The consequential implications of this are that 'none of our thoughts and feelings, not even our scientific doctrines, not even our dis-beliefs, could retain any value as revelations of the truth, for every one of them without exception flows from the state of its possessor's body at the time.'<sup>12</sup>

Having taken the argument to its logical conclusion, James is of the opinion that not even the medical materialism of his day would be willing to go that far. According to him:

It is sure, just as every simple man is sure, that some states of mind are inwardly superior to others, and reveal to us more truth, and in this it simply makes use of an ordinary spiritual judgment. It has no physiological theory of these its favourite states, by which it may accredit them; and by its attempt to discredit the states which it dislikes, by vaguely associating them with nerves and liver, and connecting them with names

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<sup>10</sup> Ibid, 36.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

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connoting bodily affliction, it is altogether illogical and inconsistent.<sup>13</sup>

That was over a century ago. What if there now is the beginnings of 'some psycho-physical theory connecting spiritual values in general with determinate sorts of physiological change,' that even-handedly and without making use of ordinary spiritual judgments, examines the inner workings of the brain in ways that were possibly beyond even James's wildest imaginings, in the process inexorably pushing towards the logical conclusions that the great man was at pains to avoid.

To reiterate the definition: neurotheology, also known as biotheology, is the scientific study of the evolutionary, neurological and psychological structures for the cognitive experiences of spiritual awe, oneness with the universe, ecstatic trance and other altered states of consciousness that are the basis of many religious beliefs and behaviors.

Since the waning of the Behaviorist paradigm, beginning in the late 1960s, consciousness has returned to a position of theoretical, experimental, and philosophical centrality. This has both stimulated and been stimulated by the exponential growth in the efficiency of brain-imaging technology with such innovations as PET (Positron Emission Tomography) and fMRI (functional Magnetic Resonance Imaging.) Although the brain-mind debate that originated with Cartesian dualism has not been resolved, nor looks likely to be for some time, insights into some of the ways in which the brain produces (or **occasions**, for the less committed) the mind have grown apace. The subjects of William James' 1901-02 Edinburgh lectures have been taken up with renewed interest and enthusiasm. Brain science is again scrutinizing religion and neurology, the reality of the unseen, the religion of healthy-mindedness, the sick soul, the divided self, and the process of its unification, conversion, saintliness, mysticism, and the aesthetics of religion, in the process greatly expanding the field of philosophy of mind.

For the past fifteen years or more, Michael Persinger<sup>14</sup> of Laurentian University in Canada has been experimenting with weak magnetic

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<sup>13</sup> Ibid.

fields, which trigger bursts of electrical activity in the temporal lobes, emulating the 'transients' experienced by temporal-lobe epileptics. The effects experienced by volunteers have been described as supernatural or spiritual. Descriptions of 'sensed presences' are remarkably similar to those described in James' third Gifford lecture, 'The Reality of the Unseen.'<sup>15</sup> The theory being applied in Persinger's work is that the electrical hyperactivity spreads from the temporal to the parietal lobes – the left temporal/parietal lobes maintain our sense of self while the right maintains our sense of location in space; when the left lobes are excited relatively more than the right, the sense of self is displaced and experienced as external to the person, usually to the left and slightly behind so that the presence is sensed but not seen. The sense of the divine described by some of Persinger's subjects again echoes passages in James' Lecture 16, 'Mysticism,' where various experiences of God or Cosmic Consciousness are induced either by chemicals (nitrous oxide, chloroform) or suddenly precipitated by being in beautiful natural surroundings. Persinger theorizes that upsurges of electrical activity in the temporal lobes caused by any one or more of multiple factors, such as intense prayer or meditation, anxiety, personal crisis, grief, isolation, lack of external stimuli, lack of oxygen, low blood sugar or even simple exhaustion are experienced as religious or mystical events. His apparatus mimics these mini-electrical storms.<sup>16</sup>

In 1997, Vilnayur Ramachandran, as a result of his experiments at the University of California, informed the annual meeting of the Society for Neuroscience that there is a 'neural basis for religious experience,' the results of his preliminary research indicating that depth of religious feeling/religiosity might depend on enhancement of electrical activity in the temporal lobes. In 2000, the American Psychological association published (*pace* James) *Varieties of Anomalous Experience*,<sup>17</sup> covering a range of subjects from near-death to mystical experiences. Andrew Newberg and his late colleague Eugene d'Aquili at the University of Pennsylvania have collaborated with Buddhist meditators and Franciscan nuns to study

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<sup>14</sup> See Rhawn Joseph: editor, *Neurotheology: Brain, Science, Spirituality, Religious Experience*, California, 2003, which contains an extensive bibliography for further reading.

<sup>15</sup> James, *Varieties*, op cit, 69-91.

<sup>16</sup> *Ibid*, 75-78.

<sup>17</sup> Etzel Cardena, Steven Jay Lynn, Stanley C. Krippner: editors, *Varieties of Anomalous Experience: Examining the Scientific Evidence*, Washington, 2000.



the effects of deep meditation and deep prayer respectively. What was of great interest here was the similarity between the two groups of the post-test reports in their descriptions of loss of the sense of self and absorption into a greater entity. There was also a startling similarity between the brain images; both groups showed a build-up of blood in the frontal lobes where focused concentration is located and a concomitant decrease in blood flow to the parietal lobes where the sense of personal identity is located on the left side and the proprioceptive sense on the right; that is, the sense of where one's own body ends.

Two other noted figures in the field of neurotheology are Matthew Alper, author of *The 'God' Part of the Brain: A Scientific Interpretation of Human Spirituality and God*,<sup>18</sup> and James H. Austin, a long-time Zen Buddhist and neurologist and philosopher, whose 1998 book *Zen and the Brain: Toward an Understanding of Meditation and Consciousness*, explored his ideas about his own and others' experiences of enlightenment. In an interview, Austin described his experience, when his sense of individual existence, of separateness from the physical world around him, melted away. He said that he felt as though he saw things 'as they really are.' As his sense of 'I, me, mine,' evaporated, 'Time was not present. I had a sense of eternity. My old yearnings, loathings, fear of death and insinuations of selfhood vanished. I had been graced by a comprehension of the ultimate nature of things.' As a Zen Buddhist, Austin understood his experience not as evidence of a deity, but *satori*, enlightenment, or 'no mind,' and as a neurologist, not as a sign of a suprasensorial reality, but as 'proof of the existence of the brain.' Given that, from the point of view of neurology, the brain mediates everything we see, hear, feel and think, his experience prompted him to explore the neurological sources of spiritual and mystical experience. The widely reported and often described commonalities of the benevolent mystical experience, like Austin's own, are a dissolution of time, self-consciousness, fear and a serene feeling of cosmic union. Austin reasoned that for these sensations to be experienced, certain brain functions must be either radically changed or interrupted. The amygdala, which is located at the base of each temporal lobe monitors incoming environmental data for threats and opportunities. In response to threats it registers fear and therefore must be quieted.

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<sup>18</sup> Seattle, 2001.

The parietal-lobe circuits, marking the distinction between self and world must also become quiescent, as must frontal-and temporal-lobe circuits that create time- and self-awareness.

Rhawn Joseph, the pioneering neurologist, is an accomplished researcher in the field of neurotheology and has published widely on the subject. He states that direct electrical stimulation of the temporal lobes, hippocampus, and particularly the amygdala, not only results in the recollection of images, but in the creation of fully formed visual and auditory hallucinations. It has long been known that tumours invading specific regions of the brain can trigger the formation of hallucinations, which range from the simple (flashing lights) to the complex. The most complex forms of hallucinations are associated with tumours within the most anterior portion of the temporal lobe, that is, the region containing the amygdala and anterior hippocampus. Similarly, electrical stimulation of the anterior lateral temporal cortical surface, and more particularly depth electrode stimulation and therefore direct activation of the amygdala and/or hippocampus of the right temporal lobe, results in visual hallucinations of people, objects, faces, and various sounds. Stimulation of the right amygdala, for example, produces vivid and complex visual hallucinations, body sensations, *déjà vu*, illusions, as well as alimentary and gustatory experiences.

The amygdala also responds actively to unusual stimuli, and conversely, if activated to a an abnormal degree, may produce bizarre memories and abnormal perceptual experiences, often of a very sexual nature, as well as fearful memories and various other mental phenomena such as dissociative states, feelings of depersonalisation, and hallucinogenic and dream-like recollections. Right hippocampus stimulation also produces memory- and dream-like hallucinations. Normally, single amygdaloid neurons, which receive a large amount of topographic input and are predominantly polymodal, simultaneously attending to a variety of stimuli from different modalities (vision, touch, taste, hearing and so on), will filter out much of this information via 5-HT (serotonin), to prevent the brain from being overwhelmed. As well as the above stressors, various entheogenic drugs, such as LSD, block 5-HT transmission which allows greatly increased activity in the sensory pathways from the limbic system to the neocortex, eliciting profound hallucinations, again often of a sexual, religious, or spiritual nature. As a side note,

LSD was originally developed from ergot, a fungus found on rye grain and particularly prevalent in damp, medieval granaries. Ergot poisoning would send whole villages into hallucinogenic, apocalyptic frenzies, wandering the countryside, penitentially self-flagellating and tormented by demons. That's the downside of the ecstatic vision, as is the sense of intense depression and abandonment of the 'dark night of the soul' often experienced by mystics – and epileptics?

What are we to make of all this? My earlier quotations from William James point to a number of directions and possible conclusions. The pessimistic 'medical materialism' view could be summed up by saying, as Michael Persinger does, that 'religion is a property of the brain, only the brain and has little to do with what's out there.' In Kantian terms we are trapped in the phenomenal and, *pace* Schopenhauer, what we might take to be glimpses of the noumenal is merely neuronal – the brain arranging itself into patterns at the behest of environmental stimuli. Pigliucci,<sup>19</sup> while agreeing with Newberg and d'Aquili<sup>20</sup> that mystical experiences are 'real' in the sense of their having neurological counterparts, questions why they distinguish this sort of reality from the one induced by epilepsy, schizophrenia, delusions and so on, given that all these phenomena are real in the same sense. His searching question is that, 'given that we experience the world through what amounts to a complex virtual reality simulation created by our nervous system, how could any psychological state not be real in the sense of having a neural correlate. And there's the rub - so much for God/gods, angels, demons, Cosmic Consciousness, and so on – it's all just the ebb and flow of neurotransmitters such as serotonin, dopamine and oxytocin in the brain, described by Jaak Panksepp somewhere as: '[A] fundamentally organic and globally holistic integrator and blender of past evolutionary solutions and present environmental challenges ... a set of emotional and motivational value-creating systems around which a great deal of behavior, both rational and irrational, revolves.'<sup>21</sup>

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<sup>19</sup> Massimo Pigliucci: 'Neurotheology, A rather sceptical perspective,' in Joseph, op cit, 269-272.

<sup>20</sup> Andrew Newberg and Eugene d'Aquili: *Why God Won't Go Away: Brain Science and the Biology of Belief*, New York, 2001.

<sup>21</sup> Jaak Panksepp: *On Preventing Another Century of Misunderstanding: Toward a Psychoethology of Human Experience and a Psychoneurology of Affect*, <http://www.neuro-psa.com/pank.htm>

However, if we take Panksepp's description and look at it in the light of the Anthropic Principle, then the dichotomy between the subjective, spiritual and objective, materialist as diametric opposites begins to move towards a harmonious resolution, a *yin/yang* dynamic, with each principle contained at the heart of the other. The Anthropic Principle can be stated as: We perceive the universe the way it is because we exist in the form that we do, and if the universe were different, either we would not be here to see it or we would not be here in our present form, in which case our understanding of it, and ourselves, would possibly be different, to a greater or lesser degree. Given that the universe is the way it is because we are they we are our chief task would seem to be better achieved by accepting that all that we know and can know is shaped by ourselves, by the neural architecture of our brains and by our psychocultural shaping. As we foolhardily hurry our mother Earth (and ourselves with her) to a particularly unpleasant form of euthanasia the imperative becomes, 'know thyself,' to aid the realisation of the noösphere by finding the *via media*, avoiding the extremes of fanaticism and dogmatism, whether in the realm of science or religion; in which case the words of the Dalai Lama may perhaps best explain the growing popularity of the Buddha in suburbia and elsewhere:

True happiness comes not from a limited concern for one's own well-being, or that of those one feels close to, but from developing love and compassion for all sentient beings.<sup>22</sup>

Perhaps this is because the brain-mind is not simply the unfeeling type of linear information processing computational device that many left-hemisphere types would like to believe, but rather, at its foundation it is a fundamentally organic and globally holistic integrator and blender of past evolutionary solutions and present environmental challenges. Perhaps for any comprehensive understanding, the two views need to be judiciously combined, so that the capacity of a mode of thought to generate coherent predictions rather than logically airtight arguments becomes the sole arbiter of how we allow a fundamentally organic mind science to evolve.<sup>23</sup>

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<sup>22</sup> Jill di Donato: 'Einstein and Buddha: The Parallel Sayings,' on <http://www.nyspirit.com/issue114/article8.html>

<sup>23</sup> Panksepp, op cit.