

OUT-OF-BODY AND NEAR-DEATH
EXPERIENCES:
BRAIN-STATE PHENOMENA OR GLIMPSES OF
IMMORTALITY?

BEING A THESIS SUBMITTED BY

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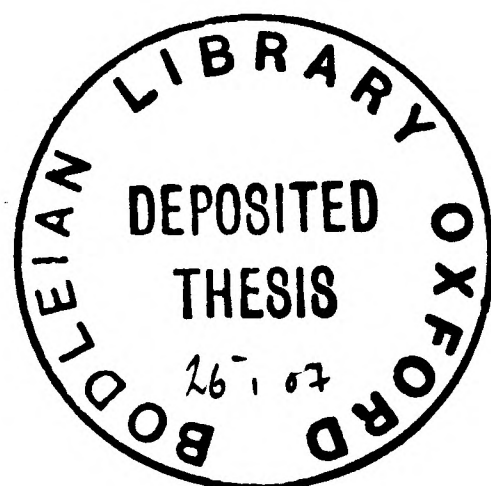
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OUT-OF-BODY (OB) AND NEAR-DEATH (ND) EXPERIENCES: BRAIN-STATE PHENOMENA OR GLIMPSES OF IMMORTALITY?

MICHAEL N MARSH (MAGDALEN COLLEGE, OXFORD): D.Phil THESIS.

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300 WORD ABSTRACT

What certainty is there for personal survival after death? Five key authors, critically analysed in this thesis, think that OB/ND experiences offer such assurances. Most OB/ND events follow severe clinical crises profoundly embarrassing cerebral function. At the nadir of brain function, invariably resulting in unconsciousness, authors aver that the escape of soul (Sabom), mind, or free consciousness (Moody, Ring, Grey, Fenwick), in providing glimpses of heaven, offers proof of immortality. I disagree.

The semantic content of *early-phase* ND experiences reveals dream-like bizarreness and illogicality, consistent with de-activation of critical cortical controls. Conversely, *late-phase* experiences, tinged with 'moral' compulsions about earthly responsibilities, herald the progressive intrusion of conscious-awareness into that subconscious mentation. These experiences, abruptly terminating as conscious-awareness erupts, are transient - as demonstrated by narrative word counts - indicating origins from re-awakening, not moribund, brains. My argument is underpinned by these latter crucial observations. Pain, intruding into ND phenomenology, is another occurrence hardly consistent with an escape of mind or 'free consciousness' into the hereafter.

"Tunnel" phenomenology, a rapid movement from darkness into heavenly brightness, involves a retrospective synthesis of vestibular-generated rotation/accelerations, and a progressively enlarging and engulfing light, signalling re-establishment of an effective circulation to associative visual centres. The content of ND experiences, as with dreams, involves the temporo-parietal cortex.

OB experiences derive from central vestibular activity (superior & inferior parietal lobules) in dormant, recumbent patients. Allied aberrations of allocentric space create bodily reduplications and sensed invisible presences. Thus, OB do not warrant "mystical" interpretations.

The spiritual overtones accorded OB/ND experiences by authors are inconsistent with classical (Judaean-Christian) accounts of divine disclosure. The eschatology adumbrated in published texts implies immortality, and seriously fails to embrace a preferred resurrectional eschatology as professed credally. I therefore conclude that OB/ND phenomenology, rather than offering alleged glimpses of eternity, reflects living, not dead, brains re-awakening to full conscious-awareness from antecedent metabolic insults.

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I am most indebted to other members of the Theology Faculty in Oxford, past and present, who have offered guidance, advice, or a steady hand: Professor John Macquarrie (Emeritus Lady Margaret Professor of Divinity), Rev Dr Margaret Yee (Nuffield and S Cross), Mr John Foster (Brasenose) and Rev Dr Liz Carmichael (S John's). Also Professor Brian Leftow (Oriel) whose suggestions and recommendations during my Transfer of Status viva were gratefully acknowledged. Furthermore, I owe a debt of gratitude to Dr Christine Mohr (Dept Exp Psychology, University of Bristol) and to Dr Peter Brugger (University Department of Neurology, University of Zurich) for their time in discussing various aspects of the neurophysiology relevant to their ongoing research and publications into OBE, phantoms and sensed presences.

The work in this thesis is original and has not been offered to any other university for a research degree. It is, as yet, unpublished. Parts of this work have been presented in public within the University, at the Magdalen SCR/MCR Research Forum; The Oxford Forum for the Medical Humanities (S John's); and The Science & Religion Forum (Harris Manchester); and at a meeting of the Magdalen Chapel Fellowship. I am grateful to all those who attended these seminars, asked questions, or provided other comments and suggestions. Finally, other aspects of this work were offered as sermons in the chapels of Nuffield College (Dr Yee) and Lady Margaret Hall (Rev Dr Doig, formerly Fellows' Chaplain, Magdalen), and in the Psychology of Religion Lecture Series (Hilary Term, Dr Yee) in Schools: it was a privilege to have been invited to lecture, and to make contributions at other times during that series (2002-6).

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ABSTRACT

This thesis is concerned with the phenomenology of out-of-body (OB) and near-death (ND) experiences. In it, I critically examine seven key texts articulating, to varying degrees, the premise that these phenomenological types bear witness to the afterlife, based on the reported narratives of several hundred experiencers. While certain experiences succeed bereavement, depression or severe loneliness, most result from acute clinical crises that directly, or indirectly, substantially embarrass cerebral activity. From a neurophysiological perspective, I contend that OB and ND ("extra-corporeal experiences", ECE) are generated by metabolically disturbed brains regaining functional competence. From a theological perspective, I further assert that ECE lack criteria exemplary of true spiritual or divine disclosure, and secondly display features incompatible with the resurrectional credal tenets central to mainstream Christian traditions.

OB and ND experiences, despite conflation by experiencers and authors, stand as separate phenomena (Chapter II). OBE involve the viewing of subjects' bodies from a higher, extra-corporeal vantage point, coincident with the locus of conscious-awareness. The other, deemed to take conscious-awareness into another realm, is sometimes presaged by movement through what is usually interpreted as a "tunnel" into a glorious light. There, spiritual figures perceived as God or Jesus, deceased friends or relatives, are encountered, invariably on a background of pastoral beauty. A life-review or judgemental episode may ensue, followed by a rather abrupt return into the (and often painful) body. In continuing to explore other features of ECE phenomenology (Chapter II), I offer descriptive accounts of hellish experiences, the perceptions of the afterlife perceived by the blind, and a comparison of narrative reports reflecting Eastern and Western perspectives, expressed in historical and contemporary form. Despite differences, such accounts exhibit firm religious and cultural imprints suggesting cognitive, and thus brain-based, this-worldly influences, rather than dependency on novel experiences derivative of other-worldly settings.

Since the experiential features of extra-corporeal events usually occur when subjects are seemingly unconscious or semi-conscious, they may be deemed to be analogous to

dreaming (Chapter III). I resist subjects' denials that they were dreaming. These people are not conversant with the numerous forms of dream-state modes now neurophysiologically defined. Indeed, hypnagogic, hypnopompic, and REM dream-state modes are rich in oneiric adventures highly reminiscent of ECE narrative accounts. Brain scans of dreaming subjects, in revealing several critical areas of cortical de-activation, suggest possible loci in which the experiential contours of ECE could likewise be effected. The defuncting of key cortical areas is probably determinative of the bizarreness and illogicality of dreams. Analogous functional deficits could condition the content of ECE which, like subconscious dream mentation, is similarly weird, intensely anthropomorphic, geo-centred, and idiosyncratic. The major associative areas of the temporo-parietal junctional cortex (TPJC) are functionally crucial, since damage to this region seriously impairs or abolishes oneiric competence. I suggest that TPJC lesions would reduce the propensity to undergo ECE. Should a prospective trial of such patients confirm that inference, vital third-party data indicating a cerebral location underpinning ECE phenomenology would thereby have been acquired.

Another foundational buttress to my argument is that ECE phenomenology ceases as full conscious-awareness is regained (Chapter III). The congruence of that pivotal alteration in the state of consciousness is a critical third-party data point. Deploying another arm of dream-state research practice, my application of word counts to ECE narratives and extrapolating backwards from that point of congruence, uncovers and underscores the transience of the phenomenology. That such dream-like mentation can be conjured during multi-second intervals by a brain rapidly awakening from an antecedent insult is securely upheld by reference to survivors of attempted suicide from the Golden Gate Bridge, and the periods of unconsciousness induced by forced fainting, and by (aircrew) centrifugation. All involve awakenings from states of unconsciousness, and the experiencing of dreamlets espousing scenes of great beauty and the sightings of deceased relatives, borne on feelings of highly-charged emotions uniquely relevant to each subject, and accompanied by a reluctance to return to earth, that is, to re-acquire full conscious-awareness. That affirms another of my contentions that ECE are not about dead brains, nor the postulated escape of mind, souls, or free consciousness from corporeal enclosure. On the contrary, I assert that the neurophysiological data deployed throughout are denotative of the contortions of normal brains re-occupying spheres of conscious-awareness from antecedent insults imposing severe, but temporary, constraints on their functional

competence. ECE phenomenology, therefore, is not about the dead and supposed journeys towards an other-worldly realm: but rather about the living, and a return to life and the re-possession of full mental activity. That is the difference. It is around this most important insight that my entire argument becomes possible, and fundamental to all my other derivative conclusions and proposals. It is also clear from the foregoing that to have ignored the vast territory of dream-state neurophysiology, and the parallel investigational analysis of the semantic and syntactical structuring of dream reports, has greatly impoverished our understandings of ECE phenomenology.

The idiosyncratic variability of ECE narrative reports points to cerebral origins, since they are based, firstly, upon memory and secondly, on the personal attributes unique to every subject's past-history and identity, as well as to subjects' personalised models of what they envisioned might ensue after death. Narrative accounts are so inconsistent that they completely undermine authors' arguments that the uniformity of otherworld accounts underscores the validity of the other-worldly encounter. On the evidence available from the published narratives, that is an erroneous and unwarranted conclusion. Furthermore, the manner in which ECE evolve destroys the imposed concept of a sequential "core experience" (Moody, Ring, Grey), since only a progressively diminishing remnant of subjects seems able to complete the idealised schedule. Moreover, the so-called "depth" experience may be no more than a manifestation of the duration of the event, and more cogently tied to the speed of the brain's recovery from its insult, and the many factors impinging on that recovery. Subjects have never been shown to classify their ECE in those terms: "core" and "depth" are artefacts in the minds of their author-originators.

Further analysis along neurophysiological avenues provides a rationale for the so-called "tunnel" phenomenon. This, it must be noted, affects only a few experiencers (10-20%) affording them a means of apparent transfer to an otherworldly realm. I believe the tunnel is a retrospective psychological synthesis of two physiological events inaugurating the earliest phases in the recovery of the brain from its antecedent insult. First, the interpretation of accelerated movement, upward elevation, or gyrations represents a mismatched vestibular component when other contributory informational afference about the body-in-space would be negligible during the subconscious period. Second, the expanding golden light represents partial re-vascularisation of the posterior cerebral circulation. That furnishes an internally-perceived notion of being engulfed by light, as is

also experienced by patients with thrombotic disease of these arteries. There can hardly be much difference between a thrombus causing a partially reduced posterior arterial supply, and, consequent upon a period of circulatory arrest, a partially restored posterior arterial supply. When later recalled, the memory synthesised is of rapid acceleration from the darkness of incipient dawning of conscious-awareness into an all-embracing light as the brain swiftly recovers. The retrospective interpretation of a "tunnel" (in all its idiosyncratically-recalled variants) can be seen to be no more than a neurophysiological artefact. It is an artefact, however, signalling the return of functional competence to the posterior brainstem and adjacent cortices.

I now proceed to consider OBE. The literature I critically analyse regards OBE as veridical demonstrations of independence of mind, soul, or free consciousness from corporeal bondage: furthermore, that such an occurrence manifests a psychical or spiritual happening. I dissent from that erroneous conclusion. Clues to the brain's ability to conjure illusory absence (Chapter IV) are exemplified by the phantom limb phenomenon. Sensed phantoms are dependent on central mechanisms of neural representation, mechanisms that also shadow congenitally-absent limbs. The occurrence of phantoms in tetraplegia attests to the possibility of a cerebrally-engineered representation of the entire body.

Yet there is another set of well-defined neurophysiological aberrations concerned with central mechanisms subserving ego-paracentric body space. These include autoscopic and heautoscopic reduplications of the subject's body, the sensing of invisible presences, and an OBE. They arise through mismatched integrations between incoming afferent visual, proprioceptive, tactile, and vestibular information. These sensory systems are integrated in the vicinity of the TPJC. Disturbances in ego/paracentric body image may accompany ischaemic migrainous vascular events, temporal lobe epileptic discharges, and vascular insults of brainstem. In addition, physiological perturbations occasioned by tendon vibration, zero gravity conditions, and the use of mirrors in obviating problems associated with phantom limbs, engender erroneous illusions of subjects' perceptions of body schema. Neurophysiological understandings of body schema are specifically dependent on the vestibular system which is responsible for the abnormal perceptions of weightlessness, accelerations, angular gyrations, and the 180^0 turn permitting OB experients to view their vacated bodies face-to-face. There is no doubt that all these aberrant misperceptions are brain-dependent. To be out-of-body is either a physiological or neuropathological event

firmly anchored in unco-ordinated neural processes, and requiring neither psychical, "mystical", nor spiritual components as necessary aetiological agents. On these grounds, I resist attempts to interpret OBE as otherworldly events, or exemplary of mind or consciousness independent of the neural substrate of their production. Given the perturbed nature of brains recovering from a period of circulatory arrest, there is no further reason to suppose that an OBE is other than a manifestation of mismatched co-ordination in the TPJC among all the component afferences subserving the construction of body image, and its perception in subjects' consciousness-awareness.

I have drawn attention to another important outcome of the ND experiential narrative which seems to have eluded each of the authors considered. At the onset of the event, subjects display remarkable abilities to traverse with ease all kinds of solid barriers during their 'outward' journeys. Next, they exhibit no qualms in proceeding towards, and investigating, the light without any concerns for their grieving relatives and families disposed about their vacated bedsides. Once conscious-awareness begins to exert a progressive influence on that subconscious mentation, however, insubstantial obstacles which initially presented no physical impedence, now become insuperable. These I regard as 'cognitive' barriers (which, from time to time, we all erect in our own lives). In addition, 'moral' urgencies crowd in, forcing subjects to relinquish their other-worldly abode thus to attend to their earthly responsibilities towards spouse, family, and work. That intrusion of conscious-awareness (and probable return of frontal lobe activity) into the dream-like bizarreness of the ECE is further indicative of cerebrally-based mechanisms (Chapter V). On these grounds, I assert there are no extra-corporeal journeys and no returns: only hallucinatory events conjured by brains as neurophysiological order rapidly supervenes on neurophysiological disorder.

A further corollary of the intersection of subconscious and conscious mentation involves the dual experiencing of physical pain, discomfort, or perceptions of bedside voices and allied clinical activities while subjects are otherworldly. The co-temporal experiencing of conscious and subconscious mentation occurs with lucid dreaming and during heautosopic body reduplications, and when normal people experience hypnopompic awakenings. This is another important neurophysiological argument for my view that ECE phenomenologies are brain-based and not body-(and brain-)-independent activities realised in some other-worldly realm.

Explanatory solutions why so few people in life-threatening circumstances undergo ECE have never been advanced. Answers may lie in emerging work on the temporal lobe. Existing literature has been extremely dismissive about its possible contribution towards ECE phenomenology (as with other biological mechanisms), an approach that has failed to have engaged seriously and to have grasped the pertinent neurophysiological data. Modern techniques and surveys (Chapter V) reveal a far wider spectrum of dispositions not previously envisaged. This spectrum includes personalities inclined towards a temporal lobe bias, auras that reproduce *in toto* ECE phenomenology without ensuing seizures, and the classical aura-plus-seizure syndrome. These advances have accrued from surveys of 'normal' populations, indicating that brain insults during intra-uterine, neonatal, childhood and adolescence causally predispose towards latent temporal lobe dysfunction. Non-seizure auras, (including psychical and other spiritual encounters) have been eradicated with anti-convulsant drugs. A recent survey of ECE subjects identified c20% fulfilling the new temporal lobe criteria and manifesting non-ictal spiking EEG wave-patterns. This is new and exciting information. Appropriately designed prospective trials should be undertaken in order to assess the impact of these data to larger cohorts of individuals predisposed to life-threatening emergencies (cardiac arrests, haemorrhage, childbirth). Until that work is completed, non-neurological explanations of ECE phenomenology will remain vulnerable to neurophysiologically-based criticism and possibilities.

ECE impinge on, and influence, experiencers' lives to which authors' approaches have been poorly researched and evaluated (Chapter VI). Most subjects are changed by their experiences(s), becoming more tolerant towards society, people, and family. Yet this facet of post-ECE phenomenology has been ignored. Here is an issue of far greater import than the speculative superstructures of spirituality and cosmic brotherhood imposed on, but largely irrelevant to, the narrative accounts of experiencers, and who would scarcely recognise such florid departures from their given testimonies. Here is a theology of personhood that exalts post-experiential subjects, offering the potential to transcend their newly-gained values towards people or neighbourhoods in need. Here is an issue deserving recognition and to which strategies should have been allocated, designed to harness these emergent personal strengths. Perhaps those societies formed to promote interest in ECE will realise their shortcomings and begin instituting relevant social programmes as part of their remit.

The greatest impact of ECE on subjects is their steadfast belief that the event was veridical. The assertion by some that they ascended to Heaven and encountered God or Jesus specifically demands theological responses. The quest is to determine whether these events are recognisable as spiritual encounters, or exhibit an appropriate eschatology. The intensely vivid, full-blooded geocentric and anthropomorphic accounts of ECE militate against the quietly introversive nature of truly divine disclosure. The widely disparate descriptions offered by respondents in sampling features and persons characterising the other-world render any sensible interpretation of their views meaningless. Further problems arise in evaluating the eschatological propriety of ECE narratives, since judgements or life-reviews seem to occur after subjects' arrival in heaven and their confrontation with divine persons. Other experiencers find themselves in hell, then to be rapidly transported into heavenly warmth and light.

Running through these narratives is the unquestioned assumption of an unbroken continuity of the person through death into the afterlife, in keeping with preconceived ideas concerning the supposed immortality of mind, soul or consciousness. That assumption is not necessarily consistent with a resurrectional theology as expressed within Christian credal traditions. Our immortality may rest on other factors, details of which have still to be revealed to us. Death may be a far more radical disjunction between earthly existence and what, ultimately, we shall come to be in the New Creation. A transference of the person through death and directly into another incorporeal modality in the afterlife, as evinced by accounts of ECE phenomenology, may not offer the authentic solution to our heart-searching agnosia, especially if that phenomenology emanates from hallucinatory events generated by brains recovering from ischaemic or allied metabolic insults.

CHAPTER I

PROSPECTS FOR LIFE AFTER DEATH

There is nothing so certain in life than death: our bodies decay and become dust. But, is biological death on earth the final frontier, or is it a gateway to another world, another existence beyond the known universe? Traditionally, belief in existence beyond physical parameters has been articulated in the metaphysic of a heavenly realm by the great monotheistic religions. But secondly, a growing appetite for other forms of experiential adventure and which, collectively, could be encompassed by the term "New Age Spirituality" has gradually emerged onto the contemporary scene. It offers to its varied adherents an alphabetical inventory of practices from Aromatherapy to Zen as means of enlightening their persons, souls or spirituality. Thirdly, there is the burgeoning field of phenomena known popularly as out-of-body and near-death experiences (OBE, NDE), or collectively as "extra-corporeal events" (ECE: my terminology) which, in the majority of cases, arise in the context of life-threatening clinical emergencies.

OBE and NDE, despite frequent conflation, do stand as separate phenomena. An OBE involves viewing one's body from another vantage point congruent with the locus of conscious-awareness. The NDE represents a glimpse of the beautiful eternal realm, with possible visions of God or Jesus, a life-review or judgement, followed by an abrupt return to earth into the same physical body. It is with these types of phenomenology that I am primarily concerned. The question arises whether this phenomenology is something new, out of the ordinary, and indeed revelatory of those aspects of the afterlife referable within

the Judeo-Christian tradition as eschatological. Conversely, the explanation of ECE may be rather more prosaic, arising out of a compromised brain indirectly related to the crises precipitating such curious, yet intriguing, forms of experiential behaviour.

Several anthologies reporting the narratives of subjects' remembered experiences have been published which, together with other allied literature, are critically considered below. It is striking that for most texts¹, the OB/NDE are, in general, treated as non-corporeal events. The physical basis of ECE is played down to varying degrees in these accounts, in favour of the metaphysical claim that they signal an escape of either mind, soul or free consciousness from corporeality, thus opening up the possibility of some kind of otherworldly spiritual departure. That a physical or brain-based neurophysiological explanation is entirely exhausted by the nature of the phenomenology revealed, seems therefore to have been assumed. Indeed, the challenge to anyone intending a serious neurophysiological account of these phenomena was clearly laid down by Kenneth Ring²:

*'I would like to advise any neurologically-minded researcher [of] one important constraint. Any adequate neurologic explanation would have to be capable of showing how the **entire complex** of phenomena associated with the core experience (out-of-body; paranormal knowledge; tunnel; light; voices and presence; the appearance of deceased relatives; beautiful vistas, and so forth) would be expected to occur in subjectively authentic fashion as a consequence of specific neural events triggered by the approach of death. It is not difficult – in fact it is easy – to propose naturalistic interpretations that could explain some aspect of the core experience. Such explanations, however, sometimes seem merely glib and are usually of the "this-is-nothing-but-an-instance-of" variety: rarely do they seem to be seriously considered attempts to come to grips with a very puzzling phenomenon. A neurological interpretation, to be acceptable, should be able to provide a **comprehensive** explanation of **all** the various aspects of the core experience. Indeed, I am tempted to argue that the burden of proof has now shifted to those who wish to explain near-death experiences in this way'.*

¹ Raymond Moody, *Life after Life*, 1976; idem, *Reflections on Life after Life*, 1977; Kenneth Ring, *Life at Death*, 1980; idem, *Heading toward Omega*, 1985; Michael Sabom, *Recollections of Death*, 1980; idem, *Light & Death*, 1998; Margot Grey, *Return from Death*, 1985; Peter & Elizabeth Fenwick, *The Truth in the Light*, 1998

² Ring K 1980, 216

One is taken somewhat by surprise with this imperious statement (my emphases). It is a challenge which provides the rationale for my thesis. This has been written on the grounds that a brain-based phenomenology is, indeed, capable of offering a fair-minded account of the events reported through the narratives of affected subjects, contrary to Ring's assertion. However, such an explanation requires a far greater involvement with neurophysiology than has been attempted by any of the authors cited above. Moreover, it will involve a far greater critique of those authors' accounts than has possibly been attempted hitherto. The following excursus provides such a critical analysis, despite there being certain areas which are beyond current knowledge but which surely will be uncovered by additional neurophysiological research. I make no apology for such deficits since the accounts offered by the authors cited, and particularly by Ring, are by no means so complete, comprehensive, nor convincingly argued that any further neuro(psycho)physiologic or neuro(psycho)pathologic explanatory insights offered could now be deemed to be completely irrelevant, inappropriate, or even untenable.

ECE phenomenology, considered on a wider front, has raised afresh important issues that are relevant to the interface between body and soul, death and immortality, and their relationship to the religious life and temperament. One might question, for example, whether the idea of "souliness" is necessary for what might be termed our religious sensibilities or as a passport to eternal life. These issues have been brought into focus by the rise of ECE phenomenology and the widespread interest generated into its possible spiritual overtones. Against reductionist claims, ECE phenomenology implies, indeed promotes, belief in some kind of afterlife among many of its adherents, although such beliefs are not necessarily congruent with the precepts of Judeo-Christian orthodoxy against which these claims will be primarily judged. Therefore, it is necessary to consider

how that concept of the spiritual afterlife as manifest in ECE compares with that of traditional religious beliefs in resurrection, and in particular with the Christian construal of "resurrection of the body". There arises the need to assess ECE as spiritual encounters and hence to compare them against traditional notions of spiritual insights as expressed in the works of William James and William P Alston. Finally, the manner in which ECE phenomenology influences and perturbs the subsequent lives and aspirations of its experiencers needs acknowledgement: an acknowledgement signally lacking in any of the major core texts engaged with here. Such considerations impinge importantly on theological aspects of personhood, and ontologically with aspects of the spiritual life as lived on earth and in relation to Christian-based ideas of afterlife.

In proceeding, I provide a structural synopsis of the main topics to be discussed and developed throughout this work.

I.1 PURPOSE OF THESIS

In this thesis, I explore the phenomenology of ECE as exemplified in certain texts published during the last thirty years: those texts will be considered in depth. My criticisms will be that these texts seem to offer an account of the nature of ECE phenomenology deficient in the possibility of neuroscientific explanation, secondly, that such phenomenology might not offer truly veridical glimpses of the afterlife, and thirdly, that the unfolding of the so-called heavenly realm fails to align with Christian eschatology and lacks criteria formally consistent with true spiritual encounter. The argument developed, contrary to prevailing opinion, is that there are cogent reasons for supposing that the phenomenology recounted by ECE subjects through their narratives is explicable

in neurophysiological terms. However, I shall avoid the pitfall of previous writers in supposing that either an OBE, or NDE, can be accounted for by direct appeals to this, or that, form of neuropathology, or neurophysiological aberration. Moreover, I shall reject the view that ECE, somehow, represent outward trips either by the soul departing from the subject's body or effected through the escape of free consciousness (whatever that could mean) from its dying brain. I shall further reject the view, often re-iterated, that ECE phenomenology occurs at the height of the crisis when the brain is moribund, if not undergoing its agonal death throes. If that were the case, I fail to see how "consciousness" could escape the brain, since conscious-awareness is a functional outcome of neurophysiologic process. Nor can I see how any such brains, at the nadir of their functional incapacity, would be competent to set down the appropriate neurally-based memory circuitry thus permitting subjects to recall, at a later time, the phenomenological details of the episode. Indeed, I regard such a platform on which ECE phenomenology has been based as fatally flawed from the outset: it does not make sense and lacks a properly thought-out conceptual basis.

My approach is to be radically different. There is a certain point at which each ECE terminates, with the recovery of full conscious-awareness. That crucial time-point provides a definable third-party reference into the subjective nature of the experience. With the use of dream-research methodology, it is possible to extrapolate backwards in real time, based on the word count relative to each narrative provided. This procedure indicates that for the majority of narratives published, the ECE is an ephemeral event lasting only seconds, or possibly a few minutes. From that exercise, it becomes apparent that any ECE is not, nor could be, derivative of a moribund brain, but is generated as that brain is in the process of returning to normal physiological functioning as conscious-awareness is once more regained. The oddity of the experience is exemplary of the

irregular processes by which various parts of the brain become functional again, during which all the relevant processes, circuitry and areas begin contributing to a fully active, co-ordinated organ. My over-riding premise is that ECE phenomenology is not about the death of individuals nor about dying, moribund brains. On the contrary, it is about the return to life, and hence with the re-appropriation by the brain of its former functional competence as the organ of conscious-awareness. That is what, in the main, I shall be concerned with in the following pages.

At this juncture, I should make clear that I accept the psycho-physical distinction between neural process, and its resultant phenomenological mentation, conscious or subconscious (as, for example in dream-state modes), even though the mechanisms through which consciousness and its higher cognitive attributes including qualia arise, are not at all clearly understood at present. For the purposes of this present work, I employ the terms brain-based, brain-generated, and brain-associated, interchangeably, as denoting the emergence of a mental realm³ from the neural substrate, and hence exemplifying that divide. These terms are not to be considered consonant with hard, reductionist views that envision conscious processes referable directly to electro-ionic and chemosynaptic interactions: or, as understood by Francis Crick, that we are *'nothing but a pack of neurons'*⁴. Nor are these terms necessarily relevant to other explanatory mechanisms or relationships between neural process and experiential outcomes characterising the phenomenologies of conscious-awareness⁵. The physical and experiential aspects of conscious-awareness are separate domains, discourses embracing different conceptual

³ Foster John, *The Immaterial Self*. Routledge 1996, 1-15

⁴ Crick Francis. *The Astonishing Hypothesis*. Simon & Schuster, 1994, 3

⁵ As, for example, recently explored by John Searle, in *Mind*. Oxford 2004, 29-74, or Nancey Murphy, *Nonreductive Physicalism*, in Brown WS, Murphy N, Malony HN, Fortress Press 1998, 127ff

ideas, prospects, and vocabulary⁶, yet whose proponents are variously attempting to witness to the unity and the uniqueness of each person – body, brain, and mind.

From this, there arises the further issue (Chapter VI) of adjudicating whether an alleged spiritual experience is a purely brain-based phenomenon (epileptic, vascular, schizophrenic) or, alternatively, one exemplary of divine disclosure as dramatised in commands to selected individuals to prophesy or write, but where the brain is seemingly a passive instrument (or teleprinter) for revelation. Between these extremes are cases where the imparted message must necessarily be understood by its recipient such that it can be properly acted upon. Moreover, like realisations of secular import, divine incursions may come suddenly, or dawn over time: presumably there is no specific cerebral locus for either the receipt or execution of divine or religious revelatory disclosures⁷.

Can ECE phenomenology, therefore, be valid, veridical in its reportings, and thus exemplary of the spiritual afterlife so portrayed? I believe there is neural process causative of emergent experiential perspectives of ECE. Nevertheless, I take those experiential perspectives of ECE as largely illusory, on grounds of being conjured by brains regaining functional competence to full conscious-awareness, while in process of recovering from their antecedent metabolic insults. Because of that disordered neurophysiological process, incumbent on dis-inhibition from, and de-activation of, key controlling influences, the resulting subconscious mentation is chaotic, and reminiscent of the bizarreness and illogicality characteristic of dream-state modes (with which there may be some functional analogy). That is the key thrust which underpins this thesis.

⁶ Midgley Mary, in Rose S (ed), *From Brains to Consciousness?*. London: Penguin 1999, 246-270

⁷ Saver J & Rabin J, *J Neuropsychiatr Clin Neurosci* 9: 498-510, 1997

I.1.1 Of Dream-State Mentation

In considering the unconscious brain (Chapter III), we come much closer to an understanding of the subconscious forms of experiential behaviour manifested in ECE. Dream-states during sleep-onset (hypnagogic), sleep-offset (hypnopompic,) and the phasic rapid eye movement (REM) episodes of the sleep-dream mode, offer insights into the experiential content of ECE narrative, and the neuro-anatomical and neurobiochemical pathways possibly involved in their generation. Indeed, given the extraordinarily striking cohesiveness of the combined visual and auditory imagery consistently reported for ECE, it is necessary to insist, as with dream-states, that considerable integrated neural machinery is necessary for their production. That could only come about with a brain in the act of becoming fully competent. Furthermore, that these images are faithfully captured in memory additionally argues for a substantial neurophysiological input, and therefore that they are not privileged views of eternity, nor testimony to the spirit or soul leaving the dying corporeal brain.

Brain scanning techniques afford valuable data on the cerebral uncoupling that attends, and hence facilitates, various forms of subconscious oneiric mental activity and of the participatory role of central brainstem and cortical midline structures. The bizarreness, banality, and generalised illogicality of dreams and ECE is clearly more than coincidental: that observation has escaped the attention of previous writers.

I.1.2 Of Phantoms & Illusory Bodies

My next concern deals with what might be termed the neurophysiology of absence (Chapter IV). The '*phantom limb phenomenon*' points to the residual memory, or more properly, the continued cerebral representation of body parts which no longer exist. This

curious illusory aberration of cerebral function also serves to introduce other forms of experiential 'personal' representations outwith bodily confines: autoscopy, heautoscopy, sensed (invisible) presences, and the OBE proper. From such neurophysiological perspectives we can elaborate a brain-based phenomenological schema involving the hallucinatory or illusory representation of a phantom, a tetraplegic torso (fictive body below a cervical cord transection), a projected autoscopic mirror-image of body, a heautoscopic body image with conscious-awareness oscillating between "self" and image, and an OBE. These latter illusory constructs are products of the temporo-parietal junctional zone and are generated through mismatches between properly co-ordinated optical, proprioceptive, tactile (haptic) and vestibular inputs. The 180^0 rotational mechanism essential for observing the vacated body face-to-face, is vestibular. The recognition of the perceived body as "self" (especially when differently attired or coutured) requires cerebral (memory) cortical recruitment: the recognition is not visually- (externally) dependent. That, importantly, is evident from OBE narratives which if analysed critically, are seen to be entirely devoid of the continuity of true "eye-witness" reported commentary. Subjects are *not* out of their bodies and therefore cannot "see" (or cerebrally interpret) their immediate environment. Hence the futility of expecting OBE subjects to report on message-cards secretly located around operating theatres and intensive care units.

Another corollary is that vestibular inputs to associative cortical domains (temporo-parietal junction) are dependent on the posterior cerebral arterial input. This fact impinges on the so-called NDE "tunnel" artefact involving vestibular representations (linear motion, gyrations, accelerations 'upwards' (or sometimes 'downwards')) and restoration of visual cortical function. Those combined sensations, idiosyncratically interpreted by each subject *in retrospect*, give rise to narratives of fictive 'movement' towards 'light'. Such experiences

are illusory constructs, related to functional re-activation of the brainstem and posterior cortices as cerebral re-vascularisation proceeds. Belief in the reality of the experiential "tunnel" is as misconceived as any adult maintaining belief that Santa Claus exists.

I.1.3 The Neurophysiologic Basis of ECE Phenomenology

The succeeding essay (Chapter V) explores neurological territory inhabited by previous writers, but contrary to their opinion, indicates how various insults – from inhalation of ether or nitrous oxide, administration of ketamine or other hallucinogens, and, in particular, temporal lobe pathology – provide extraordinarily rich insights into understanding how physiological and pathological insults to the brain mimic the entire repertoire of ECE phenomenology. None of these factors is the "cause of" nor "explains" ECE: they could not. But from a wealth of previously unexplored data, I will illustrate the vast potential possessed by the brain, and especially when it has been perturbed, to conjure up myriad illusory/hallucinatory images characterising ECE narratives. Previous attempts to account for, or more often discredit, mechanisms of ECE through direct appeals to specific lesional, pharmacological, or other physiological perturbations, miss the point. The essence of a true understanding of ECE phenomenology is to discover and note what cerebrally-generated subconscious mentation is possible while the brain swiftly recovers (and is not dying) from the influences of one or other antecedent metabolic insult. Furthermore, my view is buttressed by additional scientific data indicating that ECE-type phenomenology can be generated in brains recovering from varied insults, and, in a relatively short interval.

I.1.4 Theological Approaches to ECE Phenomenology

The literature analysed and which I criticise widely deals largely with process and mechanisms. While its inadequacies are revealed (Chapters II-V), further deficiencies will be considered (Chapter VI). These arise out of concern for two additional, and most important, outcomes of ECE phenomenology. First, its influence and impact on the behaviour of experiencers and on their subsequent lifestyles. Second, whether the narrative encounters offered by subjects could be realistically viewed as spiritual revelations of divine encounter, or, exhibitions of an eschatology intelligible within the traditions of Judeo-Christian expectation.

The impact of an ECE on experiencers and their subsequent lives has been noted but hardly evaluated in the literature cited. This is an important deficit because of the potential, within society, of the changed perspectives manifested by this corpus of individuals. Indeed, those subsequently altered perspectives in lifestyle could, I suggest, be harnessed as an instrument for promoting communal growth within local neighbourhoods and in the fostering of improved inter-personal relationships. That, in my view, is a far more important aspect of ECE phenomenology than all the efforts so far expended in explaining such events on a "mystical" platform. Here, then, we are confronted with an aspect of personal transcendence, a transcendence that could be mobilised against despair, loss of personhood and dignity and meaning for so many people ('the lost, last and least') in today's global society. This is clearly a topic for further research application. Nevertheless I draw attention to this deficit, ignored by certain authors in preference to agendas pursued into universal spirituality, cosmic consciousness or re-incarnation as veridical "mystical" events.

Despite that, undergoing an ECE is of utmost concern to the subject. That influence cannot be undone. From a theological perspective, I shall consider whether such experiences qualify as spiritual insights, but will conclude that I find them deficient in view of their full-blooded anthropo-/geo-morphic imagery in comparison with the dim, meagreness of the true spiritual encounter. For similar reasons, it seems evident that such imagery, although weakly reminiscent of the Christian afterlife, provides an unsatisfactory eschatological rendering sufficiently robust to accord with traditional Judeo-Christian percepts of eternity. The idea of a soul leaving the body as the instrumental guarantor of immortality might also be seen to militate against credal assertions for bodily resurrection, a theology scarcely approached in the ECE narrative accounts, or dealt with at all satisfactorily by individual authors. From that, it will be my conclusion that ECE phenomenology hardly qualifies as revelatory insight into the prospects for life after death and therefore, in my view, arises from illusory brain-states conjured up as the cerebral tissues are attaining a normal level of functional competency.

Before proceeding into the neurological and theological avenues as adumbrated above, the next chapter (Chapter II) will examine in more detail the phenomenology of ECE and other relevant corollaries, before reviewing other-worldly journeys from a historical and geographic perspective. These observations indicate a phenomenology markedly culture-dependent. Culture itself is a cognitively-dependent phenomenon, thus providing some initial evidence that the experiential accounts are generated through cerebral mechanisms, resulting in anthropomorphically-based visions of what is supposed to be the otherworldly eternity of a heaven or a hell.

CHAPTER II

PHENOMENOLOGICAL & CULTURAL ASPECTS OF EXTRA-CORPOREAL EXPERIENCES: (ECE)

A. Descriptive Phenomenology of ECE

A unique feature of human conscious self-awareness, and which sets us apart from the animal world, is our realisation that life ends in death. There is nothing more certain in life than death: *Memento mori*. Although we know that we will die, and for some this thought is sufficiently painful, what arouses the imagination lies in the quest of anticipating what beckons beyond death. Is an earthly death the final frontier, or is it yet a gateway into a further world of existence beyond the known universe?

Within the religious monotheistic traditions of (post-exilic) Judaism, Christianity and Islam, that existence has implied an eternal presence with God, in some kind of paradisaal locus and with some form of a new, or "resurrected" body. Yet in recent decades throughout Western culture, there has arisen in some quarters a marked trend towards secularism, and a corresponding disinterest in traditional beliefs in God and a theologically-conditioned eschatology, thus rendering useless ideas of a future existence beyond corporeal disintegration. And, if there is no God which for many, science 'has proved beyond all doubt', then not only is there no prospect of a heavenly reward, but neither is there need to pursue on earth the kind of life dictated by ecclesial doctrines as appropriate preparation for ultimate acceptance into the glorious company of Saints, Martyrs and Confessors. On the other hand, a determined and fundamentalistic approach

to religion in the rapidly expanding areas of evangelicalism, Pentecostalism, and Islamic fundamentalism is asserting itself worldwide. From another perspective, the rise of "New Age" spirituality in its varied expressions keeps ever in mind the incessant urge towards some kind of spiritual existence here, and possibly beyond the grave. And while not directly related to the surge in new forms of personalised spiritual renewal characterising "New Age" anthropology, the burgeoning interest in various kinds of death-associated experiential phenomenology has contributed to the idea of a newly-emergent dimension beyond – if not the grave – then, at least, the clinical confines of the operating theatre or intensive care unit. That latter kind of experiential testimony to which I refer is now widely understood to incorporate the out-of-body (OB) and near-death (ND) event (E): collectively I refer to them as extra-corporeal experiences (ECE).

To date, there has been an emerging stand-off between some psychologists and parapsychologists who maintain that ECE are real and represent *prima facie* evidence of an after-life, and others who regard ECE as firmly associated with specific brain-states brought on, or related to, alterations in cerebral blood flow, possibly non-physiological levels of O₂ or CO₂ gas tensions resulting in cerebral hypoxia, or hypercapnia, drug-induced influences on cerebral metabolism, or hallucinatory perturbations of mind-brain ¹. Despite other attempts at explanation² there is still evident a reluctance to engage deeply with neurobiological mechanisms³, on the grounds that these do not fully reproduce all the features of ECE, or because, somehow, they do not resemble what experiencers relate. Nevertheless, there can be little doubt that such material, as anecdotally recalled, is widely

¹ Vaisrub S, Arch Int Med **137**: 150, 1997; Blacher R, J Am Med Assoc **242**: 2291, 1979
Siegel R, Fire In The Brain. New York: Dutton 1992

² Jansen K, Br Med J **298**: 1708, 1989

³ van Lommel P et al, Lancet **358**: 2044, 2001

taken as evidential support for some kind of afterlife⁴: and all that, notwithstanding the often long intervals between event and recall, and the intervening opportunities for repeated rehearsal of those accounts and hence for their progressive rationalisation and idealisation.

In this chapter, I shall outline the background literature relevant to OB and ND experiences, and to consider the lesser known narratives describing visits to "hell". Next, I consider aspects of ECE as narrated by blind subjects and what they are alleged to have "seen" while undergoing NDE. Then I review critically the interesting case of Pam Reynolds and her operation for an intra-cranial [basilar artery] aneurysm, and for the outcome and interpretations of her ECE, given the very specialised technical circumstances of her neurosurgical procedure⁵. Having viewed ECE phenomenology as seen from its particular cultural domain through Western eyes, I continue by critically evaluating testimony from other ages, and from other (current) civilisations beyond the full embrace of westernised hegemony and its socio-cultural ethos. From this experiential and cultural background, I begin to build my argument that ECE phenomenology is a brain-associated event.

II.1 THE NATURE OF OUT-OF-BODY (OB) EXPERIENCES

Events known as extra-corporeal experiences (ECE) consist, in the main, of two discernible types: one is the so-called "out-of-body" (OB) event - otherwise known as "travelling clairvoyance" or "astral projection"⁶ and the other, the so-called near-death

⁴ Ring 1980, 168; Sabom 1982, 186; Grey 1985, 105ff, 188; Sabom 1998, 196

⁵ Sabom 1998, 37-51, 184ff

⁶ Ehrenwald J, J Nerv Ment Dis **159**: 227-233, 1974

(ND) experience. They are not necessarily simultaneous occurrences. There is a further death-associated phenomenon noted in ill people who, at the point of their departure, experience "apparitions" of other deceased friends or relatives and often associated with an elevation of mood whilst the individual retains an alert consciousness. I shall not be concerning myself here with that form of "death-bed" phenomenology.

OB events are not uniform: they comprise several defined illusory reduplications of the body⁷: the classic example is the autoscopic "double" or a visually perceived image of self, as in a mirror. A further extension is known as external "heautoscopy" ⁸ because of the self-regarding or reflexive nature of the experience (Gk self-reflexive pronoun ἑαυτοῦς). During the heautoscopic phase, consciousness oscillates between subject and double, associated with either vestibular or somaesthetic sensations. The former entails a sense of floating or body lightness: the latter acute vividness of visual and auditory perception. Internal heautoscopic events involve the subject hallucinating body organs in extra-personal space⁹. Such an occurrence was described by a woman undergoing cardiac bypass surgery. While leaving her body during the operation she described seeing her heart lying beside her body, bumping away with what looked like ribbons coming from it¹⁰. Whatever she meant by '*ribbons*' seems most obscure, but the most parsimonious explanation of this woman's seeing her heart next to her body is that she experienced a moment of internal heautoscopy. Another facet of the autoscopic experience, and one which will be of concern to our theme, is that of feeling or sensing a "presence" in extra-personal space¹¹. Finally, we come to the OB event proper, which involves seeing one's

⁷ Ionasescu J, Acta Psychiatr Neurol (Scand) **35**: 171-181, 1960; Lunn V, Acta Psychiatr (Scand) **46** (Suppl 219), 118-125, 1970

⁸ Damas Mora J, Jenner F, Eacott S, Br J Med Psychol **53**: 75-83, 1980

⁹ Brugger P & Regard M, Cogn Neuropsychiatr **2**: 19-38, 1997

¹⁰ Fenwick & Fenwick 1998, 193

¹¹ Lunn V, 1970

entire body and its immediate environment from another vantage point, usually from the ceiling of bedroom, ward, or operating theatre. In such cases, consciousness appears to lie with the floating "self", the central experience being of separation of body and mind¹². Usually, the phenomenon is accompanied by heightened auditory perceptions of speech, buzzing, vibrations or ringing tones, and vestibular effects of weightlessness, floating or other forms of kinaesthesia. The phantom self is able to pass through physical objects without hindrance.

In one series of hospitalised patients, ECE occurred in 60% respondents in whom 26% were pure OB in type, 50% other-world (transcendental) journeys (ND), and combined in the remaining 24%¹³. During OB episodes there is a sense of incorporeality and an existence in a timeless zone without the pull of gravity, complete detachment from the physical body being surveyed, and often with no concern for the predicament of that body or the attempts to bring it back to "life". Here is an illustrative example:

It had been raining, and the woman was rushing to get a bus to take her across town for a dental appointment. Her attention was momentarily drawn towards the man yelling at her as she entered the pedestrian crossing, but the car was already upon her. Its driver, distracted before impact by the needs of a child passenger, failed to notice her. The victim continues:

‘I was struck by a black car – that’s the last thing I remember, until I was above the whole scene viewing the accident, I was *very detached*. I *don’t remember hearing anything* – it was just like I floated [up to the] rooftops or a little higher ... the thing that impressed me most was that I was *devoid of emotion*. It was ... pure intellect. I wasn’t *frightened* ... it was *very pleasant*. I remember seeing the earring which was smashed ... my shoe crushed under the wheel ... my new dress ruined. And *I wasn’t thinking about my body* being ruined too ... I don’t think really *that the seriousness of the situation dawned on me* [nor] the realisation “I’m outside my body”: ... the next thing I saw [was] the woman [driver] crying ... the car [was] dented. And I saw my body – in profile as the attendants lifted me onto the stretcher. I was actually to the front and side of the car, viewing all this. I remember them looking at my eyes ... checking my pupils. Then they began lifting my body. The way they handled me was something else ... *this was amusing to me*: they lifted

¹² Tart C, J Near-Death Stud 17: 73-99, 1998

¹³ Sabom M & Kreutziger S, Death Educ 1: 195-203, 1977; idem, Theta 6: 1-6, 1978; Sabom 1982, 116

me in an amateurish way ... underneath my shoulders and knees rather than rolling the stretcher up under me and then lifting me ... into the ambulance ... the whole thing was very detached. I remember them putting me – that is, my body – into the ambulance. And the next thing I remember was crying in the emergency room because I couldn't see ... I awoke blind and couldn't see for about 30min after I fully regained consciousness' (abridged, Sabom 1982, 116ff: emphases mine).

In analysing this woman's account of her accident, one cannot but be impressed by its weirdness. It is only necessary to recall our own witnessing of the road-side scenes after a collision or major accident, the impact of the shocked faces of the survivors as they huddle together giving information to police and other parties concerned, and to compare that reality with the cold, dispassionate and passive view of events provided by this victim's recall. She displays no shock, disbelief, or concern for possible injury, insurance claims, possible charges, her future life, effects of disablement, or the ability to continue doing the same job. There was none of that in her account. She was *devoid* of emotion; she was *not frightened*; it was *pleasant*; she was *amused*. In real life, we would be very concerned, incredulous and certainly amazed by such inappropriate remarks. Her concerns were not for her body, but only for her damaged earring, shoe and dress. There is no recall of the associated noises on the street – conversations, passing traffic, the klaxons of police vehicles and ambulance. There was no emotional content nor insight into the usual worrying concerns about future physical repercussions or disabilities. Although this lady sustained a subdural haematoma as a result of the collision, she was treated conservatively and suffered no long-term sequelae. The nature of her "blindness" is not pursued further, yet she recalled visual details which, although scarce in detail, appeared to be factually correct: it is also evident that the few details reported were known to her before, and after the accident. Indeed, she reported nothing new. We note that although she "saw" things while supposedly unconscious she was, during this period, physically blinded by the brain trauma.

This lady suffered transient, mild concussive trauma to her brain accompanied by a depressed level of conscious-awareness. We have no corroborative evidence of how long she lay on the road before being brought to hospital. The story, as later remembered and recalled, is of a *continuous narrative* – but each of the incidents could have been experienced as isolated events interspersed with deeper levels of unconsciousness during which no memories would have been laid down for her to recall. What she does recall are images and impressions, and *not* an eye-witness account of the sequential unfolding of the accident and its progressive management. She could well have been on the road for an hour or more, while awaiting the arrival of the ambulance. Her verbal report referred, in reality, to a few apparent visual traces that could hardly have occupied but a few seconds of real time as she lay on the road.

But there is more to this woman's subsequent history, as elicited by Sabom on interviewing her about 20 years later¹⁴. As a result of the original road accident, she gradually discovered an innate ability to undergo spontaneous OB experiences at will. She often got out of her body to check the house while her husband was working at night. Once she discovered an open back door, but had to return to her body in order to verify the observation and muster the power to close and lock it. She later employed the same technique to check on her sleeping baby, but then resisted on the grounds that if the baby needed help and she was unable to return to her body, it might come to some harm. She felt that these various OBEs were unlike the passivity of dreams: rather, she regarded her body as a shell, and really felt that "*I am*" was "*out there*". Despite that claim, we should critically observe that verification in the real world, and the use of (real) motor power, necessitated an actual return to her real body from the hallucinated chimaera of herself.

¹⁴ Sabom 1982, 118

A similar ability to escape the confines of physical corporeality was claimed by two other subjects after their initial OBE¹⁵. One male subject was able to elevate himself above his body while he lay on a bed. On another occasion, he floated down Interstate 20 alongside cars travelling at 60-70mph while observing the occupants through the vehicle windows. He also recalled arriving in the shower cubicle of the nurse living next door just, very conveniently, as she was showering. Even more curiously, she reported to him that she had sensed his presence with her at that time. Clearly that was no more a physical encounter than was described by the previous woman in the accident. The reason is that he could only spend most of his days lying on a bed. This veteran lost both legs and one arm in Vietnam following exposure to an exploding rocket (after which he had his first OBE in a US military field hospital). A third subject, a lady whose first OBE followed a severe post-surgical haemorrhage, was able to ascend to the rafters of her church as the minister preached. In all cases, these out-of-body events occurred at moments of quiet – during the night, while lying on a bed (amputee), or when concentrating on a sermon. Thus the circumstances are in place for an OBE: an experience akin to the visionary or hallucinatory episodes that sometimes occur during the sleep-onset period (known as "hypnagogic" experiences).

A death-threatening occasion is not a necessary prelude to an OBE. Indeed, the psychological and parapsychological literature is replete with details of numerous people who undergo spontaneous, and often repeated, episodes of autoscopy throughout life. In one study of Oxford University undergraduates by C E Green¹⁶, there were five cases of autoscopy associated with dreaming; three while going to sleep; and others occasioned by

¹⁵ Sabom 1982, 121ff

¹⁶ Green C, *J Psychic Res* **44**: 111-131, 1967

a diverse collection of antecedent phenomena such as impending danger; threatening or embarrassing circumstances especially regarding earlier life-events in the school classroom; imminent drowning; physical exhaustion; occasions of severe tension, anxiety or nervousness and others precipitated either by the "grey zone" before a faint; being in a calm religious setting; or even spontaneously without any specific precipitant¹⁷.

In another statistically-controlled comparative study, there were two groups of severely ill patients. 28 patients were judged clinically by their attending physicians to be life-threatened, while a disease-control group of 30 individuals was considered clinically not to be in danger of dying: OB experiences were experienced by a similar high percentage (~68%) in each group¹⁸. The divergent data regarding the prevalence of OB phenomenology in very sick patients¹⁹ is presumed to be due to patient selection and attempts to do statistical analyses on very small numbers. Nevertheless, it is clear that clinically-considered nearness to death is not an absolute criterion which guarantees an OBE, in contrast to subjects who, when perceiving themselves to be in mortal danger, may well undergo OBE. Evidently, the varied occasions on which an individual may become an OB experient is not dependent on an immediately life-threatening cause whether internal (acute cardiac or cerebral event) or external (traumatic; psychologically demanding, or stressful). Other OB subjects extensively investigated with physiological tools (EEG; BP recording; body temperature measurements), have apparently led normal lives over many years without any demonstrable intra-cerebral or intra-cranial pathology.

¹⁷ de Vesme, *Ann Psychic Sci* **4**: 325-331, 1906; Green CE, *J Soc Psychic Res* **43**: 357-366, 1966; Tart Charles, *Int J Parapsychol* **9**: 251-258, 1967; idem, *J Am Soc Psychic Res* **62**: 3-27, 1968; Osiris K & Mitchell J, *J Soc Psychic Res* **49**: 525-536, 1977; Morse M, Castillo P, Venecia D, Jerrold M & Tyler D, *Am J Dis Child* **140**: 1110-1114, 1986

¹⁸ Owens J, Cook E, Stevenson I, *Lancet* **336**: 1175-1177, 1990; Gabbard G, Twemlow S, Jones F et al, *J Nerv Ment Dis* **169**: 374-377, 1981; Stevenson I, Cook E, Clean-Rice N, *Omega* **20**: 45-54, 1989-1990

¹⁹ Sabom & Kreutziger, 1978

From that, it is evident that an OB experience is a feature of an apparently "normal" brain, or in circumstances of determined voluntary control²⁰.

The allied phenomenon of the "double" has not only been a source of fascination for the medical profession, but a subject well-used by many literary figures throughout history²¹. It is recognised that autoscopic and OB experiences, apart from pathological syndromes (encephalitis, neurosyphilis, epilepsy or toxic-confusional states), may attend people particularly when drowsy, falling off to sleep, when in dimmed lighting conditions, or engaging in episodes of hyperventilation²². Apart from states of drowsiness or low illumination, anxiety is another contributory cause in otherwise physiologically "normal", non-brain-damaged persons²³. For example, Hopi Indian women (Nevada), as part of their mourning ritual, regularly have hallucinatory visions of recently departed family members²⁴. Again, characteristically, these hallucinatory phenomena occur only during the evening or after the bereaved individual has just retired to the bedroom, when external stimuli are unlikely to disturb either the ambient peacefulness of the house or the experient.

Neither are hallucinations of the double confined solely to the elderly. It is a well recognised phenomenon that the play of children, usually up to the age of ten years, may be accompanied by imaginary or pretend companions who act as friends, protectors or

²⁰ Osiris, K & Mitchell JL, 1977; Tart C, 1967; idem, 1968; Green E, Green A, Walters E, *J Transpers Psychol* **1**: 1-26, 1970

²¹ Jean Lhermitte, *Br Med J* **1**: 431-434, 1951; Claire Rosenfield, *Daedalus* 326-344, 1963 (Spring issue)

²² Allen T & Agus B, *Am J Psychiatr* **125**: 632-637, 1968; Kennedy R, *Am J Psychiatr* **133** 1326-1328, 1976

²³ Devinsky O, Feldmann E, Burrowes K, Bromfield E, *Arch Neurol* **46**: 1080-1088, 1989

²⁴ Matchett W, *Psychiatry* **35**: 185-194, 1972

antagonists²⁵. Creative and imaginative children, observed to a greater extent in girls than boys, and in the blind, are far more likely to engage in this type of phenomenology than matched controls²⁶. The critical environment, as for adults – particularly explorers, hermits, monks and those shipwrecked and now alone on the sea, - thus includes loneliness, sensory deprivation or stress.

II.2 THE NATURE OF NEAR-DEATH (ND) EXPERIENCES

The phenomenology of near-death (ND) events takes us beyond the physical confines of the body, and its immediate escape as realised during OBE, to offer glimpses of the alleged "existence" awaiting us after death. The interpretation of ND experiences may be regarded scientifically as a physiologically- or pharmacologically-altered brain-state; psychically, as witness to a true existence and another reality beyond the confines of physical embodiment; or psychologically as a response, in the form of depersonalisation, to the threat or stress of impending death. As already noted, the greatest impact on the definition and interpretation of ND experiences emerged from the publications of the psychiatrist Raymond Moody²⁷ and the psychologist Kenneth Ring.

It might be argued that Moody's book was cleverly executed, in that while he merely related particular aspects of each of his received testimonies, these were *preceded* by, and incorporated into, his own "ideal" or "complete" experience which embodied all the common elements *'in the order in which it is typical for them to occur'*. Thus:

²⁵ Siegel R, McLean Hosp J 2: 66-80, 1977

²⁶ Singer J & Streiner B, Percept Motor Skills 22: 475-482, 1966; Schaefer C, Dev Psychol 1: 747-749, 1969

²⁷ Moody 1976, 21ff

'A man is dying and, as he reaches the point of greatest physical distress, he hears himself pronounced dead by his doctor. He begins to hear an uncomfortable noise, a loud ringing or buzzing, and at the same time feels himself moving very rapidly through a long dark tunnel. After this, he suddenly finds himself outside of his physical body, but still in the immediate physical environment, and he sees his own body from a distance, as though he is a spectator. He watches the resuscitation attempts from this unusual vantage point and is in a state of emotional upheaval.

After a while, he collects himself and becomes more accustomed to his odd condition. He notices that he still has a "body", but one of a very different nature and with very different powers from the physical body he has left behind. Soon other things begin to happen. Others come to meet and to help him. He glimpses the spirits of relatives and friends who have died already, and a loving, warm spirit of a kind he has never encountered before – a being of light – appears before him. This being asks him a question, non-verbally, to make him evaluate his life and helps him along by showing him a panoramic, instantaneous playback of the major events of his life. At some point he finds himself approaching some sort of barrier or border, apparently representing the limit between earthly life and the next life. Yet, he finds that he must go back to earth, that the time for his death has not yet come. At this point he resists, for by now he is taken up with his experiences in the afterlife and does not want to return. He is overwhelmed by intense feelings of joy, love and peace. Despite his attitude, though, he somehow reunites with his physical body and lives. Later he tries to tell others, but he has trouble doing so. In the first place, he can find no human words adequate to describe these unearthly episodes. He also finds that others scoff, so he stops telling other people. Still, the experience affects his life profoundly, especially his views about death and its relationship to life'.

This nicely rounded account of an idealised ND experience is deceptively ambiguous for several reasons. First, in being strategically placed at the beginning of the book, such a dramatic account influences readers before they are given opportunity to independently survey and sample Moody's evidential testimonies from which to draw their own unbiased conclusions. Second, Moody declined to give any statistical analysis of the respondents who experienced each of the sequential phases in his 'model' of an evolving NDE. Therefore, this account is not a model (idem, p23) based on data, but just an opinion conditioned and driven by what Moody imagined ought to be the case. There was sufficient information and opportunity from which to construct a provisional hypothesis, but that was not undertaken. Third, Moody had no grounds to speculate that the testimonies which most closely and completely conformed to his model occurred in patients who were "dead" for the longest periods thus allowing them opportunity to experience a "deeper form of ND event". Because of the retrospective nature of the

material he was working with, he could not have possessed that necessary kind of information. Fourth, Moody conflates OB and ND as *sequential phases of the one experience*. That is an error on his part.

Ring's study (1980) sought to remedy some of the defects arising from Moody's work, such as determining the overall prevalence of ND events occurring among those facing life-threatening situations, to what degree each person's NDE corresponded to Moody's "universal" construct, and whether the qualitative form of NDE had any bearing on the type of death-threatening antecedent, such as attempted suicide, acute cardiac insufficiency or a severe life-threatening accident. Of his total case load, ~50% had experiences which '*conformed in an obvious way, at least in part, to Moody's model*': of these, about half had "*deep*" experiences. But even here difficulties arise with Ring's data, because there were marked differences in the prevalence of reported NDE between self-referring (58%) as against those medically-referred (39%) cases: this raises considerable doubt as to the clinical circumstances pertaining to the former self-referrals in this study.

On further analysis, 60% experienced feelings of ineffable peace and contentment; 20% entered the darkness; 17% saw a light; but, only 10% were successful in entering the light or finding themselves in another world comprising either flowers, lovely music or sights of deceased relatives. Ring comes to the conclusion that in women, NDE occur '*far more often with "illness"*' whereas in men, ND are '*more likely to be associated with accidents or attempted suicides*'. Despite small numbers, his '*net impression*' was that NDE in these latter (male) examples were '*aborted and damped down*'. Religious people (scored on an arbitrary 1⁺-4⁺ scale) were equally as likely to have an ND event as non-religious people. Ring is firmly of the opinion that if a transpersonal experience reflects the surpassing of the '*normal*' ego boundaries as '*well as the dimensions of time and place, then there can be*

little doubt that survivors of ND events have entered such a (transpersonal) state of consciousness'.

Moody's work was made known to a southern US cardiologist, Michael B Sabom by a psychiatric social worker, Sarah Kreutziger. Sabom expressed intense disbelief in Moody's findings, but agreed to work with Kreutziger to investigate his patients undergoing acute cardiovascular shutdown. Sabom's intent was to initiate a truly scientific, prospective study of cardiovascular collapses so as to determine the true prevalence of ECE; to compare his findings with Moody's; to evaluate the influence of social factors on the qualitative aspects of each experience and whether those factors influenced the content of ECE; and finally to decide whether the ECE itself, or the close call to death, influenced later attitudes to dying and to beliefs in the afterlife. Such observations would be made possible by rigorous follow-up of all patients admitted to his prospective study through the acquisition of clinical data amassed during each resuscitation, and then subjected to statistical analysis.

Of 78 prospectively enrolled patients thus reviewed, 33% experienced OBE, 48% had NDE and 19% went through a combined event. The majority (79%) followed acute cardiac complications, 15% were in comas and 6% were due to accidents: not surprisingly, the majority of cases was dealt with in the hospital setting. Thirteen cases (39%) were "unconscious" for periods greatly exceeding 30min, while 19 (61%) were unconscious for up to 30min: hence the majority of cases received effective resuscitation performed by experienced, hospital-based crews.

Of those experiencing ND events, only 14 described a period of darkness or a void. One subject with three successive cardiac arrests experienced blackness only during the first

two, but a sense of movement through the dark during the third, longer arrest: ‘...*like I was lifting up*’²⁸. Seventeen subjects (~22%) saw some kind of light which terminated the initial dark void. There was a tendency for the light to begin small and gradually increase in size. The transcendental environment was invariably described in quasi-geographic terms, as clouds, blue skies, flowers, streams, or a pasture with cattle. Others described gates (golden), the top of a mountain, a road ending at a gate, and a landscape full of people of different nationalities each working on their arts and crafts²⁹. Only 10 experienced some other “person” whether sensed as a “presence” or a spiritual being. Communication was verbal (from being to experiencer), gestural, or “telepathic”, and invariably concerned directives to return to earth. Three subjects recognised themselves to be in the presence of God or Jesus: many perceived beings as previously dead forebears within their larger family. Two people experienced a life review, but neither involved contact with the people in, or of, the light. Dr Sabom became an immediate convert.

This is a robust, prospective and scientifically-conducted study, indicating that for this series of subjects, ECE (OB and ND) were experienced by ~30-50% subjects. Although Sabom classifies ECE as either autoscopic or transcendental, he follows Moody and Ring in describing each experiential facet. The data showed that demographic factors or previous acquaintance with ECE, were not determinative, and that the content of ECE was independent of all other factors investigated, save that some females and non-skilled subjects tended to encounter other (deceased) people during their experiences. A reduced fear of dying and an increased belief in an afterlife, was reckoned by the majority of subjects to have been caused by the NDE rather than by the threat of death occasioned by the crisis itself.

²⁸ Sabom 1982, 42;

²⁹ idem 1982, 209, Table XII

In another retrospective study involving children who had attended University Hospital Medical Center, Seattle, WA, the prevalence of ECE was approximately 10% (12 ECE) controlled with a sample of 121 severely ill children who did not have any relevant experiential recall³⁰. Eight of 12 had OBE (~70%). The figure of 10%, despite the critical condition of the children reviewed, is considerably lower than either Ring's prevalence of 39% (physician selected) and that of Sabom (1982) of whose later sample of 116 near-death survivors, 62% had ECE, among whom 50% experienced only autoscopic journeys away from their bodies. This may be due to the much higher preponderance of cardiac cases in the adult groups which, in Sabom's study, accounted for 60% of all near-death incidents. In comparison with the typical stories given by adults, the paediatric experiences were far less developed or stereotyped. There were some accounts of dark tunnels and stairways to the light, encounters with people in white often conceived in terms of God or Jesus, but fewer visions of an organised "paradise" beyond. Typically, the recollection was of light, rainbows or flashing scintillations. Only one child saw his grandfather, and only one had the extremely rare event (among children) of a life review. In several instances the child had to make a decision to return: none, in this series, was ever told or coerced to return to home or parents.

II.3 HELL'S ANGELS ?

While there is a high preponderance in ND reports (~50-60%) of a perceived heavenly venue, albeit invariably described in geomorphic language for those experiencers who reach this 'realm', far fewer subjects relate unpleasant or terrifying excursions. In their reviews

³⁰ Morse et al 1986; Morse Melvin & Perry Paul, *Closer to the Light*. New York: Villard Books, 1990

of ECE, Peter and Elizabeth Fenwick³¹ usefully devote a small chapter in their *The Truth In The Light* to hellish experiences. These experiences add perspective to their account in quoting the 1982 Gallup Poll of 1500 American adults, of whom approximately two-thirds professed to be religious and to believe in the afterlife. Belief in an afterlife equated with a prospect, and good chances, of attaining Heaven, presumably a belief and expectation connoting the Judeo-Christian tradition. When questions about the possibility of hell were asked, only ~50% of the sample expressed such a belief, while entertaining only the remotest possibility of finding themselves there.

The question arises whether the scarcity of hellish ND relates to cultural factors and declining religious belief, especially in such a concept as hell, or whether there are neurophysiological factors also at play which determine this skewed outcome. Certainly the vagueness of the descriptions of hell most probably reflect a lack of current interest in the place, and because there is no prevailing cultural consensus as to what hell might physically entail. We no longer labour with the visual imagery of horned demons, unquenchable fires or bottomless pits. The Dives and Lazarus paradigm is no longer seen in such vivid physical dimensions and pain. The eschatological precepts of Antiquity and the Mediaevalists fail to hold either our imaginations or sensibilities captive any more.

Maurice Rawlings, an American cardiologist, gives the following account from an individual awaiting surgery after a severe assault³²:

'I felt the presence of something or some power. Next blackness I was drawn into total darkness. It felt like a big hollow room – a very large space and totally dark. I asked the power who I, and who he or it, were. He answered (by a flow of energy): 'The Angel of

³¹ Fenwick & Fenwick 1998, 187ff

³² Rawlings Maurice, *Beyond Death's Door*. New York: Nelson 1978, 116-7 (abridged).

Death'. I believed him. The Angel said my life was not as it should be, that he could take me on but that I would be given a second chance, and that I was going back. The next thing I remember I was in the recovery room, back in my body. But the encounter was real to me, and I still believe I was with The Angel of Death'.

This ND account of a weird encounter with the so-called Angel of Death is almost unique: few others appear to have experienced this sinister character. I note that the command to return coincides precisely with the subject's abrupt resumption of conscious-awareness. His immediate preceding experiences, therefore, correspond to the period when he was coming round from the anaesthetic, a period that would have lasted only a few moments. In another study of ECE in the N-W Pacific states of America³³, only one respondent experienced "*hellfire and damnation*". This man appeared to have descended in a downwards direction [vestibular influence] by mistake and was firmly told to go back. While below stairs, however, he was confronted by '*...millions of hateful, miserable people presided over by a "presence": [or] 'the devil himself ... [who] had his little horns on*'. Another man³⁴ perceived himself to be wrapped in tinfoil, '*being roasted and turned by devils with tongs ... and using their very long syringes to inject red-hot fat into [his] flesh*'. Other recorded experiences in this genre³⁵ point to a sense of despair; of seeing other wretched people in seemingly hopeless conditions, or hostile individuals and spirits attempting to pull or even inflict harm on the experient (an event which never physically materialises); or the sensing of an evil force or power. Since many of these accounts are excerpted from obviously longer accounts, it is not always possible to evaluate these specific encounters within the context of the entire ECE.

³³ Lindley J, Bryan S, Conley B, J Near-Death Stud 1: 104-124, 1981

³⁴ Fenwick & Fenwick 1998, 189

³⁵ Grey 1985, 56ff; Fenwick & Fenwick 1998, 187ff

Perhaps the most outstanding account, and which stands as exemplary of many of the previously mentioned narratives and sentiments, is recalled by Ian Wilson³⁶ of the American, Professor Howard Storm. At the time, Storm was chairman of the Department of Art at North Kentucky University, Cincinnati. While on an artistic tour of Europe, Storm developed severe abdominal pain and was taken to a local Parisian hospital. Having been apparently left in this subacute state overnight, he experienced an OBE during which he floated out of his body. Then he heard voices calling his name [in *English*] from the corridor outside his room. Storm continues his record of the ensuing events:

'I went to the doorway [and in the dimness] the people were 20, 30, 40 feet away – tall and small ... males and females [as evident from their profiles]. But every time that I would approach somebody they would back off into the mist ... they wouldn't answer anything directly ... I couldn't get a straight answer and that bothered me a lot. [He followed these people at their behest]: it felt like we walked for days and weeks but they would chorus me on. And then I started to feel very, very tired and weary, and my stomach was burning [note intrusion of this-worldly somaesthetic pain & discomfort into the other-worldly event]. The fog was getting thicker and thicker and darker and darker and we ended up like I couldn't see anything not even see my hand in front of my face. The people around me kept moving in closer and closer and closer, so that now they were just beyond my reach. I could feel from their voices where they were and I said "I'm not going any further, I don't like this at all, I don't like you. I don't want any part of this and I want to go back". I was swearing at them ... and they at me ... and we started yelling and screaming ... and pushing and shoving ... and they started hitting me. And I would swing around and try and hit somebody ... I was kicking and slugging and clobbering, and everything I did they laughed at! I'd make real contact, hitting so hard that I'd really hurt my hand, and the person would laugh hysterically. And meanwhile they were tearing at me ... and it was incredibly painful. I realise[d] that the point of the whole game was simply to put pain on me, and that my pain gave them pleasure.

[Then] I heard myself coming from inside me, saying to my consciousness: "Pray!" ...and so I used little bits and pieces of things that I could remember ... a few snatches of the 23rd Psalm and a little bit of the Lord's Prayer, all the formal stuff I could think of. The [people around me] didn't like it at all ... they were yelling and screaming at me to stop [and not to be a fool]. Nobody could hear me. What did I think I was doing? If I mentioned God they said there was no such thing ... why was I relying on all that superstition and nonsense? I liked the effect it was having on them ... and I became more and more forceful ... swearing, mixing swears with prayers ... and they got angrier and angrier ... but they also got more and more distant until they were all gone.

In the darkness I became aware of a star or small light ... and it started getting very big very fast, and I realised that it was coming straight at me ... and it came right on me and as it did I came back off the floor and all of me came back together ... and I was aware that the light was a Being. And we went out of that place, and there was a strong sense of

³⁶ Wilson Ian, *Life After Death: The Evidence*. London: Pan Books 1997, 137ff (abridged)

moving upwards very rapidly ... we travelled together and I was in ecstasy ...having orgasms of every sense and of your intellect ... it was wonderful. I thought "I'm afraid": then my friend said to me: "Oh, that's OK. We'll stop here ... We don't want you to be afraid".

Wilson continues: Storm now found himself surrounded by several other Beings of Light, or as he called them, '*centres of radiance*', each with slightly different characteristics and slightly different hues of '*a lot more colours than we can see*'. Storm was thoroughly humbled by the '*incredible love and perfection and beauty*' with which he was surrounded, and felt extremely unworthy. The Beings showed him a holographic-type (sic) review of his life. Eventually, having been told by them that he should return [to earth], he argued that he couldn't bear to leave them. As he made the painful decision not to stay, he woke up and found himself being taken to theatre. Importantly, the experience so profoundly affected him that he became converted from staunch atheism, being subsequently ordained in the Zion Church of Christ in Norwood, Ohio.

In reading these various reports of "hellish" ECE, it is particularly noticeable that where the information is given, the experient either wakes immediately from the darkness, or then proceeds towards an ever-enlarging light or finds the light coming towards him or her, so that "hell" now immediately reverts to "heaven". The logical, and indeed theological, propriety of such an acute "U-turn" seems bizarre and, as far as the Judeo-Christian tradition is concerned, must be unique in the rapidity of the exchange. Yet such a monumental reversal seems never to have been considered odd by the ECE fraternity. From a neurophysiological perspective, other conclusions can be drawn: but first, I consider two further cases discussed by Wilson³⁷:

³⁷ Wilson 1997, 150

The first, of an Australian woman [with a Gram-negative septicaemia], who sensed she was falling into an abyss ... hell ... which was moist, dark, malodorous and contained nasty shapes. As she fell further downwards she was *'in absolute terror and despair'*, but as she cried out [for help] she found herself in the arms of someone in heaven. The second, of a cardiac case borrowed from Rawlings³⁸. Rawlings was battling with a postman whose heart repeatedly stopped during a cardiac catheterisation procedure. Each time circulation was restored the man screamed out that he was in hell, imploring Rawlings not to give up on his efforts to sustain a normal cardiac rhythm. It was also noted that the man was trembling, sweating and expressing an appearance of someone in great inner fear and terror. Finally the man called out: *'Don't you understand? I am in hell ... every time you quit I go back to hell ... don't let me go back to hell!'*. Unfortunately, the subject could not recall what his experiences had been, but before resuming normal consciousness and heart rhythm, he experienced a second other-worldly dimension, but in a heavenly realm.

From these accounts I conclude that the phenomenology narrated by subjects during their sequential episodes while in a subconscious state reflects, not the beginning of an outward journey, but the neurophysiological manifestations of a brain commencing its re-entrant course towards full conscious-awareness. On that probability, the first perception of conscious-awareness, as in the initial stages of recovery from a simple fainting attack, is of darkness, gloom or a misty world. The sense of darkness may also be accompanied by an erroneous or fictive sense of falling, swirling or spinning, or of accelerated movement. This is indicative of re-activation of the brainstem, and specifically, of vestibular

³⁸ Rawlings 1978, 17ff

brainstem nuclear connections and their onward connections to the temporo-parietal cortical areas. These subserve perceptions of illusionary motion, as is the case for dream-state modes. The subsequent perception of light, especially formed and meaningful vistas and accompanied by interpretable sounds so frequently expressed by these subjects during the terminal phases of their experiences, reflects re-activation and re-integration of higher multimodal (visual) association areas sited within the domain of the temporo-parietal cortex. The severe affective perceptions of fear herald possible activation of the amygdalae, and ecstasy within other parts of the limbic system or diencephalic centres, respectively: their marked intensity may reflect an absence of higher modulating or controlling systems as the brain gradually awakens. The actual characteristics of the return to full conscious-awareness is dependent on many factors including the rate of return either from a subconscious twilight zone or a deeper level of unconsciousness, the state of the cardiovascular system including the degree of atherosclerosis, extent of lowering of blood pressure, and subject's age.

Storm was in such a twilight zone because he was simultaneously and consciously aware of his abdominal pain and the exhaustion due his deteriorating clinical condition. Furthermore, the length of his account reflects a fairly prolonged experience lasting many minutes. The Australian woman's experience was similar to a delirium, and as frightening as those experienced by patients with acute alcoholic delirium, or so-called "*delirium tremens*". In these latter cases after withdrawing from alcohol there may appear apparitions, usually of spiders or mice of the most frightening size, colour, shape and quality. Clearly, a hellish experience is not the exclusive preserve of ND experients: neither does one necessarily have to be ascribed to a visit to "hell". That descriptive label could be applied figuratively to any other allied clinically-dependent state, as with the

chronic alcoholic or others with prolonged febrile episodes or uncontrolled septicaemia. In the case of Rawlings' postman, we are not told how long the successive periods of cardiac arrest persisted: however, he would have been receiving cardiac and circulatory stimulants which may have influenced the speed at which his brain was re-perfused with blood and thus how long the intervening periods of the subconscious state (when he was in "hell") lasted. He, like the woman and Storm, all eventually experienced the light and a sense of warmth or even, as with Storm, a moment of supreme ecstasy, the neurophysiology of which states will be discussed below. Finally, we note that Storm's fictive rising upwards occurred while he was engulfed in the light and accompanied by a celestial Being. Therefore, a sense of movement does not necessarily have to be tied to the dark "tunnel" illusion.

II.4 DO THE BLIND SEE IN HEAVEN ?

Next, I turn to the important question as to whether congenitally-blind experiencers undergo the visual panoramas during ECE identical to those of normally-sighted people. One point bearing importantly on this matter must be borne in mind. That is, it is difficult to interview blind patients so to determine precisely what they are attempting to describe from within a non-visual world, relative to the highly visualised world of a 21st Century normal-sighted interviewer. It is not evident, therefore, precisely, what is to be understood when a blind person refers to seeing "*grass, flowers, trees and birds*"³⁹. No attempt was made in this paper to obtain identification of all objects referred to. From excerpts of interim transcripts of interviews, two impressions are immediately apparent (i) the (mis)use of leading questions by the interviewers and (ii) the acceptance by these

³⁹ Ring K & Cooper S, J Near-Death Stud **16**: 101-147, 1997

interrogators of superficial statements and vague responses given by those interviewed. In stating (idem, p119) '*....that coming close to death appears to restore [their] sight to normal, and perhaps in a **superior acuity**...*', (my emphasis), these authors have obviously confused visual sight with hallucinatory "sight" actually experienced during ECE. Moreover, their attempt to provide third-party corroborative support for objects observed in the real world was extraordinarily weak. Of all 31 cases cited, only two definite congenitally-blind cases could be deemed critically acceptable for their purposes.

Of these two, let us firstly consider Frank's case. Frank's 'witness' failed to confirm his ability to define the colour and pattern of a tie that she had given him. The lady in question was alleged to have purchased and delivered the tie. She, unfortunately, had no recollection of the incident whatsoever, and hence, crucially, was unable to corroborate it. Secondly, for Nancy, allegedly "seeing" her partner sitting in the corridor during her OBE is hardly novel or convincing. Given that she was undergoing a thoracotomy for a '*cancerous chest tumour*', it is hardly surprising that her friend (Leon) would not have been expectantly waiting in the corridor outside the operating theatre. In fact, he had awaited news of the surgical outcome for at least 10 hours (idem 123). In giving his version of events, Leon said he called out, 'Nancy! Nancy!' as she was suddenly rushed out of theatre towards the Intensive Care unit. The reason for this emergency dash was the result of a gross surgical error [her superior vena cava was completely severed, and then mistakenly sutured, resulting in an acute caval obstruction with immediate massive oedema of the face and upper torso]. But Nancy did not respond, either because she was unconscious, or, if still conscious, hardly capable of doing anything. And that, unfortunately, was the point at which Nancy's OBE came to an end. We could hardly be the wiser.

Here is another excerpt from the same study which upholds my earlier criticisms of exceptionally poor interviewing techniques which were neither able to secure convincing evidence, nor good rapport between interviewee and interviewer:

Interviewer: Could you describe it? Could you see it in detail? [her body]

Marsha: Yeah, it just looked like me. I was, like, asleep.

Int: And how was your vision, if I could put it that way, when you were looking down on yourself?

M: It was fine It was normal.

Int: When you say normal, you mean clear?

M: Yeah, everything. There was no problem with it

Int: Were you able to see better than you could in the physical world?

M: Oh, yeah.

Int: What was your perception like in this room [in the otherworldly portion of her OBE]?

M: Everything. I could see everything ... all the people, all the way back. Everything.

Int: In what way? Could you be a little more specific?

M: It was perfect. It was not like your eyes to see. I don't know what normal vision would feel like. It couldn't be my eyes because my eyes were back over here. I could see gold ... on the walls ... white birds and angels....

Int: When you saw birds and the people and the room, were you seeing it in detail or just like you see now?

M: No, no. It was detail. It was white light ... and gold on the walls.

Apart from the way in which Martha was led by so many questions, there is, in my view, a complete failure to draw out from her precisely what is meant by the words (a) of attribution – "perfect"; "normal"; "fine"; and (b) those relating to real objects but never visualised like normal people – "gold"; "birds"; "angels"; "white". There was no thoughtful attempt to compare Martha's use of group (a) and (b) words with respect to *our* visual world, *her* experience at that time, or thirdly *her* usual, non-visual internal world which would still have been full of brain-derived conceptual imagery. Of course, in her internal world, she would conceive images of herself and of worldly objects, as well as an internalised concept of the meaning, for example, of the words "gold" or "bird". That is the inevitable result of conversing verbally with normally-sighted adult persons. Therefore, it is not at all surprising that Martha's internal visual world would seem normal *to her*, and hence that "*everything was the way it was supposed to be*" (idem, 119). So an

ECE is not the means '*in which "sight" can be restored – even to a superior acuity*'. That inference could hardly be correct and, indeed, unlikely to be so (idem, 119) being based on two key, but flawed, case-reports. Finally, all the descriptions given by these blind or visually-impaired respondents appear to have been taken literally (idem, 129: 136ff) as proof that OBE/NDE do provide objective evidence for a spiritual world outwith the physical body, and for the existence of an other-worldly realm of which ECE respondents have been offered a privileged *visual* glimpse. With the data presented in this particular paper, I firmly conclude that such "proof" is unwarranted, and second that the alleged '*spiritualised*' form of sight, denied to these blind subjects in the physical world, is entirely misconceived.

II.5 THE EXEMPLARY CASE OF PAM REYNOLDS

This 35-year-old woman came to Dr Sabom's attention twenty years after an operation performed for a basilar artery aneurysm. We are not told what symptoms and over what time-scale it had been troublesome. The basilar artery arises from the junction of the two vertebral arteries ascending within the cervical [neck] vertebrae, then continuing its upward course on the undersurface of the lower brainstem [into the posterior cranial fossa] to supply the brain-stem and posterior parts of the cerebral cortices. Resection of this very large aneurysm was performed in Phoenix, Arizona by an operative technique termed "hypothermic cardiac arrest"⁴⁰. The procedure requires severe cooling of the patient to 60°F [normal ~98.4°F] during which procedure the electroencephalogram and electrocardiogram become flat. While surgery to remove the aneurysm takes place, the

⁴⁰ Spetzler R, Hadley M, Rigamonti D, Carter P, Raudzens P, Shedd S et al, J Neurosurg **68**: 868-879, 1988; Williams M, Rainer G, Fieger H, Murray I, Sanchez M, Ann Thoracic Surg **52**: 1069-1075, 1991

cardio-pulmonary bypass machine is turned off so that all blood circulation to the body ceases, while the blood remaining within the brain is drained under gravity by putting the patient into a sitting-up position. From the operative surgeon's notes, this phase in the surgical procedure was commenced at 11.25am. By 12 noon cardio-pulmonary bypass was being re-established, although the spontaneous return of the pulse was complicated by episodes of abnormal rhythm [ventricular fibrillation]. A proper heart beat was eventually secured after application of two shocks from the cardiac defibrillator. At 12.32pm, cardio-pulmonary bypass was terminated, at which point her body temperature, although having risen to 89.6°F, was still significantly hypothermic.

The entire exercise was prolonged. It began ~7.15am when Pam was wheeled into the anaesthetic room, after which the surgeon began cutting out a bone flap in her skull (around 9am). After 45 minutes he had assessed the aneurysm and decided to proceed with the standstill operation. At around 10.50am he gave the order for cardio-pulmonary bypass, and body cooling, to be commenced. Not until 2.10pm was the patient moved to the recovery room, still with an endotracheal tube in situ, although whether a ventilator was still being used to assist respiration is not given. If that had been the more likely case, then sedation would have been necessary to overcome the continued discomfort of the tube and the interference of the pump with her own respiratory efforts. The use of sedatives would have influenced her ultimate recall of events. At least she was conscious, speaking, and not demonstrating any obvious neurological deficit as a result of the procedure, a position confirmed twenty years later on recounting her story to Sabom. Then there was no evidence of any persistent brain damage caused either by the severe body

cooling or the period of complete circulatory arrest during the operation. The operative details are those abridged by Sabom⁴¹ who obtained the surgical notes from Phoenix.

Pam's case has become an icon for ECE phenomenologists. That is because she experienced OB/NDE during her operation, supposedly during the period when the EEG and ECG tracings were flat. It is considered remarkable that although her brain and heart monitoring records were those which normally would be ascribed to 'dead' persons, she was able to undergo such experiences, as she later recalled. Let us first observe Pam's own verbal narrative which stands as a complete account of her experiences, and then consider how Sabom reacted to her story on hearing it several years later. Sabom starts at the first recollection remembered by Pam:

'Pam's near-death experience began to unfold. She relates the story in remarkable detail':

'The next thing I recall was the sound: it was a natural D. As I listened to the sound, I felt it was pulling me out of the top of my head. The further out of my body I got, the more clear the tone became. I remember seeing several things in the operating theatre when I was looking down. It was the most aware that I think that I have ever been [sic] in my entire life. I was metaphorically sitting on [the surgeon's] shoulder. It was not like normal vision. It was brighter and more focussed and clearer than normal vision. There was so much in the operating theatre that I didn't recognise, and so many people'.

'I thought the way they had shaved my head was very peculiar. I expected them to take all of the hair, but they did not. The saw thing that I hated the sound of looked like an electric toothbrush and it had a dent in it, a groove at the top where the saw appeared to go into the handle, but it didn't. And the saw had interchangeable blades, too, but these blades were in what looked like a socket wrench case. I heard the saw crank up. I didn't see them use it on my head, but I think I heard it being used on something. It was humming at a relatively high pitch and then all of a sudden it went Brrrrrrrrrr! like that'.

Someone said something about my veins and arteries being very small. I believe it was a female voice and that it was Dr [], but I'm not sure. She was the cardiologist [sic]. I remember thinking that I should have told her about that. I remember the heart-lung machine. I didn't like the respirator. I remember a lot of tools and instruments that I did not readily recognise'.

There was a sensation like being pulled, but not against your will. I was going on my own accord because I wanted to go. I have different metaphors to try to explain this. It was like the Wizard of Oz – being taken up into a tornado vortex, only you're not spinning around like you've got vertigo. The feeling was like going up in an elevator real fast. And there

⁴¹ Sabom 1998, 37-51; 184-191

was a sensation, but it wasn't a bodily, physical sensation. It was like a tunnel but it wasn't a tunnel'.

'At some point very early in the tunnel vortex I became aware of my grandmother calling me. But I didn't hear her call me with my ears. It was clearer hearing than with my ears. I trust that sense more than I trust my own ears. The feeling was that she wanted me to come to her, so I continued with no fear down the shaft. It's a dark shaft that I went through, and at the very end there was this very little tiny pinpoint of light that kept getting bigger and bigger and bigger'.

'The light was incredibly bright, like sitting in the middle of a light bulb. It was so bright that I put my hands in front of my face fully expecting to see them and I could not I noticed that as I began to discern different figures in the light – and they were all covered with light, they were light, and had light permeating all around them – they began to form shapes that I could recognise and understand. I could see that one of them was my grandmother. I don't know if it was reality or projection, but I would know my grandmother, the sound of her, anywhere.

I recognised a lot of people.....[various relatives].....they were specifically looking after me. They would not permit me to go further ... it was communicated to me – that's the best way I know how to say it, because they didn't speak like I'm speaking – that if I went all the way into the light something would happen to me physically. They would be unable to put me back into the body, like I had gone too far and they couldn't reconnect. I wanted to go into the light, but I also wanted to come back – I had children to be reared. Then they [deceased relatives] were feeding me ...[but] not through my mouth ...something sparkly. I definitely recall the sensation of being nurtured and being fed and being made strong. I know it sounds funny, because obviously it wasn't a physical thing, but inside the experience I felt physically strong, ready for whatever.

My grandmother didn't take me back through the tunnel, or even send me back or ask me to go ... I expected to go with her but it was communicated to me that she just didn't think she should do that. My uncle said he would do it ... back through the tunnel. I did want to go. But then I got to the end of it and saw the thing, my body. I didn't want to get into it – it looked terrible, like a train wreck. It looked like what is was: dead. I believe it was covered. It scared me and I didn't want to look at it. It was communicated to me that it was like jumping into a swimming pool. No problem, just jump right into [it]. I didn't want to [but my uncle] pushed me. I felt a definite repelling and at the same time a pulling from the body. The body was pulling and the tunnel was pushing ... it was like diving into a pool of ice water ... it hurt!

When I came back, they were playing "Hotel California" When I regained consciousness, I was still on the respirator'.

Pam's OBE occurred at points within the two hour and ten minute interval (8:40–10:50am) during which the surgeon raised the rear, right-sided [temporo-occipital] bone-flap in order to inspect the aneurysm and assess the feasibility of removing it. Before continuing, we should note that Pam's eyes were lubricated and the eyelids taped together, while special earplugs were inserted into her outer ears in order to transmit tones necessary for monitoring brainstem function. We are not told whether these plugs rendered Pam

completely oblivious of all external adventitious sounds. The OBE concerns two aspects of the procedures undertaken during this two-hour period – the use of the saw in raising the bone flap, and the difficulties encountered in achieving satisfactory vascular access to her groins in order to establish cardio-pulmonary bypass.

With regard to the bone flap, I shall consider what Pam alleged she saw and heard: clearly, she was unable to use her eyes. She thought she was sitting on the surgeon's shoulder and looking over him. Yet despite occupying this grandstand position, she provides no account of the cutting procedure, only surprise at the small area of hair that was shaved from her scalp: *'I expected them to take all of the hair, but they did not ...'*. That information, of course, was available to her after the operation and could have been subconsciously woven into her narrative at some later stage. Her description of the bone saw used was inaccurate and did not fit the model actually used in her operation (idem, p184-189). She heard the bone saw *'crank up'* yet, despite being positioned by the surgeon's shoulder, she (incredibly) never observed it in use: *'I didn't see them use it on my head but I **think** I heard it being used somewhere'*. That statement clearly indicates that she saw nothing of the saw in the theatre on that day, but was only aware of its sound.

The problem arises as to whether she actually did, or could, hear the saw, despite having her ears plugged. Against the possibility that she was unable to hear any externally-produced sounds by air conduction, there is no doubt that she actually heard the saw internally, by means of bone conduction. Most of us are familiar with the analogous situation of the dentist's drill whose sound is substantially transmitted through bone, in addition to external (air) conduction. Similarly, the 'body-image' of the sound of our own voices is predominantly dependent on bone rather than air conduction, explaining why

hearing a recording of our own voice seems so different from our inbuilt mental preconceptions of its timbre. We should also be aware that the bone flap was cut immediately around the site of her right ear, so that there was direct contact between the scalp bone being severed and her internal ear mechanism (for audition) within the adjacent [petrous temporal] bone on that side.

Sabom (1998, p185) states in his interview with Pam that she did not perceive anything before hearing the bone saw. He also states that the craniotomy was begun *at the same time* as the groin incisions were being made in preparation for the bypass procedure. Thus Pam's OBE does correspond with the timing of the saw and the alleged conversation about the smallness of her femoral (groin) vessels. However, her account is sequential: Pam clearly derived no information that the events were contemporaneous. *'I believe it was Dr [] [speaking] but I'm not sure'* (idem, p42, my emphases). We note the considerable uncertainty here regarding her testimony. It is as vague as her remarks about the use of the bone saw *'somewhere'* although she was supposedly looking over the surgeon's shoulder and directly into the field of surgery *'with heightened visual acuity'*. The possibility arises that her impression about the conversation could have been inferred post-operatively, relayed to her directly through nursing or medical staff. She would naturally have enquired why *both* groins had been opened when perhaps she only expected one to have been used. She may have picked up conversations by the same female doctor when she and other members of the surgical team handed over responsibility to the personnel in the Recovery Suite, while Pam was still sedated, drowsy and possibly cool (her last stated temperature still being in the moderately-severe hypothermic range). My own conclusion is that Pam could not have heard the conversation in theatre with earplugs in her ears: her information

must have come from another source and those which I have indicated seem to be the most likely.

Finally, some comments on time and timings. We can relate Pam's OBE account to the initial operative procedures when her head and groins were opened: her experiences, however much she was conscious or unconscious, correspond. Yet we should be aware that Pam's account of this phase in her ECE is contained within 325 words for a period exceeding two hours in real time. Her account is extremely minimalist and signally fails to provide a proper commentary on the events as they evolved – only fleeting and inaccurate perceptions of two alleged happenings. I conclude that Pam did have an OBE, but it is by no means as impressive as many that are recorded in the literature, and that it clearly occurred well before body cooling was initiated. Pam notes that she did not like the respirator, suggesting that her levels of anaesthesia and sedation were shallow and that she may therefore have consciously been aware of some sounds during the early stages of the operation. Her visual record is unimpressive. She neither saw her head being opened, and neither was she competent to have reported a most telling operative detail: that is, her head had to be turned sharply to her left and held there rigidly by a robust, mechanical three-point pin head-holder, in order to allow the surgeon to proceed. All we can be sure about is that during these initial stages Pam reported having evanescent glimpses of herself "looking" over the surgeon's shoulder, giving a puzzling description of the saw which she heard, but clearly not actually seeing nor even knowing where it was being used, and of recalling fragmentary items of conversation about her groin vessels which could have been incorporated into her memory *after she had come out of theatre*. The operation was planned to get her through a technically very difficult piece of surgery, not designed to

answer questions about ECE. As a result, the issues become very unclear and indecisive when critically dissected as proof of extra-corporeal existence.

Sabom continues his account of Pam's operation and ECE. He arrives at the stage when her body core temperature had been lowered by almost 40°F. During this stage, bypass having been terminated, there was no measurable blood pressure, pulse, cardiac activity, electrical brain activity or brainstem activity (as assessed through the special earplug monitoring devices). Pam was now in a state popularly known as "suspended animation". Yet at this critical juncture in his text, and presumably without intended deception, Sabom (idem, p43) interposes the following unbelievable comment: '*...sometime during **this** period Pam's near-death experience **progressed***' (emphases mine). Sabom therefore implies that Pam experienced the next (NDE) stage in her recorded narrative comprising ascending vortex, expanding light and sight of many deceased relatives, when all bodily function had ceased. That is, when cardio-pulmonary bypass was stopped, her brain had been drained of blood, and her core body temperature had been markedly depressed to 60°F. That, of course, is impossible, viewed from any physiologic perspective. Because her brain (as the 'flat' EEG was taken to indicate) was dormant, it obviously lacked the ability to activate the cerebral processes associated with sensory perception and, importantly, with memory, an essential function necessary if Pam was ever to recall any of these perceived events at a later time. Thus, to indicate that Pam's NDE commenced during that particular stage of the operation is absurd, as it is likewise for others to believe and transmit, as true fact, what Sabom, without any warrant, is alleging here. Yet Sabom persists (idem, p49): '*During "standstill" Pam's brain was found to be "dead" by all three clinical tests – her EEG was silent, her brainstem responses were absent, and no blood flowed through her brain. Interestingly, **while in this state**, she encountered the "deepest" near-death experience of all [his previously reported] Atlanta Study participants*' (my

emphases). *'Had the surgeons brought her back from the dead?'*, he asks. The answer is clearly no, for the additional reason not included by Sabom is that Pam was markedly hypothermic as intended by the procedure, thus protecting her from the prolonged effects of having no functional circulation during that critical period of the operation.

After the aneurysm was clipped, Pam's body was rewarmed through the re-establishment of cardio-pulmonary bypass (between 11:25 and 12 noon). Here Sabom adds (*idem*, p45): *'...Pam's body appeared to be waking up, perhaps at a time during her near-death experience when she was being strengthened'*. The reference marks the occasion when Pam's relatives fed her with "sparkly stuff". At 12 noon, ventricular fibrillation occurred which needed the help of the defibrillator. This occurred at least one hour (and possibly two hours) before Pam began to regain consciousness. Sabom supposes that this was her *'... "return" from her near-death experience...'*, indicative of the moment when Pam's grandmother refused to take her back through the tunnel. That cannot be correct either, as I explain below.

It is very difficult to be certain when Pam first regained conscious-awareness, because she was still on the respirator and intubated. She thus required sedation in order to allow the machine to have priority in ventilating her lungs. It is unfortunate that we cannot pinpoint Pam's first conscious awakening, since that is the key to unravelling her experiences retrogradely. However, I suggest that it most likely occurred somewhere between 1-2pm. The time of her achieving conscious-awareness is of critical importance, because this moment co-incides with the end of her NDE, as clearly expressed by the words: *'...it was like diving into ice-cold water ... it hurt!'* Pam's account of her "return" comprises about 300 words. Extrapolating backwards, it becomes plain that her most recent mental experiences, recalled and formalised in a few hundred words, would have lasted a few

minutes immediately preceding, and terminating with, the dive back into her painful carcass. Interestingly, it seems very evident that the prolonged ND type of experience described by her was not because of an absence of blood pressure, pulse and cerebral circulation, but because her brain was still warming up [not forgetting that by-pass was stopped while her body temperature was still significantly $\sim 10^{\circ}\text{F}$ below normal]. I conclude that Pam's "ND" account, from the perceiving of the vortex until jumping into the water, occurred rapidly as an interconnected series of remembered vignettes arising in her mind as the brain was re-perfused and rewarmed and thus able to recommence its functioning. At any time point *before* that interval (before 1pm) her brain would have been too cold to have engendered the events experienced and, more importantly, to have set down the necessary memory traces for later recall. Without such properly laid down memories, there could have been no narrative to offer. Sabom's postulated claim that these events occurred considerably earlier, before or around the time when they began rewarming her body from 60°F (that is, when she was nominally "dead"), even if considered in terms of memory function alone, is therefore completely untenable. We should also observe that the OBE was quite distinct from the NDE. These processes are separate phenomena, as exemplified here.

In summary, the celebrated case of Pam Reynolds is unimpressive and distinctly uninformative. It fails to offer any new insights or novel data pertinent to the field of ECE phenomenology. I now wish to turn away from the experiential analysis of ECE in order to consider their cultural implications, implications girding the view that ECE are brain-associated events.

B. Historical & Socio-Cultural Aspects of ECE

Modern origins of this topic lie in the book entitled "Reflections on Life after Life" published by philosopher-turned-psychiatrist Raymond Moody. It was based on a previous life-event of the psychiatrist George G. Ritchie, and witness to the stories of others who, like Ritchie, had experienced what Moody was first to term "*near-death experiences*". The sequential phases in Ritchie's testimony are as follows:

First, the development of a respiratory illness [in all likelihood acute (pneumococcal) lobar pneumonia], caught during Army training, Winter 1943, and which led to his admission to hospital, loss of consciousness, and apparent clinical death. Ritchie next "woke" to find himself in a dim, unrecognised room from which he tried to escape [being intent, at that period of his life, on returning to medical school in Richmond, VA]: instead, he found himself flying at height and at a great speed across a broad river and adjacent township. He was incorporeal, unable to converse with people, yet able to traverse solid objects. He next found himself returning to the hospital to '*collect his body*'. Wandering from room to room, he eventually came across a body draped in sheets, but on whose 4th finger of the left hand he was suddenly alerted by the presence of *his* (ΦΓΔ) sygnet ring. Although by now in some panic, he became aware of a light progressively increasing in intensity at the foot of the bed, out of which emerged '*the most magnificent being I have ever known ... and which announced itself to be the 'Son of God' and accompanied by the most intense sensation of love*'. The light seemed to know everything about Ritchie who experienced a recall of his life – at one and the same time - and a sense of self-

reproach for each of his life's misdemeanours. He was then taken on another journey and shown places full of people in pain or locked into situations of hate, lust or anger.

There then followed a vision of a sunny park ... and large buildings ... one of which housed a vast library and another where music was being composed. After seeing other scenes, he found himself back in his body, and conscious. Thereupon he was informed that he had been "out" for four days. Ritchie subsequently learned from his attendants that within 24hr of admission to the hospital he had been pronounced dead, without pulse, blood pressure or respirations, so that preparations were made for his transfer to the morgue. But a perceived movement in Ritchie's larynx eventually led to him receiving intra-cardiac adrenaline, after which his vital signs, and consciousness, were gradually restored.

Moreover, Ritchie's subsequent personality and behaviour changed: he became more attentive to other people's needs while, on another occasion he responded to an '*inner voice*' telling him not to travel on a military vehicle which later hit a landmine resulting in the deaths of all personnel on board. Proof that Ritchie '*had not been hallucinating*' came, by chance, on a visit to Vicksburg, Mississippi where he instantly recognised the river over which he had previously 'flown' and adjacent to which was a small café bearing a distinctive blue neon sign, a feature which had also figured in his extra-corporeal odyssey. It was one of Ritchie's lectures about these experiences which caught Moody's ear and who was, himself, then stimulated to explore the subject in greater depth.

Moody, having elicited accounts of similar phenomena from a large group of people, attempted a generalised temporal sequence which, in general, characterised these events: movement through a dark tunnel towards a bright light and often preceded by noises;

meeting others, including relatives, and being in the presence of a "Being of Light" in whose presence a life-review – instantaneously – took place, perhaps against a background of intense peace, joy, beauty, sounds and even fragrances; then a command to return to earth because varied responsibilities needed to be addressed; finally, a retelling of the event and a changed approach both to life and to the ultimate process of death.

It is evident that Ritchie's account has only passing relationships to Moody's schema. Unlike many others, Ritchie experienced sights of people in hellish-type circumstances, or moods. Moreover, his vision of "paradise" was not particularly well-delineated. Nevertheless, Moody's book inspired another academic psychiatrist, Kenneth Ring who assembled his own personal collection of experiences from over fifty people and from which material he proposed the following criteria for near-death experiences: an origin in feelings of peace and well-being followed then by a sense of viewing one's own body – albeit sometimes difficult to recognise – and perceptions of scenes of great beauty; and the dilemma of wanting to stay yet of being coerced to return to earth's duties and responsibilities. Ring's subsequent analysis in a public lecture⁴² saw the corpus of near-death experiences as an *'evolutionary thrust toward [a] higher consciousness for humanity ... [such] ...people or others [being] transformed by ... deep experiences ... representing ... a more highly advanced human being ...'*. That these people are *'coming into being'* represents *'emergence of a new strain of human being'* signalling possibly the *'dawning of a New Age'*.

I have included Ritchie's account here because of its close relationship to other historically-based accounts of 'otherworld' journeys, a literature of which Moody and Ring

⁴² Zaleski Carol, *Otherworld Journeys*. Oxford: Oxford University Press 1998, 108

were unaware when publishing their books on what was regarded as a completely new phenomenon. In the historical literature, the shaman is the prototypical other-world traveller whether venturing into deep, dark caves, to the ocean floor, or towards the seventh level of the heavens, occasioned through an ecstatic frenzy engineered ritualistically or through some other 'psychophysical charade'. Indeed, Weston La Barre⁴³ takes the shamanic argument to the extreme in proposing that knowledge of the supernatural derives '*de facto*' from prophets and shamans under influence of hallucinogenic drugs. Thus the supernatural is entirely subjective: the '*mysterium tremendum et fascinans*'⁴⁴ simply comes from within. It is the ecstatic trance, dream or fugue about the inner spiritual spark, the yearning for fertility, and the ineffable feeling of escape from the inner anxieties of death which create the need for an immortal, everlasting soul. In states of sensory deprivation or dream-states, the subjective self emerges to reveal its autobiographical facets. Today's priests are merely administrators of the church. Jesus was a great shaman-seer, the impresario of the eternal Spirit and helper God.

II.6 WESTERN HISTORICO-CULTURAL OTHER-WORLD JOURNEYS

So much for that romantic view: it might do well for some of the world's most esoteric forms of pantheism, but there is scant evidence that the Judeo-Christian monotheism was ever based, or dependent, on hallucinogenic rituals. Yet the journeys or fugues of shamanic origin are reflected and elaborated in Babylonian, Sumerian, Egyptian, Hebrew and Hellenistic mythical literature, remnants of which are still evident in the Merkabah traditions of Jewish mysticism; the Sufi movement of Islam; in Gnosticism and

⁴³ La Barre Weston, in: Furst Peter (ed), *Flesh Of The Gods*. London: Allen & Unwin 1972

⁴⁴ Otto Rudolph, *The Idea Of The Holy*. Oxford: Oxford Univ Press 1936

Zoroastrianism; and in Christianity with Christ's harrowing of Hell and even, perhaps, in baptism with the idea of being immersed into the "death" of Christ and rising purified with him, and in him. S.Paul's brief (self)-reference (2Cor 12: 1-4) of a '*curious ascent to the third heaven*' was later elaborated in the 3rd Century into a MS known as the Vision (or Apocalypse). In this Paul, viewed on a par with Elijah and Enoch, is seen to ascend to heaven and descend into hell to recover souls in dire distress. The detailed description of two observed souls being subject to some rough handling on their way to eternal damnation was sufficient to strike a note of terror into any mediaeval malefactor with regard to his own ultimate judgement and threat of hell fire: Hell's pain is detailed to the utmost.

The dialogue of 6th Century Gregory contains a real account of a near-death experience of a soldier from Rome who was struck down in an epidemic of the plague. On regaining consciousness after his illness, he gave account of his near-death odyssey. He was confronted by a bridge, below which flowed a foul-smelling, dense river. Beyond it were green fields and beautifully-coloured flowers where people in white, their houses, and a sweet-smelling odour, were apparent. Those burdened with sin fell as they crossed the bridge, while those unladen by guilt made their way easily to the other side. In the hellish place, the soldier recognised one person now weighed down in foul slime by a massive chain – his punishment for over-zealous cruelty on earth. Another poor individual had slipped over the edge of the bridge and was being pulled upwards by white-garmented spirits and pulled down by hideous-looking men on the river. As this contest evolved, the soldier was sent back to his body, so he was never able to recount what ultimately happened to the unfortunate victim.

Bede's history (1968) of the English people and church, written in AD 731, contains an account of a 8th Century Northumbrian nobleman called Drycthelm, who was a devout man⁴⁴. He fell ill and deteriorated until one night when the "crisis" came he appeared to have died [this is also likely to have been acute pneumococcal lobar pneumonia, as in Ritchie's case]. By daybreak however he returned to life and sat up, much to the horror of those weeping and keeping vigil at his bedside. After they had fled only his wife remained to whom he declared: *'Do not be afraid ... for I have truly risen from the grasp of death ... and I must not live as I used to ...'*. Indeed, he joined a monastery forthwith, was tonsured and allocated a room within the monastic house, spending the rest of his life in prayer and taking frequent baths in ice-cold water.

As Bede continues his account of the journey, Drycthelm is being guided by a man clothed in shining white:

'...we walked in a north-easterly direction until we came to a very broad and deep valley of infinite length. The side to our left was dreadful with burning flames, while the opposite side was equally horrible with raging hail and bitter snow blowing and driving in all directions. Both sides were filled with men's souls, which seemed to be hurled from one side to the other by the fury of the tempest. For when the wretches could no longer endure the blast of the terrible heat, they leaped into the heart of the terrible cold: finding no refuge there, they leaped back again to be burned in the middle of the unquenchable flames. A countless host of deformed spirits was tormented far and wide in this wretched condition without any interval of respite as far as the eye could see, and I began to think that this was Hell, of whose intolerable torments I had often heard tell. But the guide said: "Do not think this; for this is not Hell as you imagine". When he had led me to the further end, much alarmed by the terrible scene, I saw the place suddenly begin to grow dim, and darkness concealed everything.

And as we went on through the nocturnal solitary gloom, frequent masses of dusky flames suddenly appeared before us, rising as though from a great pit and falling back into it again. These masses of flame continued ceaselessly leaping up and falling back again into the depths of the chasm, and I saw that, as the tongues of flame rose, they were filled with the souls of men which, like sparks flying up with the smoke, were sometimes flung high in the air, and at others dropped back into the depths as the vapours of the fire died down. Furthermore, an indescribable stench welled up with these vapours, and filled the whole of this gloomy place. When I had stood there for a long terrified time, I suddenly heard behind me the sound of the most hideous and desperate lamentation, accompanied by harsh laughter, as though a rough mob were mocking captured enemies. As the noise

⁴⁴ Bede, A History Of The English Church And People. London: Penguin Classics, 1968, 289ff

increased and drew nearer, I saw a throng of wicked spirits dragging with them five human souls howling and lamenting into the depths of the darkness while the devils laughed and exulted. I saw among them one man tonsured like a clerk, a layman, and a woman. The wicked spirits dragged them down into the centre of the burning chasm, and as they descended deeper, I could no longer distinguish the weeping of the men from the laughter of the devils, but heard only a confused noise in my ears. Meanwhile, some of the dark spirits emerged from the fiery depths and rushed to surround me, harassing me with their glowing eyes and foul flames issuing from their mouths and nostrils. They threatened to seize me with the glowing tongs that they brandished in their hands, but although they frightened me, they did not dare to touch me. [Then] there appeared behind me a bright shining star which grew in size as it approached me. As it approached, all the evil spirits took flight.

The newcomer whose approach put them to flight was my former guide. He soon brought me out of the darkness into an atmosphere of clear light, and as he led me forwards in bright light, I saw before us a tremendous wall which seemed to be of infinite length and height in all directions. As I could see no gate, window, or entrance in it, I began to wonder why we went up to the wall. But when we reached it, all at once- I know not how – we were on top of it. Within lay a very broad and pleasant meadow, so filled with the scent of spring flowers that its wonderful fragrance quickly dispelled all the stench of the furnace that had overcome me. The light flooding all this place seemed greater than the sun's rays at noon. In this meadow were innumerable companies of men in white robes, and many parties of happy people were sitting together. I began to wonder whether this was the Kingdom of Heaven, but my guide said: "No, this is not the Kingdom of Heaven as you imagine". When we had passed through these abodes, I saw ahead much more lovely light, and heard in it a sweet sound of people singing, while a scent of such surpassing fragrance emanated from the place that the earlier scent now seemed quite trifling. And even the wonderful light flooding the flowery meadow seemed thin and dim compared with that now visible. Hoping that we should enter this delightful place, my guide suddenly halted and, without stopping, retraced his steps and led me back along the road by which we had come.

"Do you know what all these things are that you have seen?". "No", I replied. Then he said: "The valley with burning flames and icy cold is where souls are tried and punished who delayed confessing and had recourse to penitence at the hour of death. Because they confessed only at death, they will be admitted to the Kingdom on the Day of Judgement. But many are helped by the prayers, alms and fasting of the living, and especially by the offering of the Masses. The fiery noisome pit is the mouth of Hell, and whosoever falls into it will never be delivered throughout eternity. The flowery place is where souls are received who die having done good, but are not so perfect as to merit immediate entry into the Kingdom. But at the Day of Judgement they shall all see Christ and enter upon the joys of His heavenly Kingdom. And whoever are perfect in word, deed, and thought, enter the Kingdom as soon as they leave the body. You must now return to your body ... but if you will weigh your actions with greater care and study to keep your words and ways virtuous and simple, then when you die you will win a home among these happy spirits". Meanwhile, I know not how, I suddenly found myself alive among men once more'.

A final glimpse at this literature comes from the Second Vision of Adomnán, written c11th Century in Ireland. Its origin was based on the presupposition that the Feast of John Baptist in 1096 would bring apocalyptic horrors of the Day of Judgement: certain signs

indicated this forthcoming catastrophe. It was based on the fable that an Irish monk, Mog Roth had played a role in the Baptist's beheading such that the Irish people had been singled out for special treatment. This mythology was endorsed by the Vision, which described the Heavenly City on a hill and guarded by gates and gate-keepers. In front were two bridges, one which broadened nearer the city and was for the righteous: the other, which became progressively and impossibly narrow was for all sinners who, on crossing could but only view the City in the distance, then being destined to fall off into the pit below. There they would be tormented by fire that wrapped around them and came down in showers. There were specific torments designed for bad kings, morally lax people, and, irresponsible schoolteachers who, in addition to suffering additional rings of fire about their necks were coerced into eating rotten dog flesh given to them by those children whom they had ill-informed in the classroom⁴⁵.

II.7 CROSS-CURRENTS – EASTERN PERSPECTIVES

Examples have already been presented of the way in which cultural influences inform the content of ECE. Drycthelm's recounted imagery is impressively descriptive of the rich, imaginative and metaphorical world of the mediaeval mind notably with its depictions of heaven and hell. In contrast, the modern illusions to hell are of dark, incommensurable voids, with people seen as wretched individuals devoid of hope, sometimes fighting each other or the experient who, importantly, never bears the residual marks of such assaults on the physical body, as Storm's account reveals. Thirdly, we witness in some accounts a sudden progression from experiences of hell followed by an experience of heaven, occasionally with a rescue by a heavenly being or angel. Such an abrupt switch, in what in

⁴⁵ Benjamin Hudson, Time is Short. In: Bynum C & Freedman P (eds), Last Things 1999, 101

real time could only occupy a few minutes, is inconsistent with the theological precepts of the Christian tradition regarding the sequence of post-mortem events.

Our attention now turns to how comparative analyses between typical western forms of ECE and those reported from other parts of the world, especially from regions where Christian monotheism is not the predominant religious persuasion, and where the full influence of westernised cultural ideology has yet to pervade and colour the many communities inhabiting the more distant and extreme parts of the globe. Kellehear⁴⁶ makes the important point, however, that as “westernisation” creeps ever eastwards, the opportunities for examining pure cultures and societies not yet tainted by such influences will become progressively reduced. So, although reports from such areas are not vast in terms of numbers interviewed or ECE cited, they are of crucial value in providing the evidential basis for cultural influences on the experiential phenomenology reported by non-western cultures and individuals. Indeed, the contextual background to NDE, worldwide, provides the necessary material which the brain utilises, and out of which it is able to conjure, the relevant phenomenologies which have been alluded to above.

One approach in the attempt to universalise ECE and thus to propose that they do represent an otherworldly realm has been to identify key features specific to all reported ECE. Despite the difficulty in applying that working principle even to the western literature, as in its sampling above, it has been suggested that the “tunnel” phenomenon and “life review”, for example, represent such unifying criteria. For example, an approach in establishing the tunnel percept as a fundamental canon of ECE phenomenology was

⁴⁶ Kellehear Allan, *J Nerv Ment Dis* **181**: 148-156, 1993

attempted by Blackmore⁴⁷. Of 19 responses to an advertisement in the Times of India newspaper, six cases fulfilled ND criteria based entirely on Western experiences. Of these six cases, one *'floated in a dark space'*; two sensed upwards movement one of whom also saw non-motile coloured spots; while a fourth subject whose head was spinning round at an unimaginable speed, *'travelled a few million miles ... towards a bright light'*. The sixth subject felt herself *'going through complete blackness [accompanied by] a tinkling sound of tiny bells in [her] ears'*. In passing, we should not ignore the marked vestibular/auditory accompaniments to these experiences.

For these self-reported, uncorroborated accounts, Blackmore concludes that 38% (3/8 cases) is a representative figure for *'either tunnels, specifically, or of dark places'* within the Indian population, and thus is *'in line with western data'*⁴⁸: an extremely brave statistical conclusion given the paucity of her three contributory data points. Such a weak study was rightly criticised by Pasricha⁴⁹ and colleagues whose investigations involved detailed systematic analyses of ECE in several northern and southern Indian provinces (see below). Notably, there are very significant cultural divides between north and south India with regard to education; ability to speak English; adoption of western ways of life; religious persuasions; social customs and even dietary staples: the gross bias, therefore, in soliciting views from an English-speaking, northern newspaper is immediately apparent. Kellehear⁵⁰ in an extensive, comparative review of western and non-western ECE, concluded that each is culturally bound and to some extent influenced by historic religious

⁴⁷ Blackmore S, J Near-Death Stud **11**: 205-217, 1993

⁴⁸ Greyson B, J Nerv Ment Dis **171**: 369-373, 1983; Owens et al, Lancet **336**: 1175-1177, 1990

⁴⁹ Pasricha S, Stevenson I, J Nerv Ment Dis **174**: 165-170, 1986; Pasricha S, Nat Inst Ment Health Neurosci J **10**: 111-118, 1992; Pasricha S, J Sci Explor **7**: 161-171, 1993; Kellehear A, Stevenson I, Pasricha S, Cook E, J Near-Death Stud **13**: 109-113, 1994

⁵⁰ Kellehear A, J Nerv Ment Dis **181**: 148-156, 1993

traditions (Christianity and Hinduism). Kellehear is obviously impressed by the absence of “tunnel” phenomena, and the apparent sparceness of OB experiences and of western-type “life reviews” among non-Western (American and European) peoples. The type of non-western “review” usually takes the form of a book which presumably reveals all the details of the subject’s previous life. He sees tunnels, literally, as modes of actual passage from one place to another or symbolic of rites of passage or transfer, either from one physical or spiritual domain to another. The life review is inculturated in western society as a mirror of personal probity, self-esteem and confidence. In more “primitive” cultures or societies, such attributes may reside in the co-active consciousness of community as symbolised in the natural artefacts of plants, trees, stones and rocks, or weather. Kellehear's argument may find additional support elsewhere in the relationship between experiencers' phenomenology and its causative agent ⁵¹.

My own view here is that it may be a conclusion based on too narrow an interpretation relating solely to social custom and mores while not considering, for example, the underlying neurophysiological possibilities. Again, it is important to point out that some investigators have not evaluated personal ECE phenomenology, but looked rather at generalisations about cultural trends, beliefs and traditions, without the accompanying certainty that the terms used by them (such as OB, ND, soul, spirit) were understood in the same way in which those investigators intended, given the wide linguistic distances and nuances in understanding. Others⁵², for example, have looked for demographic attitudes towards psychical and paranormal phenomena which do not provide detailed information about personal experiences of OB/NDE.

⁵¹ Greyson B, *Am J Psychiatr* **142**: 967-969, 1985;

⁵² Haraldsson E, Gudmundsdottir A, Ragnarsson A, Loftsson J, Jonsson S. In: *Research In Parapsychology* (eds Roll W, Morris R, Morris J), New York, Harper Collins 1977, 182-186

Next, I turn to reports from the south-east pacific region: first from the Elema, Gulf Kamea, and Rigo peoples of Papua New Guinea. This is more a review of beliefs and experiences among these peoples than a collected anthology of specific events recalled by particular individuals. Only the Kamea and Rigo have beliefs in OBE and an afterlife. Much of the folklore is based on magic and the role of sorcerers whose identity is unknown or a closely guarded secret. It is doubtful whether the Kamea know what an OBE is like (as defined on Western criteria): their response to being questioned was that during sleep, or at death, the spirit often leaves the body, while sorcerers can induce an OBE themselves. How that is accomplished is far less certain, because of the secrecy and hence lack of public knowledge surrounding these activities. The Rigo have similar beliefs that the spirit may leave the body at night, known as the natural OBE. Magic OBEs, on the other hand, are self-induced by (female) sorceresses under the influence of drugs obtained from plants: these sorceresses can help other people make long nocturnal journeys while their bodies remain in the bed.

While interesting, these accounts do not provide evidence that ordinary people leave their bodies or ever have transcendental journeys to the spirit world as a result of the medical conditions identified in the west as triggers. In these remote regions, death comes early in life, medical facilities are poor and not well developed, so that resuscitative techniques such as the west is accustomed to, occur rarely. Thus, there is little opportunity for a corpus of subject-originating accounts of ECE phenomenology to accrue which informs us and hence permits comparisons with that of western culture. Nevertheless, the accounts obtained⁵³ reflect a marked cultural influence on what is believed about the body, death, and the afterlife.

⁵³ McIntosh A, J Soc Psychic Res 50: 460-478, 1980

Another allied study comes from the Kaliai people of West New Britain, Papua New Guinea⁵⁴. These people have been continuously missionised by the Roman Church since 1949, so cultural aspects of their society have been tainted by western religious concepts for at least one generation. Despite that, Counts averred that the traditional Melanesian socio-cultural ethic, with its former cosmology, still remain intact. Thus, the concept of a unitary cohesion of spirit (or "soul", this latter being a westernised religious accretion to their vocabulary) is alien: the spiritual aspect comprises either an "essence" or "image" (=shadow). Illness results in an escape of the spirit from the physical body, thence being unable to re-unite with it until the illness is cured: if not, death ensues. In those circumstances the subject's essence, or image, might be seen several miles away. At death, the spirit component hovers around the deceased's grave until decomposition of corpse begins. Only in latter times has the idea of a "soul" rising directly to God arisen, an event dependent on a mass being said, and only if the relatives can afford it. A second concept (pronounced 'mate', analogous to the Hebrew participle *מת* meaning dead) refers to the sick, the old and infirm as well as the dead, and thus defines a state that may persist for many years. Death is a prolonged event, beginning with unconsciousness, staring eyes, restlessness and sphincter relaxation and finally an absence of pulse, heart beat and respiration. The corpse is viewed publicly until bloating sets in, when it is buried.

One man, a headmaster, became very ill with difficulty in walking [possibly an acute septic knee joint, but the details preclude firm diagnosis], generalised bodily aches or pains and loss of appetite. He became aware of ancestors taking him along a road that led to a white, bearded man shrouded in long white garments, and appearing as if illuminated.

⁵⁴ Counts D, *J Near-Death Stud* 3: 115-135, 1983

There was a reversal and he was told to go home, having first had ginger rubbed into his leg (a folk remedy for overcoming sorcerer-induced wound infection).

A second young man had appeared to his family to be dead, so preparations for the funeral rites and the digging of his grave were put into effect by family and villagers. When he died, *'...everything went dark, but I went through a field of flowers ... I walked along a road and met two men at a fork. I had to decide which way to go and followed one into a village'*. He was taken up the outside stairs into a house (a customary stilted dwelling) where he heard a voice say that it was not time and he must go back. The house then began to revolve as if suspended in space (note the intruding rotational vestibular component). Rather than attempt to get out, the man began describing the interior contents of the dwelling-house which now, bizarrely, contained men with steel, while others were *engaged in building ships and cars*. *'I was to come back, but there was no road ... so [I] followed a beam of light and walked along it'* That somehow got him down the steps of the house. On glancing back he saw that there was no longer any house but only a forest and a narrow path. He returned by way of the path to his family house and re-entered his body. He said he was unconscious for six hours. He had a desire to return to the scene of his experience because it was a *'happy place'*.

A third account came from a man who was a plantation labourer. He “fainted”, was taken to his house and put to bed. He was “unconscious” for over two days and was pronounced dead on arrival at a medical aid post. [Then] he was met by a friend and uncle whom he followed along a path. The two men went up into a house, but the man himself was barred from entering the house by a fence. He therefore continued his journey alone and came across more houses, his arrival being announced by a loudspeaker. People on the balconies

of the raised houses pointed at him and told him to sit on a series of magnets: he was not retained by the magnets and was thus presumed to be innocent and invited upstairs into one of the houses. Another man was not so lucky: his body was carved up and his bones ground up in a machine, boiled, placed on a plate and eaten by a dog and pig. This long story (herein abridged) ends with encounters with his daughter (she having brought him into his house after the original fainting episode) and then with another woman with bloodshot eyes and tongue hanging down to her chin.

This account is extremely bizarre, and dreamlike, and the hallucinations could have been related to his illness of which we have no clinical details. He goes on a journey, is “tried” by the magnet test and acquitted, has further visionary experiences including a light, and then wakes up. His experience thus occurs in the terminal phases of his period of unconsciousness and would have lasted a few minutes compared with the two-day period when he had no apparent conscious-awareness. The visionary part of his encounters are highly culturally dependent. The two earlier accounts also have some semblance to ECE. Case 1 saw an illuminated figure that interestingly, given this man’s western education, was white and clad in white robes, being encountered after he had journeyed along a path. There was a visionary experience (of men dancing and singing followed by the application of ginger to his leg) immediately before he regained consciousness. The second young man experienced a period of darkness, then a field of flowers followed by a visionary experience of people and a beam of light along which he travelled in order to reach home. His period of unconsciousness seemed to be accurately timed at six hours, yet the experience narrated could only have lasted a few minutes, ending with his return to full consciousness. All the stories exhibit bizarreness, illogicalities and disjointedness, just as in subconscious dream-states. Yet all the experiences contained elements of a journey,

some semblance of a trial or intended review, except in the case of the second man, and a "light" in the form of a westernised individual in white robes or other visionary scenes experienced in the light, or involving a beam. The visionary scenes were highly culturally biased, either through indigenous or westernised influences. In summary, all these experiences were transitory events of differing length, as reckoned both from their respective word counts, and through extrapolating backwards from the time-point at which the experiences came to an end; that is, when they *coincided* with the re-establishment of full conscious-awareness.

I now return to India to consider more fully Pasricha's systematic studies around Bangalore, South India. These studies were preceded by a smaller survey in North India⁵⁵. Its results revealed a general pattern in which each subject was taken by messengers to appear before a person or committee with a book; followed by the realisation that each of the persons summoned was either not ready for death or had been mistaken for others of the same name: there were reprimands for those who had brought these subjects to them, after which all the victims returned home. There are reflections of Hinduism here, since the messengers are Yamadoots belonging to Yama, or Yam-raj, the Hindu god of death and his bookkeeper, Chitragupta. These encounters were not pleasant, ecstatic or heavenly in the manner of western ND. There was also bizarreness, as with a man who had his legs amputated so preventing his return. Once, however, the mistaken call was realised, he was shown a collection of severed legs from which he was able to identify those belonging to himself and which, somehow, were then re-attached. Another man reported that the individual who pushed him back [to earth] had a very hot hand: the man narrating this incident was febrile because on regaining consciousness, he developed an abscess on his

⁵⁵ Pasricha & Stevenson, *J Nerv Ment Dis* **174**: 165-170, 1986

arm necessitating treatment by a local physician. Presumably his experience was a delirium-induced hallucination caused by the developing infected focus.

Like Storm, whose abdominal pain and weakness were apparent to him during his ECE, this man's incipient abscess likewise intruded into the content of the experience. In other words, a conscious somaesthetic sensation can be experienced simultaneously within the context of an ECE. That surely indicates a functioning aspect of mind-brain occurring in the physical world and co-existing with an hallucinatory, other-worldly experiential event in another part of the same brain. Other commentators might still insist that the story was a spiritual or other-worldly event, but such a situation could hardly be. It is directly analogous to conscious/dream-state co-incidences that have been well documented during lucid dreaming, narcolepsy and other abnormalities of sleep/oneiric experience, and for which no connotation of an extra-physical dimension or spiritual realm, would realistically be thought, or even considered, to be their likely underlying mechanism(s).

Pasricha's other studies involved villages around Bangalore⁵⁶. Thirteen ECE were recorded, the overall rate per population being 1-2%. The small numbers render a realistic comparison with northern India impossible. Taken together, all her studies revealed that subjects were taken to other realms (the Kingdom of the Dead, or Yamapatna) by Yama's messengers (Yamadoots) or someone else; were sent back because of mistaken identity or because they were not ready to die; or who returned volitionally. The cultural-religious influence of Hinduism is nevertheless obvious. No tunnels were observed contrary to Blackmore⁵⁷. Another specific feature was that subjects alleged that they were either injured or branded during their ordeal. Marks were offered in proof, but there was no

⁵⁶ Pasricha S, *Nat Inst Ment Health Neurosci* **10**: 111-118, 1992; idem, *J Sci Explor* **7**: 161-171, 1993

⁵⁷ Blackmore S, *J Near-Death Stud* 1993; and see Kellehear et al, *J Near-Death Stud* **13**: 109-113, 1994;

independent corroboration the disfigurements existed *before* the occurrence of the events recalled. There was only one co-existing OBE. The majority of subjects (70%) did not revise their attitudes to death and there was no reporting of life reviews or judgements. Despite the systematic approach employed in these studies, we should remember that the incidence of ECE was extremely low (<2%) and also note the precariousness of Pasricha's subject data-base in relation to the overall population (~800 million) of India. These are nevertheless interesting studies revealing a clear bias towards Hinduistic figures associated with death. The entire series is so small that other definitive conclusions about Indian-type ECE cannot be made with certainty. For example, there is no warrant for claiming that "tunnels", or even "movements towards a light" are either prevalent or not, within this society at large. Only considerably larger studies countrywide could ever hope to resolve such issues. Nevertheless, Blackmore did elicit some experiences of darkness and tunnel-like experiences from Northern Indian, Times-reading subjects clearly subject to Western influences. Nevertheless, it must be borne in mind that even for western ECE, the prevalence of tunnels is only about 30%, and of the [L]ight and its associated phenomenology, ~50-60% of experients sampled. Moreover, these experients represent ~10-20% of all individuals undergoing the crises resulting in ECE phenomenology.

In another interesting approach to the analysis of cultural influences on ECE, Becker⁵⁸ informs us about the origins of 'Pure Land' (Ching T'u School) Buddhism in China. The evolutionary history of Buddhism in China was moulded by a strong, pre-existing respect for the dead and even ancestor worship. This social ethos depended on belief in a soul which hovered around the body until disposed of, thence to haunt the house or go to some other paradisaical locus. The fate of souls could be influenced by family prayers offered

⁵⁸ Becker Carl, J Near-Death Stud 1: 154-171, 1981

during the forty-nine days elapsing from death. Mourning rituals by the deceased's immediate family were widely practised including fasting, praying, making penances and wearing sackcloth. The unitary sense of body and soul in the history of Chinese thought came into conflict with the concept of Buddhistic *anatta*, that of the illusoriness of material existence: such a concept was sidelined in Ching T'u. Instead, it made use of little-used sutras which provided some legitimacy for pre-existing views of body, soul, death, cosmology and the afterlife. In this emergent system, heaven was portrayed as a bejewelled realm full of beautiful flowers and fountains attainable by all men through faith and piety. Continuity of the soul took precedence over the Buddhist idea of continual rebirths in the achievement of Nirvana. There also derived a hierarchical notion of heaven and hell, presided over by a type of chief minister Yen-lo, analogous to and derivative of the Hindu God of Death, Yama(raj). Of the several bodhisattvas (men about to achieve nirvana associated with these developments), Amida (1-2 Century) presided over the western Pure Land.

Becker⁵⁹ was at pains to trace the early origins of Ching T'u in China, by inspecting the accounts and experiences of its "patriarchs" during the first five centuries of its development, but mainly from the 4th century onwards. By that time the Bodhisattva Amida had come to be revered as a supernatural, deific figure through whom a pathway to salvation could be secured. The first of these Pure Land masters was Tao-an. In 385 AD when he died, it was recorded that:

'a strange priest appeared [to him] and pointed to the north-west where the clouds opened and a beautiful heaven became visible to his dying eyes'.

Tao-an's pupil, Hai-yuan, encouraged the burgeoning devotion to Amida. He founded the

⁵⁹ Becker Carl, J Near-Death Stud 4: 51-68, 1984

White Lotus Society because it is in the lotus, at the middle of a clear lake, that people are finally reborn into a realm without craving or suffering. Hai-yuan is recorded to have had many visions of the Bodhisattva of Infinite Light, often associated with bouts of fever throughout his later years. A later disciple was Seng-chi, about whose dying moments the following account is recorded:

'He was afflicted by a grave disease, and then he devoutly wanted the Western Country ... he asked the monks to gather at night and recite for his sake. During the fifth watch, Chi handed the candle to his fellow-students and requested them to go around with it among the monks. Then he lay down for a moment, and in his dream, he saw himself proceed through the void, still holding the candle, and he beheld the Buddha Amitabha who took him up and placed him on the palm of his hand: in this position he went through the whole universe in all directions. Suddenly he awoke and told everything about his dream to those who nursed him, who were grieved at this sign of approaching death and yet consoled at his vision. When he examined his own body, there were no longer any signs of disease and suffering whatsoever.

The following night, he suddenly sought for his sandals and stood up, his eyes looking into the void with anticipation, as if he was seeing something. A moment later he lay down again, with a joyful expression on his face. Then he said to those who stood at the side of the bed: "I must go", and when he had turned over on his right side, his life breath and his words became simultaneously extinguished'

Another similar experience later befell a fifty-year-old northern Chinese Taoist, T'an-luan:

'On one occasion he recovered from a serious illness when he suddenly saw a golden gate open before him. With this experience, he decided to search for an elixir that would bring about everlasting life.....On his way back to the north he met the Buddhist monk Bodhiruci, who told him that in Buddhism there was a formula for attaining everlasting life that was superior to that of the Taoist. Upon being asked to reveal the formula, Bodhiruci taught him the texts of the Pure Land school, where upon T'an-luan became so convinced that he discarded the Taoist texts which he had obtained, and concentrated on the attainment of the western (Amida) Paradise. This conversion took place about 530 (AD) and for the remainder of his life he devoted all his time to the propagation of the Pure Land tenets'.

Here Becker notes that a northern Chinese Taoist, having been told of the Amida school travelled to south China to seek out this new means of attaining eternal life and, secondly in doing so, renounced his indigenous Chinese Taoism for an imported Buddhism now adopted and developed by the Ching T'u school. Bodhiruci must have perceived the parallel between T'an-luan's visionary experience and the concept of the heavenly realm

which underpinned Amidaist piety. Conversely, that same parallel obviously convinced T'an-luan to give up fifty years of one practice in favour of the one that had made sense of his vision as its earthly manifestation, as witnessed in the discipline of Amidaism. The monumental effect of that vision on the future lifestyle of a fifty-year-old man, steeped in another tradition until that moment of conversion, should not be underestimated.

There is a thread of identity traceable in these historic accounts. Each individual was subject to some kind of illness, fever or bodily frailty resulting in an experience akin to NDE while they still lived. Subsequently there was renewed earthly vigour in the physical body. Following that, there occurred a conversion experience involving a considerable change in philosophy or beliefs. The change in outlook represented a major, radical change after almost a lifetime's study of the indigenous Tao or Yogi disciplines to that of the (imported) Amida school. Such conversions were accompanied by a fervour to set up new monasteries, expand the community of faithful monks and preach widely to the common folk. These events are highly cultural, the visions being of the deified and revered Buddha Amida: he is therefore a "Christlike" figure who, as an extremely holy man on earth (Bodhisattva), preached and did good works before returning to heaven in his final rebirth as a Buddha.

These accounts provide important parallels to those historic western narratives concerned with otherworld, spiritual journeys. It is evident that the latter (Eastern) narratives were hostage to prevailing cultural paradigms extant at their time of writing. They resonate especially with Drycthelm's visions of the heavenly city, of the excruciating torments of hell depicted, and to his unity of purpose in shaping the remainder of his life. That, as we have seen, involved a subsequent term of extreme piety and personal hardship thus to

ensure certainty of attaining those delights of which his visionary journey had revealed such tantalising insights.

II.8 OVERVIEW

This chapter has introduced the term "ECE" as a means of embracing the phenomenology of OB and ND experiences. OB and ND events are frequently conflated, both by experiencers and authors in this field, resulting in the assumption that an OB experience is a necessary prelude to a ND experience⁶⁰. The scoring systems of Ring⁶¹ and Greyson⁶², incorporate OB phenomenology into their respective weighted schemes for determining the "depth" of any given ECE. However, the aetiology of either event is currently not understood, but even if their originating mechanisms were identical, from an experiential perspective OBE and NDE can, and do, stand independently. That is evident from Pam Reynold's case, in which her OBE and NDE were separated by several hours: there can be no doubting that fact as objectively (externally) determined.

A second issue concerns the interpretation, and hence meaning, of ECE. For many subjects, as indicated above⁶³, the experience of having an NDE is taken to furnish a glimpse of the afterlife. In addition, the experience offers the persisting conviction that an other-worldly realm does exist, independent of any previously held religiously-contoured system of faith and belief, or not. That conviction is private and thus unassailable. However, the view taken by the authors themselves, and published, that such a 'journey'

⁶⁰ Moody, 1976, 21; ⁶¹ Ring, 1980, 32

⁶² Greyson Bruce, *J Nerv Ment Dis* **171**: 369-375, 1983

⁶³ Ring 1980, 168; Sabom 1982,186; Grey 1985, 105; Sabom 1998,196

takes place outwith the corporeal body if not the physical world to the realm described, is, to my mind, an erroneous conclusion. My own view, expanded in succeeding chapters, is that ECE are not extra-corporeal, occurring when the brain is dead or dying, but during the process of restitution during which full conscious-awareness is regained. That is the difference.

A third difficulty occasioned by the burgeoning literature on ECE is whether the testimonials given can be relied upon as true accounts of the experiences allegedly undergone. It is impossible to gain much third party intelligence on every account offered, raising the question of the veridicality of the numerous reports that have been collected and published. Let us consider the following extract:

'[Sarah] had something else to show that amazed her and the rest of the surgeons and nurses during her cardiac arrest: the [operating theatre] layout; the scribbles on the surgery schedule board in the hall outside; the colour of the sheets covering the operating table; the hairstyle of the head scrub[bed] nurse Even the trivial fact that her anaesthiologist that day was wearing unmatched socks. All this she knew even though she had been fully anaesthetised and unconscious during the surgery [for her gallstones] and cardiac arrest.

But what made Sarah's vision even more momentous was the fact that, since birth, she had been blind' ⁶⁴.

On face value this appeared to be the exemplary ECE offered by a blind patient and which would certainly be welcomed and used to encourage belief (like Pam Reynold's case) in the validity of the events reported. When Larry Dossey, an American physician, was challenged (by Kenneth Ring) to identify the woman concerned, he shamefacedly admitted that the account was a cleverly crafted hoax⁶⁵. Given such blatant deception in

⁶⁴ Larry Dossey, *Recovering The Soul: A Scientific And Spiritual Search*. New York: Bantam Books 1989 17-18 (abridged)

⁶⁵ Wilson 1997, 101

the initial pages of a text entitled a *scientific* search, we might begin to lose confidence. But is it conceivable that the entire corpus of ECE in its historical, geographic, and recent contemporary record should be dismissed as fabrication? Indeed, the archetypal protagonist for the strict evidential basis of all statements and propositions, AJ Ayer, was similarly caught out in his published account: *'What I saw when I was dead'*. In it, Ayer alleged that a carelessly swallowed sliver of smoked salmon, resulting in asphyxia and a cardiac arrest, precipitated his ND experience. While unconscious, he was *'pulled towards a red light ... exceedingly bright and painful'* [a most atypical occurrence], experienced encounters with ministers of the universe and was frustrated at his inability to cross the [presumed] River Styx. Although at first confessing that this experience had *'weakened'* his stance against the finality of death, Ayer later recanted, on the explanatory ground that his brain had *'not'* died during his cardiac arrest⁶⁶.

In a later interview with Ayer's attending doctor (previously a medical undergraduate at New College, Oxford), it was established from the case-notes that no bits of fish were recovered from Ayer's trachea intubated and inspected during his resuscitation. And on a further occasion when the doctor was curious to learn how a positivist philosopher envisaged a ND event, he was surprised to hear Ayer confess: *'I saw a Divine Being. I'm afraid I'm going to have to revise all my various books and opinions'*⁶⁷. This case highlights the dilemma of accepting, on trust, reported first person testimony without independent third party corroboration. Here is a man who throughout his life purportedly sought "truth" and its cogent evidential base. Yet, from those aware of the verbal

⁶⁶ Ayer AJ *'What I saw when I was dead'*, Sunday Telegraph 28 August 1988. Reproduced in : Miethe T & Flew A, *Does God Exist?* New York: Harper Collins, 1991, 222ff; Idem, in Edwards Paul (ed), *Immortality*. New York: Prometheus Books, 1997, 275

⁶⁷ Cash W, National Post for Mar 3rd, 2001; Rogers B, A.J. Ayer – A Life. London: Chatto & Windus 1999, 349

deviations frequently employed in occluding his private indiscretions, Ayer was clearly not averse to bending the data to suit local requirements. Nevertheless, friends closest to him asserted that his approach to people became far more gentle, respectful and amenable than it had ever been hitherto. Ayer's case points up the difficulty about ECE narratives when either personal reputations are at stake, or because of the colossal impact of the experience on subjects' subsequent lives. These narratives also bear heavily on the metaphysical issues of eternity and the possibilities of a spiritual realm beyond the grave, as well as on the eschatological expectations of those within the Judeo-Christian persuasion.

Of course, there is always the ever-present risk, if not inevitability, that every account will become stylised, stereotyped, and edited in its subsequent tellings and re-tellings. It is less a question of overt deception rather than ironing out irregularities or imperfections in the remembered event, thus to render it internally rational and externally presentable in public. Blanks in the apparent sequence of events, given the extent to which they are remembered and later recalled, are always liable to "filling in": this is a phenomenon most relevant to the visual system in the cognitive conscious and subconscious modes of day-to-day living, and hence very germane to the issue of ECE reporting. The reporting of events is always subject to observer error and false recall of multiple memory fragments, as evident from witness reports to any police investigation. Memory is fallible and openly subject to suggestion and deviant perceptions. Indeed, the stereotype ECE is so widely known today that there already exists the danger that it is being consciously implanted into the collective mind, thus serving as a potential framework driving the content of future constructs during an ECE.

For example, a "nowhere" ND experience⁶⁸ was reported of a woman developing hysterical paralysis and apparent loss of consciousness following an X-ray contrast examination of her spinal column. When the "crash" team arrived at the bedside, her vital signs were normal, while an attempt to intubate her trachea occasioned a prompt return to "consciousness" and a robust refusal of any further resuscitative manipulations. In recalling her experience, however, she declared that *'she had journeyed across a river, seen her father's face, heard beautiful music and was surrounded by angels. On hearing her husband's voice, she recrossed the river to find herself waking up in his loving arms'*. This was a fabricated ND experience throughout, but clearly based on descriptions familiarised through the popular press and journals, and agency of television.

I have already noted that OBE and NDE do not necessarily co-incide, but are often conflated by experiencers and authors. Greyson's "NDE score" regards OB events as a psychical component of a full ND experience⁶⁹. I shall dispute that understanding when considering the neurophysiological basis of ego- and para-centric space perceptions in a later chapter. In addition to the apparent re-location of conscious-awareness to the new and distant perspective or vantage point, commentators have been signally impressed by the heightened sensory awareness accompanying the phenomenon. There are many accounts expressing the enhanced clarity of visual and auditory sensations whose details often relate to the event that originally predisposed to the OB/NDE. This has led to attempts to place memorable artefacts (objects, or bits of paper with written numbers or words on them), unbeknown to medical staff, around hospital or laboratory areas, hoping that experiencers during their flights will see these items and report their content to the

⁶⁸ Walker Francis, J Am Med Assoc **261**: 3245-3246, 1989

⁶⁹ Greyson 1983, 369

investigators. To pursue such "experiments" is, to my mind, futile. As already seen with the woman knocked down by the black car, the blind Martha, and Pam Reynold's case, their somaesthetic experiences could never have been experienced via the normal sensory channels. Each woman lacked normal sight, the one having been temporarily blinded after her collision with the black car, the next, Marsha being congenitally blind, or Pam whose eyes were taped up as routine protocol for any major operative procedure. The sensory data reported could have been inferred from information known prior to the event or culled afterwards, although reported as if directly pertinent to the event itself. Other data, as with Pam's account of the cranial bone saw, were inaccurate. The other victim heard nothing although she was lying in the road which should have presented a cacophony of related sounds and noises: her auditory world was as silent as a grave, while her visual reports were not sequential like those expected from a sensible, visually-competent eyewitness. Pam heard sounds which, given that her ears were blocked (the extent of imposed external "deafness" cannot be assessed), could well have been effected through bone conduction, as explained above. Auditory awareness persists even with deep during anaesthesia, while a heightened sensitivity to conversations of immediate concern to the patient and which are bound into memory occurs, while more trivial adventitial sounds are poorly recalled⁷⁰. In Pam's case, the noise of the saw and the conversation relating to the smallness of her femoral vessels were both of emotional significance to her: moreover, for her type of operation, the level of anaesthesia would not have been particularly deep.

⁷⁰ Cherkin A & Harroun P *Anesthesiol* **34**: 469-474, 1971; Wilson S, Vaughan R, Stephen C *Anesthes Analges* **54**: 609-617, 1975; Howard J, *Med J Austral* **146**: 44-46, 1987; Moerman N, Bonke B, Oostling J, *Anesthesiol* **79**: 454-464, 1993

The frequent occurrence of OB events, and autoscopic doubling in normal people throughout the world⁷¹ in whose lives a ND crisis has never arisen underscores the premise that there is nothing particularly "mystical" or metaphysical about the OBE itself. That is why I am concerned that Greyson thinks it is a "psychical" event, thus contributing to his scoring procedure. Moreover, OB events can be reproduced by electrical stimulation of the brain, or through the pharmacologic effects of various drugs, as will be explored in fuller detail in succeeding chapters. Thus, in the particular case of "crisis" OB experiences, I conclude that they result from neurophysiological disturbances of ego-centric space perception. My inference is that subjects' "consciousness" never leaves their physical bodies, and that their brains, therefore, generate the means through which those illusions are perceived, rather than, perhaps, being instrumental in mediating (or even "transmitting") some kind of spiritual event from outside.

Compared with OBE, NDE take experiencers into a realm perceived as providing data on a spiritual plane beyond body and brain, thus offering them a privileged view of heaven, or even of God or Jesus. I have discounted Moody's romanticised account of ECE phenomenology as too fictional. The essence of an ND event comprises, in its fullest proposed manifestation, a sensation of darkness and rapid movement perceived as something akin to transit through a tunnel, followed by a distant light which waxes in size and intensity, and a subsequent arrival into an illusory location of considerable pastoral beauty. In that location, "[Beings] of [L]ight" or deceased relatives (and invariably dressed in earthly apparel) may be perceived, sometimes accompanied by a sense of judgement, of having a life-review, and the need to decide or be coerced into deciding to return to earth, in order to resume pre-existing duties or responsibilities. It is notable how the perception

⁷¹ Sheils D, *J Soc Psychic Res* **49**: 697-741, 1978

of [L]ight and of [P]ersons has attained a unique metaphysic with the use of capitalised terms, implying a relationship to "real" people to whom some importance, or even religious reverence, is due. While the majority of NDE embody some sense of peace, joy and even ecstasy others, less frequently, are frightening, unpleasant and disturbing. An account must be attempted for both types. One such possibility is that they are explicable on neurophysiological grounds, because of metabolic perturbations, electrical or neurochemical, or due to reductions in regional cerebral blood flow. Another is that a truly supernatural realm, analogous to Heaven and Hell of conventional Western monotheism, exists and had been glimpsed, or even visited. Given the latter supposition, an explanation as to why those few subjects after experiencing "hell" were instantaneously transported to the peaceful environs of heaven, and within seconds of real time, is required. Such rapid reversals are inconsistent with Christian notions about eternity.

Drycthelm's narrative evolved in sequential fashion, except that he was shown satanic and heavenly realms displayed in geomorphic continuity, rather than experiencing them personally. His depiction of tormented souls alternately battered by frozen wastes or scorched by sulphurous furnaces contrasted with heavenly realms inhabited by happy people is surely a construct determined by his cultural background. To the modern mind, those descriptions seem rather amusing and resemble equally disturbing pictures made available for the illiterate masses on similar themes rendered in stained glass by mediaeval glaziers. They also effect striking comparisons with the testimonies derived from more "primitive" societies representative of their particular, and often inward-looking, cultural and religious sensibilities and practices. These observations suggest that the content of ECE is based on brain-associated, neurophysiological constructs cognitively-determined and in part derivative of memories already encapsulated in neuronal circuitry. I state *in*

part, because there is evidence that the brain can manufacture spurious "memories" *de novo*⁷², as is also the case with dreaming during which upper cortical (frontal lobe) controls are known to be de-activated. If my proposal is correct, then there should be no surprise at the distinctions between Drythelm's mediaeval portrayal of heaven and hell, the vision of paradise for a member of the Papua New Guinea Kaliain people as a world of '*factories, automobiles, highways, airplanes, European houses ... and manufactured goods*'⁷³, or the contemporary British and North American celestial paradigm as a somewhat anodyne place of soft breezes and wafting strains of angelic music amidst a display of beautifully coloured flowers, blue skies and radiant sunlight.

We should, I think, be much more alert to, and impressed by, the non-uniformity of the afterlife as pictured in so many testimonies. In its variety, the implication to be drawn is that eternity represents a "place" idiosyncratically idealised by as many subjects willing to express their experiences publicly. On the other hand, few Jews or Christians today would seriously believe in the physical reality of a location called "hell" with all the trimmings that history has bestowed on such a dreaded, albeit imaginary, construct. It is more difficult to understand what our future non-corporeal lives could entail, either in regard to what "heaven" or our "resurrection bodies" might be like. ECE phenomenology appears to conceive of the afterlife in terms of a non-physical body which, nonetheless, remains endowed with hyperacute somatosensory attributes pertinent to living flesh. Moreover, the relative contribution of each sensory modality during ECE faithfully follows precisely its importance in normal life ie, sight, then audition, followed by touch, then olfaction, rarely, and gustation, extremely rarely.

⁷² For example, see case reports in Daly, David Arch Neurol **11**: 59-60, 1975

⁷³ Counts, J Near-Death Stud 1983, 130

Anthropologically-conditioned visions of deceased loved ones or friends wearing earthly clothing by ECE experiencers, and, appearing as human beings, are little different from the vicarious memories the experiencers would have had of those same deceased individuals while living on earth. The notion of individualised idiosyncrasy that is rife throughout published testimonies is reflected in the marked degree to which the major features of NDE (the so-called "core experience") are experienced. The tunnel or darkness, 23-51%; entering another realm, 50-80%; seeing [B]eings or relatives, 26-52%; having an associated OB event, 20-70%. There can hardly be a realistically acceptable "core experience" when less than 50% of all experiencers sampled fail to enjoy few of its contributory parts⁷⁴.

When viewed collectively, these data re-inforce the idiosyncratic, non-uniformity of ECE phenomenology. Is, therefore, the chance of sampling the afterlife so capricious and uneven as to resemble life on earth? And if the tunnel is the means of access to an afterlife, why do only ~30% ECE subjects get that far? Furthermore, could we realistically suppose that the so-called tunnel and the other-worldly realm have loci or co-ordinates? On the contrary if it were insisted that ECE are representative of a cognitive-affective, brain-based mechanism, then certain suppositions follow. ECE are dependent on the degree of life-threat imposed by the predisposing crisis and the speed and efficiency with which it is dealt with and responds to the applied resuscitative measures. The phenomenological variations thus can be seen as directly related to the duration of the event (in real time), and therefore, not to the supposed "depth" of the experience.

⁷⁴ Sabom & Kreutziger, 1981; Greyson & Stevenson, 1980; Greyson, 1983, 1985, 2003; Fenwick & Fenwick, 1998

Furthermore, we must acknowledge the conscious experiencing of bodily pain which obtruded into the other-worldly experiences of Storm, who became aware of his abdominal pain⁷⁵, of Mangal Singh pushed back to earth by a man with a hot hand⁷⁶, and the male (Patient 5) who felt the burns of several defibrillating shocks⁷⁷. It is difficult to imagine how these three people, respectively, could have been '*in hell*', in an hallucinatory delirium, or '*floating around and going up into a light*' while simultaneously experiencing cognitively-based, this-worldly somaesthetic pain and discomfort related to their particular illnesses. The concurrent experiencing of body, and 'beyond-the-body', argues for a brain-associated phenomenology rather than with a metaphysical realm outwith corporeal existence and the physical universe. Neurophysiologists are aware of the same combination of conscious-awareness and a dream-state mode, in subjects with narcolepsy, lucid dreaming, and other syndromes associated with disturbed sleep patterns.

But more important than these anomalous depictions of space and apparel within the supposed spiritual world, is the serious interference with affective responses towards the physical body, its physical (clinical) plight or outcome during ECE-precipitating crises, especially at scenes of life-threatening intensity involving road-traffic accidents, severe blood loss, or cardiac arrests. I have listed the varied attitudes of the lady knocked down by the black car who derived no insights during her OB event into the implications of her accident. In other instances⁷⁸, affect can be extraordinarily inappropriate: on apparently seeing Jesus Christ in 'the beyond', a man was amused by the sight of the crucifixion wounds. '*...I thought it was a joke ... made me laugh ... thought it was wildly funny*'. To

⁷⁵ Wilson 1997, 141

⁷⁶ Pasricha & Stevenson 1986, 167

⁷⁷ Sabom & Kreutziger 1978, 3

⁷⁸ Grey 1985, 52-3

accept such crass nonsense as reflective of a sensible afterlife, as Grey clearly did in publishing this excerpt is to exceed the bounds of mature judgement and propriety. Furthermore, to offer such material to the public as a reasoned, serious contribution to enhancing understandings of the supposed 'mystical realm', as she proposes, would strain most peoples' sense of basic credulity. These few brief anecdotes articulate the difficulty in accepting the entire narrative oeuvre as a veridical portrayal of another real, credible world, and what is seemingly taken by so many authors to be deeply indicative of a fiducial existence of incorporeal being, outwith the physical constraints of the observable universe.

In this chapter, I have begun to lay the foundations for my argument that ECE are brain-associated phenomena, and therefore not capable of being viewed, in general, as intelligible contributions to any deeper understanding of the metaphysics of the afterlife. In analysing the phenomenology of ECE, as portrayed by the most significant authors in this field, I have established the point that OB and ND events, whether based on a common neurophysiological foundation or not, are experientially distinctive events. In the narratives given by the experiencers, the two phenomena are conflated, so as to produce a fluent account of what was remembered: that is strikingly the case with Pam Reynold's unbroken narrative, despite the prolonged interval between each event. Most authors have followed suite, thus regarding the OBE as an initial phase in the entire sequence, incorporating it either descriptively⁷⁹ or phenomenologically within a weighting system for deriving a score indicative of the depth of experience⁸⁰ or criterion of acceptance as an ECE once a predetermined arbitrary cut-off point has been exceeded⁸¹.

⁷⁹ Moody 1976

⁸⁰ Ring 1980, 32ff

⁸¹ Greyson 1983

To my mind it is important to distinguish, and not conflate, OB and ND experiences. To that end, I have brought forward the relevant and important evidence indicating that an OBE is a common, self-standing physiological event, comprising part of a series of phenomena embodying autoscopy, heautoscopy, the sensing of another presence, and the full OBE: therefore, the latter are to be construed neither as mystical nor metaphysical phenomena. Neither, and this is an important aspect of the phenomenological distinction, is an OB event to be construed as a necessary prelude to a flight beyond the body, that is, an ND experience of a heaven-like realm. Finally, it is important to acknowledge the inaccuracies and lack of proper eye-witness reporting about the surrounding environment when individuals undergo OBE. There is little to commend the view that OB experiences are actual eye-witness accounts of the scenes represented in subsequent reportage. As a corollary to that assertion, it is also futile to suppose, or even attempt to demonstrate, that such experiencers would be able to report on objects, words or numbers placed at high levels in clinical facilities where ECE are likely to take place. It is odd why this view persists because it misconstrues entirely what the essence of an OBE entails and implies. For similar reasons I reject the proposal that blind subjects "see" a heavenly realm. The evidence for that is unacceptable: the authors obviously misconstrue what the afterworld is like.

With regard to ND experiences, I have also reviewed much material of historical, geographical and social provenance to sustain my view that the ND moiety of ECE is a powerfully and culturally-dependent phenomenon⁸². It surely follows from this position

⁸² Lundahl C, *Omega* **12**: 319-327, 1981-2; Counts, 1983; Becker, 1984; Schorer C, *Omega* **16**: 111-113 1985-1986; Kellehear A, Heaven P, Gao J, *J Near-Death Stud* **8**: 163-173, 1990; Feng Zhi-ying & Liu Jian-xun, *J Near-Death Stud* **11**: 39-48, 1992

that if NDE narratives are engendered by the particularities of historic, social, religious and geographic circumstance, then ND experiences themselves could rightly be construed as cognitively-based, and hence, brain-associated phenomena. That conversations overheard, and pain experienced obtrude simultaneously into subjects' flights into the beyond, whatever that beyond might entail, again buttresses the view that ND events results from brain-generated activity.

On occasion, I have drawn analogies in the preceding text to dream-states, although that is not to imply that I regard ECE as equivalent, or even identical, to dreams or dreaming. My emphasis will be to underline the poorly acknowledged fact that ECE exhibit a similar inbuilt bizarreness, incongruity and illogicality, thereby reducing considerably their evidential force presumptive of an existence outwith the known physical world. Moreover, the predominant anthropomorphic and geomorphic banality of ECE narratives likewise alludes to a form of mentality that bears many characteristics to subconscious dream-state mode mentation. The subconscious mentation of ECE reveals a lack of cogency and robustness through its signal failure to bring radically new insights into, and knowledge of, the implied otherworldly supernatural realm as depicted in published narratives.

Finally, I am impressed by the firm sense of first person perspective upon which the recorded narratives of ECE are based, indicating a contribution by the brain in directing both a profound sense of inner, as well as outer, personal space and awareness. In order to evaluate and expand that further claim, I shall turn to the recently burgeoning fields concerned with the "phantom limb" phenomenon, together with allied neurophysiological

observations on the mechanisms of creating, and disturbing, perceptions of ego- and paracentric body-image and body-space.

It is these two neurophysiological fields, firstly of dream-states, and secondly of the phantom limb phenomenon, that I now proceed to consider in the two succeeding chapters. The contents of each will offer further data to expand and consolidate the ongoing theme and argument of this thesis.

CHAPTER III

THE BRAIN & THE SUBCONSCIOUS MIND

In the previous chapter, I reviewed the typology of OB and ND experiences. In particular, I drew attention to the markedly influential role of the historical, geographical, and social factors which appear to inform the descriptive framework of published narratives. The explanation offered was that if the experiential phenomenology of ECE is influenced by cultural determinants which, themselves, inform cognitive performance, then from that perspective, ECE could be conceived as having a relationship to brain-associated activity. The experiential qualities of NDE involve well-formed visual images that are coloured, beautiful, and invariably accompanied by music or sounds which are clearly determined by socio-historic factors, and, an affective component that is intensely moving for the experient. These experiences are also remembered, thus bringing into play another aspect of cerebral function, thereby permitting the subject to recall the experiences undergone at a later time beyond the clinical prodrome(s) responsible for their origin. That activity, and use of, memory firmly necessitates the presence of some normally-functioning brain tissue available during the crisis or in its earlier or later phases of recovery, with recruitment of the relevant circuitry in order both to implant those memories and to permit their later recall.

Much of the phenomenology associated with extra-corporeal experiences, especially NDE, occurs when the patient is either unconscious or, at least, in some kind of subconscious state. Another important aspect of the reported subconscious 'visions' experienced during

ECE is that they are open to later interpretations pregnant with spiritual overtones. They are frequently seen to afford insights into life beyond the grave if not glimpses of what, in the Judeo-Christian tradition, are termed heaven or eternity. Furthermore, they include figures often perceived to be God or Jesus. Yet the difficulty here is whether such memories, for that is how they are recalled and thence reported, portray a reality beyond the universe, or merely comprise sundry recollections of varied sorts which the brain delivers as perceptions experienced during these subconscious episodes. If so, the scenes and people visualised will incorporate aspects of the subjects' own sense of spirituality, of God, and of eternity as part of their personal mental framework. Again, we see here a cultural influence which both informs and shapes the contour of these narratives.

The narratives offered through ECE lack a corresponding resonance with those dreams, trances or visions recorded in the scriptural annals of the Judeo-Christian monotheistic tradition. Those latter types of experience attest to numerous encounters of the prophets or other holy men and women with God, as exemplified in the great theophanies of Isaiah's vision in the Temple (Isa 6:1-4), of Daniel's phantasmic percept of the Ancient of Days (Dan 7:9) or in later times, of Paul's dramatic confrontation with the Lord while *en route* to Damascus (Acts 9:5). Scriptural dreams, on the other hand, also find employment as literary devices through which particular individuals are singled out by Divine agency for the prosecution of defined tasks, the receipt of interpretative understandings, or disclosure of revelatory insight. Peter's experience in his dream of unclean beasts is interesting not only for the divine contravention of Jewish food laws but particularly for the manner of its literary expression, as of '*another*' (...ἐγένετο ἐπ' αὐτὸν ἑκστασις) standing alongside Peter as the *subject* of that trance. Another very appropriate example is the somewhat curious Pauline reference (2Cor 12:2-4) to '*a man who ascended up to the third heaven*' (...ἕως

τρίτου οὐρανοῦ) *whether in the body or not into (the) paradise (...εἰς τὸν παράδεισον), there to hear words not permitted for mankind to speak*'. Even if Paul was obliquely referring, in third person speech, to an event which he himself had experienced fourteen years previously¹, it seems quite clear that it had a profound significance for him (2Cor 12:7) in his newly-inspired task of promulgating the gospel throughout the Diaspora.

Despite the differential emphases and comparisons in construing biblical experiences of the divine or of other spiritual worlds, in comparison with those arising out of the experience of ECE, we now turn back to the main focus of this section in considering aspects of the unconscious brain most likely to be relevant to ECE. Much of the phenomenology associated with ECE occurs when the patient is either unconscious or, at least, in some kind of subconscious state. The subconscious visualisation of formed images with or without other sensory accompaniments related to touch, sound or olfaction is a characteristic of dreams and dreaming. Indeed, dreams, like ECE, can be envisioned as a state of sub-conscious awareness within an externally-perceived state of apparent unconsciousness. These parallels, by way of demanding an analysis of the neurophysiology of sleep and its attendant phenomenology of dreaming, will be shown to provide important insights into what could be happening in the brains of those undergoing ECE. More importantly, they suggest possible experimental approaches which could be designed to uncover further the neurophysiologic basis of ECE phenomenology. For in stating this, we must constantly bear in mind that ECE victims recover full consciousness without evident neurological defects, indicating that their brains were not, nor could have been, dangerously anoxic or even severely hypoxic. An in-depth consideration of

¹ Murphy-O'Connor J, Paul: A Critical Life. Oxford: Oxford University Press 1997, 320

dream-states, therefore, provides a novel, and hitherto systematically unused approach towards further understandings of ECE.

I proceed (Section A) by examining the process of falling asleep, and then assessing the neurophysiological aspects of rapid eye movement (REM) and of non-rapid eye movement (NREM) sleep-modes. This is followed by an account of hypnagogic and hypnopompic sleep-onset and sleep-offset modes, considered in relation to the parallels existing between them and the phenomenology of ECE. A third offering concludes with a discussion of the pathologies which inhibit dream-mode mentation, and how that relates to ND experiences viewed, as far as this thesis is concerned, as analogous brain-states.

Following that, I develop another section (Section B) devoted to critical analyses of the content of ND narratives. Here, again, I borrow from the neurophysiological field of dream-state research and from the techniques developed in analysing dream mentation. The application of such techniques, as I shall demonstrate, exposes the semantic basis of ND narratives to be far more this-worldly (than other-worldly) because of their anthropomorphic and geomorphic content, and because of their firm sense of temporally-progressing sequences, as is repeatedly emphasised by experiencers and the ECE authorship alike.

A. THE NEUROPHYSIOLOGY & NEUROPATHOLOGY OF SLEEP-DREAM MODES

III.1 ON FALLING ASLEEP

Although there is a clear distinction between alert wakefulness and deep sleep, the process by which we fall asleep is a far less definable event. Important studies have taken place since it was first discovered that the brain during certain phases of the sleep cycle is more active and awake than in its daytime mode of wakeful attentiveness^{2,3}. Neurophysiology now identifies several distinct phases representative of the passage from wakefulness, through drowsiness, to true and deep sleep, a sequence termed the sleep-onset period (SOP). The most detailed compendium relating to SOP describes nine phases⁴ although for most purposes, SOP is more easily regarded as comprising four consecutive stages, I-IV⁵. Just to add to the investigational difficulties, during Hori sleep-onset phase 1, 82% subjects declared themselves awake as opposed to 7% who thought they were asleep, while in Hori phase 9, 26% declared themselves to be still awake while 44% deemed themselves to have been fully asleep. There is still a gulf between the objective laboratory signs of sleep, and the subjective impression of the point at which sleep ensues in any one subject. Like death, falling asleep is not an event but more akin to a time-dependent process. These sentiments apply to ECE: it is difficult to know whether subjects are awake

² Aserinsky E & Kleitman N, *Science* **118**: 273-274, 1953

³ Dement W & Kleitman N, *J Exp Psychol* **53**: 339-346, 1957

⁴ Hori T, Hayasahi M, Morikawa T, *Am Psychol Assoc*, 1994

⁵ Ogilvie Robert, *Physiol Rev* **5**: 247-270, 2001

or unconscious in relation to their reportings of alleged external happenings. However, quantitative approaches to the measurement of levels of unconsciousness, as for example during anaesthesia⁶, could easily be employed in ECE studies.

The basis of this emerging technology arises from quantitative analysis of conventional EEG (electroencephalographic) traces by means of fast Fourier computation⁷. One such outcome is termed *bispectral analysis*, a computation of the differences between wave activity ("sinusoids") at differing frequencies, from which the bispectral index (BIS) is derived. This calculation provides a dimensionless numeric scale (100-0) which decreases continuously as levels of consciousness fall, and subjects become progressively more unconscious⁸. There is also good correlation between BIS and cerebral metabolism, as determined by positron emission tomography (PET) ⁹. It is evident that this technique could easily be deployed during resuscitative attempts, during which specific, timed visual and auditory signals could be given. Any subsequent relationships between memory of such stimuli, BIS, and OB/ND events (should they occur), would help in resolving the problem whether subjects were deeply unconscious (BIS<60) at the time and were therefore hallucinating, or whether they were capable of responding to specific environmental cues and hence accurately reporting what they experienced, albeit seemingly "unconscious" to outside observation at the time.

Stage I of SOP corresponds to what is popularly known as "nodding off". During this interval there is an overwhelming sense of drowsiness: the eyelids seem very heavy, the eyes themselves roll slowly, and the muscles undergo relaxation. In a sitting position the

⁶ Myles P, Leslie K, McNeil J, Forbes A, Chan M et al, Lancet **363**: 1757-1763, 2004

⁷ Wallace B, Wagner A, Wagner E, McDeavitt J, J Head Trauma Rehab **16**: 165-190, 2001

⁸ Rampil I, Anesthesiol **89**: 980-1002, 1998; Sigl J & Chamoun N, J Clin Monit **10**: 392-404, 1994

⁹ Alkire M, Anesthesiol **89**: 323-333, 1998; Rosow C & Manberg P, Anesth Clin N Am **19**: 947-966, 2001

head gradually rolls forwards, an event which invariably jerks individuals concerned back to their senses. In comparison with the full waking state, the EEG reveals ~50% α -wave [low amplitude, high frequency] activity. The subject may not necessarily be aware that he was transiently asleep. Stage II is characterised by sleep, complete muscle relaxation and cessation of rolling eye movements. There is a further reduction in α -wave activity which is replaced by the occurrence of so-called sharp spindle and K-complex EEG activity, with the ultimate appearance of bursts of spindle-wave activity.

In Stage III, the subject is deeply asleep and rapidly enters Stage IV when there is complete muscle relaxation, a raised threshold for external sensory stimulation and difficulty in arousal. The EEG typically reveals δ -wave [high amplitude, very low frequency] activity. Stages III and IV are collectively known as slow-wave-sleep (SWS) and occupy approximately 30 minutes of the entire SOP cycle, the latter lasting for about 60-90 minutes. Dreaming occurs during SOP: in SWS it is termed non-rapid eye movement (NREM) sleep, while in SOP stages I and II, a more vivid REM-like form of dreaming occurs, known generally as hypnagogic dream-mentation.

As SWS terminates, there follows a series of striking physiological changes. The EEG suggests that the subject has woken up, [the predominant δ -wave activity being now replaced by the re-appearance of non-synchronised low amplitude, high frequency α - β -waves]. The eyes make intermittent (or phasic) rapid side-to-side [saccadic] movements, yet apart from that increase in muscle activity the remainder of the body musculature, excepting the inter-thoracic muscles of respiration, now becomes inhibited, that is, paralysed and flaccid. In addition, pulse and blood pressure rise, while body metabolism

and temperature increase. At this point, the subject has just entered the first period of so-called rapid eye movement (REM) sleep which lasts approximately 30 minutes, and during which vivid dreaming occurs. Subjects roused from REM sleep usually report that they have been dreaming. Once this phase has passed, the cycle repeats itself through Stages I-IV and thus into SWS again. During an average 8-hour period of sleep about five to six cycles occur although, as the night progresses, the time spent in REM sleep progressively rises per cycle, while that of NREM sleep sharply decreases¹⁰. As a result, far less is known of the neuronal pathways and relevant transmitters in NREM sleep in comparison with REM sleep.

III.1.1 Wakefulness, NREM and REM Sleep

Current understandings of the inter-relationships between waking, and the dreams characteristic of NREM and REM sleep derive from analysis of EEG tracings, interrogation of dream-subjects awoken at specific times during their sleep cycle, and culling of data, especially relevant to humans, from brain scanning technologies¹¹ [PET or positron emission tomography, and fMRI or functional magnetic resonance imaging] applied during the sleep-wake cycle. Despite the impressive advances relating brain function to sleep, comparative experimental difficulties arise which are important to keep in sight. Much of the neurophysiology derives from experimental cats whose brains can be partly excised or impaled with electrodes, but whose dreaming can only be inferred. Humans certainly dream, but inferences about brain physiology have only been capable of anatomical localisation at the macro-level with scanning techniques, or with

¹⁰ Horne J, *Experientia* **48**: 941-953, 1992

¹¹ Maquet P, Peters J, Aerts J et al, *Nature* **383**: 163-166, 1996; Maquet P, Degueldre C, Delfiore G et al, *J Neurosci* **17**: 2807-2812, 1997; Maquet P, *J Sleep Res* **9**: 207-231, 2000; Braun A, Balkin T, Wesensten et al, *Brain* **120**: 1173-1197, 1997; Nofzinger E, Mintun M, Wiseman M et al, *Brain Res* **770**: 192-201, 1997

pharmacological manipulation, even though these data emulate, to varying degrees, those of animal studies. Nevertheless, in cross-species correlations, reality must be cautiously separated from speculative exuberance.

Brain scanning data help in determining what the parameters of those various modes of subconscious sleep are, and which areas of brain remain active. In the established phase of SWS (SOP stages III-IV), cerebral blood flow [CBF] is reduced overall by approximately 30% ¹², while cerebral glucose metabolism is reduced by 40% ¹³: these are very significant changes in comparison with waking state. In respect of ECE, it is useful to compare this reduced level of blood flow and oxygen supply in SWS with that attending a cardiac arrest and its subsequent treatment. When the arrest occurs, oxygenated blood is still present within the intra-cerebral circulation, although the rate of oxygen extraction now rises in order to sustain oxidative metabolism within the neuronal and peri-neuronal (glial) tissues. Given the institution of some effective cardiac resuscitation, a reduced CBF - perhaps 30-50% below normal - could still then be compatible with an undamaged brain as, indeed, the outcome of such procedures has amply demonstrated. That will usually be dependent on a concurrent source of applied oxygen.

During SWS, scanning technology reveals loci where changes in the uptake of oxygen [computed through the distribution of (H_2^{15}O)] indicative of regional [r] cerebral blood flow [CBF] or the uptake of glucose [$^{18}\text{fluoro-deoxyglucose}$], as measures of tissue metabolism, occur. Since rCBF and glucose metabolism are tightly linked, either methodology provides data relating to local alterations in brain physiology. During SWS, marked reductions in rCBF involve the brain-stem [mesencephalic structures]; thalamus;

¹² Braun et al 1997

¹³ Maquet P, *Behav Brain Res* **69**: 75-83, 1995

basal ganglia and basal forebrain; and much of the frontal cortex, including the important pre-frontal higher executive association areas [lateral orbital and dorso-lateral cortices]. In parallel with the de-activation of the pre-frontal cortex, rCBF is reduced in other major secondary sensory association areas within the temporal and parietal lobes. The significant falls in rCBF during stages III-IV SWS are indicative of large-scale reductions in metabolic support for synaptic transmission as well as for basal neuronal and glial cell metabolism. Unfortunately, answers how NREM dreaming occurs are not immediately clear, since detailed neurophysiological study of the mechanisms involved have not been undertaken either at neuronal or molecular level. The difficulty in interpretation here, of course, is that the resolution of PET scanning exceeds the micro-anatomy of neuronal circuitry: clearly some residual neural activity persists which is not necessarily registered on these scans.

We enter more secure terrain, however, in considering REM sleep and dreaming. When the REM sleep-mode follows NREM, certain marked alterations occur in brain physiology, in addition to the wake-like changes in the EEG trace discussed above. Global CBF overall rises by 17% over SWS, but there are also important increases in rCBF involving brainstem, thalamus, basal ganglia, basal forebrain including the limbic and paralimbic systems, together with re-activation of the medial forebrain areas. Importantly, the centres for conscious awareness, control and self-monitoring in pre-frontal cortex (as in NREM) remain de-activated: that may be of direct relevance to the bizarreness and illogicalities attending dream mentation.

The discovery of REM sleep, and originally derived from nocturnal EEG studies¹⁴, was a key advance in sleep-dream research. This discovery was further consolidated when it was demonstrated that REM sleep in the cat could be abolished by brainstem transection [at the level of the pontine mesencephalon] while remaining unaltered if the transection was made at a slightly lower level. The intervening area of brainstem is now known to contain neurones central to the generation of the side-to-side eye saccades, or rapid eye movement (REM) characterising this type of sleep. The neural impulses, easily identified in the cat brain have become known as PGO waves, because the relays originating from these neurones in the mid-brainstem, or *P*ons, further involve the visual circuitry of the lateral *G*eniculate body and *O*ccipital (visual) cortex. The relevance of these findings to the human are somewhat in doubt¹⁵.

It has been further demonstrated that the midline cerebellar vermis is activated, indicative of its receipt of brainstem vestibular afferents [from the inner ear] and which are related, in association with the temporo-parietal cortex, to the dream-associated sensations of moving, flying, and rushing, or of being pulled, dragged, rotated or hurled through "space". The involvement of the basal ganglia¹⁶ is relevant to movement and the universal hallucinatory content of motion typified by REM dreaming. Such motor accompaniments are typical of REM-associated dreaming in comparison with NREM-associated dreaming. The re-activation of the parietal lobe [operculum]¹⁷, as the REM sleep mode succeeds NREM sleep, is necessary for the elaboration of spatial imagery and thus another important component in driving (internal) dream-associated cognitive activity. These data

¹⁴ Aserinsky & Kleitman, 1953

¹⁵ Datta S, *Cell Molec Neurobiol* **17**: 341-365, 1997; Salzarulo P, Lairy G, Bancaud J, Munari C, *Electroencephalogr Clin Neurophysiol* **38**: 199-202, 1975

¹⁶ Braun et al, 1997

¹⁷ Maquet et al, 1996

collectively are obviously of high importance for explaining the hallucinatory experience of fictive movement during the early phase of the ND experience in relation to the so-called "tunnel" phenomenon. Such motion is clearly vestibular in origin, and not visual, a significant point overlooked, ignored, and certainly not elaborated upon in depth by any previous investigators commenting on this intriguing aspect of ECE phenomenology.

III.1.2 Sleep-Onset Hypnagogic Hallucinations

Hypnagogic hallucinations are visions or dream-like images appearing during stage I SOP (the sleep onset period), that is, between full awakeness and light sleep¹⁸. With reference to SOP, it is during Hori stage 5 ('H5') when hypnagogic events most likely occur. 'H5' is characterised by the presence of ripple waves in the EEG following a period of flattening ('H4') resulting from attenuation of α -wave activity ('H3'). As Hori's study showed, it is difficult to be sure whether subjects are still awake and aware, or not during these particular stages. Proposed criteria of true sleep are the replacement of occipital α -wave by 4-7Hz θ -wave activity¹⁹, or, the establishment of 12-14Hz spindles in the EEG²⁰. Hypnagogic activity appears to precede either of these two criteria.

The occurrence of dream-like mentation at or around sleep onset, and in the absence of the more specifically refined criteria pertinent to REM sleep has been reported and analysed²¹. The hallucinatory content of hypnagogic sleep episodes differs little from REM-associated

¹⁸ Vihvelin H, Acta Psychiatr Neurol **23**: 359-389, 1948

¹⁹ Liberson W & Liberson C, Rec Adv Biol Psychiatr **8**: 295-302, 1965

²⁰ Dement & Kleitman, 1957

²¹ Ogilvie, 2001; Foulkes D & Vogel G, J Abn Psychol **70**: 231-243, 1965; Foulkes D, Spear P, Symonds J, J Abn Psychol **71**: 280-286, 1966

dreaming. However, there are some detectable subtleties, in that REM-associated dreams appear, on average, to be much more "dreamlike" and more highly dramatic or bizarre, than waking reports experienced during stage I (SOP) hypnagogic mentation. It is not always easy, however, within the setting of an experimental sleep laboratory, to foster the conditions necessary for the possibility of the hypnagogic state. The latter demands a reduced level of sensory (environmental) input while simultaneously retaining a sufficient degree of arousal to permit continued awareness, together with the absence of movement, and the adoption of a restful, passive demeanour before the commencement of the experimental period. Useful experimental subjects are capable of being trained through the use of certain biofeedback procedures which serve to prolong the hypnagogic state. Green, for example, made use of alternating EEG α and θ rhythms by generating two different tonal sounds heard by the subject, in addition to relaxation and controlled breathing exercises²².

A specific feature of hypnagogic events is characterised by the sudden acquisition of "knowledge" about an object, state of affairs, or person's face, even though neither are scrutinised with the detail which, in waking life, would be necessary for complete recognition. We should carefully note that the sudden eruption of "complete knowledge" is directly pertinent to the "all-knowing states" reported by near-death experiencers. The latter are completely aware of all there is to be known in the contents of vast libraries of books, or what other persons were thinking about them during extra-corporeal journeys. It is also evident that the images, visual and auditory, are located external to (and not within) the subject's awareness. In general, visual followed by auditory and then somaesthetic modalities, is the order of sensations experienced during hypnagogic hallucinations, as

²² Green E, Green A, Walters D, *J Transpers Psychol* **1**: 1-26, 1970

with REM dreams and ECE. The imagery of the hypnagogic state is itself complex, varying from the experiencing of lights to panoramic landscapes or other extensive, well-formed scenes: the latter may be exceptionally vivid and characterised by much movement and activity²³. Subjects describe these resemblances in terms of the rapidity with which the hypnagogic imagery changes, its vividness and chromatic brilliance thus being distantly reminiscent of the 'forms' such as honeycombs, webs, tunnels and spirals described by Kluver in reference to experimentally administered LSD²⁴. As one laboratory subject remarked – *'having an hypnagogic hallucination is the best way of hallucinating without actual recourse to taking LSD'*²⁵.

Auditory hypnagogic sensations are a composite of various perceptions in which subjects hear their own names being called²⁶ or of occasions when persons visualised in the experience directly address the subject of the hallucination. There may be other cognitively-determined auditory auras comprising music or chime-like bells – all features of exceptionally common occurrence within the ECE literature. A third feature, presumably related to the recruitment of the vestibular apparatus and to the vestibular connections through midbrain, thalamus and cerebral cortices, is the sensation of movement such as floating upwards or falling. Commoner than these passively-sensed events are other vigorously experienced episodes of flying, of rapid acceleration or of being *'wrenched out of one's body'*. These may further be elaborated in terms of spinning; swirling; of being hurled through a tunnel or of being moved rapidly forwards. That these events are remembered and thus available for later recall indicates that they have to be processed by the cerebral cortex by way of the neural networks already alluded to, and

²³ Schacter D, Psychol Bull **83**: 452-481, 1976; Leaning FE, Proc Soc Psych Res **35**: 289-409, 1926

²⁴ Ardis J & McKellar P, J Ment Sci **102**: 22-29, 1956; Dybowski-Poznan M, Kwart Psychol **11**: 68-94, 1939

²⁵ Schacter 1976

²⁶ Liberson & Liberson 1965

further rationalised by the subject in his recall of the events. So with both hypnagogic and NDE, there is a paradoxical conflict between lying passively on a bed and simultaneously being moved around in "space" in the manner reported. This is indicative of a dissociation between the phenomenal self, "consciously" perceived as ego/paracentric body-space by the cortex during either type of experience. Such events have also been associated with feelings of calm, peace or joy²⁷, thus indicative of a presumptive input from paralimbic and diencephalic systems and their inter-cortical connections.

There seems to be a marked element of suggestibility relevant to hypnagogic dream-content, as revealed by the proneness of subjects to report influences arising from their immediate environment during this twilight zone of the SOP. Indeed, external stimuli have been noted to be readily incorporated into the hypnagogic experience and hence act as major contributors to the dream-like imagery of the occasion²⁸. This further pointer arises in relation to the ability of ECE subjects to recount accurately many phases in the resuscitatory process while still apparently unconscious and yet, still exquisitely aware of the immediate environmental surroundings. This is not to say that the early events during an ECE are necessarily hypnagogic or in their realisation neurophysiologically: but to observe their striking resemblances and hence to note the opportunity for allied brain-states to be operative as consciousness, in either of these two experiences, fluctuates between wakefulness and either sleep or another subconscious mode. We also note that OBEs may simultaneously be experienced during either event. The neurological basis of hypnagogic dream-hallucinations is, at best, presumptive rather than definitive, in comparison with the data now available for REM sleep. Nevertheless, it is important to draw attention to the closeness of the phenomenologies experienced, whether in the

²⁷ Twemlow S, Gabbard G, Jones F, *Am J Psychiatr* **139**: 450-455, 1982; Cheyne J, Newby-Clark I, Rueffer S, *J Sleep Res* **8**: 313-317, 1999

²⁸ Stickgold R, Malia A, Maguire D et al, *Science* **290**: 350-353, 2000

physiological stage I (SOP), or in the abnormal circumstance during which a patient with cardiac arrest, undergoing external cardiac massage, also experiences an ECE. The mechanism(s) undergirding that phenomenology would surely demand the co-ordinated operation of major neural pathways between brainstem and cerebral cortex, thus bringing into question whether the brain of ECE subjects could realistically be regarded as dying, or even dead.

It is further recognised that the hypnagogic delusional condition is a manifestation of another syndrome known as the sleep paralysis (SP) phenomenon. SP may be qualitatively defined as a transient conscious state of involuntary immobility recurring during SOP, or as awakening occurs, during which subjects are paralysed yet able to open their eyes and to report their experiences. Dependent on cultural background, ~25-40% of individuals are subject to some form of SP. SP, itself, is part of another triadic symptom-complex that includes narcolepsy and cataplexy. In a recent open survey of 264 participants with SP ²⁹, 28 (11%) reported having an OBE, some of whom additionally experienced a sensed presence, and auditory and visual hallucinations. I stress that some of the OBE subjects tried to identify objects previously placed on wardrobes or cupboards, in order to show whether during the paralysis event, they were actually conscious, or not. All such attempts failed. For example:

'I think I'm awake, so I look at my alarm clock to check, and if the bright green LED is not there, then I immediately know that it is a sleep disorder experience'.

And another:

'So far, I haven't been able to identify anything, so I guess what you can see is just stored in the memory of your surroundings'.

²⁹ Buzzi Giorgio & Cirignotta Fabio, Sleep Res Online **3**: 61-66, 2000: Buzzi G, Lancet **359**: 2116-2117, 2002

Or,

'I looked at "me" sleeping peacefully in bed as I wandered about. Trouble is the "me" in the bed was wearing long johns ... I have never worn such a thing'.

These examples re-inforce the statements made above concerning the lady knocked down by the black car, blind Marsha, and Pam Reynolds. There is no normal sight, nor sightings, during an OBE. Conversely, any veridical observations made and remembered must be due to ordinary conscious perception, even if the subject seems to have been "unconscious" to outside observation. It is most notable that in SP, that is, circumstances unassociated with dying or near-death, the phenomenology of an OBE was not conceived in terms of 'other-worldly' dimensions. Indeed, it is quite clear that the inability to "see" objects planted by subjects around their bedrooms led these ordinary folk to conclude, quite sensibly, that the event was *in the mind* and, most certainly, not *out-of-body*. The data afforded by Buzzi and Cirignotti, therefore, have a signal relevance to the manner in which crisis OBE have been, and continue to be, interpreted and reported.

Accompanying SP are a number of anomalous sensory phenomena intrinsic to hypnagogic (sleep-onset) and hypnopompic (sleep-offset) experiences. Hypnopompic experiences include visual and auditory hallucinations; aberrant perceptions of motility – typically those of falling or flying; out-of-body experiences; and, additionally, choking or suffocation due to muscle paralysis and a low respiratory effort. The phenomenology of these experiences reveals a gradient of experiential and emotional content ranging from the average hypnagogic (or hypnopompic) event to full-blown vivid, multimodal, terrifying nightmares. It is this latter aspect which culturally and historically, has contributed to a rich folk-lore referential to lethal demons, vampires, old hags, or spirits

which during their nocturnal visitations, sit on their victims' chests, and make to suffocate them to death³⁰ or attempt sexual intercourse with females.

We should take especial notice of how the burgeoning of this form of worldwide cultural mythology mirrors the historical and trans-cultural fabulous accretions characterising ECE phenomenology, despite the fact that the latter are potentially traceable to underlying neurophysiological perturbations. Such supernatural misinterpretations of plainly neurologically-determined events associated with hypnagogic sleep phenomena and possibly with ECE are of considerable interest, culturally and scientifically. The parallelisms, in particular, are of great relevance to this study, but need not be pursued any further.

III.2 NEUROPATHOLOGY OF DREAM-STATE MODES

The foundational studies discussed above have engendered a predominant sleep-dream model founded upon the view that REM sleep-states are the physiological correlate of dreaming, and that dreaming '*is therefore an epiphenomenon of REM sleep*'. According to Hobson's model, REM sleep is triggered by pontine [mesencephalic] brainstem neurones using acetylcholine as their fundamental neurotransmitter, and thus known as 'cholinergic REM-on' cells, and terminated by inhibitory, 'aminergic REM-off' cells. The inhibitory nuclei are localised at an adjacent, but more anterior, level of the brainstem position and termed the *locus coeruleus* [nor-adrenaline secreting] and *dorsal raphe* [serotonin-producing]. The corollary to that model is that the central region of the [mesencephalic pontine] brainstem is responsible for the content of dreams, rather than the cerebral cortex

³⁰ JA Cheyne, S Rueffer, I Newby-Clark, *Cons Cogn* 8: 319-337, 1999b

itself which, being driven from below, attempts to create some kind of narrative out of the impulses it receives³¹. Furthermore, reciprocal interplay between the two systems determines the sleep-wake cycle, dream content, and even daytime sensori-motor conscious-awareness. Hobson and colleagues do indeed acknowledge that they are not comprehensively explaining what David Chalmers³² terms '*the difficult bit*' – that is, how the attributes of conscious-awareness and abstract cognitive ideation create a unique, experiential realm, including qualia, beyond the essential physically-based neurophysiological process.

Secondly, in their neuropharmacologic account of REM sleep-mode³³ based on their earlier 'activation-synthesis' model³⁴, Hobson and colleagues perceive dream imagery to be a response by the forebrain to '*chaotic impulses arising through the ascending brainstem nuclei*'. That speculative model is compatible with the PET studies of human subjects in recent years³⁵. These latter studies demonstrate that REM sleep mode is accompanied by activated forebrain structures predominantly including the medial limbic affective centres, fronto-medial cortex and occipito-temporal cortices, while the dorso-lateral pre-frontal cortex associated with full wakeful vigilance and attention remains deactivated. Despite the marked similarities between REM sleep mode in animals and humans, PGO waves of pontine origin have not been easy to identify in humans³⁶. Furthermore, it may not be necessarily true that the causative mechanisms of REM sleep inevitably result in dreaming: in humans, there is evidence that these are dissociable

³¹ Hobson J, Stickgold R, Pace-Schott E, Neuroreport **9**: R1-R14, 1998; Hobson J & McCarley R, Am J Psychiatr **134**: 1335-1348, 1997; Jones B, Neuroscience **40**: 637-656, 1991

³² Chalmers David, The Conscious Mind: In Search Of A Fundamental Theory. Oxford, 1997

³³ Hobson, Stickgold, Pace-Schott, 1998; Hobson JA, Pace-Schott E, Stickgold R, Behav Brain Sci **23**: 793-842, 2000

³⁴ Hobson & McCarley, 1997

³⁵ Braun et al, 1997; Nofzinger et al, 1997; Maquet, 2000

³⁶ Salzarulo Lairy & Bancaud Munari, Electroencephalogr Clin Neurol **38**: 199-202, 1975

states³⁷. There is no irrefutable evidence that REM sleep-mode, and dreaming, are congruent phenomena: up to 30% REM awakenings fail to elicit dream reports while ~10% NREM reports are indistinguishable from REM dream reports. These data are re-inforced by evidence from subjects brain-damaged through cerebro-vascular catastrophes, tumours, epilepsy, or surgical procedures. The cumulative body of evidence comprising case-reports and other literature reviewed involves close on a thousand patients, as now briefly reviewed. I refer firstly to brainstem and cortical lesions, then to temporal lobe epilepsy, and finally to the results of leucotomy.

III.2 1: Brainstem Lesions and Reduced Oneiric Experience

It might be thought that patients with brainstem lesions would illuminate the proposed neurophysiologic basis of REM sleep/dreaming, since a great deal of the physiology of dreaming has been founded on the animal brainstem. However, of the relevant case studies available, there are surprisingly no clearcut answers. The difficulty here, as has been well defined clinically, is that brainstem [mesencephalic] assaults invariably cause states of deep, irreversible unconsciousness. Hence, the issue of either continued or absent dreaming when REM sleep is abolished by brainstem pathology is a problem hardly likely to be resolved.

³⁷ Solms Mark, *Psychoanalyt Quart* **64**: 43-67, 1995; idem, *Behav Brain Sci* **23**: 843-850, 2000

Of some of the relevant case-reports available³⁸, no clear answers are provided. In two cases only³⁹ was there a marked reduction in REM sleep-mode with absence of dreaming. Conversely, it has been shown that oneiric experience during sleep can be eliminated by cortical pathology, in the absence of concurrent brainstem injury. That is, cortical structures themselves may initiate and modulate dream experiences. Pathologically-defined lesions in these cortical regions provide an initial corpus of evidence for that assertion. We consider the posterior regions of the cerebral cortex. Vascular, traumatic or neoplastic injury to the posterior cortex involving either the parietal, temporal and occipital (PTO) lobes invariably results in a substantial⁴⁰ or complete loss of dream recall⁴¹. Other circumscribed pathologies involving visual association areas are damaged through carbon monoxide intoxication⁴² or other pathology result in deprived visuo-spatial oneiric content: *'I can dream about a person without seeing him, and can remember the person without having seen him'*⁴³. These specific forms of visual agnosia (the so-called Charcot-Willbrand syndrome) occur during wakefulness as well, indicating that areas of cortex employed for full visual comprehension during wakefulness are those recruited for the construction of oneiric imagery during the sleep-dreaming mode. In comparative studies, posterior cortical lesions caused ~68% non-recall of dreams as opposed to ~13%

³⁸ Markand Omkar & Dyken Mark, *Neurol* **26**: 769-776, 1976; Feldman Martin, *Neurol* **21**: 459-478, 1971; Osorio Ivan & Daroff Robert, *Ann Neurol* **7**: 277-280, 1980; Fremon Frank, Salinas-Garcia Ruben, Castaigne P, *Electroencephalogr Clin Neurophysiol* **34**: 177-184, 1973

³⁹ Feldman 1971; Lavie P, Pratt H, Scharf B, Peled R, Brown J, *Neurology* **34**: 118-120, 1984

⁴⁰ Schanfeld Darlene, Pearlman Chester, Greenberg Ramon, *Cortex* **21**: 237-247, 1985

⁴¹ Humphrey M & Zangwill O, *J Neurol Neurosurg Psychiatr* **14**: 322-325, 1951; Nielsen J, *J Nerv Ment Dis* **121**: 50-52, 1955; Luigi Murri, Roberto Arena, Gabriele Siciliana, Raffaele Mazzotta, Alberto Muratorio, *Arch Neurol* **41**: 183-185, 1984; Murri L, Massetani R, Siciliano G, Giovanditti L, Arena R, *Sleep* **8**: 356-362, 1985; Arthur Epstein, *Biol Psychiatr* **14**: 77-93, 1956; Epstein A & Simmons N, *Am J Psychiatr* **140**: 108-109, 1983; Bischof, Matthias & Bassetti, Claudio, *Ann Neurol* **56**: 583-586, 2004

⁴² Adler, Alexandra, *Arch Neurol Psychiatr*, **51**: 243-259, 1944; Adler A, *J Nerv Ment Dis* **111**: 41-51, 1950; Arena R, Murri L, Piccini P, Muratorio A, *Res Commun Psychol Psychiatr Behav* **9**: 31-42, 1984

⁴³ Russell Brain, *Proc R Soc Med* **47**: 288-290, 1954

non-recall for anterior cortical lesions. Moreover, recall is not influenced by memory defects or dysphasia resulting from left-sided temporo-parietal lesions⁴⁴.

The conjunction of parieto-temporal-occipital cortex is an important area of higher multimodal associative activity, so it is not surprising that the cognitive processes germane to the execution of mental imagery so vital to dream content, are impaired by lesional pathology there. Dreaming is inhibited or reduced when these brain areas and their associated circuitry are interfered with, divided by leucotomy, or compromised by other frontal cortical pathology. The emotional contours of oneiric activity (limbus) can be inhibited with anti-dopaminergic drugs, such as haloperidol. Conversely, dopamine agonists (L-dopa as used in Parkinson's disease) stimulate the occurrence of frequent vivid dreams and nightmares⁴⁵.

In comparison with the posterior cortex, the anterior cerebral cortex plays a less prominent role in dreaming⁴⁶, the only area involved being the fronto-medial cortex which remains active during REM sleep⁴⁷. The pre-frontal lateral-dorsal cortex has no direct involvement in dreaming since it is entirely de-activated during sleep. With lesions of the upper ventro-medial forebrain structures [anterior cingulate gyrus and basal forebrain nuclei] dreaming may be continuous throughout sleep. In such cases⁴⁸, there may be inability to distinguish clearly between dreaming and reality, even to the extent that waking thoughts are

⁴⁴ Sharf B, Moskowitz Ch, Lupton M, Klawans H, J Neural Transm **43**: 143-151, 1978; Nausieda Paul, Weiner William, Kaplan Linda, Weber Steven, Klawans Harold, Clin Neuropharmacol **5**: 183-194, 1982

⁴⁵ Murri et al, 1984, 1985

⁴⁶ Braun et al 1997

⁴⁷ Lugaresi E, Medori R, Montagna P et al, N Engl J Med **315**: 997-1003, 1986; Gallassi R, Morreale A, Montagna P, Gambetti P, Lugaresi E, Cortex **28**: 175-187, 1992; Morris M, Bowers D, Chatterjee A, Heilman K, Brain **115**: 1827-47, 1992

⁴⁸ Whitty Charles & Lewin Walpole, Brain **80**: 72-76, 1957

transformed into complex delusional experiences resulting in confabulatory hallucinatory states.

The absence of these loci through damage or their controlling influences, many of which are cholinergic, contradicts the view that bizarre hallucinosis is the cholinergically-mediated root of REM-associated dream mentation. Conversely, anti-cholinergic agents (atropine-like) produce submania, hallucinations and dreamlike mentation. Therefore, if the REM state is cholinergically mediated then something additional, according to Solms⁴⁹, is needed in order to induce dream-like mentation and that could well be provided by dopaminergic inputs, as indicated above. In passing, we should note that cholinergic agents administered before sleep cause wakeful insomnia; during NREM sleep induce REM sleep; and during REM sleep provoke wakefulness⁵⁰.

III.2.2 Epilepsy & Dreaming

The second corpus of information concerns epilepsy. The data indicate that epileptiform foci, mainly in the temporal and to a lesser extent the parietal lobes⁵¹ often present as recurrent nightmares. These are usually associated with SOP stage I NREM sleep and responsive either to lobectomy or anti-convulsant therapy⁵². One case of particular interest was a man with temporal lobe epilepsy⁵³ whose illness evolved through daytime hallucinations, followed by identical dreamed olfactory hallucinations of perfume associated with his wife and with a former girlfriend. This case report establishes the

⁴⁹ Solms Mark, *Behav Brain Sci* **23**: 843-850, 2000

⁵⁰ Sitaram N, Wyatt R, Dawson S, Gillin J, *Science* **191**: 1281-1283, 1976; Sitaram N, Moore A, Gillin J, *Nature* **274**: 490-492, 1978

⁵¹ Boller Francois, Wright David, Cavalieri Ralph, *Neurology* **25**: 1026-1028, 1975;

⁵² Epstein A, *Arch Gen Psychiatr* **10**: 49-54, 19

⁵³ Epstein A & Freeman N, *Epilepsia* **22**: 603-605, 1981; Epstein A, *Arch Neurol* **16**: 613-619, 1967

important point that the same area of the brain provides the basis of wakeful, as well as oneiric, experience.

III.2.3 Leucotomy & Dreaming

A third body of evidence comes from reviews of over 300 surgically-performed leucotomies⁵⁴. These studies have revealed clear evidence of reduced ability to daydream or dream during sleep, and involving both NREM and REM sleep modes. Loss of ascending dopaminergic circuitry is likely to be relevant here.

From the foregoing, it is evident that dreaming can be initiated by forebrain cortical structures in the absence of rapid eye movements and its cholinergic brainstem origins, and terminated by forebrain pathology or through appropriate pharmacological manipulations⁵⁵. Furthermore, these considerations imply that forebrain mechanisms contribute to dream content and imagery and that such constructs, like wakefulness, require extensive circuitry throughout the cortex. Indeed, it is important to realise that visuo-spatial percepts in dreams require an intact, functional PTO cortex, while visual recall is critically dependent on intact visual cortex, in life as in dreaming⁵⁶. The widespread recruitment of cortical as well as brainstem regions during REM-dream episodes would be consistent with the supposition that the predominant complex visual imagery of dreams is effected through the same higher cortical areas as during wakefulness. Evidence from other sources re-affirms the close association between the employment of identical cortical structures for perceptual and imaginary processing, and

⁵⁴ Frank Jan, *J Ment Sci* **92**: 497-508, 1946; Frank Jan, *Psychiatry* **13**: 35-42, 1950; Jus A, Jus K, Villeneuve A, Pires A, Lanchance R, Fortier J, Villeneuve R, *Biol Psychiatr* **6**: 275-293, 1973

⁵⁵ Solms, 2000

for the congruence of activated motor cortical areas during real and fictive muscular exercising⁵⁷.

In passing, it should be recalled that primary visual cortex is not involved in dreaming⁵⁸: indeed, it is rapidly de-activated during REM sleep mode yet without any accompanying “tunnel” event as prelude to dreaming. Hence the so-called tunnel phenomenon of ECE may not thus be due to reduced blood flow to the primary visual cortex, as alleged elsewhere⁵⁹. Likewise with Morse and Perry⁶⁰, who seem to have misunderstood the sequence: *'As the brain begins its final dying process, [the visual fields collapse] and tunnel vision results. The eyes are no longer seeing, and the brain can no longer interpret what it sees. The tunnel becomes dark and the organism dies'*. As their accounts of patients I-10 reveal (idem, p24-40), the recall is of a sequence of darkness, immediately followed by a tunnel, then forwards movement into the increasing light, and associated with heightened ecstatic feelings of love, peace and wonder. Then the experient rapidly awakens. That sequence, clearly, has nothing to do with either a dead brain or a dead patient. Neither do military aircrew experience an identical form of tunnel experience (as described for ECE) when exposed to high G-force centrifugation or enforced anoxic episodes during training⁶¹. In anoxic aircrew the tunnel appears immediately before *consciousness is lost* and before the onset of convulsive episodes. In NDE, it invariably *follows* an OBE or arises at some later times during the NDE. Indeed, the NDE-type

⁵⁶ Nielsen, 1955

⁵⁷ Farah Martha, Psychol Rev **95**: 307-317, 1988; Farah Martha, J Exp Hum Percept Perf **15**: 203-211, 1989; Jeannerod M, Neuropsychologia **33**: 1419-1432, 1995; Decety Jean, Cogn Brain Res **3**: 87-93, 1996

⁵⁸ Braun et al, 1997

⁵⁹ Blackmore Susan, Dying To Live. New York: Prometheus Books 1993, 83ff; Blackmore & Troscianko, J Near-Death Stud **8**: 15-28, 1989

⁶⁰ Morse Melvin & Perry Paul, Closer To The Light. New York: Villard Books 1990, 117

⁶¹ Whinnery J, J Near-Death Stud **15**: 231-258, 1997; Forster E & Whinnery J, Aviat Space Environ Med **59**: 517-522, 1988

tunnel is more than likely to be associated with *revascularisation* of the brain following a period of circulatory arrest; or an episode of physiological “hypotensive shock” which frequently accompanies the onset of an incipient myocardial infarct or intra-peritoneal haemorrhage associated with an ectopic or tubal pregnancy; or, possibly, a mild transient concussive injury to the brain. That would explain why the central macular “light” appears first, then followed by full-field visual panoramas in these exemplary types. In the case of enforced ischaemia, *that sequence is reversed*⁶²; vision initially fades in the peripheral field quadrants leaving a central “tunnel” due to a transient persistence of macular vision up to the point when conscious-awareness dissolves.

III.3 DREAMS & ECE COMPARED

Next, we need to turn to the content of NREM and REM dreams in order to effect comparison between oneiric forms of subconscious phenomenology with those reported for ECE. The difference between NREM and REM dream mentation has been a very contentious issue between psychologists and neurophysiologists engaged in this type of work. In general, NREM dream mentation is more conceptual and thoughtlike, volitionally controlled with poor visual and vivid images and lacking in emotive content⁶³. It is more akin to wakeful thought-reveries that wander and drift through the mind without particular direction or aim. Not surprisingly, reports of NREM dreams are smaller and contain fewer words and ideational percepts than REM reports. There is little here, then, to compare or relate to ECE reports.

⁶² Rossen R, Kabat, H, Anderson J, Arch Neurol Psychiatr **50**: 510-528, 1943; Lambert E & Wood E, Med Clin N Am **30**: 833-844, 1946; Finnerty F, Witkin L, Fazekas J et al, J Clin Invest **33**: 1227-1232, 1954

⁶³ Foulkes, 1966: Goodenough D, Lewis H, Shapiro A, Jater L, Sleser I, J Personal Soc Psychol **2**: 170-179, 1965; Symons Donald, Cogn **47**: 181-217, 1993

⁶⁴ Symons, 1993

In comparison, REM-associated dreams are either hallucinatory (during bursts of rapid eye movement), or ‘conjured’ during non-REM saccades by the cortex, when uninfluenced by pre-frontal cortical control and editing⁶⁴. REM dream reports are longer, conveying elaborate scenes that are mainly visual, accompanied by motor activity and highly emotive contents. Thus REM dream reports contain many more ideational units than NREM dream reports (87 vs 38%)⁶⁵. Often in REM dreams, characters are non-self and not true to life and may be undefined or lacking in identifiable facial features, The recognition of persons tends therefore to be cognitive rather than visual⁶⁶, that is, according to reports, *‘I just knew it was him/her’*. Blind people seem to make similar comments about their dreams.

Symons⁶⁷ is of the opinion that in dreams there are no truly auditory encounters involving heard speech, but only verbal exchanges related to speech production with activation of the articulatory musculature⁶⁸, as with sleep-talking. Dream speech is either hallucinated or conjured, as is the case with manufactured speech during day-dreaming, or other imagined rehearsals of conversations about anticipated or past meetings with particular people. That speech occurs during NREM sleep when the brainstem is inactivated⁶⁹ and not cholinergically driven by the forebrain, indicates that dream speech can be generated by the cortex, in line with Solms’ hypothesis of dream construction by cortically-based mechanisms⁷⁰. Dreamed auditory imagery is usually in the first person, that is, dependent on the dreamer’s speech rather than audition, and characteristically exhibits sequenced give-and-take exchanges. The background cacophony of everyday noise and speech is

⁶⁵ Fiss H, Klein G, Bokert E, Arch Gen Psychiatr **14**: 543-551, 1966

⁶⁶ Cavallero C, Cicogna P, Natale V, Occionero M, Zito A, Sleep **15**: 562-566, 1992; Kahn D, Stickgold R, Pace-Schott E, Hobson JA, J Sleep Res **9**: 317-325, 2000

⁶⁷ Symons, 1993

⁶⁸ Akira Shimuzu & Tsuyoshi Inoue, Psychophysiol **23**: 210-214, 1986

⁶⁹ Braun et al, 1997; Nofzinger et al, 1997

⁷⁰ Solms, 2000

neither experienced nor reported, either for ECE or for dreams. Dreams, like the ND component of ECE, rarely depict the sensations of various types of pain since, as in life, we can barely reproduce such unpleasant sensations cortically, but only remember their occurrences in our personal past histories. These are important correlative features to be further noticed and borne in mind.

Having introduced the neurophysiological concepts of dreaming at cerebral level, it is now my intention to analyse, in the next section, the qualitative and semantic aspects of dream narrative phenomenology as they pertain to that of ECE.

B. Dream-State Mentation & The Syntax Of ECE Narratives

III.4 THE ANTHROPOMORPHIC & GEOMORPHIC REFERENCE OF ECE NARRATIVES

For my initial analysis, I critically examine the descriptive qualities of ECE reports. For these critical analyses I borrow approaches developed within the world of dream-state research. The syntactic and semantic properties of recalled ECE narratives may be characterised by particular words: illogicality, incongruity, bizarreness and banality.

Here are some initial exemplary vignettes:

' then I became aware that Jesus, or perhaps an angel, was standing by the bed. He led me gently through the window and across the hospital lawn, which had been transformed into a heavenly scene' ⁷¹. It requires little expertise in literary criticism to detect the incongruity and illogicality offered by this fragment – of passage through a glass window with the help of Jesus or of an angel, likely to be double-glazed in a hospital ward, followed by a descent onto a hospital lawn now suddenly turned into a makeshift heaven. That, I suggest, is pure dream-world fantasy.

Or another, involving a rather silly conversation (my emphases added): *'...a voice said, 'Gill, you know who I am', and I thought, '...this is God and He knows me by name'. Then the voice chuckled and said, '...there is someone here you **do** know'.* It was her grandfather who died two years previously. On this occasion, God seems not to have noticed that Gill recognised Him as well as her grandfather whom He then introduces to

⁷¹ Fenwick & Fenwick, 1998: 79;

her. Despite the error, God seemed to be very amused with himself when introducing the older man. This odd conversation continues: *'Grandfather,' I said, 'I'm not staying here. Hamish [her husband] can't cope, and I've left a pile of shirts to be ironed and he doesn't know how to do them'.⁷²*

In another account⁷³ from Papua, New Guinea, similar elements of bizarreness, illogicality and incongruity are clearly evident. A man enters one of the typical stilted dwelling houses characteristic of Melanesian society. Having opened the door, he is now confronted by a vast engineering plant where steel is being forged into the manufacture of motor cars and ships, although there is no water or dockyard in the vicinity. Subsequently, he leaves the house by following a beam of light, and looking back, finds that the house has now been replaced by a forest and a path. He takes the pathway homewards and re-enters his body. That sequence is extremely bizarre and sequentially illogical— just as in dream-states.

Even more incredible is the meeting of an experient with his father: *'... .. dressed just like he used to be in grey trousers and a cardigan. He hadn't changed a bit. We chatted quite naturally and he joked',⁷⁴*

Really? One wants to ask the author in providing this illustrative portrayal of the after-life, whether of a "secular" or "religiously-conditioned" provenance, why it is so resolutely anthropomorphic. There is nothing at all original here: only a boringly identical picture to life on earth, and an emphasis on the apparent humdrum existence there of many of its elderly citizenry. And why never children?

⁷² idem, 80, 100-101

⁷³ Counts 1983, 120

⁷⁴ Grey 1985, 79;

Next, given all the varied accounts and narratives we should be impressed, too, by other factors: banality and non-uniformity. Eternity, in its realised narrative recall, becomes a "place" individualised by as many experiences who are willing to testify, and, overlain by an overwhelming anthropomorphic and geo-centred form of imagery. Here is another excerpt which collectively is illustrative of my observations⁷⁵:

'I found myself in front of a nice [prefabricated dwelling] ...the front door was open and I could see my mother inside. I went up to the door and said: 'I've brought you a present, Mum'. It was some lovely blue silk, enough to make a dress. She took the material and put it on the table and then got out a pair of scissors. I said: 'Mum, what are you doing? You know you don't know how to do dress-making'. She said: 'It's alright, they've been teaching me since I got here'...'Can I come in?' ... It looked so nice and welcoming, but my mother said: 'No, you can't, it's not your time to stay'. I said: 'Please Mum, its so lovely here, I don't want to go back'. But she was very firm and would not allow me to cross the threshold'.

If a truly spiritual realm had been sampled, we might have expected that something radically new, unexpected, or original, - even revelatory! might have been opened up to us - that is, invoking insights co-incident with the supposed reality and other-worldly provenance of that realm. Despite all that has been confessed and widely published, we have been vouchsafed no data whatsoever capable of expanding our current, darkly illumined perceptions of the afterlife. Neither does the eternity so depicted correspond to any construal based on the scriptural and eschatological formulations of the Judeo-Christian tradition, despite the fact that within so many of these sylvan depictions, figures allegedly purported to be, or actually to represent, God and Jesus Christ have been confronted and lovingly described in great detail. The utter banality of the afterlife so described must be emphasised.

⁷⁵ Grey 1985, 54

In support of the transcendental significance of ECE, it is invariably argued that the uniformity of reportings obtained from many subjects provides firm evidence for the existence of the 'spiritual' or 'other-worldly supernatural' domain to which they were privy. If that assertion were true, then given the hundreds of anecdotes published, we ought surely to be able now to construct an extra-ordinarily accurate description of the contours of heaven, the heavenly life, together with convincing images of what God and Jesus really look like. However, a closer, critical reading of the accounts offered reveals considerable variance between them: there is scant certainty that an identical place, or even the Godhead, were exclusively sampled by each ECE subject. For example, consider the following excerpts taken at random from prominent writers on this theme:

Of heaven: *'a field of beautiful corn': 'a garden filled with beautiful flowers': 'animals, pictures ... colours of pink, yellow, blue etc'*⁷⁶; *'when you get to the other side there's a river – just like in the Bible – just like a glass';*⁷⁷ *'I was in a most beautiful landscape, the flowers, the trees, the coloursI heard the most wonderful music and there was an organ playing as well': 'The surroundings were or appeared to be marble, in structure pillars. There seemed to be something in front of me that looked like a crypt': '...but I can only describe it as heaven ... of intense light, of intense activity, like a bustling city ... nothing like floating on clouds or harps ...'*⁷⁸

Of heavenly persons: *'Just as clear and plain the Lord came and stood and held his hands out for me. Well, he stood there and looked down at me and it was all bright then He was tall with hands out and he had all white on, like he had a white robe on ... It [the face] was more beautiful than anything you've ever seen. His face was beautiful, really and truly beautiful. His skin was almost like it was glowing and it was flawless, absolutely flawless'*⁷⁹; *'...when I suddenly found myself in this gentle glowing light ...*

⁷⁶ Fenwick & Fenwick 1998, 75-77

⁷⁷ Moody 1977, 17-18

⁷⁸ Grey 1985, 50-51

⁷⁹ Sabom 1982, 49

below the three beings above me ... dressed alike in high-necked silver-coloured tunics... .. with silver turbans on their heads. And from a jewel in the centre of each forehead or turban three 'laser' beams emitted, meeting in the centre'; '...at end [of tunnel]... three old Chinese men [with] long white beards [wearing] white robes ...' ⁸⁰; 'I saw Jesus Christ. I was aware of him by the print of the nails in his hands and his feet and I remember I was very amused' ⁸¹.

It is evident that these excerpts most obviously resemble the contours of the happenings, memories, conceptualisations and ups-and-downs that pertain to everyday life on earth. A pervading sense of weirdness and bizarreness firmly engenders these accounts, which typifies the content of most forms of dream-states: REM, hypnagogic and hypnopompic, as well as the reveries of the daydream. In their cultural modalities – historic, western or non-western, christianised or not – the narrative panoramas evoked are firmly this-worldly oriented - geomorphically and anthropomorphically. We not only have reference to flowers, grass, trees, country lanes, lakes, breezes, but also committees, clerks, books, administrative errors in personal identification, trials by magnet, and commands sometimes given by God, or Jesus, and even parents or grandparents, ordering newly-arrived experients to get back to earth, and so refusing outright their continued residency as spiritual citizens. Here is another example:

'I was aware of the haemorrhage [and] became very cold and was shivering uncontrollably. Then suddenly I was being propelled down a tunnel which had a swirling grey mist and I could see a small bright light in the distance. As I progressed along the tunnel the light got bigger; I appeared to reach my destination when I was enveloped in this large bright light. I was met by my grandmother, who quietly said: 'You must go back'. I was immediately back in my body and aware I was being pronounced dead'.⁸²

⁸⁰ Fenwick & Fenwick 1998, 81-82

⁸¹ Grey 1985, 52

⁸² Fenwick & Fenwick 1998, 91-92;

The overall impression given by these accounts of the so-called other-worldly realm, (thinking specifically of Western accounts) is entirely reminiscent of impressions gained collectively through each experient's personal life from stained glass windows and other forms of ecclesial iconography; the typical Sunday school pictured representations of Jesus; films and media; the worlds of fine art and literature; other sources of more mediocre artwork, and, of course, the imagination. Indeed, the stories "brought back" seem to be an amalgam of all the varied metaphorical attempts by living people to express the inexpressible. Interestingly, since God is so rarely illustrated in facial or personal terms, we should take note that very few portrayals of him are offered in these narratives. On the other hand, it is noticeable how frequently grandparents figure in these accounts, and play a role – presumably reflecting the strong psycho-social bonds that exist between the aged and young in many extended families. That children very rarely appear in these reports seems not to have occasioned any dismay from our key writers: these two anomalies are therefore all the more remarkable.

III.5 WORD COUNTS AND THE TEMPORAL DURATION OF NDE

Next I apply another analytic narrative technique originally used, in part, to distinguish NREM from REM dream reports. Here, word counts are employed as a means of determining the duration of the reported experiences⁸³. This particular approach to the analysis of ECE narratives has never been previously taken into account. Word counts of a few hundred words indicate relatively short experiences lasting no more than a few minutes or less, as is so with dreaming. If that is the case, then we can apply that

⁸³ Fiss et al, 1996; Foulkes et al, 1966; Antrobus J, *Psychophysiol* **20**: 562-568, 1983

deduction to another reference point, the precise moment at which the experience terminates, that is, when the subject awakes in real time. By that means, we can substantively derive direct third party insight into an otherwise subjective experience. Extrapolating backwards from the time-point of awakening, we are led to the inevitable conclusion that ECE, as recalled, occur only in those last few moments leading up to the re-establishment of conscious-awareness. So, although a cardiac arrest resuscitation could last from 30 minutes to an hour or more⁸⁴, the accompanying NDE probably lasts for no more than a few minutes or even less – several seconds. That is a most important insight, because it changes the whole perspective on NDE. They become, not vague, endless journeys to an imaginary somewhere (or nowhere), but the outputs derivative of the somewhat disordered contortions of a brain that is rapidly waking up, and, by inference, unharmed.

But am I correct in using word counts, firstly, as indirect measures of the duration of ND and, secondly, in inferring that those final moments leading up to the resumption of conscious-awareness last for seconds or a minute or two? I maintain that I am correct, and that there is good warrant for my assertion that ND events are brief, ephemeral experiences occurring as cerebral blood flow is being completely re-established and conscious-awareness fully regained. Three sets of objective data buttress this claim:

Firstly, I refer to suicide jumps from the San Francisco Bay Bridge⁸⁵. The vertical drop at low water mark is 260 feet, the interval between leaving the walkway to hitting the water is about 4 seconds, and the terminal speed on impact is ~75 mph⁸⁶. Since 1937, when the bridge was opened, approximately 5-600 attempted suicides have been registered by local

⁸⁴ Sabom 1982, Table VI, 202

⁸⁵ Rosen David, *West J Med* **122**: 289-294, 1975; Seiden R, *Suicide Life-Threat Behav* **8**: 203-216, 1968

⁸⁶ Snyder Richard & Snow Clyde, *Aerosp Med* **38**: 779-783, 1967

police. Of those, only 10 are known to have survived, of whom eight have been interviewed. Six out of those eight survivors did not remember the impact: therefore they were unconscious before hitting the water. As these survivors fell, they experienced feelings of space, of self, and of loss of time. A loss of the sense of time is an extremely sensitive indicator of cortical dysfunction. In addition, there were sensations of great peace, beauty, and transcendent oneness and unity with the universe or with humanity. One subject described the sequence as he regained consciousness: '*...dark, grey brown and the light...*'. Obviously, this was the phenomenological outcome of the neurological process during which his conscious-awareness was regained during that multi-second period.

Secondly, there are data on syncope [fainting] brought on in young students by a period of hyperventilation followed by a forced Weber-Valsalva manoeuvre [forced expiration against a closed larynx]. Syncope, induced in 42 subjects, lasted 12 ± 4 seconds⁸⁷. Of those occurrences, visual and auditory experiences were noted by 25 (60%), the majority assigning their experiences to the period of unconsciousness, while the remainder thought they took place during their recoveries. The visual imagery revealed a spectrum from greyness, coloured patches or light to perceptions of formed scenes, situations or persons. Likewise, auditory hallucinations ranged from noises, rushing sounds or screams, to human speech. Most felt detached from reality, peaceful and unwilling to return⁸⁸. 47% subjects thought they were in another world, 20% were confronted by "preternatural" beings, 16% underwent OBE, and 8% experienced "tunnels". Many felt their experience

⁸⁷ Lempert T, Bauer M, Schmidt D, Ann Neurol **36**: 233-237, 1994

⁸⁸ Lempert T, Bauer M, Schmidt, Lancet **344**: 829-830, 1994

was akin to previous drug adventures. This phenomenology, as the authors pointedly recognise and remark on, is virtually identical to that reported for ECE.

This method of achieving syncopal loss of conscious-awareness through hyperventilation, resulting in hypocarbia [low partial pressure of blood CO₂], cerebral vasoconstriction and hypoxia⁸⁹, and a forced Weber-Valsalva leading to reduced venous return and a reduced cardiac output, causes high amplitude slow wave activity in the EEG, or even a "flat" tracing. During the short period of unconsciousness, there is presumed disconnection of higher cortical centres from the thalamus and upper brainstem, thereby allowing these bizarre phenomenological experiences to occupy subconscious mentation during the subsequent recovery period. In these studies, the period of unconsciousness was not as prolonged as those normally arising from clinical crisis-events. Nevertheless, the capacity of the brain to synthesise such subconscious imagery and for it to be remembered, during such a short period, must be noted. The obvious importance of these studies emphasises the objectively measurable time-scale during which the outcome phenomenologies evolve.

Thirdly, I use data from military aviation sources⁹⁰. I refer to experiments and observations on induced loss of consciousness effected through centrifugation of selected aircrew, resulting in head-to-foot cerebral hypoxia and ischaemia through rapid G_z-force acceleration. The "z" subscript refers to a force acting in the vertical body plane (head-to-feet), as opposed to a frontal ("x", back-front) or lateral ("y", through-shoulders) plane of applied force. Such acceleration-hypoxic forms of loss of consciousness persist for up to 20 seconds, or about 40 seconds if the subsequent period of confusion is included.

⁸⁹ Howard P, Leathart G, Dornhorst A, Sharpey-Schafer E, Br Med J **iii**: 382-384, 1951; Klein L, Saltzman H, Heyman A, Sieker H, Am J Med **37**: 263-268, 1964; Gotoh Fumio, Meyer John, Takagi Yasuyuki; Arch Neurol **12**: 410-423, 1965; Duvoisin R, Arch Neurol **7**: 219-226, 1962

⁹⁰ Whinnery J & Jones D, Aviat Space Environ Med **58**: 943-947, 1987; Forster E & Whinnery J, 1988; Whinnery J & Whinnery A, Arch Neurol **47**: 764-776, 1990;

Importantly, an invariant pattern of sequenced psychophysiologic events obtains, the experiential aspects being related to the strength or degree of G force applied through the centrifuge, and thus on those parts of the brain which remain functional, compromised and/or de-inhibited from higher centre control. 'Dreaming' ⁹¹ occurred with the most strongly applied G_z force, that is, with the greatest degree of enforced cerebral ischaemia, and was located to a precise 12 second window during these carefully-timed experiments.

The dreams evoked by this experimental mode of inducing cerebral ischaemia were of high emotional content; associated with detailed visual imagery; vestibular components of floating or other fictive movement; and illogical sequences. Relatives or friends figured predominantly in these dreams, while memories and thoughts were specifically relevant to the individual's personal history, precisely as is witnessed with ECE. Also, like ECE experiences and the Golden Gate survivors, the memories remained crystal clear and of high intensity for many subsequent years. Clearly, the persistence of memory for ECE subjects has no special relevance to their encounter with death. I quote: *'I was floating in a blue ocean, on my back ...asleep but not asleep. I knew the sun was up ... like someone trying to wake me up. I woke up and was on the centrifuge. I did not want to wake up – I could see myself on the water, and also look at the sun: the sky was blue and the sun very yellow'*. Or: *'I was being propelled by something like a magic carpet'* ⁹². Here there are strong vestibular influences giving rise to powerful illusions of fictive movement accompanied by visual vividness, a profound sense of ecstasy, and a sensation of light before consciousness supervened. It was also quite apparent that mnemonic function was one of the first cognitive functions to return thereby permitting the subsequent phenomena to be remembered. In recall, the sequence was characterised by vestibular and "tunnel"

⁹¹ Forster & Whinnery, 1988

⁹² Forster & Whinnery, 1988, 520; Whinnery 1997, 245-6

phenomena, visual hallucinations, emotive feelings, audition, and finally motor competences.

Here, we see a clear, reproducible cycle in brain re-activation as consciousness is re-established that is virtually identical to that of ECE recoveries: indeed, these G_z -enforced dreams seem to be microcosms of the ECE event. Moreover, the confusion attending the post recovery period is clearly not a barrier to later detailed recall of the experiences undergone. Importantly, some of these pilots refused to accept that they had been unconscious until they viewed their video-recorded episode of centrifugation. Moreover, some accounts given of the experiences (~50% subjects) contained confabulatory elements, with the attempted purpose of hiding such lapses in conscious-awareness.

And finally, in relation to ECE narratives, I should point out once more that for these experiences to be remembered and thus recalled, sufficient brain function has to be in place for appropriate memory to be laid down. That strict requirement, noted by Winnery and colleagues in the G_z studies outlined above, must always apply, even if it were insisted that the subject was experiencing extra-corporeal "free" consciousness or spirituality. An ECE cannot occur when the brain is "dead", "down", or at its most hypoxic or ischaemic. If that were the case, then there could be no establishing of memories for the events that are later recalled. In fact, there would be no story to tell at all. Conversely, it is important to note, whether for dream-state modes or ECE, that while the illusion of having acquired vast knowledge and insights is remembered, the content of that new information is not.

I think the flaw in Peter Fenwick's argument⁹³ is that "consciousness" escapes and exists independently of the brain when the latter is "dead". On the contrary, using the time data

⁹³ Fenwick P, 2004a,b

from the three examples cited above (Golden Gate bridge attempted suicides, loss of consciousness from hyperventilation/forced Valsalva manoeuvres, and G_z -enforced centrifugal brain ischaemia), it is patently obvious that a great deal of subconscious mentation and imagery can be synthesised in a few seconds of cerebral real-time but only, as I have indicated, in those last few moments, and during which, the brain is re-awakening, contingent with restoration of a competent circulation. We neither need "dead" brains nor the forced deus-ex-machina-necessity of "free consciousness" to account for the illusions undergone and reported: that only adds confusion to circumstances which can be more prosaically explained.

I also think Fenwick is wrong in supposing that the confusion exhibited by people on awakening after a cardiac arrest, precludes vivid recall of brain-associated perception, as opposed to his notion of free-floating conscious perception. Subjects are confused after acute vascular occlusion to the brain, yet are perfectly able to describe vivid events which occurred while being unconscious. We can also be very drowsy after a dream, yet recall it with perfect memory once the post-awakening period of drowsiness has passed. Moreover, those memories persist, not only for ECE - and as if something "mystically" exclusive therefore pertained to them alone - but with G_z -enforced experiments and for the Golden Gate survivors, as well. These memories could either be put down in the prelude to unconsciousness, for example, during an OBE, or during an NDE experience as the brain rapidly regains its former state of full conscious-awareness.

To be fair, Fenwick is talking only about cardiac arrest-induced ECE⁹⁴. However, his view again falters because subjects who do not lose their blood pressure or suffer acute

⁹⁴ Parnia S, Waller D, Yeates R, Fenwick P, Resuscitation **48**: 149-156, 2001; Parnia S & Fenwick P, Resuscitation **52**: 5-11, 2002

circulatory shutdown, experience identical forms of imagery. Fenwick's proposal, based on such a shaky foundation about free-floating "consciousness" and "dying brains", seems highly improbable. It is also capable of other interpretations, and it is those other interpretations that I am in the business of exploring and articulating.

III.6 AND THEN.....

I have considered the validity of word counts in establishing the short-term, ephemeral nature of ECE as the re-vascularisation of the brain to full conscious-awareness occurs, followed by examples of the earthbound banality and incongruity of the narratives offered by experiencers. In dealing critically with a third feature of the narrative syntax of the recalled events, I draw attention to the presence of conjunctive prepositions in the narrative structure and to their widespread use in later, rationalised public accounts. Typical constructions include the following, and are indicative of a patchwork of remembered vignettes strung together, rather than of a temporally-sequenced flow of experiential happenings: *'Then, there appeared'; 'Next, I found myself'; After that ...'; 'Following that ...'*. These grammatical constructs are precisely those associated with recalled dream-states, in that they relate to passive events. There is an absence of intent, control or directed action (*'So...'; 'in order to...'; 'my purpose was to...'*); nor is there reverse causality (*'because so-and-so...'; 'as a result of x, then y...'; 'since that, I did/decided to...'*).

Like dreams, events during ECE just occur, are goal-less and purposeless, without any obvious beginning, nor without any logical conclusion – only that of eventually waking up

in the same body again. In Chapter II, I drew attention to the fact that narrated accounts of what was supposed to be going on were false and not proper "eye-witness" reports (the lady knocked down by black car: Pam Reynold's account). There is another telling (paediatric) case of Morse & Perry⁹⁵. As she floated above her bed, Cindi casually remarked on the doctors '*pushing on [her] chest... [although she] ...couldn't really see any details*'. She certainly could not! The resuscitation lasted several hours during which internal cardiac massage by a cardio-thoracic surgeon was necessary, requiring an incision through her chest wall. Being unconscious means being opaque to the truth, whatever subjects think they may have seen or heard.

The use of the pronominal "I" and its reflexives "me" and "my" in ECE narratives imply both a self, as well as a self-referential state. A truly spiritual "person" or even an incorporeal or disembodied "consciousness", as the authored excerpts given above variously indicate, should neither rely on somaesthetic capacity nor allude to body parts and their functions. Indeed, by the very definitions and implications imposed by that collective authorship, any persisting body part and its allied function would no longer be present, available, or relevant to the other-worldly realm required of those writers. Thus, in order to explicate further the self-referential dominance of ND testimony, I shall again borrow from the world of neurophysiology, in respect of phantom limb phenomenology and the currently expanding neurological precepts underlying the physiological construct of the personal body schema (Chapter IV). It is from this approach to the perception of the body and self that new understandings of self, mind, personhood and reality, truly derive. They also contribute most substantially to the elicitation of further insights into the phenomenology of ECE.

⁹⁵ Morse & Perry, 1990, 37: [Case 8]

III.7 GENERAL OVERVIEW AND SYNTHESIS

In this chapter I have considered, on a wide front, the neurophysiology, neuropathology, and phenomenology of the dream-state modes. Dreams are complex neural processes arising from co-ordinated networks active across parts of the neo-cortex and brainstem. They create a subconscious, yet visually-coherent, coloured panoramic of cognitive constructions and memories which flash across the subject's internally perceived consciousness. Dream content arises from the activities of the medial frontal and association areas of the temporal, parietal and occipital cortices. The parallelism between dream-sleep modes and the formed visual, auditory, emotive and motor imagery of ECE should not go unnoticed. While I am not advancing the view that dreams and ECE are identical, one of my principal reasons for considering dream-state modes is that they, like ECE phenomenology, are invariably generated in subconscious, or near subconscious, forms of existence.

In the anthologies cited throughout this thesis, the authors emphasise the fact that to experients, ECE are not dreams nor like them, but "real " events. It may therefore seem surprising, if not perverse, to those familiar with this literature that I have linked ECE with the dream-state modes. But such a conclusion, in my view, would be to miss the point. Indeed, my response is that because ECE, like dream-state modes, occupy subconscious states, some neurophysiological parallels between them could very reasonably be drawn out. That is because dream-state physiology has uncovered much about the mechanisms and relationships between sleep "unconsciousness" and its associated forms of perceptual awareness. Secondly, statements of the kind that ECE are not dreams cannot be taken literally as reliable indicators of any comparative neurophysiological lack of association or

connection. Ordinary folk are not in a position to offer that kind of assurance since they are unlikely to have a detailed knowledge of the various dream states now identified by neurophysiological research. To take such statements at face value, as these authors have clearly done, is to risk missing crucial relationships or principles that could have influenced their opinions about the experiences of their collected subjects.

Mentation during waking and dreaming is ongoing: the brain hardly stops working during sleep⁹⁶. Cerebral activity during the nocturnal NREM/REM sleep mode cycle is based on electrical, chemical and metabolic processes: the differences between dream-states and wakeful consciousness reside in the metabolic and chemical milieux within which each phase-state occurs. I have emphasised the almost identical phenomenology between ECE and dream-state modes in terms of the subconscious mentation occasioned by hypnagogic, REM sleep, and sleep-offset hypnopompic awakenings. In all of these, to varying extent, the dreamer undergoes episodes of fictive motion, experiences panoramic coloured vistas, and gains insights into deep matters of existence, life and the cosmos which are unavailable once full conscious-awareness has again supervened. Firstly, the twilight mentation of sleep-onset hypnagogic reveries not only involves perception of vivid visual and auditory imagery, but the acquisition of "complete knowledge" and "all-knowing states" that is typically representative of ECE narratives. Of further relevance to ECE is the intrusive vestibular influences of flying, rapid acceleration, being propelled through a tunnel or being wrenched out of the body. Secondly, identical motor/vestibular phenomenology attends the REM dream state: indeed, flying over water or falling from a great height are almost universal features of this type of unconscious mentation,

⁹⁶ Kahan T, LaBerge S, levitan L, Zimbaro P, *Conscious Cogn* 6: 132-147, 1997; Mahowald M, Woods S, Schenk C, *Dreaming* 8: 89-102, 1998

accompanied by formed panoramic coloured vistas, sounds of music, chimes or bells, and sequences of highly affective content and meaning. Thirdly, the hypnopompic dream-offset mode occurs just before the subject fully awakens. It usually occurs during the shorter periods of sleeping that follow the first morning awakening. The dream content is extremely vivid, and the awakening often occurs with an abrupt "startle" reaction, accompanied by the perception of a noise, such as a bell ringing or knock on the door. The subject, on awakening, cannot be sure whether the sounds are real: more often they are illusory. There is a marked relationship here both with the pictorial vividness of the hypnopompic dreamlet, and with the sudden return to conscious-awareness and to the physical body as the ECE terminates. Often, as the event abruptly ends with a return to the body, the reality of physicality experienced both as gravity or heaviness (as opposed to apparent weightlessness), and pain (as opposed to a joyfully painfree and ecstatic affective state while the experience lasts) is forced upon the subject.

All such aspects of dream mentation, embracing phenomena as the acquisition of an "all-knowing" state, being commanded by other voices; having feelings of rapture, joy and utter peace; and the occurrence of fictive motion highly reminiscent of the ECE "tunnel" phenomenon are associated with underlying brain mechanisms which have been reasonably well established. There is no reason to suppose that the phenomenological experiences described for these various dream-states could not underpin the physiology of ECE events, given my proviso that the latter occur during the short period of re-vascularisation as the brain approaches a state of full conscious-awareness, as argued from the data given above. Dreams, and ECE, undoubtedly confer a sense of reality on their recipients. Subconscious mentation is as real as ordinary conscious wakefulness⁹⁷: the

⁹⁷ Revonsuo A, *Philosoph Psychol* 8: 35-58, 1995

differences arise partly because in sleep, endogenously stored and newly-created material determines the outcome, while during conscious-awareness, externally-derived signals prevail⁹⁸. Nevertheless, dreaming subjects cannot reliably distinguish between information gained while awake or dreaming⁹⁹ and, as is demonstrated in the next chapter, we are all subject during normal conscious waking to cerebrally-conjured illusory deviations from what is the case. I suggest that the sense of reality pervading the narratives of ECE subjects is no different. Indeed, my contention is that the phenomenologies of ECE and dream-state modes are analogous forms of subconscious mentation and that, like wakefulness, they are all part of the same cerebral machinery. I base that contention on the objectively-definable co-incidence between the termination of ECE and the re-establishment of full conscious-awareness.

My second point is that far too little emphasis, in my view, has been given to the fact that ECE experiencers have to wake up and regain conscious-awareness. I have also stressed the observation (in extrapolating backwards using dream research word-counts) that the illusory ECE mentation preceding the return to conscious-awareness lasts only a few seconds or perhaps a few minutes. The basis for that assertion is dependent on other data in which the timing of subconscious mentation has been more precisely documented. That evidence comes from individuals interviewed after attempting suicide from the Golden Gate Bridge, from controlled experiments on subjects performing Valsalva manoeuvres, and from military aircrew subjected to controlled, G_z-force centrifugation as a means of investigating in-flight lapses of conscious-awareness during aerial combat training. From these reports certain important conclusions flow.

⁹⁸ Purcell S, Mullington J, Moffit A, Hoffmann R, Pigeau R, *Sleep* **9**: 423-437, 1986

⁹⁹ Mazzoni G & Loftus E, *Consc Cogn* **5**: 442-462, 1996; Mahowald et al, 1998

First, excepting hypnagogic experiences (during which subjects gradually lose consciousness), all other examples referred to occur as subjects are awakening from periods of unconsciousness. Those awakenings engender phenomenologies closely resembling those of ECE. Second, the corroborative events described all occur within very short, measurable time-frames, extending from about 4 to 20 seconds of real time. Third, they are all variably associated with vivid pictorial scenes, high affective content, "knowledge" gained, vestibular effects of fictive movement, encounters with dead relatives, intrusions of personal details exclusive to each subject, and a reluctance to return to consciousness. Fourth, memory is involved since without that, none of the subjects involved in these varied forms of experience would have been able, subsequently, to recall their experiences. Fifth, despite some temporary confusion, the memories are retained, and, persist long after the event, together with their impressive emotive impacts. Persistence of highly meaningful, vivid memory is by no means exclusive to ECE alone. Notably, these remembered experiences led the experimenters to conclude: '*...it is interesting that a coherent visual illusion can be generated within such a short period of time*'¹⁰⁰. Most interesting, indeed: and even more interesting that none of the authors I consider here made use of these striking evidential contributions towards a more balanced scientific understanding of ECE phenomenology.

In light of these precisely measured events, and the invariant sequential pattern experientially undergone and recalled, it is difficult to uphold Fenwick's assertions that lucid experiences occur during the period when global cerebral function is most severely impaired or absent. That is certainly incorrect, as well as being demonstrably impossible. The data explored above indicate firmly that ECE experiential phenomenology is most

¹⁰⁰ Forster & Whinnery, 1998

certain to occur, not when the brain is functionally compromised, but as it is rapidly re-entering the sphere of conscious-awareness as a result of *re*-vascularisation. That assertion clearly holds for the Valsalva subjects, Golden gate survivors, centrifuged aircrew, for REM and hypnopompic dream awakenings, and, I would insist, for ECE experients. Neither is post-event confusion an absolute excuse for suggesting that there cannot be associated mentational lucidity, newly set-down memories, vivid visual panoramas, and vestibular sensations out of which originate a sense of rapid flight, spinning or acceleration. The evidence, despite contrary assertions¹⁰¹, shows that this can, and does, occur, and that subconscious mentation is indeed operative during these aetiologically varied circumstances. In all such situations, the evidence clearly shows that cerebral functioning comes into being as conscious-awareness is being regained, and not when the brain is most severely compromised and while the subject, to external witnesses, seems either "dead" or deeply unconsciousness. While the subject is unconscious, it is quite impossible for any external witness (or scientist) to determine at what time-point ECE phenomenology begins, or in which subjects it occurs. Forster & Winnery, in addition, emphasise the early return of memory function in order to permit the remaining sequence of re-awakening to be recorded in the brain, remembered, and subsequently recalled. Therefore, out of varied antecedent causes of cerebral ischaemia, it is plainly obvious that the related phenomenology occurs as the brain is recovering from its insults and that memory formation is a key factor for subsequent recall, once full conscious-awareness is re-established.

¹⁰¹ Parnia & Fenwick 2002; Greyson Bruce, *Gen Hosp Psychiatr* **25**: 269-276, 2003; Cook E, Greyson B, Stevenson I, *J Sci Exploration* **12**: 377-406, 1998; Kelly E, Greyson B, Stevenson I, *Omega* **40**: 513-519, 1999-2000

My third observation is that pain [somaesthesia], obtruding into the experiential aspects of ECE, requires a cerebral (cognitive) role as explanation. Given that important component, it becomes a problem to explain ECE as mystical or '*other-worldly*' when accompanied by the concurrent '*this-worldly*' intrusion of a somaesthetic physical component related to limb injury, as with the woman knocked down by the black car, or to some other pathological mischief brewing within the abdominal cavity, as with Storm's dreadful experience in a French hospital. Finally, if we add the further point (Chapter II) that ECE narratives have a foundational base in cultural, historical and geographical trends which, likewise, necessitate cognitive competence and hence underlying brain-associated mechanisms for their realisation, we already have a strong cumulative and analogical argument developing in favour of a neurophysiological explanation for ECE phenomenology.

Fourthly, in addition to word counts, I have employed other dream-research techniques with which to critically analyse the semantic qualities of ECE narratives. As with much dream mentation, ECE narratives convey incongruity, bizarreness, banality and illogicality. In general, whether viewed culturally, socially, or historically, the material offered is uniformly anthropomorphically- and geomorphically-oriented. That claim lies against authorial pretensions that the material is representative of heavenly things, some sort of higher mystical realm or an ascent into astral consciousness, or of free-floating consciousness or mind.

Furthermore, the narrative accounts are so varied as to warrant another seemingly important conclusion: that each is idiosyncratically tied, not to any necessarily universalising or all-pervading spiritual paradigm, but merely to each subject's personhood

and prevailing life history. Moreover, the pictorial realisations of divine persons, especially of Jesus and to a much lesser extent God, are as varied as the number of people giving testimony, thus representing an amalgam of the material employed in either the secular or religious worlds as means of depicting an imaginary account of these Persons. Interestingly, images of God are offered far less frequently than those of Jesus, probably because representative imagery is either infrequently deployed in general, or in the case of existing Byzantine representations, are far too severe or remote to underpin current notions about the Almighty. Other accounts recall terrestrially-conditioned meetings with fondly remembered grand-parents which, it is to be observed, is evocative of these common socially-dependent forms of bonding in family relationships.

From all this wealth of testimony, we have been given nothing which sheds any deep, thought-provoking insights into the afterworld, whether of Judeo-Christian provenance or not, and nothing revelatory that could be dispassionately evaluated alongside traditional doctrinal assertions on the spiritual habitat lying beyond the grave. This is a paradox which has confronted mankind for aeons: few would find persuasive material in ECE narratives to settle the matter, or as offering veridical proof of such a reality, as so descriptively portrayed. Only people who have gone beyond physical death and complete bodily annihilation know, but none have ever returned to earth to inform us. Those who have provided accounts of "near-death" experiences have never experienced a physical death, have never been anywhere beyond the confines of their own bodies, and have neither "proved" the existence of an other-worldly domain, nor "disproved" the conventional theological paradigms of what might entail beyond the grave. All we have in their varied accounts is something parallel to pure dream-world fantasy. And should there be disquiet or even sensed outrage at my assertion that much ECE phenomenology is analogous to pure dream-world fantasy in its banality and illogicalities (but see my textual

examples given earlier in this chapter as evidence), I again draw attention to the brain scanning data pertinent to dream-state modes.

In the major dream-state modes, the occurrence of lateral frontal lobe disconnection from the brain has been demonstrated. For example, in REM dream-sleep mode, during which the oneiric component is highly reminiscent of ECE phenomenology, the brain is metabolically highly active yet whose "unconscious" mentation is bizarre and illogical as a result of lack of higher controlling influences from the lateral-orbito frontal and dorso-lateral pre-frontal cortices. While we have no such data on regional blood flow, glucose utilisation, or zonal cerebral function during ECE, the likelihood of similar operational disconnection and dysfunction during the period immediately before conscious-awareness is regained, seems highly possible. The generalised absence of personal directive, or of any executive control over the imagined mental contours of the experience described, is also exemplified in the grammatical delivery of relevant narratives. The seams of what could be disparately remembered mental vignettes are linked by words such as "*then*", "*after that*", "*next*", or "*I then found myself*", and so on. Conversely, the narrative accounts, as retrospectively remembered and recalled, invariably lack the syntax indicative of purpose, of consequential decision making, or the resultant appropriateness of any behavioural response to the various contexts through which the experiences moved. When "time" is referred to, ND narratives are usually deemed to be accompanied by a disturbed, absent, or accelerated sense of the passage of time. While eternity may be "timeless", a failure of time sense is also an important indicator of cortical dysfunction. Like dreams, events during ND experiences just happen and are apparently goal-less and lacking in purpose, with no obvious beginning nor any logical conclusion – only that of a sudden, abrupt and often painful, re-awakening back into the cold light of everyday existence, into

the same corporeal prison, and into the same physical universe which we recognise as home.

There is, however, one distinctive time-point as the experience terminates which provides a direct measure for third-party access.. The experience of being "other-worldly" finishes strictly with the return to, or re-awakening within, the subject's body, a suddenness reminiscent of hypnopompic dream awakenings. There is no recorded account in which a subject's sojourn in the outer realms persisted beyond the return to basic physicality and conscious wakefulness.

Fifth, I turn to brain pathology and development. Additional implications pertinent to ECE are derivable from dream-state pathology. It is established that oneiric capacity is either severely reduced or eradicated by stroke lesions located around the temporo-parietal junctional zone of the cerebral cortex. Since the visuo-spatial aspects of dream mentation, as in wakefulness¹⁰², require an intact temporo-parieto-occipital (TPO) cortex¹⁰³, it is my contention that the visual imagery and associated auditory and vestibular accompaniments of ECE are largely subserved by the same cortical architecture. If that proposition is correct, then individuals with PTO cortical stroke lesions should have a markedly lessened propensity to experience dream-like mentation during ECE. A prospectively controlled trial between such victims and age/sex matched control subjects would uncover any discernible differences. If that was the result, it would have been objectively shown that the TPO cortex is crucial for ECE phenomenology undergone and reported by near-death

¹⁰² Nielsen , 1955

¹⁰³ Llinas R & Pare D, *Neurosci* **44**: 521-535, 1991

subjects. More importantly, it would have been demonstrated that the origins of ECE phenomenology ultimately lie within the brain, and not in some kind of 'spiritual' realm.

Continuing this theme, it is also evident that other prospectively-controlled trials could be organised on pharmacological principles. They would need careful planning to avoid possible interference with resuscitative procedures. Nevertheless there is ample evidence, for example, from dream research, psychiatric practice and other sources that drugs can either augment, diminish, or induce oneiric activity¹⁰⁴. On similar grounds, if ECE are derivative of cerebral activity, then clearly their phenomenology, likewise, should be subject to modification by pharmacological interventions. The apparent conversion of a pleasurable ECE to an unpleasant sequela¹⁰⁵ is a tantalising example of the possible manipulability of these events, and would provide yet further third party data and evidence for their cerebral origins.

Finally, I revisit children's ECE, in order to consider possible relationships between them and the dream-state mode. The main corpus of paediatric cases derives mainly from Morse. But the narratives offered by these children are comparably distinct from those of adults, and far less elaborate. It is part of my overall contention that children's ECE phenomenology is less well 'developed' because their dream-state mentation is similarly retarded, dependent on age. That latter condition is neither due to an absence of dream mentation, nor an inability to recall it. Rather¹⁰⁶, it is more directly related to the quality of

¹⁰⁴ Hobson et al, 1998; Vogel G, Buffenstein A, Minter K, Hennessey A, *Neurosci Biobehav Res* **14**: 49-63 1990; Aizenberg & Modai, 1985; Hemmingsen & Rafaelsen 1980; Schlauch 1979; Albala et al, 1983

¹⁰⁵ Judson & Wiltshaw, 1983

¹⁰⁶ Foulkes David, *J Sleep Res* **2**: 199-202, 1993; Butler Stephen & Watson Robert, *Percept Motor Skills* **61**: 823-828, 1985; Foulkes D, Hollifield M, Sullivan B, Bradley L, Terry R, *Int J Behav Devel* **13**: 1990, 447-465

REM dream-state mentation, which is more impoverished the younger the child. Dream recall is closely related to acquired visuo-spatial capacities, as assessed quantitatively by the Wechsler Block Design protocol, rather than by verbal proficiency. In children of eight years or below, there is a paucity of substantial dream recall. Beyond eight years, dream recall improves in parallel with increasing visuo-spatial competence, together with a substantially improved contribution from self agency in the dreams reported.

Interrogated from this perspective, there is one outstanding deficiency in the childhood ECE cases reported¹⁰⁷: that is, their overall numbers are very small and are completely unrepresentative of the childhood age-span. In general, there is a bias towards older children. From this, it is evident that a closer relational analysis of REM-dream content to reported ECE phenomenology should be undertaken. Such a trial would be prospective, necessarily multi-centred in order to recruit sufficient numbers, and performed in collaboration with child psychologists and experienced paediatric dream-research personnel. Evidence would be accumulated on a year-on-year basis, beginning with 3 or 4-year-old infants, and involving annual cohorts up to the age of about fourteen years. That form of study would provide further evidence that ECE phenomenology, like REM dream-state mode, is correlated and dependent on relevant cortical functions and their age-dependent development. Such approaches, and to date entirely novel as far as I am aware, would contribute greatly to understandings of the neurophysiology of childhood dream-states and their relationship to the putative brain-based phenomenology of ECE across this somewhat neglected age-group.

¹⁰⁷ Morse & Perry, 1990; Fenwick & Fenwick 1998, 169-185

In summarising this stage of the thesis, I have adopted a controversial, and unconventional approach to ECE phenomenology in relating it to dream-state neurophysiology. I have emphasised the parallelism between REM dream-states and hypnagogic sleep-onset and hypnopompic sleep-offset modes. These comparative insights indicate the extent to which subconscious mentation in the dream mode reproduces the experiential phenomenology of NDE. Such widely-conducted and detailed comparisons have not, hitherto, been effectively pursued. Second, in critically analysing the qualitative make-up of various published narratives, focussing on syntactical and semantic content as developed and employed by dream-state researchers, my findings indicate that much content of ECE narratives resembles dream-state mentation. Such illogicalities and incongruities would be totally unacceptable in fully conscious rational individuals, pointing to a lack of higher editorial [lateral orbito-frontal] cortical control, that would normally be expected from this region of the brain. Importantly, this function is absent from dream-state modes, thus emphasising their mutual parallelisms. Third, cerebral pathology and various drugs severely interfere with oneiric competence. I have suggested prospective trials which would provide third-party objective evidence for the view that ECE are brain-derived phenomena. In children, poorly-developed ECE narratives may well be related to their stage of developed visuo-spatial abilities. Properly tested, that view could be used to help underpin my proposal for the cerebral origins of ECE phenomenology. From all this, I am increasingly drawn to the thesis that ECE are, fundamentally, constructs of the brain, thus contradicting those who otherwise suppose that consciousness, or some other non-corporeal reality, is capable of existence outwith the corporeal body, and in particular, its brain.

Having dealt with the phenomenology of ECE in relationship to dream-state neurophysiology, I next turn to consider and analyse the OB event. At the root of any out-of-body experience is a disturbance in ego-centric control, or internal body schema, and the neurophysiological mechanisms subserving that important contribution to one's perception of "self". In addition, other aspects of the neurophysiological basis of self are considered in terms of the phantom limb phenomenon, that is, the neurophysiology of corporeal absence. Both phenomena impinge critically on the processes whereby conscious-awareness is led to the illusory belief that it no longer remains with(in) the physical body. That the many forms of out-of-body experiences can be perceived in terms of neurophysiological process adds further contour to the prevailing view that an escape from the body is either physiologically normal, a response to a life-threatening crisis, or a psychological reaction to internally-generated stress or to some form of external threat.

CHAPTER IV

THE PHENOMENOLOGY OF "PHANTOM LIMB", & THE NEUROPHYSIOLOGY OF THE TEMPORO-PARIETAL CORTEX

The previous section drew attention to the qualitative similarities between the types of dream reports relevant to various sleep-state modes, and the narrative accounts given in the recall of ECE. The point of that comparison was to emphasise, given the extensive and cohesive panoramic vistas reported that are allied to experiences of pleasurable sounds and verbal encounters with persons of the light or deceased relatives and friends, that ECE (OB and ND experiences) have to depend on co-ordinated brain activity in order to produce the phenomenology common to each, and a functional memory thereby permitting their later recall. These are clearly phenomena which do not, and could not, occur when either subjects are alleged to be deeply unconscious, or their brains dead.

A further salient feature about ECE should be noted. In these the experient always seems to be a detached subjective observer of the supposed celestial locus which he or she comes to inhabit. For others, there may be a duality of presence, an awareness both of the immediacy of their physical surroundings with scenes, voices or other this-worldly events (eg, pain) appropriate to the circumstances antecedent to the event, yet accompanied by simultaneous perceptions of a spiritual realm offering scenes of great beauty, colour, and feelings of awe, love and ecstasy. That the this-worldly element may occasion the experiencing of physical discomfort (injury, burning from defibrillator electrodes, the jab

of a needle injection) makes it difficult to suppose how subjects could, simultaneously, be this-worldly and other-worldly:

' the doctors had all given up ... they said I was dying [and] I was feeling the life going out of my body I could still hear what everyone [the medical personnel attending her] was saying ... [then] ...I heard God's voice talking to me. He had the most gentle, loving voice. He told me that if I wanted to live I was going to have to breathe' ¹. (My emphases in this and succeeding passages).

During these events there remains a continued sense of personal "I-ness": all reports are in the first person and reflect a continuing sense and feel of personhood:

'I remember that I could see myself walking away. I was ... 20 feet away ... I could see me walking away. I was wearing this grey suit [he was not: in fact, he wore something completely different - another instance of the inaccuracies in OBE reporting, indicating, therefore, that they are not veridical eye-witness reports of the alleged happenings] that I bought last year and I was walking away from myself hanging there' ². (Report by an attempted suicide victim).

Others imagine possession of another kind of body, although sensed in terms of physicality:

'I had a piece of clothing on ... very loose ... and I remember having bare feet ... it was very different [from my physical body] ... very thin, very delicate ... very light. My face and hands were the same. Because I remember trying to touch my face to make sure everything was okay ...[and] ... I could feel it' ³.

The pronomial 'my' here implies a self, as well as self-referential concerns for corporeal attributes, that is, a fleshly human body. However I note, in passing, that there has never been reference in the relevant literature to any ECE subject claiming to possess a "resurrected body" and what form or degree of corporeality such a resurrected body might have. Self-referential concerns should not obtain with a completely spiritual entity, contrary to what is usual ECE reportage. That criticism applies to the majority of recalled experiences whether the predisposing circumstances threatened cerebral blood supply, or not. Neither, one might suppose, should the different types of "people" observed during

¹ Moody 1977, 27

² Ring 1980, 46;

³ idem, 52;

these extra-terrestrial events so unmistakably resemble the configuration of human beings. Here is one respondent's anthropomorphic description of a "[B]eing of light" that is very suggestive of Jesus:

'It was this vivid gold, yellow ... then I saw a form there [note reference to physical location] ... I can see that form now ... it had blond-gold hair and it had a beard, a very light beard and a moustache. It had a white garment on ... [and]... there was a red spot here [pointing to a Sacred Heart on the chest on his gown] ... and a chalice in his hand' ⁴.

The visual clues about corporeal imagery apply not only to "people of [L]ight" seen during an NDE, but also to long-dead family relatives invariably reported to be wearing the same suits or dresses when last seen alive on earth. It is this innate sense of structural and bodily corporateness, whether concerning the experiencers themselves or other so-called people observed during an ECE, which demands further exploration. It is highly probable that such internal images and perceptions of body shape are, as indicated by these many examples, derivative of internally-generated cerebral mechanisms⁵ in brains that could hardly be hypoxic.

IV.1 THE "PHANTOM LIMB": THE NEUROPHYSIOLOGY OF ABSENCE

New avenues to understandings of self, mind and reality derive from the neurophysiology of what is popularly known as the "phantom limb" phenomenon, a term originally coined in 1872 in describing the symptomatology of 90 American Civil War amputees⁶. This, in its basal form, refers to the continued memory of a body part previously removed through trauma or a planned surgical procedure. The phenomenon⁷ applies to, and is most

⁴ Ring 1980, 60

⁵ Melzack Ronald, *Canad Psychol* **30**: 1-16, 1989

⁶ Carlen P, Wall P, Nadvorna H, Steinbach T, *Neurology* **28**: 211-217, 1978

⁷ Weinstein Sidney, Vetter Robert, Sersen Eugene, *Neuropsychologia* **8**: 185-197, 1970; Cohn Robert, *Arch Neurol* **25**: 468-471, 1971; Cogan David, Albrecht v Graefes *Arch Klin Exp Ophthalmol* **188**: 139-150, 1973; Schultz Geoffrey & Melzack Robert, *Perception* **20**: 809-825, 1991

commonly thought of in terms of, a lost limb but it is also relevant to the severing of an arm, hand or finger; resection of a breast; enucleation of an eyeball or to any brain lesion from the retina to the occipital cortex. It can also result from removal of an internal organ to which conscious somatic representation applies. The most obvious examples involve removal of a diseased uterus for painful fibroids⁸; bladder, or rectum. In these three latter instances, persisting sensations of crampy abdominal pain, fullness, bursting or urgency may extend for a considerable interval post-operatively.

There are other perceptions applicable to limb amputees that require consideration. These concern the experience of pain, sometimes of a very distressing quality which in recent years has become amenable to stereotactic surgery in the central [peri-aqueductal] grey matter of upper brainstem, or the sensation of coldness, heat, sweating or itchiness. The phantom may feel normal in size, and if "telescoped" will nevertheless seemingly expand to fit its prosthesis. At other times, the subject may voluntarily (i.e., consciously) attempt to flex the phantom's knee either on sitting down or when the leg is perceived to obtrude into the pathway of passers-by. Sometimes, without thinking, the patient falls when arising from bed believing the leg is still *in situ*. In other instances, persisting pain in a former arthritic joint, a ring on an amputated finger seemingly present, or a persistent tremor of Parkinsonian type remaining in an amputated hand, or similar movements ("tardive dyskinesia") induced from adverse reactions to the drug metaclopramide,⁹ are representative. Another subject recalled that his phantom adopted the same flexed position as his remaining arm when attempting to forcibly close a door¹⁰.

⁸ Dorpat T, *Comprehens Psychiatr*, **12**: 27-35, 1971

⁹ Jankovic, J & Glass J, *Neurology* **35**: 432-435, 1985

¹⁰ Riddoch George, *Brain* **64**: 197-222, 1941

Consider next another variant: traumatic avulsion of the brachial plexus caused by a severe wrench to the arm, thereby severing the leash of nerve trunks connecting it to cervical cord. In this circumstance, the neurologic phantom arises out of what is otherwise a normal arm with intact blood supply¹¹. The phantom may be denied because the arm is warm and obviously still present. However, if the limb is moved without visual control, the subject lacks insight into its real position. Once the real arm has been re-visualised, the subject cognitively fuses the phantom to it. This phenomenon is verifiable with experimental anaesthesia applied locally to the brachial plexus¹². In this condition, subjects commonly report that their arm is either lying by their side or across the chest: that is only correct when the arm is under visual control. If, during blindfold the limb is moved elsewhere, its real position can only be ascertained again through visual contact, after which the imagined phantom is 'thought' back into its rightful position.

These data clearly indicate that in the absence of peripheral somaesthetic information, the subject defaults to his innate cerebral image, imagining the limb to be elsewhere other than its prevailing anatomical position. The disparity can only be overcome when the image is consciously fused with the limb. That is, body shape is largely dependent on central, rather than purely peripheral nervous signals, contrary to what some other investigators have insisted¹³: under normal physiological conditions, the two images are always fused. From this, we proceed to consider additional aspects of phantom body-imagery, resulting from accidental transection of the spinal cord.

¹¹ Wynn-Parry C, *Pain* **9**: 41-53, 1980

¹² Melzack, R & Bromage P, *Exp Neurol* **39**: 261-269, 1973

¹³ Henderson, W & Smyth G, *J Neurol Neurosurg Psychiatr* **11**: 88-112, 1948

IV.1.1 Phantom Body-Images in Para-/Quadri-plegia

Paraplegia and quadriplegia, due to complete transections of the spinal cord, result in a phantom body which, in parallel with brachial plexus avulsion or local anaesthetic block, seems to fill the existing body parts. When the eyes are open, phantom and reality are fused and perfectly co-ordinated with passive movements of the limbs or torso. Dissociation does occur if the body or limbs are moved by nurses or carers without the victim being first made aware. Note that this category of perceived body-image has been realised only through advances in long-term care in specialised units for those to whom this kind of trauma befalls¹⁴. The perceived imagery is sharper for distal structures like large toe and heel, knee or hip, emphasising their relatively larger cortical representations. In addition, many subjects report internal images of bladder or lower rectum and associated sensations of fullness, tightness or evacuation. On being asked to move a paretic limb¹⁵ their behaviour and facial expressions resemble those of normal individuals attempting to recall a fact, or to deliberate or concentrate on some problem. The gaze is distant and non-focussed, suggesting a volitional initiation pattern which takes origin in the conscious-awareness of the cerebral cortex.

Miscueing of body-image results in several recognisable syndromes. First, a proprioceptive disorder is occasioned by disturbed axial-appendicular perceptions. This is exemplified¹⁶ in a 37-yr-old with a cord transection (T7) resulting from being thrown off his motorcycle. While lying flat and paralysed and thinking that he was still in a sitting position assumed while driving his vehicle, he "consciously" attempted to move his (cerebral) legs to co-incide with their actual position on the road (Case 1).

¹⁴ Bors Ernest, *Arch Neurol Psychiatr* **66**: 610-631, 1951;

¹⁶ Conomy John, *Neurology* **23**: 842-850, 1973;

¹⁵ *idem*, 624-5

Second are kinaesthetic disorders of body-image, due to a misperceived sensation of physical work or effort, sometimes accompanied by feelings of exhaustion¹⁷ (Case 5). Here, a young footballer sustained a high transection of cervical cord (C5) during a game. Soon after injury he experienced episodes as though his legs were flexed tightly against his anterior abdominal wall, and felt that they were performing a circular, bicycling activity with repetitive flexion and extension of hips, knees and ankles, leaving him with a great sense of fatigue. He needed confirmation that his legs were indeed stationary. This case exemplifies that centrally-mediated cortical phantasms of his body-image were generated which gained access to his centres of conscious-awareness but which also were accompanied by the unusual emotive memory of tiredness which is the invariable result of hard, sustained work or labour. It is indeed intriguing that an emotive element (of fatigue) can be configured in phantom body-imagery within the brain.

Thirdly, hallucinatory misconstruals of body shape, size and discontinuity arise. A youth¹⁸ (Case 6) with a high cervical (C4) transection thought that part of his right thigh was missing; that his legs were flexed; and that his feet turned inwards and his right index finger overlapped the middle digit on that hand. He also suffered occasional bladder tenesmus despite being on continuous urethral catheterisation.

Fourthly, evidence from the genitalia imply centrally-generated mechanisms of body-phantasms¹⁹. It is not unusual for male paraplegics to experience phantom penile erections²⁰. In another series²¹ 14 men and 7 women paraplegics experienced cerebral orgasms without the corresponding sensations in their genitalia, either during erotic

¹⁷ Conomy JP, 1973, 846; ¹⁸ *idem*, 847

¹⁹ Heusner A Price, *Trans Am Neurol Assoc* 75: 128-134, 1950

²⁰ Riddoch, 1941

²¹ Money John, *Arch Gen Psychiatr* 3: 373-382, 1960

dreams or during intercourse (as appropriate) with their spouses. These experiences are clearly centrally-generated as is the case in normal, younger males and females who experience nocturnal orgasms, and emissions, during the REM sleep-dream mode²².

Finally in this category is the rare occurrence (5%) of severe pain in the phantom torso of paraplegic patients²³. Such a distressing occurrence has not been easily treatable by analgesics or surgical tractotomy, that is, the severing of ascending pain pathways in the cord *en route* to thalamus and cortex. Recent advances have shown that this type of pain is centrally-generated and is amenable to stereo-tactic neurosurgical obliteration of the para-aqueductal grey matter of the upper telencephalon.

IV.1.2 Phantom Limb Imagery in Congenital Aphakia

In the earlier clinical literature the conceivability of phantoms occurring in children with congenital aplasia (aphakia) of upper or lower limbs was dismissed, on grounds that there would not have been any sensory impressions recorded in the cerebral cortex from which later, and persisting, memory phantoms could be generated²⁴. Melzack and Loeser reviewed thirty such patients (age range 5-8 yrs), finding a prevalence of phantom limb experiences in five subjects (17%). Case 4 was a 10-yr-old female with left upper limb dysmelia. Although lacking the distal two-thirds of this arm, her phantom, now shorter than that of the actual limb, comprised thumb, fingers and a faint image of a palm. Another 11-yr-old female from another study²⁵ was bilaterally peromelic [lacking both

²² Henton Comrade, J Genet Psychol **129**: 245-251, 1976; Hirshkowitz, M & Moore, C Neurol Clin **14**: 721, 1996

²³ Melzack Ronald & Loeser John, Pain **4**: 195-210, 1978

²⁴ Weinstein Sidney & Sersen Eugene, Neurology **11**: 905-911, 1961

²⁵ Poeck, K, Cortex **1**: 269-275, 1964; 1998

forearms and hands]. Yet in her earlier years, she happily employed her phantom fingers for solving simple mathematical sums: and, when approaching a wall, she sensed initial contact with her phantom hands, this impression disappearing when her stumps made actual physical contact. In another example, a male whose gangrenous right foot and lower leg were amputated, felt his phantom foot could penetrate solid objects without fading.

These cases clearly indicate that, despite absence of incoming sensory afferents, the brain contains some kind of an inherited inbuilt engram which, in representing parts either completely or in part, informs the subject's conscious-awareness²⁶. This view is strengthened by the nature of the given reports which, although derived from young people, were as bizarre as those tendered by adults. Had those children been either imagining or even confabulating their phantoms, they are more likely to have portrayed complete limbs rather than the actual accounts offered, being referential to one or two fingers, or a thumb, or the possibility of a palm. The phantoms usually configure distal parts, in parallel with the normal somatic interpretations of the body in the parietal lobe where those parts usually involved in important functions are afforded greater cortical representation. However, the cerebral "location" of these phantoms does not reside in primary sensory cortex, but in the premotor and parietal cortex [superior posterior area, along the intraparietal sulcus], as confirmed by appropriate technology [fMRI and transcranial magnetic stimulation], in the same way that pain-qualia are represented in other cortical locations than in primary sensory areas²⁷.

²⁶ Ramachandran VS & Hirstein, William, *Brain* **121**: 1603-1630, 1998

²⁷ Weinstein S, Sersen E, Vetter R, *Cortex* **1**: 276-290, 1964; Brugger Peter, Kollias Spyros, Muri Rene, Crelier Gerard, Hepp-Reymond Marie-Claude, Regard Marianne, *Proc Nat Acad Sci* **97**: 6167-6172, 2000

One outstanding feature given in accounts of ECE is the firm sense of personal subjectivity which embodies them. They are always expressed in the first person, or with the pronominal possessive, and hence similar to dreaming and phantom limb phenomenology in which some sense of personal corporeality is usually expressed, informing the overwhelming belief that this is "me"; this is what "I" am actually experiencing; this is what "I" (am being made to) see, hear, speak, do. This idea of corporateness expresses the essence of body-image. The experience of body-image is unitary and of an integrated quality welded to the powerful percept of self: uniquely, entirely, and totally non-shared with, and unrelated to, any other individual.

IV.2 THE POSTERIOR PARIETAL CORTEX AND BODY IMAGE

The innate sense of body image which we, as humans and probably other animals possess, is by no means a statically-organised neuro-anatomic construct. Percepts of intra-personal (ego-centric), and of extra-personal (or allo-centric) body space require constant updating and re-organisation. They are based on incoming information from visual, proprioceptive [joint and muscle position], haptic [sensory] and vestibular influences²⁸. Perturbations of the sense of spatial bodily mentation can be demonstrated physiologically, and through the example of varied pathological lesions. Ego-centric and allo-centric perceptions of body image depend, predominantly, on differing modal afferences. Ego-centric space perceptions rely on vestibular inputs from the semi-circular canals and adjacent otolith [saccule and utricle] structures of the middle ear, and proprioceptive information from stretch receptors in muscle tendons and joint capsules. On the other hand, para-centric space perception is largely provided by visual clues, together with proprioception.

²⁸ Farrell Robertson, I, *Neuropsychologia* **38**: 585-595, 2000

The neurophysiological co-ordination of these varied afferent inputs is effected by the posterior parietal cortex. This comprises the superior parietal lobule [Brodman areas 5,7] and the inferior parietal lobule [Brodman 39,40]. Together they weld sensory, proprioceptive, vestibular and visual inputs into a "body image" envisioned in terms of internal (ego-centric) and external (allo-centric) components.²⁹ Through these inputs, and additional intra-cerebral connections [including the cerebellum, motor cortex, vestibular centres], a detailed conscious perception is assembled whereby subjects become aware of the shape of their own bodies, how their bodies are aligned with respect to space, and how objects within the field of view are located relative to the body. These relationships permit appropriate motor responses to events within the immediate, or more distant, environment, responses that are also dependent on memory and attentional alertness to its ever-changing contours and events.

Although in normal waking existence the eyes, limbs and head are rapidly changing position, our perceptions of space are not interpreted as though life were for ever lived on a helter-skelter or a "bouncy castle". The varying afferent inputs are functionally co-ordinated by means of parallel-distributed circuitry through which a stable internal frame of reference pertinent to body-in-space and space-to-body is created and sustained. The maintenance of the ego-centric (internal body image and body-in-space) framework is thus independent of actual ocular, head, body, or limb and joint movements. Likewise the sense of space-to-body is represented by reference to external co-ordinates, such as gravitational (upwards and downwards) and geographic (such as compass points). Memory plays an important role in permitting subjects to know and remember their own body shapes and contours, and their environmental relationships.

²⁹ Stein JF, Neuroscience 2006, 235; Idem, The Posterior Parietal Cortex, in Neuroscience, Wiley 2006, 235-244

It is clearly obvious (even to the layman) that perturbations in these variously co-ordinated brain centres can severely disrupt body imagery. Lesional pathology, of varied kinds, affecting especially the right parietal lobe can give rise to the inability to recognise coins in the pocket, to employ the left hand constructively, and, in severer cases, to accept the left side of the environment or, indeed, to recognise that side of the body which is thus interpreted to be foreign, of non-self, or the property of another person.

In addition, as we have seen above, the shape and orientation of the body can be rapidly altered through various experimental manoeuvres, resulting in disturbing and illogical sensations of illusory motion or of impossible limb positions. These insights are important indicators of how normal persons with normal brains are easily deluded by absurd perceptions as to how their body is disposed, where their limbs appear to be positioned, or, in which direction they seem to be moving. In one such experiment, subjects touched their noses with their right hand as the biceps tendon of the fixed right arm was subjected to vibration. The resultant illusion was that their noses appeared to elongate – by as much as 30cm (1 foot) for some subjects (the so-called Pinocchio effect). Conversely, vibration applied to the triceps tendon gave rise to the belief that the nose was now being pushed backwards into the head. In another test, subjects lay on a flat surface with the outstretched right leg crossed over the outstretched left leg. The palm of the right hand was placed under the right thigh. Vibration of the right biceps tendon led to a sense of arm elongation, resulting in the associated illusion of a considerable left-sided body tilt of up to 45°. Triceps vibration made some subjects think that their trunk had now been elevated some distance above the floor. The data indicate that our perceptions of body shape, size and movement are extremely labile, by no means fixed, and are able to be brought about by the simplest of experimental manoeuvres. In considering the Pinocchio effect, the biceps tendon vibration is centrally interpreted as a "movement" forwards of the arm, but

since the head and hand-to-nose remain fixed, the nose has to be interpreted as elongating simultaneously as the arm extends away from the body in order to maintain contact with the illusory recession of the hand²⁹.

In another experiment with subjects lying flat on a floor with forearms flexed vertically upwards and held in position by restraints, biceps tendon vibration gave rise to the sensation that the trunk was moving backwards, and downward, through an angle of tilt of up to 25° below the horizontal. This may result from decreased functioning of the otolith organs in the middle ear when the head is horizontally disposed. It is noticeable that OB experiences almost universally occur in a supine rather than sitting or erect position³⁰. From these brief reports, it is clear that any disruption to the normally existing balance between collaborative multiple afferent and efferent neural signals rapidly leads to the generation of perceptions that herald illusory alterations in ego-centrally-perceived body position, orientation, or weight³¹. An OBE is more likely to occur in situations of reduced afference brought about by a quiet environment, dim lighting conditions or darkness, concentrated meditative practices, sleep onset, or a subconscious state of existence.

Beyond the physiological, there are pathological examples which, in the case of migraine, reveal how cortical ischaemia may occasionally perturb the experiencing of body image, while topographical lesional data (strokes: tumour) provide further data pertinent to ego-centric space misperceptions. In general such material offers additional understandings of the underlying neural components, and process. Ultimately, they provide the neurophysiological basis offering rational explanations for the occurrence of OBE.

²⁹Lackner, *Brain* **111**: 281-297, 1988

³⁰Blanke Olaf, Landis Theodore, Spinelli Laurent, Seeck Margitta, *Brain* **127**: 243-258, 2004

³¹Pavani Francesco, Spence Charles, Driver John, *Psychol Sci* **11**: 353-359, 2000

IV.3 MIGRAINOUS DISTURBANCES IN EGO-CENTRIC BODY IMAGE

It has been noted that OB phenomenology refers to occasions when percipients state that their "consciousness" seems to have left the physical body, "travels" without corporeal assistance, and "sees" things which would not have been expected to be visible to the physical body. The major question here is whether OBE are true examples of extracorporeal existence, sentience or consciousness providing cast-iron proof of a "mental" life independent of the brain, or whether they are a product entirely of illusory/hallucinatory brain-states. A third explanation for those few subjects who appear to report allegedly real events in their vicinity during an OBE is that, like lucid dreaming, they may be both conscious as well as in a subconscious mode of existence. In that regard, we must always remain alert to the impossibility (to date) of knowing whether any subject is completely unconscious or not. OBE are inevitably personal and subjective and therefore opaque to third-party investigation or objective interrogation. Nevertheless, it has been suggested³² that if an experiment could be set up with specific objects placed around resuscitation or intensive care wards in hospitals, it would be possible to determine precisely whether an OBE is a real or illusory event. The difficulty with that kind of argument is that an extracorporeal mode of existence still requires some ocular means of vision. In such a mode, however, it may *not* be possible to "see" in the manner in which we conceive earthly sight, therefore rendering the experiment useless. Those advancing this kind of approach do not seem to foresee the many difficulties inherent in pursuing this type of investigation.

³² Fenwick, 2004a, 7-8

As a more compelling answer, there seems to be a great deal of evidence indicating that OBE are caused by internal brain-states. For example, among some of the psychologic manifestations of migraine, the latter caused by temporary cortical ischaemia, are striking instances of autoscopy, OBE, "presences", vestibular sensation, and distortions of perceived body image. These phenomena occur in ~15% cases of migraineurs, and are frequently depicted in migraine art³³. These may involve the presence of a double (idem) or of having two bodies. During this sense of 'doubling', additional features arise, such as the attribution to the double of additional and fictive cognitive and affective properties³⁴. One woman, a 37-yr-old housewife (Lippman, Case 1) experienced OB events during which she was able to observe herself dealing with her husband and family: '*....it was as if I was in another dimension There was "I" and there was "me"*'. Another 48-yr-old woman regularly had experiences with her migraine headaches during which her phantom body seemed to be more real, while her true physical body was viewed as the more illusory. This seems to be more an example of heautoscopy, in that her hallucinatory double was capable of mental volition, thought and independent "visual" activity. Another man, an accountant, regularly experienced a double who, simultaneously adding up a second set of identical figures, arrived at a correct total just as he, himself, completed the real set.

Other patients of Lippman had sensations of being very tall or very small, or of parts of their bodies changing in shape and "feel", or of the body apparently splitting vertically into left and right halves, or as if the body was swinging like a pendulum (into and out of) the adjacent phantom, together with vivid, coloured dreams or horror nightmares³⁵. These

³³ Moersch, Frederick, *Am J Psychiatr* **3**: 697-716, 1924; Podoll K & Robinson D, *Cephalalgia* **19**: 886-896, 1999

³⁴ Lippman, Caro, *J Nerv Ment Dis* **117**: 345-350, 1953; idem, *Am J Psychiatr* **107**: 856-858, 1951

³⁵ Lippman, Caro, *J Nerv Ment Dis* **116**: 346-351, 1952; idem, *J Nerv Ment Dis* **120**: 273-276, 1954

phenomena even occur in migranoids – those not always experiencing headaches. A woman (Lippman 1953, Case 6) became accustomed to finding herself in two places at once, the hallucinatory phantom in an elevated position observing what she was doing, and, during which, *'time seemed to be suspended'*. A 23-yr-old spinster (Lippman 1952, Case 3), felt that her head grew to enormous proportions thus to be elevated to a great height above her. She was embarrassed when walking in the street, and having to look down on the heads of other passers-by. Importantly, she observed that it was frightening and annoying not to be able to actually *"see"* what [she] was *"feeling"* (emphases added). For her, as for another 48-yr-old man with similar symptoms, the illusory nature of their ordeals was understood because of the associated clinical diagnoses offered them by their physicians. Nevertheless, the conclusion is clear: certain people with a paroxysmal vascular abnormality of their brains are able to undergo OBE much in keeping with the kind of OBE associated with near-death events. The occurrence of horror dreams, dependent on migrainous vascular dysfunction, recalls the similar hellish types of NDE.

IV.4 EPILEPTIC FOCI AS CAUSES OF DISTURBED EGO-CENTRIC BODY IMAGE

Epileptic foci that give rise to perceived pre-convulsive aura arise predominantly from the temporo-parietal region of the brain, usually from right-sided lesional pathology. Such auras give rise to a sense of displacement, loss, or mistaken identity of body, or body parts, or vestibular illusions of abnormal limb positions and body rotations³⁶. In one series³⁷, 11% patients experienced disturbances of body image or position, including a

³⁶ Epstein, Arthur, Arch Neurol **16**: 613-619, 1967

³⁷ Salanova V, Andermann F, Rasmussen T, Olivier A, Quesney L, Brain **118**: 607-627, 1995

vestibular component of twisting or turning of the extremities or trunk, as in migraine sufferers.

Further critical insights into this kind of phenomenology have been highlighted recently³⁸. In this short offering, investigative findings are described on a 43-yr-old woman who for eleven years had suffered from complex partial seizures emanating from a focus somewhere in her right temporal cortex. As part of her pre-operative assessment, multiple subdural electrodes (n=64) were implanted into her skull and then focally stimulated. The outcomes of these stimulations under such conditions evoked reports that she was *'sinking into the bed'*; *'falling from a height'* or *'floating'* about 2m above the bed subjacent to the ceiling. Higher stimulatory currents caused her to *'see myself in bed [from above],... but...[she] only saw her legs and lower torso'* and felt that *'they were changing in shape and size'*. On another occasion when she thought that her arms were rapidly coming towards her, she took evasive action – that is, her hallucination was perceived as real, despite being conscious and having her eyes open at that time. Here is another example of the simultaneous perception of illusory mentation in a conscious subject. Other illusions of body parts moving relative to her trunk were experienced even when her eyes were closed. The authors note the differences between this lady's ability to see her lower half and arms from those total perceptions elicited by Penfield³⁹ when electrically stimulating the temporo-parietal regions of patients' brains. The responses in question here⁴⁰ were derived from electrodes overlying the aural/balance/spatial awareness "centres" towards the posterior, superior aspects of the right temporal lobe, but possibly involving the inferior parietal lobules.

³⁸ Blanke Olaf, Ortigue Stephanie, Landis Theodor, Seeck Margitta, Nature **419**: 269-270, 2002

³⁹ Penfield W, & Perot P, Brain **86**: 595-696, 1963

⁴⁰ Blanke et al, 2002: Blanke & Arzy, Neuroscientist **11**: 16-24, 2005

A more systematic, in-depth approach came from the same laboratory⁴¹, involving four individuals with complex partial seizures (2 right sided, and 2 left sided temporal foci); one patient with a vascular lesion of uncertain nosology, and a sixth with a mild, left-sided hemiplegia [right-sided temporo-parietal cortex lesion] and history of migraine. In OBE subjects, the experiences comprised extremely vivid, life-like visions of people and objects of direct personal relevance. They also involved spontaneous 180° rotations of the entire body allowing percipients to view their vacated bodies from a detached position, and to experience other vestibular components of elevations and floating, and graviceptive (otolithic) perceptions of body lightness or weightlessness. Self-recognition of the vacated body was immediate, even if the vacated body now appeared to be younger, differently attired, or offering an altered hairstyle. These latter observations imply a role for central cognitive interpretations of body contour, and the utilisation of self-memory. The pathologic locations, although in these six cases showing no lateral preponderance (right as against left) within the temporal cortex, were closely distributed around its postero-lateral aspects [superior temporal gyrus, anterior aspect of the angular gyrus, and including the inferior pre-central gyrus, amygdala, and fronto-temporal-insular cortex]. Common to the majority of these analysed case-histories and experiences, importantly, were focal disturbances arising within the vicinity of the temporo-parietal junctional zone.

Four of these patients underwent autoscopic events: notably, one underwent both OB and autoscopic experiences. She had partial complex seizures arising from the left temporal cortex from identified foci [superior temporal gyrus, angular gyrus and left pre-central gyrus]. Her pre-convulsive OB auras comprised a loud humming noise [suggesting primary auditory cortex] located to her rear; elevations of her legs, and of rising to the

⁴¹ Blanke et al, 2004

ceiling and viewing herself in bed from that position. Her autoscopic disturbance was characterised by seeing herself from behind, although she felt herself to be concurrently in both positions – a form of heautoscopy. Another patient with right-sided cortical ischaemic damage and a history of migraine felt himself rising up in his chair thus to witness his seated double moving away from him while he remained elevated, during which he experienced graviceptive illusions of weightlessness and floating. In rapid, alternating succession, he was able to view his wife (who was actually sitting in a chair opposite him as the aura progressed) both from his elevated, and from his original floor-based position. This form of heautoscopy may provide another explanation of the concurrence of illusory phenomena in an otherwise fully conscious individual. In this man's case, there were associated affective components of elation and great happiness.

A third male case [with left fronto-temporal-insular and temporo-parietal foci] was sitting in a chair when he slowly rotated backwards in the horizontal position, thus coming to think that he was now behind the nurse attending to an intravenous infusion in his arm. He thought his body looked about ten years younger and differently attired. In both types, the visual scenes were highly coloured, vivid, and, importantly, veridical of events pertinent to the immediate physical locations. There were vestibular sensations of rising or turning; of otolithic components of weightlessness or lightness, together with the immediate 180° rotation of the body in order to permit viewing of the vacated body. With autoscopic experiences, the vestibular sensations not only accompany the illusion of a second presence, but also occur before, or after, the period during which the double is experienced.

IV.5 THE UPS-AND-DOWNS & INS-AND-OUTS OF EGO-/PARA-CENTRIC BODY SPACE

The essence of this chapter deals with the concept of the body schema and its neurophysiological base, and their relationships to OBE. Such considerations are pertinent to the view that when the brain is "unconscious", "dead", or "down", some form of "consciousness" escapes its physical confines, thus to represent subjects, and to permit observation of their vacated bodies, from other detached spatial orientations. Whether such a construct is the only explanation for the phenomenon of being outwith the constraints of the physical body will be considered below. Whatever psychological or even "psychical" interpretations [see Greyson's (1983) inclusion of OBE in the *psychical* section of his scoring schematic] are applied, there is no doubt that current neurophysiological understandings have much to contribute to dissecting the differing forms of body-shape perceptions and their derangements. They need, therefore, to be taken into serious consideration in respect of the varied forms of motion experienced during OB and ND events. Importantly, as noted above, the neurophysiological role of the vestibular system in the genesis of these illusory perceptions of motion has been completely ignored in the ECE literature hitherto.

It is an impressive aspect of ECE that the narratives subsequently rendered are expressed in firm, ego-centric language. The universal employment of the pronominal "I", and reflexives "me" and "my" in respect of body position, limbs, clothing, or happenings implies the continued presence of a subjective, self-referential (and whole) individual. From a neurophysiological perspective, it is evident that the concepts of mind and of self are inbuilt cortical phenomena, as evidenced by the burgeoning field of studies into phantom limb phenomenology. This is the neurophysiology not only of *absence*, whether

of limb, finger, breast, bladder or uterus, but also of body schema *illusion*, whether in relief of spasm of a phantom hand by means of a mirror⁴², nose elongation and other illusions resulting from tendon vibration⁴³, or a sense of being upside-down when in a spacecraft under G_0 conditions⁴⁴. In these settings the brain constructs illusory images that are clearly inappropriate to the prevailing physical conditions. It might be insisted that much of the evidence for the concept of a body schema for ego-/para-centric spatial representations, is based entirely upon data culled from pathological examples, such as temporal lobe epilepsy, strokes or migraine. However, Reed & Farah⁴⁵ in an insightful paper, have demonstrated that the body-schema concept likewise holds for control, non-brain-damaged subjects as, of course, we might have expected. In the given sets of tasks performed by their subjects, the data revealed that the physiological mechanism for body schema is supramodal (use of combined visual and proprioceptive information), thus reaffirming the central role of the multimodal association areas of the temporo-parietal junction. These latter areas additionally encode body parts for self as well as for other people's bodies, being modal for arm and leg representations. Finally, in exhibiting processes devoted solely to body space, position and parts, the concept of body schema has been demonstrated to be functionally separable from other mechanisms which subserve identification of parts, or components, of non-living objects⁴⁶.

⁴² Ramachandran VS & Rogers-Ramachandran D, Proc R Soc Lond B 263: 372-386, 1996; Ramachandran VS, *Phantoms In The Brain*. London: Fourth Estate 1999, 55ff

⁴³ Goodwin Guy, McCloskey Ian, Matthews P, Science **175**: 1382-1384, 1972; Lackner, 1988

⁴⁴ Lackner J, Ann NY Acad Sci **656**: 329-339, 1992

⁴⁵ Reed Catherine & Farah Martha, J Exp Psychol Hum Percept Perform **21**: 334-343, 1995

⁴⁶ Andersen R, Snyder L, Bradley D, Xing J, Ann Rev Neurosci **20**: 303-330, 1997; Calvert Gemma, Campbell Ruth, Brammer Michael, Curr Biol **10**: 649-657, 2000; Matsushashi M, Ikeda A, Ohara S, Matsumoto R, Yamamoto J, Takayama M et al, Clin Neurophysiol **115**: 1145-1160, 2004; Zacks J Rypma B, Gabrieli J, Tversky B, Glover G, Neuropsychologia **37**: 1029-1040, 1999

Central to the physiological construction and representations of an internal ego-centric body schema⁴⁷, and its external (para-centric) relationship to the environment inhabited, are neural mechanisms based on inputs derived from visual, haptic, proprioceptive and vestibular inputs. The vestibular organs [within the middle ear] are essential in contributing to ego-centric space, providing information on linear accelerations, head tilt and graviception [otolith functions in saccule and utricle] and rotations and angular accelerations [semi-circular canals]⁴⁸.

In terms of OB phenomenology, I am concerned here not with peripheral disorders of these organs (middle ear), but with disturbances in their central connections as a result of various types of brain pathology, and their resultant symptomatology. Perceptual (cognitive) disturbances in ego-/para-centric body space depend, in part, on disorders known as the subjective visual vertical (SVV) and room tilt illusions (RTI). The former defines differences between the visual and gravity (G)-dependent sense of being upright, the latter descriptive of the relationship between subjective position and the orientation of the horizon [or subjective proprioceptive vertical: SPV]. A weightless astronaut might think himself and his craft to be upside-down due to his zero gravity (G_0) environment, resulting from otolithic graviceptors (SPV) being inoperative in G_0 , while SVV [inner ear saccule, and visual] data continue to function during weightlessness. Other subjects can be made to undergo a 90° or 180° illusory change in panorama by slow rotation about the z (head-to-foot) axis: this would be equivalent to a pilot's view of the horizon at the nadir of

⁴⁷ Stein J, Behav Brain Sci 15: 691-700, 1992; Zacks et al, 1999; Farrell & Robertson, 2000; Grush Rick, Brain & Mind 1: 59-92, 2000

⁴⁸ Gresty Michael, Bronstein Adolfo, Brandt Thomas, Dieterich Marianne, Brain 115: 647-673, 1992; Brandt Thomas, Dieterich Marianne, Ann NY Acad Sci 871: 293-312, 1999; Tiliket Caroline, Ventre-Dominey Jocelyne, Vighetto Alain, Grochowicki Michele, Arch Neurol 53: 1259-1264, 1996; Mittelstaedt Horst, Zool Jbk Physiol 95: 419-425, 1991

a barrel-roll, with sky below and land above⁴⁹. The relevance of these considerations relates to the phenomenon, rarely if ever commented on in the ECE literature, that during an OBE, experiencers are immediately rotated about their z-axis by 180°, yet without any sense of body motion as the inversion occurs. How could "free consciousness", for example, be able to invert itself thus to encounter the vacated body face-to-face? A more prosaic alternative is that it is entirely neural, resulting from ischaemic malfunctions disturbing the self-representational circuitry within the brainstem and cerebral cortex. On the other hand, it is evident that for less acutely precipitated OBE, necessary combinations of a supine position, quiet surroundings with low or absent illumination resulting in reduced visual and proprioceptive afferences to the brain, together with a slowing of pulse rate and lowering of blood pressure would provide the cumulative antecedents necessary to precipitate the occurrence of floating out of the body with a 180° reversal in body attitude.

Beyond the physiological, there is a great deal of information culled from patients with vascular insults to the brainstem, brain injuries, tumours, epilepsy, and lesions of the parietal cortex⁵⁰ which, among other body-schema defects, cause body-to-horizon or horizon-to-body inversions. These perceptual illusions⁵¹ are deemed to arise from central

⁴⁹ Lackner, 1992; Mittelstaedt H & Glasauer S, *Clin Invest* **71**: 732-739, 1993

⁵⁰ Dieterich M & Brandt T, *Neurology* **43**: 1732-1740, 1993; Brandt T & Dieterich M, *Ann Neurol* **35**: 403-412, 1994; Charles N, Froment C, Rode G, *J Neurol Neurosurg Psychiatr* **55**: 188-189, 1992; Mehler M, *J Neurol Neurosurg Psychiatr* **51**: 1236-1237, 1988; Slavin M & LoPinto R, *J Clin Neuro-Ophthalmol* **7**: 729-733, 1987

⁵¹ Bottini Gabriella, Sterzi Roberto, Paulesu Eraldo, Vallar Giuseppe, Cappa Stefano, Erminio Francesco et al, *Exp Brain Res* **99**: 164-169, 1994; Friberg L, Olsen T, Roland P, Paulson O, Lassen N, *Brain* **108**: 609-623, 1985; Slavin M & LoPinto R, *J Clin Neuro-Ophthalmol* **7**: 729-733, 1987; Steiner Israel, Shahin R, Melamed E, *Neurology* **37**: 1685-1686, 1987; Stracciari A, Guarino M, Ciucci G, Pazzaglia, *J Neurol Neurosurg Psychiatr* **56**: 423-429, 1993; Teuber H & Mishkin M, *J Psychol* **38**: 161-175, 1954; Solms Mark, Kaplan-Solms Karen, Saling Michael, Miller Percy, *Cortex* **24**: 499-509, 1988; Smith Bernard, *Neurology* **10**: 465-469, 1960

otolith-ocular disconnections in the brainstem or cortex – and experientially from within the posterior temporal and inferior parietal cortex. Surprisingly few loci have been located within the superior parietal lobule (pp 160-1 above). The area surrounding the posterior temporo-parietal zone is a large, multimodal association area which is the site of integration of somaesthetic, visual and vestibular representations relative to ego-/para-centric space. It is noticeable that many of the reports referred to above involve vascular insults [stroke: migraine] or mass lesions [tumour: abscess], each seriously interfering with blood supply to these vital centres. This area is also the watershed between the two vascular supplies to the brain⁵², namely the middle cerebral artery [internal carotid] and posterior cerebral artery, being the terminal branch of the vertebro-basilar system. Therefore, it is not improbable that a similar 180° reversal of the cortically-perceived visual horizon experienced during an OBE could relate to a concurrent disturbance in this critical vascular region of the posterior cerebral cortex.

The underlying neurophysiological contours of body space and position perception, and their associated illusory corollaries, are complex and incompletely understood. Advances have been made possible through use of more elegant technologies, including brain scanning, improved computerised EEG analysis, and use of patients with various pathological disorders of the brain, especially temporal/parietal lobe epilepsy in whom disturbances of ego-centric body space have been critically evaluated. A further point is worthy of mention here. That concerns present-day nosological redefinitions of temporal lobe epilepsy (TLE) into mesial forms (mTLE) and lateral or neocortical (ncTLE). mTLE embodies the earlier, classical descriptions, the seizures originating outside mesial temporal lobe structures, as defined by MRI and PET scanning, and exemplified by relief

⁵² Price J, Whitlock F, Hall R, *Psychiatra Clinica* 16: 26-44 1983

of seizure by surgical removal [anterior temporal lobectomy or amygdalo-hippocampal resection] ⁵³. These patients are younger and have often been subject to childhood febrile episodes, perinatal birth injuries, infections of the intracranial cavities and brain tissue, or head injuries. Conversely, ncTLE subjects are older, lack such predisposing features, and whose seizure activity can be controlled by lateral cortical resections, once the loci of these discharges have been precisely located by appropriate investigational techniques.

Therefore, it is very difficult to be able to concur with van Lommel, for example, that temporal lobe epilepsy or other models of ECE phenomenology, are '*not identical to NDE*': nor would I be brave (or rash) enough to postulate that '*NDE pushes at the limits of medical ideas about the range of human consciousness and the mind-brain relation*' ⁵⁴. It is not possible for third party opinions to be aligned with the first person experiential perspective concerning these varied phenomenological events. How can a temporal lobe-induced OBE really differ from that induced by cardiac arrest? And if so, on what grounds? And by what other mechanism(s)? On the other hand, by engaging with these forms of brain pathology and their resultant experiences, I maintain that new and important insights can be derived and applied to ECE phenomenology, as I have attempted herein. Neither do I claim that such models are fully explanatory, but what I do claim is that in dismissing such disorders and their contributory neurophysiology, many authors have deprived themselves of a means of exploring further the underlying neural basis of ECE phenomenology. I have already shown what can be achieved with neurophysiological comparisons between ECE and various dream-states. The new insights thereby realised should, by now, be obvious.

⁵³ Foldvary N, Lee N, Thwaites G, Mascha E, Hammel J, Kim H et al, *Neurology* **49**: 757-763, 1997

⁵⁴ van Lommel Pim, van Wees Ruud, Meyers Vincent, Elfferich Ingrid, *Lancet* **358**: 2044, 2001

IV.6 TEMPORAL LOBE EPILEPTIC AURAS & BEING OUT-OF-BODY

In light of that, our attention becomes specifically directed to the types of auras of temporal lobe epilepsy which are relevant to OBE. This relationship is important in regard to the quality of the paroxysmal auras (as occurs in complex partial seizures) that precede a full epileptic fit with its attendant loss of consciousness. Pre-convulsive auras derive from the temporo-parietal lobe, and their content reflects heavily on its role creating a sense of body schema, as outlined above. Disorders of body-schema typically involve corporeal transformations or displacement, either illusions of a phantom limb absence or presence of additional supernumary phantoms, and heautoscopic experiences⁵⁵. Experientially, these auras comprise integrated visual, sensory, auditory, vestibular and somaesthetic components which variously derive from the initial spread of electrical discharges passing through the temporo-parietal (and occipital) junctional zone of the cerebral cortex. Their phenomenological identity to ECE is very hard to dismiss.

Of equal importance is the psychological impact of these auras. They are extremely real and veridical, compelling in their impact, and firmly tied to the personal life history and memories of each subject. The affective component, presumably deriving in part from deep mesial structures [hippocampus and amygdala], is also dramatically realised. The entire episode becomes a unified, subjective experience. Nevertheless, like dreams and many ECE, "time" is invariably distorted, so that there is no real evolution in the narrative event recalled, since the experience "goes nowhere" ⁵⁶. Some cases⁵⁷ describe vestibular

⁵⁵ Lunn, 1970; Devinsky et al, 1989; Epstein 1967; Halligan Peter, *Cogn Neuropsychiatr* 7: 251-268, 2002; Halligan P, Marshall J, Wade D, *J Neurol Neurosurg Psychiatr* 56: 159-166, 1993; Ionasescu, 1960;

⁵⁶ Halligan Peter, Marshall John, Ramachandran Vilayanur, *Cogn Neuropsychol* 11: 459-477, 1994; Gloor P, *Brain* 113: 1673-1694, 1990

⁵⁷ Salanova et al, 1995; Blanke O, Perrig S, Thut G, Landis Th, Seeck M, *J Neurol Neurosurg Psychiatr* 69: 553-556, 2000

components to their auras – of twisting or turning, being pulled or pushed to one side, while during intra-operative electro-cortical stimulation, patients sense they are rolling off the table or experiencing other spatial displacements of torso or limb.

The following quoted excerpts illustrate well the generalisations given above⁵⁸:

First, a young lady [with a right posterior temporal focus] who sustained concussion and mild brain injury following a road traffic accident. Following the original impact, she was unconscious for two hours and amnesic for the preceding 24 hours:

'...[I] left my body and saw it from above that it was lying in a pool of blood in the car. Then I got up, walked around the car, and began banging on the driver's window. [I saw] a man who instructed me to get back into the car. [Then] the voice of an older [unrecognised] man [said]: 'Don't go. Come back and have a child' '

An eye-witness could not corroborate any of this hallucinatory confabulation. One month later she had another aura in which the same man's voice told her that he wanted to take her away from her body. Subsequent auras involved her seeing her own body, dressed in similar clothes, but appearing motionless.

Second, a 29-year-old man with seizures since the age of twelve felt as though he was ascending to the corner of the room, from where he could look down on his body. Although clothed identically, his hair was always combed, even if he knew that was not so as the aura continued. While the body below was motionless, his "mind above" was free to move around the house and see other family members in their separate rooms. Third, a 35-year-old woman with a long history of absences and tonic-clonic convulsions, was alone in a hotel room. During a seizure she fell between two adjacent beds and became entangled with the bedclothes as her limb thrashing movements continued. Then

⁵⁸ Devinsky et al, 1989

'...[I] saw a light move from my body on the floor. It lit up the room, and rested up in the corner. Somehow I became the light source up above. [I] looked down and saw [my] body, jerking in all four extremities, tangled up in the sheets. A man's voice then said to me: 'Relax, relax, you're gonna smother if you don't': I watched the whole episode as if I were at the movies. Then [my] body on the floor woke up, the voice stopped and I felt [myself] slip back into my body'.

Finally, a 41-year-old woman developed complex partial seizures in her twenties. She experienced being out-of-body as though her consciousness was hovering in the upper corner of the room. There was also religious ecstasy that involved talking to God and of sensing that she was in His presence. Other patients with various pathologies including temporal lobe epilepsy, reported feelings of sensing another (invisible) presence⁵⁹. One example⁶⁰ is of a male computer operative with a six year history of déjà vu experiences due to a cerebral tumour [right temporal lobe astrocytoma]. After its removal, he reported sensations of either carrying an unidentified object, or of another person standing behind him. These episodes occurred several times a day, but further follow-up details were not given.

It is quite evident, in perusing these striking accounts of patients with temporal lobe pathology, that, if these narratives were subjected to analysis by a "blinded" judge, they could not be critically distinguished from those given by people undergoing an OBE whether due to causes physiological, or pathological such as cardiac arrest. Both the experiential phenomenology, and its neurophysiological basis as understood to date, indicate a complex series of illusory or hallucinatory, extra-corporeal events. They comprise autoscopy, heautoscopy, the sensing of invisible presences (a type of negative heautoscopy) and a true out-of-body event. I therefore re-iterate the point made above:

⁵⁹ Brugger & Regard 1997; Brugger P, Regard M, Landis Th, *Neuropsychiatr Neuropsychol Behav Neurol* 9: 114-122, 1996

⁶⁰ Ardilo Alfredo & Gomez Jaime, *Epilepsia* 29: 188-189, 1988

complaints by writers on the subject of ECE declaring that crisis OBE are experientially different from OB experienced in other circumstances or through other pathologies, are weak, unconvincing in the extreme, and thus carry little weight.

IV.8 THE SPECTRUM & EXPERIENTIAL PHENOMENOLOGY OF BEING OUT-OF-BODY

During autoscopy, subjects experience a vision of themselves as if in a mirror, that is, with a 180° y-plane (through-shoulder) reversal⁶¹. The observed phantom is undoubtedly the subject, is extremely vivid and three-dimensional. The experience is only visual. A 33-year-old teacher with left-sided seizures was admitted and a tumour [a rapidly growing malignant glioblastoma multiforme] was excised from the right fronto-temporal region of the brain. Two-days post-operatively, she turned one evening in bed to be confronted by her double sitting aside her. She thought a mirror had been left on the bedclothes but on reaching out, realised it was a phantom of herself. "She" was very quiet, staring steadily, without blinking. As with all autoscopic phenomena, the subject's consciousness was firmly rooted in the subject, and not in the doppelganger⁶².

Secondly, heautoscopy, in addition to the visual autoscopic illusion, combines some degree of detachment from the self as seat of full conscious-awareness. Vestibular accompaniments of floating, or of bodily lightness are usually present, while the "ghost" is less vivid or even transparent, yet still three-dimensional in quality. Moreover, the

⁶¹ Lunn, 1970; Brugger & Regard, 1996; Brugger Peter, *Cogn Psychiatr* 7: 179-194, 2002

⁶² Brugger & Regard, 1996

appearance of the double may be smaller, larger, younger or older, and sometimes of the other sex. Nevertheless, the identity is firmly that of the subject:

*'I would sit at the table and have beside me or in front of me another "me" sitting and talking to me. That's my double. I do hear him ... has the same voice as me, maybe a bit younger ... indeed, he seems to be a little bit younger than me'*⁶³.

Thirdly, a variant of heautoscopy is the sense or feeling of another presence (FOP): no visual sensations are involved. If the FOP is due to pathology, the sensed presence is ipsilesional, with associated affective affinities expressed by the subject towards the phantasm. We have seen an example of internal heautoscopy during an ECE (Chapter I, p26).

Then we come, fourthly, to the OBE proper, that of one's mind or consciousness viewing the body from another vantage point, either at ground level or more usually from an elevated perspective. This chapter has been primarily concerned with OBE, of which several typical examples have been given in the preceding text. The question remaining to be discussed is whether OB phenomenology is purely psychological (or even "psychical") in origin, or is directed by determinable and explicable neurophysiological facts and observations. Blanke and Mohr⁶⁴ have carried out an extensive review of the pertinent literature, and of 113 cases reported throughout the last century, forty one were capable of being analysed from a modern, neurophysiological perspective. Of these, 20 were autoscopic, 10 heautosopic, and 11 OBE. In brief, autoscopic phenomena appear to arise from the orbito-parietal cortex, are often unilateral due to pathological involvement of the visual tracts, and are entirely passive encounters with another "self" within allocentric space. Of far greater interest are the neurophysiological inter-relationships between heautoscopy and OB events. One major difference is that the former occurs more often

⁶³ Brugger & Regard, 1996

⁶⁴ Blanke O & Mohr C, Brain Res Rev, **50**: 2005, 184-199

from a seated or standing position, while OBE invariably arise from a recumbent posture, a position which nullifies graviceptive otolithic stimulation and which therefore more readily predisposes to a sense of non-gravitational weightless recession⁶⁵.

These authors concluded that OBE predominantly (~70%) derive from the *right* temporo-parietal junction. Furthermore, disturbing this area with extraneously-applied fields [Transcranial Magnetic Stimulation] causes body schema disorganisation in normal subjects. Clearly⁶⁶, these externally-induced effects presumably disrupt the continual updating of the body schema from its four primary sources of external primary afference. Of all the available pathologies reviewed, temporal lobe epilepsy was by far (80-90%) the predominant aetiology. Importantly, while in OBE the experient views his body as detached and inert from his vantage point, heautosopic subjects have a considerably more "dynamic" relationship with their double. Consciousness appears to be divided or split between either perspective. Other subjects perceive an existence in two places at once⁶⁷.

The origins of ego-/para-centric space arise from multiple associative neurological connections within the temporo-parietal junction, although with such an important function, other areas are involved including centres within the frontal lobes. Para-centric space is largely visual (parietal and occipital lobes), haptic and proprioceptive (parietal lobe), while ego-centric space is controlled by vestibular connections that are related to the cortical representations of otolithic (saccular and utricular) function underpinning verticality, linear acceleration and sense of body weight in relation to unitary gravitational force. The semi-circular canals subserve other forms of bodily dispositions including the

⁶⁵ Blanke & Mohr, 2005

⁶⁶ Blanke O, Mohr C, Christoph M et al, J Neurosci **25**: 550-557, 2005

⁶⁷ Blanke et al, 2004; Blanke & Mohr, 2005; Lunn, 1970

vertical, gyrations, and angular accelerations. Nevertheless, despite being at present so poorly understood, disturbances among these multi-modal connections, resulting from much lesionally-defined pathology, give rise to erroneous perceptions of being out-of-body, or of the simultaneity of being in two minds, or an illusion of bi-locality. Even with the least disturbance of afference, the brain can conjure all kinds of impossible scenarios of tilt, the wierdest anatomical configurations of limbs, a sense of being upside-down, or of a 180⁰ reversal of one's horizon in either the x (back-to-front), y (shoulder-to-shoulder), or z (head-to-feet) body planes.

It is therefore not difficult to perceive that an acute vascular disturbance followed by recovery could temporarily dismantle these highly co-ordinated and inter-dependent systems leading to momentary aberrations in body position (disembodiment), a sense of motion or spinning (vestibular mismatching), and disturbances in person-oriented agency. Our sense of conscious corporateness (ego-centric body schema) and its relation to the immediate environment (para-centric body schema) is a mentally contrived 'virtual reality', in continuity with other forms of subconscious mentation, which is extremely vulnerable to a variety of cerebral insults⁶⁸. Further ongoing research is uncovering additional defects associated with OBE and a dysfunctional TPJ cortex, which give rise to psychotic and schizotypic personalities, a propensity towards anxiety, panic and depression, and the acquisition of a dysmorphic sense of bodily proportions⁶⁹.

⁶⁸ Kahan Tracey, LaBerge Stephen, Levitan Lynne, Zimbardo Philip, *Consc Cogn* **6**: 132-147, 1997; Mahowald Mark, Woods Sharon, Schenck Carlos, *Dreaming* **8**: 89-102, 1998; Murray Craig, *Metaphys Epistem Technol* **19**: 149-173, 2000; Neisser Ulric, *Philosoph Psychol* **1**: 35-59, 1988

⁶⁹ Murray Craig & Fox Jess, *J Nerv Ment Dis* **193**: 70-72, 2005; Mohr C, Blanke O, *Curr Psychiatr Rep* **7**: 189-195, 2005

The issue, therefore, could not be clearer. A normal brain can produce a non-existent phantom part or organ, a cerebrally-engineered engram of a torso in a tetraplegic subject with a broken neck, a mirror image of one's body, the spontaneous sensing of an invisible "presence", or a situation in which consciousness appears to reside entirely outwith the corporeal body during an OBE. All these events do occur in normal people: they do not need mystical, metaphysical or psychical explanations. Moreover, the glimmerings of an explanation of the "double-mindedness" of schizophrenia should not be allowed to escape one's attention in respect of these neurophysiological disturbances, in part, within the temporo-parietal cortex.

In the light of these advances and revelations, the problems and challenges facing those who persist in attempting to argue that these aberrations are not brain-determined neurophysiological constructs, but phenomena that originate outwith the natural, conscious world of everyday function and sensibilities, are rapidly increasing. I have shown that in pathological terms, a great deal of this phenomenology is determined by temporal or parietal lobe disease, and particularly with epileptic foci, migraine, or stroke lesions. The study of these conditions has therefore offered a most fruitful exposure of the hallucinatory disturbances engendered, in particular, by neurophysiological and neuropathological disturbances in the region of the temporo-parietal junction. Epilepsy provides a focus for an abnormal discharge which imposes hypoxic influences on those regions affected and progressively recruited into the spreading and accelerating discharge. In physiological cases, the causative aetiology is related to reduced visual, vestibular and proprioceptive inputs; the influence of overbreathing; a quiet and subdued atmosphere with low or absent illumination; the role of pain and N₂O narcosis in obstetric cases; and the major impact of arterial atheroma in impairing regional cerebro-vascular blood flow.

These findings are of critical importance to OBE considered more generally under the umbrella of ECE phenomenology. Of all cases reported, by far the greatest are due to pathological causes as the text at various places throughout this thesis illustrates. I have also stressed that for OBE, as for heautosopic phenomena, vestibular contributions are critical in generating the sense of floating, loss of body heaviness (absent G perception), of upwards motion and accelerations, and of the 180⁰ reversal in viewing perspective which regularly attends these events. The vestibular cortex does not have primary or secondary associative domains (unlike vision, audition, smell or somaesthesia) but projects throughout the large multimodal associative area that lies within the temporo-parietal lobes. It might be insisted that too much attention has been given over to considerations of pathological conditions, but nor should it be forgotten that most of the ECE phenomenology of which this thesis treats also occurs more as a result of pathological, than physiological, conditions. Nevertheless, the reality of body schema has been clearly demonstrated in young, healthy control subjects not known to have any underlying cerebral pathology. In such subjects⁷⁰ the basis of body schema manifests in multimodal activity; is referential both to the self and to others; and is hierarchically disposed, in that head, shoulders and upper torso are far more predominantly perceived than legs and feet. That, in fact, is true of one's own daily experience – the upper body and face is of greater importance and impact in terms of personal self-awareness, of the image one prefers to present to the outside world and of the impression gained from viewing and assessing the demeanour, compositeness and "personality" of others, especially when encountered for the first time. This is related to the cortical anatomic somatotopic representations of the body in the primary somaesthetic area. It also explains why, with autoscopic viewings of the body, the predominant imagery is invariably (>70%) of the face, head and chest.

⁷⁰ Reed & Farah, 1995

From all this, I assert that an OBE does not have to be ascribed to purely psychological or postulated "psychic" causes. There is a vast quantity of neurophysiological data indicating that the brain can replicate all of the experiential facets of OB (and ND) phenomenology. Furthermore, additional clarifications and greater understandings will accrue. I have not advanced the view that such pathologies underlie the origins of ECE. However, I continue to stress the point that the failure to have entertained such pathologies has weakened the case for a more enlightened neurophysiological understanding of ECE. I hope this contribution has helped to make that clear, and to have shown, precisely, where those many and newer insights can exert their influences and impact on this field of study.

Nevertheless, there are authors at present who are either somewhat reluctant to engage with, or be convinced by, neurophysiological explanations⁷¹. My own view here is that it is becoming very difficult to continue insisting that "crisis OBE" are experientially different from OB events brought about by varied neurophysiological or neuropathological processes (such as temporal lobe epilepsy, migraine, vascular disorders, or electrical brain stimulations). Indeed, I would require that in view of what has been asserted in this thesis, the onus of proof lies with those workers to explain precisely why they think such experiential differences exist, to bring forward arguments that permit valid differentiation of the one form of experience from the other, and to enunciate precisely where the neurophysiology diverges from other proposed causative "psychic" or other-worldly-domain mechanisms for these events.

Neurophysiological explanations, in my view, more than adequately account for OBE phenomenology, as portrayed in the anthologies referred to elsewhere. Not to have

⁷¹ Ring 1980, 216; van Lommel et al 2001, 2004; Greyson 2003, 274

engaged with the neurophysiology of those many pathological insults is to have left the resultant field poorer as a result. OBEs are overwhelmingly brain-associated events: mystical, metaphysical or other mystery explanations become increasingly redundant as postulated causal aetiologies, while the persisting requirement for such explanation grows ever smaller, as the progress of scientific knowledge expands these areas of brain functioning.

In Chapters III and IV, I have engaged with the neurophysiological aspects of dream-mode mentations, and with the neuropathological relationships of body schema to NDE and OBE phenomenology. Those excursions have brought several new insights to the field, and in doing so, have greatly illuminated the ways in which ECE events can be more intelligently understood. In the succeeding chapter (Chapter V), I shall deal with further neurophysiological approaches to those other details of ECE phenomenology which, in my view, have not been well discussed in the books and literature considered specifically in this thesis. The points evaluated bring further substantial evidential contributions to my argument that ECE arise in brains in the process of awakening from a wide variety of antecedent insults – physiological and pathological.

CHAPTER V

FURTHER NEUROPHYSIOLOGICAL OBSERVATIONS

In proceeding with this chapter, my aim is to travel beyond the position which I have developed so far and review, briefly, below. My further aims seek to dissect how authors have interpreted subjects' ECE, and how they have dealt with possible underlying biomedical mechanisms of causation. I then devote space in evaluating the significance of (conscious) cognition and other cognate matters for ECE, matters which have been poorly dealt with in the literature. Then I proceed to explore to a considerable extent, how temporal lobe pathology informs our understandings of ECE phenomenology. Indeed, latent temporal lobe disease may be related to the propensity to undergo this type of experience. The conclusion reached is that the temporal lobe may ultimately come to play a far more significant role in leading to, and effecting, ECE phenomenology than has been suspected hitherto.

To consolidate, in Chapters III and IV, I employed neurophysiological data to lay foundation to my argument that ECE are psychologically-perceived events arising out of brain-based perturbations as conscious-awareness is being regained. I showed how the features of near-death experiences are comparable to dream-states on the grounds that both are types of subconscious activity, and that the content of certain dream-state modes (especially REM sleep, hypnagogic sleep-onset and hypnopompic sleep-offset modes) reproduces much of the phenomenology ascribed to NDE. Through reference to the semantic content of NDE mentation, a pronounced anthropomorphically- and geomorphically-based outlook was revealed, consistent with socio-cultural influences on

cognitive functioning during these events. I also used data from attempted suicides from the Golden Gate bridge, induced [Valsalva] faints, and laboratory-controlled centrifugations of military aircrew as means of inducing cerebral ischaemia and unconsciousness. Those data not only strengthen my argument that NDE phenomenology is brief and transient (minutes or seconds), but reveal that in those varied circumstances, the accompanying subconscious mentation is also highly reminiscent of ECE. From this varied background, it is clear that over very short periods, normal brains can manufacture hugely evocative, transcendental "visions" which are totally amenable to later recall.

It is, however, my position that ECE are manifestations of subconscious mentation arising epiphenomenologically during the processes of recovering full conscious-awareness by markedly disturbed brains. From all that, I am led to the conclusion that the otherworld journeys of NDE just seem to happen, are apparently goal-less and lacking in any purposeful or endeavour. They terminate abruptly at their apparently most important and interesting phase, when (some) subjects are seemingly within the bounds of "heaven". For the majority of cases which arise from medical, surgical, accident trauma, and obstretrical crises¹, NDE represent the progressive, if somewhat disordered, return of functional activity to the brainstem and cerebral cortex. For other non-crisis cases, the phenomenon is likely to result from altered breathing patterns, the possible influence of drug manipulations (as in the management of depression), a recent bereavement, or reductions in sensory and proprioceptive inputs giving rise to altered (vestibular) interpretations of

¹ Stevenson, Ian & Greyson, Bruce, *J Am Med Assoc* **242**: 265-267, 1979; Greyson B & Stevenson I, *Am J Psychiatr* **137**: 1193-1196, 1980; Fenwick & Fenwick, 1998, 212

body image and erroneous perceptions about para-centric space. Some of the experiences reported may, indeed, be hypnagogic sleep episodes, or day dreams, and not true ECE².

Another noteworthy feature of ECE narratives is the manner in which a firm ego-/para-centric sense of body image, or body space, pervades them. Consideration of the phantom limb phenomenon likewise points to cerebral mechanisms from which originate the spurious sense of anatomical presence without any corresponding corporeal reality (amputated limbs, fingers, breast or eye). That, in other words, is the neurophysiology of absence. The brain has no difficulty in conjuring a sense of body image (a phantom, or a paraplegic torso) in the total absence of incoming signals from the relevant parts. From that, it is not too difficult to imagine that the brain can conjure up an illusion of the entire body, as is manifested in autoscopy, heautoscopy, imagined presences, and, of course, the OBE proper. One concludes that there is nothing "mystical" in being partly, or wholly, outwith one's corporeal body – an event which can be produced either by various pathologies (cerebral ischaemia or hypoxia consequent upon cardio-pulmonary collapse; temporal lobe epilepsy; migraine; vascular occlusions, hyperventilation, or tumour) or by sensory deprivation as during a quiet evening sojourn when the light is dim, or on falling asleep, in which circumstances visual and proprioceptive inputs are severely diminished. On that basis, I consider it fully justified to consider OBE purely to be neurophysiological, rather than psychical or some other form of mysterious event.

Because much of the neurophysiology of ECE is likely to be played out within the multimodal associative temporo-parietal cortex, I have suggested that stroke victims would have a severely reduced capacity to undergo ECE. I am unaware that such studies

² Parkes C, Br J Med Psychol **38**: 1-25, 1965; Rees WD, Br Med J **4**: 37-41, 1971; Matchett W, Psychiatry **35**: 185-194, 1972; Fenwick & Fenwick 1998, 202ff; 223-236; Blanke et al 2002, 2004

are currently being undertaken elsewhere. If this proposal arising out of my thesis is correct, the results of a prospective, comparative trial between age/sex-matched (non-stroke) "controls" and stroke patients should reveal marked differences in the prevalence of NDE during subsequent life-threatening circumstances. Moreover, the data would have realised a significant third-party observation that NDE are essentially brain-dependent, and not to be perceived as brain-independent journeys of minds, souls, or even free consciousness into the metaphysical realms of an afterlife. I also suggest that ECE are manipulable through pharmacological means. From this perspective the case report of a man whose ECE, following the administration of the anti-opiate agent naloxone, is alleged to have changed its character from one of an ecstatic high to one of great discomfort and unpleasantness³, assumes a completely different significance. While this single case-report is only suggestive, the potential for pharmacological manipulations of ECE, especially with subjects who are able, spontaneously, to bring on such experiences at will⁴ now becomes evident.

Sabom describes a young woman having an OBE during an eclamptic fit. After an injection – *'presumed to be phenobarbitone'*⁵ her visual and auditory clarity associated with the OBE decreased, such that everything became darkened as she faded away. That is, she was no longer able to remain "outside of herself" while her brain (pharmacologically) was "put to sleep": that is, the more it became non-conscious. Of course, if she had really been out-of-body, the injection should have been irrelevant. According to Ring⁶ there is a decreased incidence of ECE in suicide cases due to drugs

³ Judson, I & Wiltshaw, E Lancet ii, 561-562, 1983

⁴ Sabom 1982, 116ff; Tart, 1967, 1968

⁵ Sabom 1982, 170-171

⁶ Ring 1980, 211ff;

compared with the survivors of non-drug forms of attempted self-destruction. However, that was not the finding of Osis & Haroldsson⁷ who reported scant influence of therapeutic manoeuvres on visions at around the time of death. A depressed mood can give rise to an ECE without any predisposing 'crisis'⁸ which, as a result of changes in cerebral chemistry results in reductions in afference, affect, and motor activity thus providing the antecedent criteria for the experience. This is not unlike the process of bereavement⁹ or the effects of prolonged isolation¹⁰.

In this context, it is useful to be reminded of the frightening imagery such as illusory animals, spiders or of crawling insects, and the appearance of known (deceased relatives) and unknown persons within the bedroom, that accompany some hypnagogic and hypnopompic hallucinations evoked by anti-cholinergic agents (imipramine and chlomidamine) in depressed patients¹¹. But Ring¹² observes: '*...pharmacological factors cannot serve to explain the core experience. Indeed, the evidence suggests that drug usage tends to be negatively associated with the experience*'. True, maybe; but isn't that to miss the point? I am not suggesting that ECE are necessarily *effected* by drugs, but only to emphasise that brain chemistry, and the corresponding ECE if brain-generated, should be markedly *affected* by key drugs which influence, directly or indirectly, that chemistry. That is the issue requiring further systematic consideration in prospective trials.

⁷ Osis K & Haraldsson E, *At The Hour Of Death*. New York: Avon Books 1977, 70-78

⁸ Fenwick & Fenwick 1998, 223ff

⁹ Matchett, 1972

¹⁰ Moody, 1976, 175

¹¹ Schlauch Robert, *Am J Psychiatr* **136**: 219-220, 1970; Hemmingsen, R & Rafaelson, O *Acta Psychiatr Scand* **62**: 364-368, 1980; Aizenberg D & Modai I, *Psychopathol* **18**: 237-240, 1985

¹² Ring 1980, 212

Given the many thousands of available narratives, I suggest that those who have published anthologies have not systematically considered or taken sufficient account of the drug backgrounds of their respondents. It would be unthinkable to imagine that this large group of individuals did not reflect society's widespread exposure to the many pharmacological preparations now available from primary care physicians and other sources and outlets. As far as I am aware, no incisive evidence has ever been adduced to show that some highly personalised ECE accounts could not have been influenced, in part, by pharmacological exposure. Unfortunately, the emphasis within the ECE literature has been firmly oriented towards drugs capable of reproducing ECE phenomenology, rather than towards preparations capable of modulating, or even mimicking, the spectrum of experiences generated by particular neurophysiological systems. From all this, it evidently follows that carefully designed prospective trials with selected drugs could provide much needed third party data supporting my contention that ECE momentarily arise out of somewhat chaotic brain activity, albeit leading ultimately to a restoration of full conscious-awareness. These trials would be ethically viable, and the data obtained could point to the possible intracerebral loci of origin, and mechanisms of ECE production.

V.1. AETIOLOGICAL MECHANISMS – AUTHORS' PERSPECTIVES

There are several ways of analysing the approaches adopted by authors in their interpretations of ECE. My concerns here are with two. First, their handling of the wider neurophysiological implications of ECE, including psychical phenomena and whether mind can exist outwith the brain or body. Second, how these authors shaped their understandings of ECE in the light of the narrative testimonies they received and published. Those understandings involve the relevance, in their eyes, of such testimonies

pointing to the possibility of an afterlife, and their perceptions of the changed behavioural patterns in the subsequent lives of their subjects directly resulting from the experiences undergone and recalled. Two major arguments in favour of psychical explanations (as against neurological constructs) have been based, first, on subjects' supposed acquisition of precognitive information about contemporaneous or future eventualities. Second, of subjects' propensity during OBE to observe their bodies and resuscitations, this being exemplary of the supposed existence of mind (or soul or free conscious-awareness) beyond its neural substrate¹³.

The question of precognition, as a psychical outcome of ECE, is a favoured ploy in counteracting reductionist or psycho-physical explanations. Yet that ploy founders on two counts: first, because of the very small number of cases used in evidence (in comparison with the thousands of ECE testimonies published overall), and second, because of the very lack of strict, independent third party corroborations of the special information alleged to have been acquired. I emphasise that I am only concerned with the claims of the authors who constitute my investigation. Grey¹⁴, for example, offers three cases of post-experience clairvoyance for which no solid evidence is at all given: the simultaneity of two telephone calls could hardly be considered to be convincing evidence. And it hardly seems a likely explanation that a loss of time/space is a pre-condition of future prophecy. As Grey herself states (idem, p178) in avoiding the obvious consequence: *'...there is no obligation to accept these apocalyptic pronouncements as being of any significance for future world conditions'*. Following Ring, she quotes: *'...interpretations of prophetic visions need to be made with utmost caution because of their capacity if taken seriously to generate a ...range ... of... reactions based on fear, hysteria or simply passivity...'*

¹³ Moody 1977, 108ff; Ring 1980, 213-4; Grey 1985, 115-133

¹⁴ Grey, 1985, 115-6

But unfortunately, Ring's basis upon which Grey so heavily relies is, itself, most uncertain. For example, his Case 25 suffered an hypotensive episode during childbirth, simultaneously foreseeing a child who would have a heart problem and be gifted. At first, Ring¹⁵ *'did not have time to investigate this [him]self'*, so the event remained uncorroborated. Yet later (idem, p75) we are invited *'to recall Case 25 which presents more striking data consistent with the assumption that ND experiences can sometimes disclose pre-cognitive information'* (my emphases here and below). Finally, (idem, p126), the same case hardens into *'a woman who, on nearly dying, received pre-cognition information about her newly delivered baby and felt she had to come back'*. Other unconfirmed cases involved foresight of a future husband and children five years hence (idem, p75), which *'only suggests pre-cognition knowledge [but] no convincing evidence of it'*; of a young man possibly having a daughter with the girl to whom he had just become engaged (idem, p77), and of a man who, during his NDE, sensed his wife telling him of his brother's death (idem, p207-8).

Much of this circumstantial, and poorly documented, material is akin to the celebrated case of Maria who reported seeing, on a third-floor window sill at the other end of the hospital, a shoe having a worn patch over the little toe and a lace stuck under the heel. The Fenwicks¹⁶ are right in dismissing this testimony *'as hearsay rather than hard fact'*. These same authors cite other supposed cases of prophetic foresight (idem, p143-149), but without convincing corroborative back-up. Clearly, the material offered by all authors is poorly researched and documented. Many cases could be due simply to chance or circumstance. What is needed is a stringent, prospective study between age/sex matched

¹⁵ Ring, 1980, 35-6

¹⁶ Fenwick & Fenwick 1998, 257

controls and ECE subjects, in order to determine the true basis of these alleged powers, thus to reveal if ECE of themselves are able to confer, or uncover, a latent predisposition for precognition or even prophecy, or not. One might also ponder the probity of accepting whether anyone is capable of predicting a future event, or train of happenings, when either human or naturally-occurring events in the physical world result from chance and choice, as against any form of strict causal determinism.

Because we are being given solicited, retrospective reports they suffer, as with all other previous writers' offerings, from a lack of critically acceptable and corroborative third-party evidence. That is particularly crucial to certain "key" case reports in regard to knowledge gained in the absence of a presumed lack of sensory afference. It is beyond credibility that Mary¹⁷ physically "*saw*" the nurse while simultaneously being unable to "*feel*" the physical effects of her ministrations. Regarding the precognition of her head bandages (following neurosurgery), could she not have seen other similar patients in the ward during the pre-operative period? Furthermore, from their weight, extent and "*feel*" (presumably she could move her arms during that three day post-operative period, given that the operation was on her head), she could have deduced much information about how her dressings would have appeared. That is, the information gained by her is by no means watertight evidence for extra-sensory perception, as offered by the Fenwicks. Is this, we may ask, the type of information necessary to critically convince a sceptical public that precognition really occurs? For Jean (*idem*, p32-33) it is unclear whether she was anaesthetised in preparation for a re-exploration of her abdominal incision, or whether the pack was simply re-introduced intra-vaginally. Scull (*idem*, p33-5) would have seen his wife's red suit and formed memories of it on many past occasions before his admission to

¹⁷ Fenwick & Fenwick 1998, 30-31

hospital. Despite having sojourned in a side ward with high windows for 48 hours, he still had to be taken to it in the first place. He would therefore have vicariously noted (and memorised) during the period of his admission some details about the ward, its layout and reception area, and, moreover, stored memories of it because of the gravity and urgency, as well as the novelty, of the occasion. It is not too difficult then to envisage a quasi-hynopompic dream-like reconstruction of events that just happened to co-incide with real events. How little all these authors understand about the intricacies of brain physiology.

In view of the absence of the much required third-party independent corroboration, we are never told (nor given tabulated data) by any author how many OBE *never* co-incide with reality. Non-co-incidental events are, of course, far less newsworthy anecdotes. Conversely, striking co-incidences invariably acquire a significance that far outweighs their actual importance but which are more likely to be eclectically published, despite the triviality of events offered as evidence of precognition (by Ring and Grey: this chapter, p191ff). Similar sentiments apply to the congenitally blind woman reported by the Fenwicks¹⁸. The blind learn to use and share the visually-laden vocabulary of normally-sighted people. This hearsay report, as it stood in their reporting, reveals no further insights about the issue of non-sensory acquisition of external data. Such reportings require incisive questioning in order to establish precisely what blind people are saying, and their meanings intended by the words employed in ordinary conversation. That stringent criterion has never seemingly been met in the ECE literature. The same criticism applies with some considerable force to the paper of Ring & Collins (Chapter II, p45) which failed completely, in my view, to establish that the blind "see" during an ECE. To my mind, it difficult trying to understand how "free consciousness" could acquire an out-

¹⁸ Fenwick & Fenwick, 1998, 86

of-the-body, visual function with which it had never been previously acquainted during its 'this-worldly' life, thence to lose it promptly on assuming re-occupancy of the flesh.

It is also necessary to be aware of the intrusive, and ever present, difficulties which frustrated Charles Tart¹⁹ in his attempts to provide accurate documentation of telepathic and other extra-sensory perceptions under stringent laboratory conditions. Despite his use of selected subjects able to render themselves out-of-body, their performances under laboratory test conditions for the tasks set up by him were by no means impressive. There has been a long-continued absence of persuasive, systematic evidence for the alleged occurrence of 'psychical' phenomena. We might also be concerned that for over one hundred years, there have been no major developments or insights deriving from this field of endeavour, despite our increasing technological resources. We need more data, derivative of a far larger corpus of exemplary cases studied under even stricter, updated laboratory disciplines than attempted by Tart. Until those data are forthcoming, my inclination is to ignore the handful of cases offered in the ECE literature as of little real significance. The responsibility for providing that strict evidential base lies with those who continue to promote psychical competence as a true, demonstrably reliable, and acceptable outcome of ECE in particular, or of "mind" in general.

As a corollary to the psychical outcomes of ECE, Sabom (1980) records no examples among his sample of 116 subjects. Yet in his later book (1998) he states that visions (idem, p157) and precognition (idem, p162) were common in comparison with non-ECE cardiac controls. However, there was no difference in frequency of these phenomena pre- and post- experience (idem, p163). The possibility of a predisposing cerebral origin for

¹⁹ Tart, 1998

these alleged powers thus arises and requires further investigation by the appropriate, and strictly-controlled, prospective studies.

Secondly, I turn to OBE, but viewed specifically from the perspective of representing the occurrence of mind independent of physical support. I have extensively reviewed the modern conceptual neurophysiology of OBE and emphasised, on that basis, their cerebral (vestibular) origins (Chapter IV). Yet there is a continuing unease about that kind of explanation, since the phenomenology suggests that mind or consciousness can exist, and continue functioning, outwith the body. Sabom refers to six cases²⁰ who, during their OB experiences, were able to report on specific focussed details exclusive to their individual resuscitations. These cases are certainly worthy of attention. Nevertheless, my objection to the notion that they represent mind operative outwith the brain is that the trivial reports given are isolated recollections of this, or that, little detail – the insertion of a needle, the shape of the defibrillator electrodes, the use of contact lubricant. None of these patients gives a fluent, sequential eye-witness account of the entire procedure: neither did Pam Reynolds (Chapter II, p48), nor did the lady knocked down by the black car (Chapter II, p27). There is also a very alarming disparity, with all these subjects, between the apparent cognitive activity displayed, and the absence of pain or (for some subjects) audition, and the complete lack of affective connection with the seriousness of the event and the threatened extinction of life. That casts considerable doubt on whether a complete, competent mind was actually active during these or other resuscitations. Whatever the conscious state of these subjects, it is clear that some data necessarily had to enter their brains, otherwise they would not have been able to recall, from later memory in their real bodies and mind, what apparently did happen. To date, the degree to which these subjects

²⁰ Sabom 1982, 83-115

were either unconscious or in a subliminal mode of existence, has not been ascertainable (See assessment of conscious level by means of bispectral analysis, Chapter III p99). That an individual in a momentary moribund state happens to give a few details about the dials and knobs on a machine, or a nurse's hair-do, is hardly an overwhelmingly convincing demonstration that "mind" has, on these occasions, existed and functioned independently of body (or brain). What we do need is some robust indication that mind was capable of exhibiting some entirely different, coherent mental accomplishment away from the body. That kind of information we still expectantly await.

The incisive issue (for anyone considering a dualistic ontology) is whether the total personality, or "I-ness", of any subject is capable of independence without the underpinning neurological support of the brain. That, signally, has not been demonstrated in any report. We are led to believe that ongoing experiments²¹ with cards or markers being placed on high light fittings in intensive care facilities, will hopefully lead to someone revealing the hidden code. Badham & Badham²² called for such an experiment over twenty five years ago. Yet, according to Fenwick (taken only from press briefings on the internet), his pupil Penny Sartori after five year's work did not find any OBE patient (of eight) able to report on her cards. We are therefore required to believe that the patients were '*not in the right place*' or were '*more interested (obviously) in observing the course of their resuscitations*'. Thus, having been given thousands of OBE reports, we still have no piece of convincing data on what can only be described as a most unpromising front. Indeed, I claim Sartori's data (if internet reports are correct) to further my view that OB subjects are not "out" of their bodies and cannot "see" their immediate physical environment.

²¹ Sabom 1982, 190; Fenwick P, 2004c

²² Badham Paul & Badham Linda, *Immortality or Extinction?* London: Macmillan 1982, 76

A much greater problem arises in attempting to read off data (from a resuscitative procedure designed to restore a life hanging precariously in the balance between extinction or survival) that rightfully belong to an entirely different sphere of investigative analysis. We can neither require of personnel involved in heroic life-saving procedures to effect additional (and clinically irrelevant) reliable and clear-headed observations, thence to be used by other groups as corroborative back-up for their claim that mind exists outside the body. Without independent, dispassionate observations on whether patients' eyes were open, how long they remained conscious in their place of resuscitation before being moved elsewhere, and thus whether glimpses of the procedure, staff members, and general disposition of the apparatus could be taken in, even while subjects were not necessarily too aware of their surroundings, we will never be certain or convinced.

But even those sentiments hardly get to the root of the problem. The issue of real existence outwith the brain and its experimental demonstration raises enormous, if not insuperable, neurophysiological and philosophical challenges. Attempts to overcome such challenges with the use of concealed marker cards are, to my mind, extremely facile. The solution to the existence of mind outwith its brain is far less simplistic. For all these reasons, I do not consider the viewing of one's body, or of resuscitatory procedures being applied to it, as an appropriate veridical "proof" that any subject's mind, soul or free consciousness has actually existed and functioned *coherently* in space. Nor do I believe that such experiences have to be construed as mystical, supernatural or even religious, in content or in context. If only somebody could have an original idea while out-of-body.....!

Having considered these two objections – that of the alleged acquisition of pre-cognitive powers and of the independent existence of mind during an OBE,– I return to the

neurophysiological approaches considered by various authors as explanatory aetiologies of ECE. My prevailing view is that those approaches have not been subjected to sufficiently acceptable in-depth critical evaluation, in terms either of their virtues or relevance. The impression gained is that neurophysiological or other cognate proposals offered as explanatory models (current at authors' times of publication), in general, have been discredited. Factors influencing a neurophysiological aetiology are either extrinsic, such as hypoxia, anoxia or elevated CO₂ levels ["hypercapnia"], or intrinsic, such as brain pathology (especially temporal lobe disease) or endorphin secretion. The extent to which each possible aetiology is discussed varies considerably from author to author, while the level of engagement with basic neurophysiologic mechanisms, overall, is in my view extraordinarily poor. At this stage, it is not my intention to review each candidate in detail, but to deal only with certain important key themes. Firstly, I deal with intrinsic mechanisms: initially, endorphin secretion and then, the relevance (or otherwise) of temporal lobe pathology.

V.2 INTRINSIC MECHANISMS

V.2.1 The Role of Endorphins

I turn, firstly, to consider the endogenous secretions of the opioid-like endorphins. The proposal put by Daniel Carr²³ is that an NDE results from limbic system activation, as might be effected through the temporal lobe, intrinsically by epilepsy, or extrinsically through electrical stimulation of its cortex²⁴. Limbic activation is predominantly manifested through β -endorphin receptors which are concentrated throughout the upper diencephalic regions of the brain and beyond [hypothalamus, hippocampus, amygdala, thalamus and reticular formation]. β -endorphin, together with many other peptides, are released during physiological stress [hypotension, hypoxia, hypoglycaemia, endotoxaemia, psychological stress, and during ether and N₂O anaesthesia], the resultant effect leading to sedation, analgesia and passivity. Carr's thesis is that endorphins induce hallucinatory states reminiscent of NDE reportings. There is some overlap here with another independent proposal²⁵ involving the temporal lobe from which an opioid-induced electrical discharge to the limbic system, hippocampus, amygdala, and neocortex, results in an NDE.

Sabom²⁶ dismisses a central role for β -endorphin, on account of its prolonged action, thus exceeding the interval during which an NDE might be expected to have taken place. This view, however, is based solely on one report²⁷ which details the clinical application intrathecally [into the cerebro-spinal fluid] of β -endorphin to terminal cancer patients. The

²³ Carr Daniel, *Lancet* **i**: 390, 1981: idem, *J Near-Death Stud* **2**: 75-89, 1982

²⁴ Penfield W & Perot P, 1963

²⁵ Saavedra-Aguilar J & Gomez-Jeria J, *J Near-Death Stud* **7**: 205-222, 1989

²⁶ Sabom 1982, 171

²⁷ Oyama T, Jin T, Yamaya R, Ling N, Guillemin R, *Lancet* **i**: 122-124, 1980

problem here is whether, after the injection, the resulting tissue levels within the brain were comparable to those realised through endogenous physiological secretion. Nevertheless, the persisting effect of endorphins beyond the stressful crisis precipitating their release, and their failure to reproduce the ecstatic bliss that is a recurrent theme of ECE reports, suggests that their aetiological role, if any, is ancillary, rather than primary. However, endorphins should not be dismissed outright. They are endogenously secreted during stress, and thus could provide one important factor in activating latent temporal lobe dysfunction, given that β -endorphin causes non-convulsive limbic epileptiform disturbances²⁸. It would be useful to sample jugular (bulb) blood during ECE in order to perform assays for endorphins and thus attempt to shed more light on this intriguing proposal. I am surprised this has not been attempted.

Another difficulty is that the pharmacologic effect of endorphins cannot explain the OBE, the "tunnel", or visions of religious people²⁹, which, it is claimed, are due to after-discharge in primary visual cortex. I reject entirely previous suggestions, as reviewed severally elsewhere³⁰, that the tunnel represents either some transition to higher consciousness; a rite of passage; a literal geocentric translocation; or a revisitation of the birth canal at one's natal origins. What then of a possible neurophysiological account?

The initial sense of darkness is representative of the first glimmerings of a return to conscious-awareness, and as such, yields only to the vaguest form of verbal capture. The experience is analogous to an incipient fainting attack or loss of consciousness, and the initial recall of a vague grey darkness as conscious-awareness begins to return. The

²⁸ Henricksen S, Bloom F, McCoy F, Ling N, Guillemin R, *Proc N Acad Sci* **75**: 5221-5225, 1978

²⁹ Saavedra-Aguilar J & Gomez-Jeria J, *J Near-Death Stud* **7**: 205-222, 1989

³⁰ Blackmore S & Troscianko T, 1989; Kellehear A, 1993; Drab K, *J Near-Death Stud* **1**: 126-152, 1981

perception of darkness is immediately followed by the tunnel sensation and perception of a distant light that rapidly enlarges. The latter suggests return of visual competence, a view corroborated by the physiological evidence from acute occlusion of the neck arteries³¹ or during G_z-enforced acute cerebral ischaemia³². Peripheral vision is first lost with the sensation of grey-out while macular central vision remains (for about another second before consciousness is completely erased) as retinal artery perfusion dwindles. The retina is more sensitive to blood flow than the cortex because of its higher perfusion pressure³³ [c20mm Hg above cerebral pressure]. There is no physiological reason for supposing that restoration of retinal blood flow would not be a reversal of the pattern experienced as consciousness wanes, that is, a central photoma heralding return of macular competence followed by a spreading of light as peripheral retinal field function returns. Maybe. Yet we do not "see" with our retinae but by means of the higher cortical visual representations in the multimodal association areas of the temporo-parietal cortex. In other words, the sequence of the enlarging light is a viewing of the retina by the cortex as *both* become re-vascularised.

I have previously reiterated, contra Blackmore³⁴, that the experience of the light cannot come from the primary visual cortex because stimulation or vascular insufficiency in that region gives rise to coloured scintillating auras ("lightning flashes" or "fireworks"), rather than the cognitively-interpreted, multi-coordinated visual, auditory, and affective perceptions that specifically characterise ECE. It is for that reason that Blackmore & Troscianko are most certainly incorrect to suggest that "scintillations" (increasing noise in

³¹ Rossen et al, 1943

³² Whinnery J & Whinnery A, Arch Neurol 47: 764-776, 1990

³³ Lambert E & Wood E, Med Clin N Am 30: 833-844, 1946; Woerlee G, Skeptical Enquirer 28: 28-33, 2004

³⁴ Blackmore S & Troscianko T, 1989

their computerised model of the retina as the intensity of the spots increases into the peripheral fields) satisfy the criteria for light at the end of the tunnel. Scintillating photomas (visual "fireworks") imply activation of primary visual cortex³⁵: yet the image is not only formed, as experientially recalled and narrated, but also accompanied by intelligible sounds and vestibular symptomatology. Therefore, these co-ordinated events have to be located far more anteriorly into the cortex than in primary visual cortex. Indeed, it is evident that these events can only take place in the heteromodal association areas in the temporo-parietal region. Admittedly, some of the earlier sounds likened to hissing or the rumble of machinery accompanying the darkness phase do suggest an emanation from the primary auditory cortex in the temporal lobe cortex.

Nevertheless, the combination of perceived darkness and motion, together with the illusion of a distant light-source increasing rapidly in size, provide the three contributory ingredients for the later recalled interpretation of illusory 'motion' along an illusory 'tunnel' at the end of which is a 'light'. The increase in size of the cortically-perceived retinal image, and the illusory (vestibular) component of forward movement, rotation, or linear acceleration provide the necessary basis for the post-experiential interpretation of having traversed an imagined tunnel from blackness thence to have emerged into an intense, enveloping light.

It is evident that the tunnel represents a retrospective, interpretative synthesis of two concurrent inputs – visual and vestibular. Clearly, such an illusory construct can have no precise geomorphic co-ordinates, and since >>70% subjects never experience this event, it cannot be regarded, from any perspective, as a specialised entrance to any kind of "higher"

³⁵ Sveinbjornsdottir S & Duncan J, *Epilepsia* **34**: 493-521, 1993

consciousness or other notional plane of elevated existence. Finally, we should note the markedly idiosyncratic and subjective variations in the manner through which the tunnel phenomenon has been recollected. There are, like ECE reports in general, as many tunnels as there are subjects willing to testify to this particular type of experiential phenomenology.

The variable spread of these experiences is dependent on the underlying cause for the loss of consciousness or hypotensive episode; the duration of the crisis and the speed of recovery in re-establishing an effective cerebral blood flow. More generally, recovery will reflect the age of the patient, mean blood pressure, and degree of atheromatous degeneration of the cerebral arterial tree, bearing in mind Drab's observation that many tunnellers will have suffered cardio-pulmonary collapse. Recovery, seen in terms of re-vascularisation, will be strongly influenced by the state of the intra-cerebral vessels, their degree of narrowing and the effectiveness of the cross-circulation through the circle of Willis, and any previous history of hypertension. Atheromatous plaques will result in maldistribution of blood leading to a patchy return of activation in all critical areas of brainstem and cortex. That could certainly account for the non-uniform perceptions of the tunnel phenomena in the few subjects experiencing them: there is no canonical description that defines the event. For the remaining non-tunnellers, the pattern of cerebral blood flow could mean a by-passing of this initial recovery phase, if re-vascularisation were more rapid, especially in younger subjects without a prolonged loss of circulatory competence, as during childbirth, eclamptic seizures or febrile incidents. Consideration of these many and varied circumstances offers a plausible account of the tunnel – in its fullest

representations, in its myriad partial descriptions as given in later recalled narratives, and, for the vast majority of ND subjects, its absence.

V.2.2 The Temporal Lobes and NDE: Relevant - Or Not?

Moody³⁶ (1978: 109) accepts that noises and panoramic memory could result from aberrant temporal lobe activity. Ring³⁷ with Grey very much in tandem, dismiss a temporal lobe aetiology by siding with Sabom's approach³⁸. Yet that argument relies on older, standard clinical observations that in temporal lobe epilepsy (compared with ECE) the perceived environment is distorted, the predominant emotion is fear, the major sensations include gustatory and olfactory components, the memories recalled may be singular, and forced thinking is common to seizure. I have no immediate quarrel with those conclusions. However, in the referential material given below in regard to complex auras, whether preceding actual seizure activity or not, the published material exemplifies the marked extent to which temporal lobe pathology is capable of reproducing the phenomenology of ECE. In view of its importance to the understanding of ECE phenomenology, this information will be revisited in a later section of this chapter.

I re-iterate my point that I do not consider frank temporal lobe epilepsy to be considered as the aetiological cause of ECE, but to draw attention to the role which the temporal lobes, the right more than left, play in the genesis of neurophysiological processes (auras) which for the mental subject, create the many qualitative phenomenological perceptions of which

³⁶ Moody 1978, 109

³⁷ Ring 1980, 213; Grey 1985, 176

³⁸ Sabom & Kreutziger 1978, 5; Sabom 1982, 173

ECE narratives are full. The Fenwicks³⁹ come closest to that realisation, although only considering the sound of wonderful music, the emotional content of ECEs, their ineffability (because speech is invariably a left hemisphere function), the feelings of unity and altered percepts of time which arise, and the overall vividness and reality of the experiences. But they rely on Penfield's data⁴⁰ (1955) which offer but a fragmented glimpse of the experienced universe of temporal lobe phenomenology and its possible relationships towards ECE.

It is therefore quite clear that the full extent of the role of the temporal lobes in terms of NDE phenomenology has yet to be defined. Therefore, in considering the multiple, yet coordinated, experiences gleaned from the many case-reports of patients with multiple expressions of temporal lobe dysfunction which will be offered below, it becomes unquestionably evident that this part of the brain could provide a fundamental contributory role in ECE phenomenology. But I have gone much further by incorporating the additional role of the parietal cortex, in its contribution to these phenomenologies (Chapter IV) particularly in regard to OBE and the resultant disordered state of body image.

V.3 EXTRINSIC FACTORS

Next, I proceed to consider some of the extrinsic factors capable of influencing brain physiology in respect of ECE. These include O₂, CO₂, and the anaesthetic agents ether, N₂O and ketamine. It is worth remembering that much ECE phenomenology occurs while subjects are in some kind of subconscious state. This applies to ~70-90% cases⁴¹ since

³⁹ Fenwick & Fenwick 1998, 219-221

⁴⁰ Penfield Wilder, *J Ment Sci* **101**; 451-465, 1955

⁴¹ Fenwick & Fenwick 1998, 205; Stevenson & Greyson 1979

many are undergoing surgery, an acute crisis with cardio-respiratory arrest, or the effects of acute hypotension consequent upon severe haemorrhage. In this hospitalised setting the use of many ancillary drugs and anaesthetic agents could confuse the picture. In general, such possible explanatory contributions are usually dismissed, because similar factors are thought to be equally operative in the majority of cases (~80%) in which, under identical clinical settings, ECE are not experienced. But great caution is required before the acceptance of such simplistic claims can be justified. Since the majority of those latter subjects is not prone to experience an ECE, the sample does not comprise a valid control population against those who are susceptible: neither, therefore, can it support the conclusions usually drawn from the comparison.

V.3.I Cerebral Hypoxia and Hypercapnia

Moody and Ring⁴² dismiss hypoxia as an aetiological factor on the grounds that not all ECE subjects suffer hypotensive episodes (severe haemorrhage; cardio-pulmonary collapse). There has also been a failure to distinguish between anoxia and hypoxia: "[A]noxia does *not* mean hypoxia"⁴³: these are not interchangeable terms. Anoxia means complete absence of a source of molecular oxygen for uptake into cellular metabolic processes. Hypoxia implies a reduction in ambient arterial oxygen levels [PaO₂], and is dependent on many factors including alterations in regional cerebral [arterial] blood flow [rCBF], vascular [arteriolar] resistance, arterial CO₂ levels [PaCO₂], supplies of inspiratory oxygen, cerebral oxygen-extraction rates and hence, on the metabolic rate of the brain, and on the presence of metabolic toxins or inhibitors. We know nothing about

⁴² Moody 1977, 109; Ring 1980, 213

⁴³ Fox Mark, *Religion, Spirituality and the Near-Death Experience*. London: Routledge 2003, 147

these factors operative *locally* within various parts of the brain during ECE. In migraine, for example, rCBF may be severely compromised for as long as 60 minutes⁴⁴ even to ischaemic levels but without evidence of intra-neuronal acidosis [reduced pH_i]⁴⁵ or resultant damage detectable at clinical level in the post-headache/aura period.

Vague statements and assumptions, then, about conditions of cerebral "hypoxia" or "anoxia" within the brains of ECE subjects, without any reliable data concerning local physiological variables pertaining at the time, are not particularly informative and offer no proof as to whether, or to what extent, these factors might be relevant to the problem. Indeed, it is patently obvious that the brains of these subjects could never have been severely anoxic, for, if they had, the experients would have suffered long-standing neurological defects. Despite that, many subjects investigated have displayed some form of circulatory disturbance compatible with variable degrees of hypoxic insult to the brain.

The effects of induced cerebral hypoxia⁴⁶ either by the inspiration of progressively O₂-depleted air samples, or as a result of acute carotid arterial occlusion, and by induced cerebral ischaemia following centrifugation, all reveal a slowing of physical and mental activity ultimately resulting in convulsions and loss of consciousness. That train of events is exemplified by a progressive '*muddling and confusion of cognitive ability*' in contrast to the sharpness of cognitive insight evident during ECE⁴⁷. Moreover, this sequence of events does not reproduce the typical evolution of ECE, as testified to by a pilot who had experienced both acute (aerial) hypoxia and an ECE⁴⁸. In line with these observations, my

⁴⁴ Olesen J, Cerebrovasc Brain Metab Rev 3: 1-28, 1991

⁴⁵ Welch K, Levine S, D'Andrea G, Helpert J, Cephalalgia 8: 273-277, 1988

⁴⁶ Henderson Y & Haggard H, Noxious Gases And The Principles Of Respiration Influencing Their Action. New York, Reinhold Publ Corp 1943; Rossen et al, 1943; Forster & Whinnery, 1988

⁴⁷ Sabom 1982, 176

⁴⁸ Fenwick & Fenwick 1998, 213

proposal gains considerable validity in stating that ECE occur as conscious-awareness is being regained, that is, as the brain is being revascularised and re-oxygenated, as is the conclusion to be drawn from the centrifuged aircrew studied by Forster & Whinner.⁴⁹ Therefore, hypoxia although relevant, cannot be a lone aetiological factor. Sabom records a patient who, after a massive heart attack exhibited high O₂ and low CO₂ levels in his blood⁵⁰: the difficulty here is that peripheral arterial gas measurements may not be at all reflective of intra-cerebral levels.

An altered state of consciousness may be brought about by carbon dioxide (CO₂) intoxication. Some degree of hypercarbia and an elevation of CO₂ in the cerebral blood may follow a cardiac arrest. The experience of inhaling a 30:70 (v:v) of CO₂:O₂ mixture was examined by L J Meduna⁵¹ whose subjects comprised 150 psychiatric patients and 50 controls. After some minutes continuous inhalation, the occurrence of severe neurological compromise was indicated by the appearance of certain physical signs [upwards conjugate deviation of the eyes, opisthotonus, tonic extension of the extremities, and hyporeflexia]. Other bizarre features, such as having illogical compulsions, apprehending frightening figures and shapes, and the perception of complex geometric shapes are notably unlike the phenomenology of ECE. Meduna rightly concluded that such phenomena were not idiosyncratically related to each of his subjects but to the generalised effect of CO₂ on the brain.

⁴⁹ Forster & Whinnery, 1988

⁵⁰ Sabom 1982, 178

⁵¹ Meduna LJ, CO₂ Therapy: A Neurophysiological Treatment of Nervous Disorders. Springfield, Thomas 1950

V.3.2 Inhalational Anaesthetic Gases

While an acute lack of inspired O_2 , or the inhalation of CO_2 , do not induce altered states of consciousness reminiscent of ECE, that is not the case with the inhalational anaesthetic gases ether and nitrous oxide [N_2O or "laughing gas"]. During the 19th Century when these gases were first prepared, there was a widespread vogue for inhaling them in order to discover their properties. A particular account is attributed to Oscar Wilde on visiting the dentist in Broad Street, Oxford, May-June 1895 and receiving ether anaesthesia⁵². He observed a reduction of conscious-awareness during which he knew everything and experienced a rush of thoughts which solved all his pre-existing problems: '*...I seemed to see myself as in a dream, a space of light about 4 or 5 inches in diameter. Surrounding this space a non-existence, a thick, heavy material darkness which steadily encroached upon the limits of the light ... this luminous space seemed to be in the form of a funnel, and gradually to decrease in size until it became a point of light ...*'. Ernest Dunbar reviews his experiences with ether, which are different from Snow's rather more prosaic account⁵³. Dunbar's thoughts (idem, p73) '*... raced like a mill-wheel ... every trifling phenomenon seemed to fall into its place as a logical event in the universe. I began to realise that I was the One*'. Having asked surgical patients of their experiences during ether anaesthesia (idem, p75), 80% recalled rushing into a dark tunnel, singing in their ears, and a flashing of lights in their eyes. Their sense of time was also disturbed, as with N_2O . His call for all these reactions to be recorded appears to have gone unheeded: that is a pity, because much of the phenomenology recorded reflects that undergone by subjects

⁵² 'I.B'. Psychol Rev 6: 104-106, 1899; and see Smith PB, Chemical Glimpses Of Paradise. Springfield: Thomas 1972, 38ff

⁵³ Dunbar Ernest, Proc Soc Psychic Res 19: 62-77, 1905; Snow J, On Inhalation Of Ether In Surgical Operations. London: Churchill 1847

experiencing an ECE. Modern anaesthetic techniques have now rendered the possibility of retracing those early experiences redundant.

Humphry Davy (1799) was the first to record the effects of N₂O inhalation, during which there was a very heightened sense of audition, a loss of connection with external realities, and a rapidity of thought processes, (as with ether and during ECE). '*...I existed in a world of newly connected and newly modified ideas...*'⁵⁴. A fusion of antitheses was experienced by William James⁵⁵. He concludes:

'... the keynote of the experience is the tremendously exciting sense of an intense metaphysical illumination. The mind sees all the logical relations of being with an apparent subtlety and instantaneity to which its normal consciousness offers no parallel....It is impossible to convey an idea of the torrential character of the identification of opposites as it streams through the mind in this experience...'

N₂O parties were often held during those earlier times, much as drug parties are held today⁵⁶. Here are some excerpts from a recent orgy at which modern gas cylinders were used as a source of N₂O.

*'often, during the N₂O exhilaration, one experiences sensations of floating, whirling or flying, The setting of these sensations is frequently an infinite vacuum or void, astral blue or neutral grey. More often than a floating sensation, I have experienced a rushing feeling – I am being propelled upright, through unidentifiable time and space at an extremely high rate of speed – only to arrive back at my nitrous oxide party'*⁵⁷.

Another experient writes:

*'... as more gas is inspired a loss of ego and subsequent sense of unity – the cosmos is one and interrelated - as experienced in a mystical state of consciousness, is achieved. There is a certain point of the mind from which life and death, the real and the imaginary, the past and the future, the communicable and the incommunicable, the high and the low, cease being perceived as contradictions'*⁵⁸.

⁵⁴ Davy, Humphry Researches Chemical and Philosophical, chiefly concerning Nitrous Oxide and Its Respiration, 1799-1800, London;

⁵⁵ James William, Mind 7: 186-208, 1882

⁵⁶ Sheldin Michael, Wallechinsky David, Saunia Salyer, Laughing Gas (Nitrous Oxide). California: And/Or Press, 1973

⁵⁷ Lopez William, The Effects Of Nitrous Oxide. In: Sheldin et al 1973, 20-23

⁵⁸ Kaplan Dora, Nitrous Oxide And The Surreal Condition. In: Sheldin et al 1973, 36-38

Moody records the experience of a patient at the dentist: '*as [N₂O] began to take effect, she felt herself going round in a spiral – as if the chair was moving and spiralling upwards – up and up and up*'⁵⁹. Another example describes a woman in her third labour who is quite obviously intoxicated by her N₂O inhalations⁶⁰. In her hallucination, she sees herself floating down the corridor above her trolley and then undergoing a Caesarian section with the birth of a new daughter. She thought she had then transferred into her own body, thence to sleep. Only was she aroused then by the living, corporeal midwives attending her who were now exhorting her to push, after which efforts the real, non-hallucinatory baby arrived. These accounts of the phenomenological experiences associated with the inhalation of N₂O are important for two reasons. First, because in no account has any author considered the inhalation of this agent as a precipitant of ECE, for example, during childbirth in a susceptible subject (as opposed to other antecedent causes such as pain, haemorrhage or a full eclamptic fit). Second, because N₂O has been shown, more recently, to fulfil criteria for a "dissociative" anaesthetic agent⁶¹.

Anaesthetic agents can be broadly divided into those acting through the inhibitory neural transmitter GABA [γ -NH₂-n-butyric acid] such as barbiturates, halothane and valium-like compounds. The others block the glutamate neuro-excitatory receptor NMDA [n-CH₃-D aspartate] such as N₂O and ketamine. These latter agents can also block NMDA receptors on GABA-ergic neurones, thus abolishing their glutamatergic and cholinergic inhibition resulting in neurotoxicity and neuronal cell damage. The importance of these recent neurophysiological discoveries concerns the NMDA-receptor antagonist, ketamine.

⁵⁹ Moody 1976, 158

⁶⁰ Fenwick & Fenwick 1998, 198-9

⁶¹ Jevtovic-Todorovic V, Todorovic S, Mennerick S, Powell S, Dikranian K, Benshoff N et al, *Nature Med* **4**: 460-463, 1998; Pang Elizabeth & Fowler Barry, *Psychophysiol* **36**: 552-558, 1999

Ketamine probably acts through selective inhibition of thalamo-cortical neural networks, and stimulation of limbic systems⁶².

V.3.3 Is Ketamine the Ideal Paradigm of ECE Phenomenology?

After sub-anaesthetic doses, ketamine induces awakening ("emergence") phenomena, akin to ECE, such as lively dream activity, sensory distortions and hallucinatory phenomena. They can be categorised as a sensation of bodily lightness and of floating, an aberrant sense of body composition (like foam rubber or plastic) or shape (micro/macro-somia), vividly coloured imagery (a conviction of seeing coloured shapes, or movement through differently coloured rooms), a feeling of utter timelessness (eternity), the acquisition of all knowledge or insight into perplexing problems, emotional "highs" and fusion with other people or objects in the environment; and OBE. Similar experiences are reported for patients receiving full ketamine anaesthesia for formal surgical procedures⁶³. These phenomena have engendered the proposition that ketamine is a model "dissociative" paradigm for ECE⁶⁴. This proposal depends heavily on the notion that an endogenous blocker of the NMDA receptor, akin to ketamine's actions, is released by the brain during events conducive to brain injury, and ECE [epilepsy, hypoxia, hypotension, acute hypoglycaemia]. At present, there seems to be little hard support for this radical, but interesting, concept.

⁶² Hansen G, Jensen S, Chandresh L, Hilden T, J Psychoact Drugs **20**: 419-425, 1988

⁶³ Collier B, Anaesthesia 27: 120-134, 1972

⁶⁴ Rogo, D Scott J, Near-Death Stud **4**: 87-96, 1984; Jansen K, Medical Hypotheses **31**: 25-29, 1990; Jansen K, 2000; Jansen K, Br Med J **298**: 1708, 1989

In 1984, a breakdown product of L-arginine called agmatine was shown, like ketamine, to block the PCP subunit of NMDA. Another agent, "β-endopsychosin"⁶⁵ was shown to attach to another subunit [σ] of NMDA, but this may not have any influence on subconscious brain activity. But the paper which Jansen (1990) gives in further support of these ketamine-like NMDA blocking agents is, however, highly critical of those previous findings. It cautions: '*rigorous studies are needed to determine if "endogenous ligands" (in this context meaning receptor blocking agents) have a real physiological significance, or whether they are merely extraction artefacts*'⁶⁶. A recent review of agmatine fails to mention such a pioneering role for this polyamine⁶⁷. Whether agmatine or any other putative endogenous NMDA blocking agents are released during ECE, what their specificity for its multiple receptor subunits⁶⁸ could be, and hence what effects might ensue from such particular forms of blockade, remain to be determined. The widespread distribution of the various combinations of NMDA receptor subunits throughout the central nervous system confers a diversity of pharmacological sensitivities to a variety of agonists and antagonists. That remains a fundamental, and as yet relatively unexplored, problem for any further understanding of a possible role for generating ECE by this type of mechanism.

At sub-anaesthetic dose levels, ketamine interferes with dopaminergic pathways in the pre-frontal cortex. This effect, through activation of other forms of glutamergic receptors

⁶⁵ Contreras P, DiMaggio D, O'Donohue T, Synapse **1**: 57-61, 1987

⁶⁶ Sonders M, Keana J, Weber E, Trends Neurosci **11**: 37-8, 1988

⁶⁷ Berkels Reinhard, Taubert Dirk, Grundemann Dirk, Schomig Edgar, Cardiovasc Drug Rev **22**: 7-16, 2004

⁶⁸ Moghaddam Bitá, Adams Barbara, Verma Anita, Daly Darron, J Neurosci **17**: 2921-2927, 1997; Haberny Kathleen, Paule Merle, Scallet A, Sistare F, Lester David, Hanig J et al, Toxicol Sci **68**: 9-17, 2002

[kainite: AMPA] leading to increased tissue levels of dopamine⁶⁹, is particularly marked with the S-type enantiomer of ketamine⁷⁰. The effect resembles the metabolic hyperfrontality seen in acutely psychotic schizophrenic subjects, including ego-disintegration and hallucinations⁷¹. Other studies point to widespread impairments in frontal lobe activity, [including the fronto-medial cortex, anterior cingulate gyrus; left inferior, middle and medial frontal gyri and right middle frontal gyrus: also the thalamus, parietal, sensorimotor and temporal cortex]⁷². These lead to poor memory and attention, thought disorders, depersonalisation, lack of time perception, and severe emotive withdrawal⁷³. These are parts of the brain which have figured greatly in our preceding discussions and analysis, yet the cognitive and psychological perturbations recorded with ketamine embrace a much wider constellation of defects not generally recognisable as those associated with ECE.

Despite these several pertinent drawbacks, it is noteworthy that the ketamine-associated dissociative episodes are emergent phenomena, occurring as subjects recede from its pharmacological influence to regain conscious-awareness⁷⁴. That is analogous to my claim that ECE likewise are emergent phenomena, but in the latter case as the brain is receding from a subconscious state. But there are troublesome differences between ECE and ketamine-induced psychological outcomes. First, recurrent hallucinations occur from one

⁶⁹ Moghaddam et al, 1997

⁷⁰ Vollenweider F, Leenders K, Oye I, Hell D, Angst J, Eur Neuropsychopharmacol 7: 25-38, 1997a

⁷¹ Vollenweider F, Leenders K, Scharfetter A, Maguire P, Missimer J, Eur Neuropsychopharmacol 7: 9-24, 1997b

⁷² Vollenweider et al, 1997a

⁷³ Krystal J, Karper L, Seibyl J, Freeman G, Delaney R, Bremner J et al, Arch Gen Psychiatr 51: 199-214, 1994; Malhotra A, Pinals D, Weingartner H, Sirocco K, Missar D, Pickar D et al, Neuropsychopharmacol 14: 301-307, 1996; Adler C, Goldberg T, Malhotra A, Pickar D, Breier A, Biol Psychiatr 43: 811-816, 1998; Breier A, Malhotra A, Pinals D, Weisenfeld N, Pickar D, Am J Psychiatr 154: 805-811, 1997

⁷⁴ Hansen et al, 1988; Perel A & Davidson J, Anaesthesia 31: 1081-1083, 1976; Collier 1972

week and up to one year post-ketamine anaesthesia⁷⁵ thus more resembling the flashbacks associated with LSD usage⁷⁶ rather than ECE. Second, 8% of anaesthetised subjects⁷⁷ were perturbed by unpleasant visions, a figure greatly in excess of the fewer unpleasant events recorded by ECE subjects. Third, one patient (*idem*, 1972) underwent a transcendental ascent into heaven during which God was seen, and after which he thought he had been re-incarnated in Italy. This illusion persisted for over two hours in the awake post-operative period, throughout which the subject was convinced he was speaking Italian. That does not occur with ECE, since the transcendental voyage ends abruptly at the point when conscious-awareness is regained.

The effects of ketamine and its cogener phencyclidine ("angel dust"), [both of which non-competitively block the PCP subunit of the NMDA receptor], have been known for over forty years⁷⁸. Yet the apparent importance of these substances for a greater understanding of the mechanisms of ECE has had little impact in the literature. Of all the predominant ECE authors dealt with here, only Moody⁷⁹ gives ketamine a mention as an agent capable of reproducing some of the phenomenology of these events. But he ultimately dismisses anaesthesia, and drugs in general, like Ring, Sabom and Grey⁸⁰, since many of their respondents interviewed had putatively never received medications of any kind. That may, in part, be correct but it is also important to stress that the administration of CO₂, N₂O, ketamine, or even ether, perturbs the brain in a manner analogous to ECE. Therefore, their mechanisms of action require investigating, not ignored or only superficially perused, so

⁷⁵ Perel & Davidson, *Anaesthesia* **31**: 1081-1083, 1976; Johnson B, *Br Med J* **iv**: 428-429, 1971

⁷⁶ Horowitz M, *Am J Psychiatr* **126**: 565-569, 1969

⁷⁷ Collier, 1972

⁷⁸ White P, Way W, Trevor A, *Anesthesiology* **56**: 119-136, 1982

⁷⁹ Moody 1976, 157

⁸⁰ Ring 1980, 210; Sabom 1982, 168; Grey 1985, 174

that further insights may be brought to ECE phenomenology. I have already pointed out that, in my view, a failure of these authors to have seriously engaged with the neurophysiology of the various sleep modes, the phantom limb phenomenon, and body schema, likewise, missed important opportunities for gaining a fuller appreciation of ECE at neuronal and molecular levels.

Nevertheless the observations, however complex and presently unresolved, are of great importance for neurophysiology and for a possibly greater understanding of the molecular basis of ECE. More information is needed as to why ketamine induces impairments of cognitive and memory recall and emotional negativity which are foreign to the ECE typology. Second, the ketamine model of ECE also fails to explain why only ~20% of the population is prone to these events. Despite Jansen's requirement⁸¹ that every person, subject to an ECE and likely to suffer excitotoxic (glutamergic) neuronal damage, should elaborate an endogenous neural protector to occupy the NMDA receptor, the low percentage of actual susceptible subjects needs another explanation. Third, Collier⁸² found that although many patients enjoyed the pleasantness of ketamine anaesthesia, 60% of her sample did not wish to repeat the experience. That is not the impression given by ECE subjects, many of whom express great reluctance at having to return to earth. Fourth, in comparisons of ECE with ketamine anaesthesia, it is rare to experience a marked slowing of time and thought processes, a feeling of death as that of an internal emptiness, paranoia, micro/macrosomia, or a convergence of visual perception rather than the beautiful panoramic vistas usually reported by them. We must conclude that ketamine does not fulfil the criteria of the ideal paradigm of ECE.

⁸¹ Jansen, 2000

⁸² Collier, 1972

V.4 INTERPRETATION OF ECE – AUTHORS' PERSPECTIVES

Much of the testimony of ECE subjects has been published and made known to a very wide public through books written by certain key authors. My purpose, in this section, is to evaluate the interpretation given to the narratives elicited by these authors. Moody, the originator of the current, growing interest in ECE phenomenology, was very reserved in his approach, and refused to be drawn to any particular explanatory model. Despite that refusal⁸³, he felt strongly that the narratives he received were '*very significant*' and '*very persuasive*', becoming '*real events to [him]*'. There seems little doubt, despite a rather non-committal afterview, that he was drawn to the view that these experiences did add up to something that neither modern science nor philosophy could adequately explain. They exceed our present understandings of death and, in particular, what might lie beyond. He was dismissive of conventional explanations, whether based on pharmacological, physiological, or neurological premises. Neither did he warm to psychological explanations, such as dreams, hallucinations or delusions (idem, p156ff). For all such proposals questionable doubts arise (idem, p177) '*requiring a newer type of evaluative paradigm*'.

The contributions of Ring, Sabom, and the Fenwicks offer far more organised material relevant to their understandings of ECE. Like Moody, Ring is dismissive of scientific explanations through their failure to account for every facet of what he terms the "core experience". As a result⁸⁴, '*...we find ourselves at the threshold of the scientific study of "impossible" events – parapsychology...*', despite the unease and scepticism within the

⁸³ Moody 1976, 182ff

⁸⁴ Ring 1980, 218-252

public mind concerning its outcomes of precognition, psychokinesis, telepathy, and clairvoyance. Notwithstanding, Ring finds that parapsychology is insufficient to frame the entire phenomenology of the "core experience". It needs to be buttressed with a *"states-of-consciousness" component, known in neuroscience as the holographic theory or paradigm'* (idem, p220).

V.4.1 Ring's Interpretation

He begins by suggesting that the initial phases of the core experience, the OBE and its accompanying aura of peace represent a real, rather than subjective, separation of an entity, (that is, "consciousness"), from the physical body (idem, p220ff). Thus, now existing as *'disembodied consciousness'*, the subject experiences peace, lightness (non-gravity) and painlessness, together with a heightened awareness, and a vividness of perception and affect. Indeed, Ring argues that the entire core experience is an "extended" OBE, upon which may be erected a coherent picture of phenomena associated with the dying process. This claim is underpinned by the vast literature on OBE reports, and by the fact that subjects' verification that the experiences are real, rather than imaginary, illusory or dream-like. There is no doubt of a splitting-off process as subjects die, releasing their centre of self-awareness from the constraints of a physical body (idem, p229 & 232). As to the mechanism(s) of separation, any answer would only take us into the *'wilds of esoteric speculation'*.

This construct is purely speculative about extra-corporeal existence. Not all ECE comprise, or are initiated by, an OBE. For example, the numerical data⁸⁵ for OBE are 37%

⁸⁵ Ring 1980, 40, Fig 1; Sabom 1982, 52; Grey 1985, 31, Table I

(Ring), 52% (Sabom) and 21-32% (Grey), clearly indicating that well over one-half (~60%) of all experiencers never have an OBE as a preliminary component of ECE. Ring's argument is that all respondents may not have known that they were having an OBE (idem, p220), but that is an extraordinarily curious statement if separation from the body leads to a marked generalised heightening of subjects' perceptions. There is also a disjunction between 37% knowing that they had an OBE and the 60% within the same sample who experienced peace as the affective component of an OBE. Ring continues: *'...most of them claimed to be detached from their bodies [but] not actually able to see themselves [or, in retrospect] were uncertain'*. That statement is prevaricative and very puzzling because it is inconsistent with his next avowal that *'another sixteen subjects had visually clear OBE'* (idem, p45). That figure does not make sense, since only 37% or 18 subjects of all his original 49 positive-ECE cohort (idem, p40, Fig 1), experienced an OBE.

From my neurophysiological perspectives (Chapters III, IV), I do not think it is possible to presume to comprehend what extra-corporeal, "free"-consciousness could be like, or even to know what it is like to be dead. The notion of a free-standing consciousness is a strangely curious idea. Consciousness, and conscious-awareness including qualia, are emergent properties of the neural process, irrespective whether, or how, we envisage any psycho-physical divide. Incorporeal spirits, on the other hand, are a different entity and cannot be compared with humans whose brains, temporarily, are malfunctioning. Consciousness cannot exist independently of its brain, at least for human beings. One is reminded of Antony Flew's article (1995) *'Can a man witness his own funeral?'* which drew an unequivocally negative answer.

One further problem is that of rigid classification, and the attempt to idealise the accompanying phenomenology. Moody avoids the problem by not giving figures, so his paradigm survives (for him) unscathed. Sabom and the Fenwicks avoid making any classification. It should be recognised that each narrated experience should be accepted as a truthful record on its own merits, as an idiosyncratic realisation of that individual's particular insight. The impossibility of Ring's position is forced upon him by his schema, and his insistence on a so-called "core experience" when, in fact, vanishingly smaller numbers of people enter each successive "phase" of his postulated experience. His own data⁸⁶ exquisitely illustrate the inter-connectedness of both criticisms: 60% respondents experienced peace but that percentage falls steeply to only 10% of the entire sample which enters the light. This creates a further dilemma for Ring because in his explanatory section (idem, p220) he regards the two components, peace and body separation, as a unitary OBE, even though his data (Figure 1) reveal that only 37% report the separation. This is explained away with the excuse that the other 23% were '*unaware of corporeal disconnection*', despite his assertion that separation increases sensory awareness and acuity.

A better explanation is that most ECEs are of very short duration, as I have previously argued. Furthermore, an OBE is not part of a sequential phase that leads into the transcendental or near-death moiety of ECE. The case of Pam Reynolds (Chapter II, p48) destroys that myth entirely. I am unpersuaded by Ring's view that an OBE represents a real, rather than subjective, separation of an "entity" ("replica", "second body", "consciousness", or even "soul") (idem, 220ff) from residual corporality. Ring's abundant evidence for that separation is experiential: and one could hardly complain that such

⁸⁶ Ring 1980, 40, Fg 1

narrated evidence was therefore exaggerated (idem, p222-232). Yet as to mechanisms, Ring backtracks by stating that any explanatory answer would take us *'into the wilds of esoteric speculation'* (idem, p233). But why? -even if we knew what those words really mean. I suggest a more parsimonious answer, and one which Ring has not thought about in depth or explored. I refer to the vast body of solid, empirical neurophysiological data (Chapter IV) indicating that OBE, whether occurring in people whose brains are "normal" (future investigations may show that they are subtly "abnormal"), or overtly pathological (lesional or metabolic), arise predominantly from disturbances around the temporo-parietal junctional zone of the right hemispherical cortex. I am certainly not aware of any data which categorically show that any process, external to and independent of the brain, results in an OBE. Therefore, I again re-iterate my claim that to be out of one's body is determined by neuro(patho)physiological processes, and that the emergent experiential feelings associated with those processes do not necessarily have to be interpreted as mystical, esoteric, or metaphysical, nor for that matter, from any religious perspective. It is very difficult to understand why Ring thinks differently.

Having now split from the body, "free consciousness" is able to enter the tunnel towards the light during which a presence may be encountered, voices heard and former family revisited, a judgement received, and a decision made whether to remain or return to earth. Here Ring assumes that these latter experiences reflect a "shift" in levels of consciousness: that is a transition from the sensations tied to the physical world to those now sensitive to the realities of another dimension of existence. This experiential functioning of consciousness outwith the constraints of physical corporeality permits awareness of a *"fourth dimension"* (idem, p234). These later, central features of the "core experience" are to be understood in terms of holographic theory, whose *'origins lie in neurophysiology and physics'* (idem, p235). As a laser can reconstruct an object from a representation of itself

through interference patterns, so the brain interprets the world by analysing received frequency domains and portraying them as the environmental objects with which subjects are familiar. OB/ND experiences, mysticism and Eastern philosophy all provide means of appreciating these orders of (holographic) reality that lie behind our day-to-day world of sensible appearances.

According to Ring, the perceived motion in the tunnel is literally that of unembodied mind-awareness in transit towards the fourth dimension. The tunnel is a protective, like a subway that brings the pedestrian through (beneath) a slum area and upwards into the safety of the light on the other side: hence the low number of hellish reportings by subjects. Is the transition from hell to heaven another cultural imprint on the mind? Usually the survivor is kept from having a direct awareness of this realm, (by what, or whom, or Whom?), while some are stranded there. Hell is a (temporary) "*sticking*" (idem, p249) in a lower frequency domain where the type of minds interacting to create that reality are encountered. From my reading of the literature, I am not aware of any subject recounting a hellish experience and remaining in that location. And, if he did so remain, how could he subsequently be capable of recounting his experiences to earthlings? The question remains open as to '*what happens after the initial stages of death, a question that cannot be addressed by this type of research*' (idem, p259).

The light can represent the astral plane, but more. It is an encounter with, indeed a vision of, one's higher self – a reflection of one's inherent divine nature. That higher self has all knowledge and can initiate a self-review: this is the (erroneously) perceived reality of God. Ring thinks (idem, p244) that holography offers an interpretative framework that helps make sense of '*some of these phenomena*' (= "core experience"), even though all the

concepts used in explanation derive from holographic ideas. And since we do not currently exist holographically, a proper and definitive judgement on its appropriateness as an explanatory framework cannot reasonably be undertaken. In other words, this is neither an all-embracing analysis nor a complete explanation by Ring of all the facets of ECE phenomenology.

There is no objection, I suppose, to the view that an OBE results in the emergence of a "*second body*" which now ascends into the astral fourth dimension where it encounters its higher self, or its corresponding "divine image" of earthly personhood. Ring, however, is hard-pressed to offer convincing explanatory data for such a view and, in fact, almost apologises for the failure of his theories to secure that end, on the weak premise that we do not inhabit that holographic environment (idem, p244 & 250-1). His threshold for the scientific study of the "*impossible*" seems to have collapsed without affording us any innovative or revelatory insights. This is a strange wimpering finale to what was earlier heralded (idem, p217) as [his] freedom to explore other experimental categories, as against those failed approaches stemming from conventional (neuro)science.

In returning to Ring's proposed sequential "core experience", I suggest that it is emphatically not an authentic blueprint for the idiosyncratic unfolding of every experience published. Indeed, the idealised schemes produced by Moody and Ring have created far more misunderstandings than enlightenment. One could hardly be too impressed with Ring's explanatory account which, in his own confessional words, fails '*to provide a comprehensive explanation of all the various aspects of the core experience*'. Having dismissed all scientific possibilities in ten pages (idem, p207-217) while, at the same time, ignoring an extensive corpus of relevant neurophysiological data available to him (even in 1980), he devotes over three times more discussion (idem, p218-252) to the emergence

from the body of free consciousness and its ascent into the fourth dimension of holographic enlightenment and understanding. I have already set out objections to Ring's hypothesis above (this chapter, p190) in regard to the meagre evidence he presents for precognition. As an alternative, I have presented a substantial contribution to the likely neurophysiological basis of OB/NDE. A fairly complete neurologic explanation for OBE is now available, while a more comprehensive account of NDE will surely follow from further neurological advances and expand what I have advanced here, based on previously published accounts in the literature. Explanations that are lacking now will surely come fairly quickly in the near future. Such an account will be based, as I have demonstrated already, on the particulars relevant to each of the brains that are re-awakening from their incapacitating insults and re-gaining full conscious-awareness, as subjects themselves once again re-appropriate their living bodies, minds, and personhoods. Yet there are two further deficiencies with Ring's proposals.

First, he fails to deal adequately with his own data, that is, why so few of his subjects proceed beyond stages I and II (the OBE and associated feelings of peace). His difficulties are brought about by idealising the "core experience" into a linearly-contrived sequence that fails as a universal blueprint. Far too few subjects sample the central or final phases of this so-called "core" (idem, p40, Fig 1). It might be thought reasonable that once stage I had been entered, any corporeally-disencumbered consciousness would have no difficulty whatsoever in ascending, unimpeded, to the fourth holographic dimension. That, somehow, seems not to be the case. His difficulty would instantaneously dissolve if respondents' accounts were taken as given, rather than collectivised into an idealistic formula unable to accommodate individual, and the more idiosyncratic, responses to the insults instantiating the ECE. Furthermore, Ring tries to suggest that the more phases a subject recollects, the "deeper" his experience. But that is wishful thinking, and wishful

thinking that wants to suggest mysteriousness and other-worldly psychical import. A more parsimonious explanation can be based on the extent and duration of the insult to which any subject's brain is compromised and hence, as I have previously emphasised, on the crucial time taken for such brains to recover full conscious-awareness. Since that recovery time, as I stress, is very short, only one or two bits of all the possible phenomenology could realistically be sampled. The issue is whether such a short experience can still be deeply moving in the experient's mind, rather than the commentator's. I see no reason why not: neither, do I suppose, would the experient. And, in fact, this is precisely the case of those who experienced transcendental joy in the four seconds taken in jumping off the Golden Gate Bridge and hitting the water below.

Second, the theory fails to address the more obvious objection as to why ECE are restricted to ~20-30% of the population. Ring offers no account of this obvious anomaly. Another possible explanation might lie in the underlying neurophysiological configuration of individual brains, as uniquely structured at birth and continuously modified throughout life. My support for that view is seen in the differences in brain structure and function observed in synaesthetes, who can hear sounds as colours or smells. Another example is autistic children who, despite their social imperfections, can perform almost miraculous calculations with vast numbers, draw complex buildings from memory, or predict the days of the calendar greatly into the future. The minority of subjects who can either flip into an OBE at will (physiologically) or during a severe medical crisis (pathologically), are likely to have brains which through some process unbeknown to us at present, are able to function in this idiosyncratic way. One possibility is that susceptible subjects may have subclinical deviant circuitry affecting the temporo-parietal cortex as a result of developmental anomalies, minor birth injuries, childhood infections, or ischaemic influences. Although the techniques are available, to date the brains of ECE subjects

compared with age/sex-matched controls have not been extensively investigated anatomically to evaluate such possibilities, or to exclude other anomalies such as left/right asymmetries, or local sulcal abnormalities. I take up this issue in greater detail below as I consider temporal lobe dysfunctions.

It appears clear that Ring has ignored the corpus of data garnered from his respondents in order to elaborate his own personal schema and holographic theories. Here we see a grandiose theory whose superstructure vastly outstrips the data upon which it should have been based, and which ultimately fails to account for the phenomena observed. Doubtless, few of his subjects would immediately recognise the implications of their experiences as viewed through his eyes.

V.4.2. Grey's Interpretation

Similar criticisms apply to Grey's study. Like Ring, she rapidly dismisses conventional scientific explanations in less than six pages, while her own interpretations occupy 25 pages of text. Grey⁸⁷ believes that death is not the end of existence, that free consciousness can exist outwith the corporeal body (idem, p41), and that mystical idealisation offers the best explanatory means of confronting the phenomena of ECE and their allied '*psychical*' outcomes. Access to this mystical or spiritual state can only be accomplished once "*consciousness*" is freed from corporeal dependency. Unlike Ring⁸⁸, Grey dismisses the possibility that future neurophysiological researches will be able to prize open the depths of ECE (idem, p187). Extraordinarily, she then continues to assert that her findings are '*in no way intended to represent evidence of a life hereafter, as clearly not one of the*

⁸⁷ Grey 1985, 186-187

⁸⁸ Ring 1980, 259

respondents went further than surviving the initial stages of death'. Based on the material presented, readers are left to develop their own opinions. Nevertheless, Grey is convinced that having an ECE is one way through which we can taste other realities, even though her view is not intended as an endorsement of that assertion. The obvious response to that reversal is why she needed to make such utterances public.

Grey continues by stating that at death we leave the dualistic world of mind-body, as consciousness dissociates into the *sushuma nadi* or pathway of energy (prana) located in the spinal cord, giving rise to the luminosity (or "light") experienced by '*many*' (idem, p188). The truth of that statement is questionable given the markedly differing published figures⁸⁹ for seeing the light. Of the collective sample of ~700 subjects representative of the five authors considered in this work, only ~50% (as a crude average), encounter light. Conversely, ~50-60% experients *never* experience a light phenomenon. Once consciousness is corporeally free, it is enabled to function independently, thus to become immediately aware of the fourth dimension beyond the physical world of sensibilities. This is akin to various sensory isolation practices, old and modern, through which ego-death occurs. Ego-death is an intense emotional experience, embodying a '*tremendous sense of encompassing oneness*' (idem, p189) and leading to awareness of a '*higher transcendent order*'. This is invariably followed by a '*sense of rebirth*' (re-incarnation) and the certainty that consciousness enjoys independence from physicality (body and brain), thus being able to continue beyond death. Fine words, indeed, but scarcely supported by firm, empirical data.

⁸⁹ 16% (Ring 1980), 39% (Grey 1985), 28% (Sabom 1982), 43% (Greyson 1990), 56% (Linley et al 1981), 72% (Fenwick & Fenwick 1998)

The NDE is not the sole passport to experiencing the fourth dimension: any technique (Eastern) which allows consciousness to function independently of the physical body (kundalini; yoga; pranayama meditation, and the "third eye" or Shira Yoga) will permit this ascent. The third eye is evolutionarily connected with the pineal gland, which some think is functionally redundant. But according to this latter form of yoga, it is still evolving and whose growth can be accelerated, thus permitting the subject to see events on a larger panoramic canvas. Pineal development also collapses temporal progressions and sequences, thereby engendering a newer sense of oneness and eternity. Hellish experiences arise when the subject has unresolved psychological aggravations in life. Thus the NDE appears to represent, in an *'ever increasing frequency'*, an evolution towards the attaining of enlightenment, and that in attaining that heightened form of consciousness, such individuals become united in a universality of brotherhood, love and compassion⁹⁰. Individualism is mutating into a wider collective co-operative, based on increased self-responsibility. Therefore, we do not necessarily have to die so to experience these newer levels of higher consciousness. The afterlife is but an illusion or chimaera: there is no heaven or hell. We need enlightenment to lift our own lives from the mundane of the here and now into one of those exalted planes via the agency of the collective consciousness of the universal cosmic mind (idem, p195).

Here we have a synthesis hinting at Buddhist re-incarnation and enlightenment, very closely aligned to the notions put forward by Ring⁹¹. Nevertheless, the same criticisms apply to Grey as to Ring – particularly why only a certain percentage of the population is apparently susceptible to ECE, and why, for those experiencing some form of ECE, the

⁹⁰ Grey 1985, 193 (and see Ring 1980, 255)

⁹¹ Ring 1980, 237ff

so-called "deeper aspects" of the experience curiously become progressively less attainable, or unavailable, to an increasing proportion of experiencers.

V.4.3 Fenwicks' Interpretation

In assessing the contributions of the British writers Peter and Elizabeth Fenwick, we encounter a far more measured approach to ECE. Nevertheless, it is regrettable that the work of certain investigators and their publications are not detailed in the "bibliography" appended at the end of the book. These writers avoid the trap of painting themselves into a corner by not offering an idealised schematic of ECE, as Moody, Ring and Grey have done. Thus each narrative is allowed to speak without being forced into a preconceived scheme or the impropriety of a so-called "core experience".

I therefore conclude that it is far more preferable to speak of idiosyncratic experiences, each with its own events that are related to the life-style and memories pertaining to each specific life-history. That view has been substantiated by the many narratives offered by Fenwick & Fenwick (1998) and which differ markedly from those of American respondents. Their accounts were drawn from *'over 350 replies'* (idem, p2) to a postal questionnaire in response to an earlier television programme on ECE. Some people returned directly to their bodies either from an OBE - such as Anne following surgery for an undiagnosed condition (idem, p27) and Eleanor with toxic delirium due to pneumonia and pleurisy (idem, p76). Others finally re-entered their bodies by returning through the tunnel - Mary, following a neurosurgical resection of intra-cerebral aneurysm (idem, p30-31), Mrs Baker, due to the impact of a road traffic accident (idem, p57), and James who possibly had a dissociative experience due to N₂O intoxication (idem, p210). These

narratives are clearly inconsistent with the prototypic "core experience" variously promulgated by Moody (1976), Ring (1980) and Grey (1985). Four other accounts from respondents Davies, Smith, Whitmarsh, and Mill (idem, p151-158) are obviously idiosyncratic, clearly indicating that *'the... "realm"... to which people travel is something created entirely by their own minds, and will be different for everyone'* ⁹². Two other examples are especially noteworthy because the subjects involved (Inman: idem, p67, and Langschiold: idem, p68) only experienced a peaceful awareness.

In line with this thinking, another awkward problem which arises is that multiple ECE do not recur with identical experiential content. Surely they should all be the same if they were really veridical journeys to the realm of the spiritual afterlife, however that might be conceived, and irrespective of the subject involved. Many reports fail to follow the idealised experiential sequences that have been forced upon readers by Moody, Ring, and Grey. Such 'irregularities' have been amply noted severally by Sabom, Fenwick & Fenwick⁹³ and by Serdahely⁹⁴. Serdahely concludes *'that each ECE is tailored specifically to fit the needs of [each] person'* (idem, p194). That is hardly convincing, however. Unfortunately he fails to answer the most obvious questions arising: by [W]hom and/or by what are these events individually tailored? And, in response to the difficulty why ~70-80% individuals never undergo ECE, the answer is that they do not need one (idem, p194). That aside, it is clearly evident that ECEs do not follow a prescribed, invariant form. Each ECE, despite certain general similarities, is a unique experiential event for each individual, and related to that unique (and cerebrally-determined) personal history from which it arises. That assertion⁹⁵ could be hardly bettered than by a remark of one of

⁹² Fenwick & Fenwick 1998, 159

⁹³ Sabom 1980, 116-123; Fenwick & Fenwick 1998, 36-39

⁹⁴ Serdahely William, J Near-Death Stud **13**: 185-196, 1995

⁹⁵ Fenwick & Fenwick 1998, 68

the Fenwick's correspondents. Having watched a television broadcast on ECE, she declared that she was totally unable to recognise the content of the experiences as advanced on the programme!

There is, in my view, only one consistency among all these anecdotes: that the subject awakens as the experience terminates. That termination co-incides with an immediate return to full conscious-awareness. As that terminal phase of the ECE is gradually extinguished, it is interesting to observe how real events invade the rapidly decreasing state of subconscious existence. As Linda (*idem*, p98) was coming round from the anaesthetic, she had a sense of facial smothering and of hearing voices. In fact, the smothering was due to an anaesthetic mask and the voices those of her doctors. Smith (*idem* 99; 153) was playing on children's slides as he became aware of chest pain, then awakened to find his bed surrounded by nurses and doctors. Jean (*idem*, p105), who had almost taken hold of the hand of her father who was in the light at the end of a tunnel, was overcome by an indescribable calmness, a beautiful smell and music. She then saw her husband's face at the end of the tunnel and heard another (his) voice calling her as she began to regain consciousness. The diversity of narratives obtained, either as the subject 'comes to' after a period of quietness or reflection, or regains conscious-awareness following a severe medical crisis, point to markedly personal idiosyncracies in terms of sequence, duration, content and aetiology in which each ECE is played out.

In their approach, Fenwick & Fenwick query whether ECE are brain events, psycho-physical phenomena, or outwith the physical substrate of body or brain, that is, whether they could be metaphysical or spiritual. At this point, we note that a definition of ECE, descriptive or functional, is not the same as defining the so-called "core experience". Here,

we are concerned with the former. In considering mechanisms, it has to be fully recognised that children's ECE appear to be consistent with age, and hence with their level of cognitive ability, understanding and outlook on life, and on the possibility of an afterlife. These mini-ECE are analogous to "forme fruste" examples of medical illness, incompletely developed and indicative of a microcosm of the fuller event or experience, recognising how variable and idiosyncratic the latter may be. The childhood ECE is discussed in comparison with dream competency, above (Chapter III, p146-7).

These authors dismiss the purely reductive stance that ECE are entirely within the brain substance. They more than favour⁹⁶ a psychological reality: '*...if [ECE are] psychological, mechanisms must underlie the experiences – they are not out of anywhere*'. They are unable to muster any substantive evidence that mind exists without its underlying brain or, more importantly, that memories could be manufactured and stored in some place outwith the cerebral cortex (idem, p256). Attempts to encourage those subjects undergoing ECE in operating theatres or intensive care to observe and remember messages or objects placed at a high level in these places have signally failed to demonstrate extra-corporeal "vision". Again, I have noted that somatic vision is non-operative during ECE, so that such experiments are doomed to failure at the outset.

The Fenwicks recognise that there is meaning in the world as well as in the life of the universe, as expressed through cultural-religious views about an after-life and some kind of disembodied survival. If there is no meaning (as reductionists insist), then life for billions of people, past present and surely in the future, becomes entirely pointless, cold, limited and unfulfilled. But how could meaning be secured, either on earth or in the future,

⁹⁶ Fenwick & Fenwick 1998, 223

and do ECE really shed any light on, or give substance to, that longed-for meaning (idem, p263)? My feeling is that these authors, having reviewed the testimonies received, are unable to articulate any real theory that ECE do, in reality, point to an afterlife or to the existence of mind outside the brain or body.

V.4.4 Sabom's Interpretation

Finally, I turn to the cardiologist, Dr Michael Sabom and his interpretations of the respondents' narratives which he elicited, mainly from cardiac and some post-surgical, hospital-based patients. His studies have been robust and supported by clear statistical comparisons, and a scientific background fully referenced. His chapter⁹⁷ devoted to possible explanatory scientific paradigms is long (28 pages), but somewhat patchy in its approach to major aetiological causes, all of which he rejects. So, like the Fenwicks, he is left pondering the mind-brain question, and the possibilities of a splitting of mind (or soul) away from corporeality during ECE. What convinces him to lean in that direction⁹⁸ is the fact that subjects gain knowledge of their environment and of events occurring within it during their experience. That is achieved as they view its temporal unwinding from their privileged position beneath the ceiling. The difficulty in going down that explanatory pathway is that the supposed sensory (visual and auditory) perceptions reported at those times may, or may not, be veridical. This is because, hitherto, it has not possible to determine subjects' levels of consciousness (Chapter III, p 99). And, as was shown for heautosopic patients (Chapter IV, p 170) two forms of consciousness (full conscious-awareness and a subconscious mode) may co-exist: that is part of the relevance of fully

⁹⁷ Sabom, 1982, 151-178

⁹⁸ Idem 1982, 184

considering other aberrations of neural function, as in lucid dreaming. Therefore, it is perfectly reasonable on these, or analogous grounds, to understand why a person can recount actual events going on around him (as the resuscitation proceeds) and, simultaneously, engage in some other form of subconscious dream-like mentation. That's not magic: its just plain neurophysiology.

The other difficulty is that the subject may experience intervening periods of conscious waking such that he is able to fix events in his memory without being aware either that he was doing it, or even, that he was conscious. Until we have a foolproof means of determining when any subject is awake, or not awake (unconscious or in some form of subconscious existence), this issue will remain unresolved, and, continue to generate controversy. The work of Olaf Blanke⁹⁹ and colleagues indicates that conscious-awareness can co-exist with a parallel perception of being out-of-body, as Penfield extensively demonstrated intra-operatively¹⁰⁰. Therefore, the conclusion that new knowledge is gained during an OBE does not constitute (as these other investigations have demonstrated) convincing evidence either for a mind-brain split, or mind-body separation, during these occasions. To demonstrate a split would, indeed, be a most profound observation. But it would necessarily demand exceptionally tight data on which to be founded. At present, one can accept the distinction between the cerebral engine and phenomenological outcomes, but to have the latter without the former is most difficult to envision, despite so many unproven suggestions to the contrary.

In considering the transcendental experience (=NDE), Sabom is unable to explain whether this represents a glimpse of the after-life, bearing in mind that subjects did not actually die

⁹⁹ Blanke et al, 2002

¹⁰⁰ Penfield Wilder, Proc Nat Acad Sci **44**: 51-66, 1958; J R Coll Surg Edin **5**: 173-190, 1960

but returned to life. Is it, he asks, the soul which begins to separate from the brain thence to continue its existence beyond the demise of the body? That is the ultimate question raised by these events¹⁰¹. But he is amazed as a physician that so many people have survived these life-threatening emergencies, and has been moved (since I regard Sabom to be a very caring individual) by the *'tears of sorrow and joy'* accompanying the retelling of so many personal narratives. Thus he feels convinced, in line with many of his subjects, that these events do represent the work of the Spirit, or the power of God. Indeed, he goes further to assert that a NDE is not the misfiring of the brain *'but that it is a spiritual encounter that is both "real", "otherworldly" as the soul is in the process of leaving the body'*¹⁰². That assertion is based on four criteria: an occurrence within the spiritual realm; one that pertains to religious and thus transcendent things; and which is not amenable to scientific quantification; yet is a real and hence not imaginary, hallucinatory or dream-like illusion. In other words, NDE have the qualities of a spiritual experience. Sabom delivers the consequences of his interpretation, that as NDE are spiritual adventures, they are also revelations from God, involving visions of Jesus, and providing an inspirational model for the future life direction of the subjects they come to involve and influence.

V.4.5 Re-Interpreting the Commentators

In the two preceding sections, I have critically analysed the exploration of scientific paradigms and the interpretations of the meanings in respondents' ECE narratives, as adopted and presented by prominent commentators in the field. To my mind, these collective approaches to explanatory scientific hypotheses and possibilities are weak,

¹⁰¹ Sabom 1982, 185-186

¹⁰² Sabom, 1998, 200-202

superficial and, in parts, even dismissive. Of the authors reviewed, only Sabom provides any reasonable documentation of pertinent research papers. Fenwick & Fenwick devote four chapters (70 pages) to considerations of (patho)physiologic, psychologic and psychical theories, and in what form survival beyond the grave might be configured. Their referencing, relative to the breadth of material surveyed is selective, omitting important details of other workers' publications cited in their text, so making follow-up difficult and frustrating. One might have expected from each authorship a more in-depth approach to underpin their discussions, and a more energetic engagement with existing scientific material and insights. Throughout the relevant chapters, the text is continuously disturbed by frequent anecdotes as though offered to prop up weakly-developed argument, although sufficient narrative material included in earlier chapters was adequate in providing a competent, descriptive overview of ECE phenomenology¹⁰³.

I wish to say no more concerning the varied authorial views on the afterlife, since I am not convinced that the escape of either free consciousness, mind, or soul from the body offers a feasible explanation of what is actually occurring during ECE. That view is based on more prosaic arguments to the effect that the experiential aspects of these phenomena are brain-based, arising not from brains that are 'dead', but in the process of recovering from an imposed insult.

V.5 THE INFLUENCE OF COGNITIVE THOUGHT & COGNATE PHENOMENA ON THE SUBCONSCIOUS MENTATION OF NDE

¹⁰³ Sabom 1982, 1-150; idem 1998, 11-73; Fenwick & Fenwick 1998, 5-196

There are other features of ECE phenomenology which compel the acceptance of a brain-generated (conscious) input, aspects of which I now proceed to draw together. None of the authors I am reviewing has made specific note of these cortically-induced influences on the phenomenology experienced. Several instances arise throughout the ECE narrative accounts in which conscious-awareness, in some way or other, has impinged on the "other-worldly journey" (and see brief allusions to this in other case reports: (Chapter II, p40-1; 72-3). It is important to my quest that these are critically addressed and evaluated.

First, I wish to tackle the prevailing assumption among my authors that the uniformly-qualitative phenomenology of ECE is indicative of the existence and reality of a spiritual realm. I disagree with that assumption. The question arises as to why, within what I regard as an idiosyncratic individualised experience, the predominant typology does envision another form of otherworldly realm, or even heaven, and encounters with known spiritual figures. NDE only result from an acute event. I am not aware of NDE being an occurrence common to subjects lying unconscious for months or even years. Moreover, it is when facing an acute crisis that many subjects overestimate the mortal threat to their continued existence. I believe that the impact of sensing themselves to be dying, or of being dead, induces subjects to recall conventionally-uniform cognitive models of what it is like 'on the other side'. Those model apprehensions will have been previously drawn from past experiences, cognitive imaginings, impressions based on vicarious religious influences, and subjects' overall thoughts and constructions about the future afterlife. That mentation, now to be subconsciously unfolded as the NDE proceeds, is directly dependent on a previously perceived phenomenology of "heaven" coloured by cultural and religious inputs current throughout their lives.

I give some cogent examples to drive home the important point that cognitive activities shape the contours of subsequent subconscious mentation. There are several pertinent case-reports. The first is of a 29-year-old English woman¹⁰⁴ subject to repeated temporal lobe seizures since the age of eight. At the time of clinical presentation, she had recently received from The Netherlands an official photograph of her brother's tombstone in a British (WW2) military cemetery. Following receipt of this photograph, her pre-ictal auras henceforward now always comprised rows of tulips, serried lines of grave-stones, and linear arrays of lamb carcasses. Clearly, the impact of this highly emotionally-charged experience had major repercussions on the character of her later seizural auras. Importantly, a subconscious transferral of her cognitive and affective disposition had now become realised in another part of her brain concerned with the elaboration of those auras. Moreover, the witnessing of the lambs was perhaps a metaphorical representation of her innermost feelings although we neither know the circumstances of her brother's death, her depth of grief, nor the duration of her loss and what it meant to her. We might surmise it was fairly significant: and we only have to recall the disastrous horrors of Arnhem to feel the poignant impact of the phrased imagery 'like lambs to the slaughter'.

The second example¹⁰⁵ involves a girl, who aged 7, encountered a man who threatened to put her in a sack filled with snakes. This threat was later re-enacted in her subconscious dreams (age 11), and subsequently became a daytime aura (age 14) accompanied thereafter with occasional tonic seizures. Investigations revealed right-sided temporo-occipital atrophy. A third case centres on an American veteran. His armed service in Vietnam became transferred to his subconscious as very frightening dreams. EEG showed

¹⁰⁴ Karagulla S, Robertson E, Br Med J 1: 748-752, 1955: [Case3B, p751]

¹⁰⁵ Epstein A, Biol Psychiatr 17: 1207-1215, 1982: [see p1211 and 1213]

bilateral temporal spikes. He subsequently responded to the anti-epileptic drug, carbamazepine¹⁰⁶. It is significant that in all three cases, underlying temporal lobe damage presumably facilitated the transfer of the original cognitive stimulus to the ensuing ictal aura.

In like manner, it is understandable, as the prospect of death or thoughts of having died are faced, how the ensuing ND phenomenology would directly reflect the memories, perceptions and apprehensions which all subjects might imagine would ensue at their moment of death, and beyond. The variety of retrospective narratives offered, all intensely geomorphic and even anthropomorphic for those supposing themselves to have been in the presence of God or Jesus, are clearly evident from an appraisal of each subject's idiosyncratic account. The imagined descriptive contours of the afterlife are represented in subconscious mentation as vivid, but often somewhat bizarre, quasi-dream-like sequences and encounters, many examples of which have been given in the preceding pages. It is noticeable that there are no pearly gates: confronting death during a life-threatening crisis is a serious business and not a time for music hall jokes or newspaper cartoons. These images, in part, represent the deepest concerns and inarticulate instincts which we all secretly and to variable degrees harbour in the recesses of our hearts about the finality of death. This repressed imagery is played out on the neurophysiological matrix of a brain as each part of it recovers to lead onwards to the expression of full conscious-awareness. My argument has been that the common foundation for all ND experiences is the recovering brain which provides the neuronal base to whatever bits of NDE phenomenology are experienced. However, that underlying phenomenology is coloured and rendered non-uniform, first, because the circumstances of and recovery from each NDE are dependent

¹⁰⁶ Stewart J, Bartucci R, *Am J Psychiatr* **143**: 113-114, 1986

on many pertinent biological factors (this chapter, p204) which are personally idiosyncratic and second, because the stored perceptual model idealisations of what might be entailed by dying and accessing the afterlife are, likewise, personally idiosyncratic. These, to my mind, are critical insights.

My second observation draws attention to the conscious perception of somaesthetic afferent inputs, notably pain, in parallel with the unfolding subconscious mentation of the ECE. That was prominent in the case of Howard Storm's peritonitis (Chapter II, 41-2) and an Indian subject with an abscess brewing in one of his arms (Chapter II, 73-4). David Whitmarsh, a naval seaman with a respiratory arrest following electrocution aboard, became aware of "pressure" caused by assisted respiration applied by the (older) Holger-Nielsen technique¹⁰⁷. His conscious perception of the force of the movements applied by the resuscitator around his shoulder joints appeared to be pushing him downwards while he, subconsciously, was simultaneously attempting to rise upwards. Another less common, yet significant effect, is that of body distortions. One woman¹⁰⁸ during childbirth felt that her body was diminishing in size. Such abnormal perceptions of body are a common feature in migraine attacks¹⁰⁹ or, more rarely, of epileptic aura¹¹⁰, and are presumably due to disordered functioning of the posterior parietal cortex. Miscued ideas of body position occurred in Lackner's tendon vibration experiments, including the 'Pinocchio effect' illusion¹¹¹. In these various trials, subjects erroneously thought their bodies were being angulated upwards or downwards relative to their position on a level floor. In Whitmarsh's

¹⁰⁷ Fenwick & Fenwick 1998, 154-155;

¹⁰⁸ *idem*, 119

¹⁰⁹ Lippman, 1953; Todd J, *Canad Med Assoc J* **73**: 701-704, 1955

¹¹⁰ Leker R, Karni A, River Y, *Acta Neurol Scand* **94**: 383-385, 1996

¹¹¹ Lackner, 1988

case, his tunnel was '*angulated downwards*'¹¹². James was '*falling down*' his tunnel as he experienced '*a kaleidoscopic burst of changing colours*' (idem 56) suggesting disordered cortical functioning due to widespread arterial hypoperfusion¹¹³. A kaleidoscopic burst of colour implies impaired activity within the occipital (primary) striate cortex. From all this, one has to conclude that the conscious perception/misperception of bodily sensations, shape or position could not occur if that consciousness was outwith the body and, importantly, its disordered brain. No author seems to have recognised the impossible 'duality' of that state of affairs.

Thirdly, and all the more impressive, are the vivid tinctorial panoramas incorporating radiant yellows, greens, and blues especially, that figure in the narratives of many respondents. They are likely to have arisen because of impaired circulation to the region of the temporo-parital-occipital cortex. These illusory auras reflect dysfunction of more rostral parts of the associative cortex, since the colours reported are simultaneously coordinated with sounds of music and bodily movement (eg walking). Whitmarsh saw a blue train¹¹⁴, was impressed by the intensity of blueness of the sky, and thought he was wearing a blue gown just like the passengers on the train. Darell, as he faded into unconsciousness following the first of a series of rapid cardiac arrests, was enshrouded in sky blue¹¹⁵. Or another woman respondent: '*...and I went on to this lovely land, green grass, blue sky ... [then] I started down [a vestibular influence] this hill by the stream*', after which she '*came to*'¹¹⁶. Similar reports abound: '*At the end of this deep well I could see a wonderful blue*

¹¹² Fenwick & Fenwick 1998, 51

¹¹³ Price et al, 1983

¹¹⁴ Fenwick & Fenwick 1998, 93

¹¹⁵ Sabom 1998, 20

¹¹⁶ Fenwick & Fenwick 1998, 104

light which was coming up and enveloping me'.¹¹⁷: *'A blue-gold light appeared and grew brighter and brighter ...'*. (idem, p47): *'...by now the tunnel is behind you and before you is this magnificent, blue-white light ...'*. (idem, p47), and, *'I [saw] a lot of beautiful blue ... on all sides of us was this beautiful blue. You can't even call it a sky, but it was a deep blue – a beautiful colour. I've never seen a blue like it ...'*.¹¹⁸: *'before you ... is this gorgeous ... blue-white light'*.¹¹⁹.

But let us consider the following: *'For instance, he thought of fire-crackers, and suddenly these were seen in sunset colours of blue and purple ...'*. This young epileptic boy had extensive left hemispherical atrophy involving temporal, parietal and occipital lobes¹²⁰. And: *'...his final hallucinatory experience was of a large bluish inkspot with gold rim around it'*, or, *'She described a lady in a blue dress'*.¹²¹ Both had undergone strokes [infarctions of the right parieto-occipital cortical areas], related to vertebro-basilar arterial insufficiency. Another 73-year-old woman¹²² while sitting quietly at home saw *'beautiful scenes – a tropical shore with white sands, a blue sky and brilliant flowers, more lovely and more vivid than she could have believed possible'* (my emphases). At subsequent post-mortem, a thrombus of the basilar artery was demonstrated. Another lady experienced hallucinations of *'verdant Elizabethan gardens, with peacocks [bluish-green feathers] and lovely flowers ... brightly coloured stars and fireworks ... which became more vivid and more lovely as time [the passing years] went on'*. She gave a ten year history of severe migrainous headaches with a variety of preceding auras. Michael Perry,

¹¹⁷ Grey 1985, 46

¹¹⁸ Sabom 1982, 54

¹¹⁹ Ring 1980, 57

¹²⁰ Karagulla & Robertson, 1955: [Case 3C, p751]

¹²¹ Lance J, Brain **99**: 719-734, 1976; Lance J, Cooper B, Misbach J, Proc Austral Assoc Neurol **11**: 209-217, 1974

¹²² Williams D, Wilson T, Brain **85**: 741-774, 1962: [Cases 8,9: p755]

in his recent book¹²³, refers to a man witnessing blue smoke rising up from a church floor during a service, presumably as a result of some kind of trance. *'But ... it was not smoke, but an impalpable ... haze of violet colour'*. The *'luminous blue haze'* which *'then engulfed him was transformed into golden glory'* (idem 72).

Price and colleagues¹²⁴ emphasise the prolonged perception of golden light which symptomatically typifies basilar arterial insufficiency. My call for "blinded" judges to review hallucinatory/illusory narratives, such as these, assumes a greater significance as we ponder what the brain evidently conjures in the presence of progressive (arteriosclerotic) ischaemia. The illusionary perceptions are all very much of a piece, despite their varied aetiologies, and that includes ECE. It is especially important to appreciate that reduced [embolic or thrombotic] cortical blood flow [involving the vertebral-basilar-posterior cerebral arterial supply] can produce identical "auras" of golden light to those experienced by NDE subjects as they regain conscious-awareness. I find little functional difference between golden yellow/blue auras of light arising from a partial *reduction* of blood flow due to longstanding arterial blockade and that resulting from a partial *restoration* of blood flow, especially within the posterior cortex [via the vertebro-basilar system], as would necessarily occur during the recovery phases from an NDE due to acute circulatory arrest.

Vivid, lively visual hallucinations¹²⁵ of people, scenes and animals with affective concomitants are associated with another condition originally recognised by L'Hermitte

¹²³ Perry M, *Psychical And Spiritual*. Louth (Lincolnshire): The Churches' Fellowship For Psychical And Spiritual Studies, 2003, 72

¹²⁴ Price et al, 1983

¹²⁵ L'Hermitte J, *Rev Neurol (Paris)* **38**: 1359-1365, 1922

and termed "peduncular hallucinosis" (PH) by van Bogaert¹²⁶. This is not directly concerned with the [cerebral] peduncles themselves but presumably involves critical neuronal pathways passing through the peduncles between upper brain-stem, thalamus and cortex¹²⁷. Pathologies involving these tracts include various encephalopathies, tumour¹²⁸, phenobarbitone toxicity which has a predilection for structures in the upper brain-stem¹²⁹, multiple sclerosis¹³⁰, and especially vascular disturbances¹³¹ either obliterative, haemorrhagic, or structural¹³². The case of Taylor revealed demyelination in the periaqueductal grey, indicative of a disruption of multi-sensory projections to the multi-modal association cortex and their feedback controls, resulting in visual and auditory hallucinations.

One case demands further detailed consideration¹³³. A woman developed left-sided symptoms suggestive of right hemisphere pathology. An attempt to define the lesion by carotid artery angiography [X-ray of the vessel on the right] resulted in the erroneous cannulation and delivery of the full dose of contrast medium into the vertebral artery. Following this error, there arose a series of extremely vivid, colourful hallucinations: *'a garden planted with trees and flowers of all colours – the scene was lovelier than in nature'*. Many of the scenes hallucinated involved vivid blue or green hues: *'I saw a green colour which dissolved into a field of corn [yellow] waving faintly in the breeze'*. And: *'There was a pretty blue colour transformed into a sea scene – on both sides of the horizon there rose up high massive mountains. All the images appeared in colours brighter than*

¹²⁶ van Bogaert L, Rev Neurol (Paris) **40**: 416-423, 1924

¹²⁷ Feinberg W, Rapcsack S, Neurology **39**: 1535-1536, 1989; Catafau J, Rubio F, Serra J, J Neurol **239**: 89-90, 1992; Jones E, J Comp Neurol **162**: 285-308, 1975

¹²⁸ Dunn D, Weisberg L, Nadell J, Neurology **33**: 1360-1361, 1983

¹²⁹ Trelles J, Lagache D, Ann Med Psychol **90**: 565, 1932

¹³⁰ Taylor K, Brugger P, Schwarz U, Cogn Behav Neurol **18**: 135-136, 2005

¹³¹ Caplan L, Neurology **30**: 72-79, 1980

¹³² Bossi L, Nobili M, Benedetto P, Arch Sci Med **137**: 347-350, 1980

¹³³ Rozanski J, Neurology **2**: 341-349, 1952

nature'. After two to three weeks these hallucinations became less obtrusive and thus were unlikely to have been precipitated by the original (undiagnosed) hemisphere lesion, rather than the injection. The contrast medium injected may have temporarily occluded vascular terminals in the brain-stem, the temporal cortex and beyond, thus impairing the function of the territories involved.

The importance of this syndrome is that disturbances of presumptive visual connections between thalamus and cortex, often due to vascular causes, leads to perceived phenomenology analogous to that of ECE. The point should be made that coloured panoramic scenes, in which the perceived hues are more intensely vivid than those naturally perceived (as usually reported for NDE), and associated with pleasurable feelings and even auditory commands¹³⁴ are hallucinated by subjects whose brains are compromised, either through space-occupying pathology, inflammatory conditions, or most commonly, vascular disturbances [atheromatous, embolic, or haemorrhagic]. On these grounds, I suggest that there is warrant for supposing that vascular impairment, particularly of the posterior and middle cerebral circulation, could reasonably be held responsible for the phenomenologies of ECE, as well as PH.

For my fourth example, I refer to another subtle distinction which seems to have evaded any significant comment or attempted explanation. This concerns the antithesis between a complete absence of concern for work, family or children during the *incipient* phases of the subject's progressing NDE, and a *later*, and much-felt urgency or even sense of overwhelming guilt, which impels the necessity to return to earth and resume former

¹³⁴ Manford M, Andermann F, Brain **121**: 1819-1840, 1992

responsibilities, rather than remain in the "light". Several examples arise¹³⁵. Richard (idem, p58-9), with complications following an appendicectomy, had far more interest in the "light" than in his grieving parents. Ella (idem, p70-1), during a prolonged recovery from her anaesthetic, willed herself to go towards the "light" without any thought for her husband and children. Alf (idem, p169), while floating above his bed during an episode of pneumonia, had no emotional concern for his weeping mother kneeling at the bedside. These events, I submit, occur while subjects are in a subconscious mode. That attitude contrasts strikingly with the later urgent compulsion to return to earth and take up again former personal ties, responsibilities and jobs. That *terminally* contrasting emphasis, I suggest, is due to re-awakening, from its immediately previous dormant phase at the nadir of the crisis, of the frontal cortex where moral decision making occurs.

It is my view that these terminal aspects of the ND event occur just as consciousness re-appears, and are conceivable in terms of re-activation and re-coupling of the critical aspects of the mind within the lateral-orbital frontal cortex, dorso-lateral pre-frontal, and fronto-polar cortex¹³⁶. Other parts of the brain, having generated their own subconscious mentation which, like dream-states is somewhat bizarre, illogical and incongruous, are now being told by the pre-frontal cortex, as it fully recovers its own controlling influences and critical faculties, ' *stop all this fantasy; wake up – its time to get going...*'. The overwhelming moral coercion to return to earth and attend to one's responsibilities is

¹³⁵ Fenwick & Fenwick 1998

¹³⁶ Joseph R, The Frontal Lobes. In: Neuropsychology, Neuropsychiatry, And Behavioral Neurology. New York, Plenum 1990, 157ff; Bradshaw J, The Frontal Cortex And The Control Of Behaviour. In: Developmental Disorders Of The Frontostriatal System. Hove: Psychology Press 2001, 19ff; Bechara A, Damasio A, Damasio H, Anderson S, Cogn **50**: 7-15, 1994 ; Decety J & Sommerville J, Trends Cogn Sci **7**: 527-533, 2003

consistent with the re-establishment of critical pathways from the frontal lobes to thalamus and related structures. Moreover, the abrupt termination of the event, co-incident with the reappearance of conscious volition, is likewise consistent with the full reconstitution of frontal lobe activity. This salient observation offers additional, consistent support to my view that ECE occur during the transitory moments when the brainstem and cortex are being re-vascularised, re-oxygenated and revitalised, ceasing abruptly at the moment as conscious-awareness is re-established. There is also an inconsistency in the manner of return. Some experiencers make the decision for themselves¹³⁷ (Linda and James: *idem*, p98), others say the return just happens while for others, they are commanded to go back (Avon, Ella, Anne and others: *idem*, p102-3). The so-called "barrier" is none other than a manifestation of the return of cognitive function, thus helping to establish and rationalise the incipient ending of the excursion as conscious-awareness resurfaces.

Barriers, of various sizes and shapes, decisions made as a prelude to returning to earth, and the urgency to resist the pleasure of going onwards instead of returning to one's responsibilities on earth, are all further indicative signs of the *later*, but progressive intrusion of conscious-awareness into the subconscious mentation of the NDE. It is very noteworthy that experiencers are impeded by trivial, earthly barriers, indicating that they are mental constructs (or metaphors) betokening the intrusion of cognitive processes into the terminal phases of the ECE. That is, they are 'cognitive barriers' that rationalise the growing awareness for these subjects that they are beginning the '*inward*' trajectory back into the conscious world. No author seems to have noticed that subjects, in their *earlier* subconscious state as the NDE begins, experience no difficulty whatsoever in traversing far more difficult physical obstructions, such as walls, double-glazed windows in wards,

¹³⁷ Fenwick & Fenwick 1998

ceilings and roofs as they commence their '*outward*' flights towards the tunnel or light. The two phenomena, to my mind, are all of a piece. The initial experiential disregard for family and the ease with which solid objects are transversed stand in striking contrast to the terminal inability of subjects to cross insubstantial barriers, and the manner with which worldly responsibilities assume an increasingly moral urgency to return. That vivid antithesis emphasises the divide between dream-like phantasy and its replacement by the incipient dawning of conscious reality. It should not be forgotten that in the course of normal living, we tend to construct similar 'cognitive' avoidance-barriers when the going gets particularly hard and unpleasant, challenging or frightening.

I think that these considerations more than adequately answer another of the Fenwick's queries (idem, p206) as to '*how it is that people manage to think so coherently at a time when one would have expected logical thought to be impossible*'. The key is to look in the right place, and at the right time: - not at a supposedly dead brain but one that is rapidly and vigorously re-awakening itself - and to recognise that such coherent cognitive functioning occurs (and could only occur) during that terminal revitalising process. Once that is understood, the problem dissolves.

V.6 THE EXPERIENTIAL OUTCOMES OF TEMPORAL LOBE PATHOLOGIES

I now proceed to focus specifically on the temporal lobe on account of its important central role, in conjunction with the parietal lobe, in co-ordinating the neurophysiological constructs of body-image and of ego/para-centric space, in addition to emotion, cognition,

speech and memory. In their longest textual sequence¹³⁸, the Fenwicks offer no referential material pertinent to temporal lobe studies. Sabom, in his earlier work¹³⁹ refers only to Penfield's work and to a local set of collected essays on electrical stimulation of the brain¹⁴⁰. Ring (1980) relies on a previous paper by Sabom & Kreutziger whose referential material on the temporal lobe is based solely on a 1969 textbook of clinical psychiatry by Slater & Roth. Grey (1985) merely relies on Moody, Ring and Sabom, thus inappropriately concluding in less than a page that '*this mechanism* (of temporal lobe seizures) *is inadequate to explain the complete range of near-death phenomena*'¹⁴¹. In his later book Sabom¹⁴² has a lone reference on the temporal lobe to a paper by the former eminent London-based neurologist, Dr. Dennis Williams (1956). The paper comprises a personal collection of 2000 cases of temporal lobe epilepsy¹⁴³. That material is representative of the current field then existing over one-half century ago. In comparison with the rapid advances in neurophysiology that have since taken place, that material is clearly out of date and entirely unacceptable as a definitive statement on the temporal lobe. Given the wealth of material available to Sabom and the Fenwicks, post-1995, that is a somewhat unsatisfactory state of affairs.

There has been an enormous expansion in our understandings of the neurophysiology of the temporal lobe. This has been achieved through brain scanning techniques¹⁴⁴, computerised electro-encephalography and the deployment of multiple subdural and deep,

¹³⁸ Fenwick & Fenwick 1998 218-221

¹³⁹ Sabom 1982, 173-174

¹⁴⁰ Roberts L, In: Sheer DE (ed), Electrical Stimulation Of The Brain. Austin [TX]: Univ Texas Press 1961, 547

¹⁴¹ Grey 1985, 176

¹⁴² Sabom 1998, 179-181, 238

¹⁴³ Williams D, Brain **79**: 28-67, 1956

¹⁴⁴ Lamuso S, Ruottinen H, Knuuti J et al, J Neurol Neurosurg Psychiatr **63**: 743-748, 1997

stereotactically-inserted electrodes¹⁴⁵. Furthermore, distinctions have been made between mesiobasal and neocortical temporal lobe (epileptic) syndromes¹⁴⁶, the aetiological recognition of minor forms of injury as causes of disordered temporal lobe function (closed head trauma; childbirth trauma; neonatal, childhood and adolescent febrile episodes and/or delirium), and a greater emphasis on pre-ictal auras, and inter-ictal behavioural outcomes for these subjects¹⁴⁷. Simple pre-ictal auras comprise uninterpretable visual (coloured flashes, scintillations or 'fireworks') or auditory (buzzing, vibrations, noises) sensations arising from their respective primary cortices. Complex auras, offering explanatory insights into the disturbed cortical functioning during NDE, comprise co-ordinated visual experiences accompanied by music or other sounds. There is greater recognition that psychical and mystical behaviour, at least in many individuals, represent non-ictal auras arising from disturbed temporal lobe functioning. Below, I offer relevant published case material concerning temporal lobe disturbances, irrespective of aetiology (epilepsy, migraine, stroke) or secondary to tumour formation, vascular abnormalities or other developmental and acquired space occupying lesions [cysts, hamartomas, rests etc].

The extensive case material to which I refer encompasses the hallucinatory basis of transcendence of space¹⁴⁸, of time and accompanying illusions that time is speeding up¹⁴⁹,

¹⁴⁵ Lesser R, Luders H, Klem G et al, *J Clin Neurophysiol* **4**: 27-53, 1987; Heath R, *J Nerv Ment Dis* **154**: 3-18, 1972; Wieser H, *Neurosci Biobehav Rev* **7**: 427-440, 1983; Gloor P, Olivier A, Quesney L, Andermann F, Horowitz S, *Ann Neurol* **12**: 129-144, 1982

¹⁴⁶ Foldvary N, Lee N, Thwaites G, Masca E, Hammel J, *Neurology* **49**: 757-763, 1997

¹⁴⁷ Fenwick P, Galliano S, Coate M, Rippere V, Brown D, *Br J Med Psychol* **58**: 35-44, 1985; Daly D, 1975; Waxman S, Geschwind N, *Arch Gen Psychiatr* **32**: 1580-1586, 1975

¹⁴⁸ Ionasescu 1960, Case 2

¹⁴⁹ Daly 1975, 69

and of self¹⁵⁰, including rapid life reviews or memories¹⁵¹; of vertiginous sensations of floating or rotating¹⁵²; of auditory hallucinations¹⁵³ of buzzing, ringing, or vibrational noises or voices and/or commands given to subjects¹⁵⁴; of peace, joy, pleasure¹⁵⁵ or of ineffable ecstasy and euphoria¹⁵⁶; of observing deceased relatives or friends¹⁵⁷; of being in a light¹⁵⁸ or of being in the presence of God, Jesus, or other persons¹⁵⁹; of experiencing "presences"¹⁶⁰; an OBE¹⁶¹, "pre-currence"¹⁶², pre-cognition¹⁶³; or horrific hallucinations¹⁶⁴.

These case reports (the latest quoted being published in 1996) indicate quite clearly that the repertoire of the experiential phenomenology reported in ECE can be created *in toto* by brains subject to various types of insult, the majority, however, predominantly involving the temporal lobe. This repertoire, available within the literature, advances greatly beyond the severely diminished approaches offered by Ring, Sabom, Grey, and Fenwick & Fenwick towards the temporal lobe as an aetiological *factor* in ECE.

¹⁵⁰ Ionasescu 1960, Case 2

¹⁵¹ Daly 1975, referring Jackson 1931; Devinsky et al 1989, referring Kamiya et al, 1982

¹⁵² Smith 1960; Devinsky et al 1989, Cases 2,6,7,8,10; Ionasescu 1960, Cases 5,6,7

¹⁵³ Brugger & Regard, 1997

¹⁵⁴ Mabilie 1899, Observations I-IV; Devinsky et al 1989, Cases 1,5-7; Daly 1975; Ionasescu 1960, Case 2; Halligan et al 1994; Lippman 1954, Case 1 (migranoid entering darknesss and spinning), Cases 2,5

¹⁵⁵ Devinsky et al 1989, Cases 4,7,10

¹⁵⁶ Williams 1956, Cases 31,35,36; Boudoursque et al 1972; Cirignotta et al, 1980; Viulleumier et al, 1997

¹⁵⁷ Halligan et al 1994, 465; Ionasescu 1960, Case 4

¹⁵⁸ Dewhurst & Beard 1970, Cases 2,4

¹⁵⁹ Mabilie 1899, Observations I-IV; Waksman & Geschwind 1975, Case 1; Dewhurst & Beard 1970, Cases 1,2,3; Devinsky et al 1989, Case 10; Mesulam 1981, Cases 10,12; Sedman G, *Psychiatr Neurol* **152**: 1-16, 1966; Sedman G, Hopkinson G, *Confin Psychiatr* **9**: 65-77, 1966

¹⁶⁰ Ardila & Gomez 1988; Brugger et al 1996; Persinger et al 1994; Lippman 1954

¹⁶¹ Daly 1975, Case 5; Brugger et al 1996; Lunn 1970, Cases 1,2; Lance et al 1974, Case 4

¹⁶² Gowers 1910, quoted by Daly 1975

¹⁶³ Gloor et al 1972, Case 4; Penfield 1958, 63 [Case MM]

¹⁶⁴ Williams 1956, Case 43; Mesulam 1981, Cases 8,9; Lippman 1954, Section 3, Case 1; Kroll J, Bachrach B, *J Nerv ment Dis* **170**: 41-49, 1982, [vision of S Guthlac]

It is stressed that I am not advocating temporal lobe epilepsy to be the *cause* of ECE. That would be a totally untenable hypothesis. Equally, I should want to resist any observed criticism that the above case-reported hallucinations are (in some instances) single events, as opposed to being welded into a complete sequence reminiscent of the spontaneous NDE. That is not my argument. Rather, my case rests on the notion that the temporal lobe can, in a variety of defined circumstances, conjure all aspects of the phenomenologies characterising ECE. Therefore, ECE could well be emergent phenomena from within the brain's temporo-parietal axis, given the important contribution of this axial multi-modal associative centre to conscious and subconscious mental awareness. Physiological stresses, as occasioned by ischaemia, hypoxia or other functional aberrations of which the preceding paragraph treats, are the catalysts most favoured to generate ECE phenomenology. Moreover, because so many ECE (~80%) occur during life-threatening circumstances¹⁶⁵, there is no particular reason why such phenomenology should be shrouded with mystical overtones consonant with other-worldly trips, or even glimpses of heaven. The brain dimension must neither be ignored, dismissed, nor underestimated.

From that, my observations confirm, and serve to amplify my argument that ECE are brain-associated constructs engendered while insulted brains regain functional normality as conscious-awareness is rapidly regained. Subjects do remain alive, their brains do not die, and a full clinical recovery invariably results, as is widely manifested in the thousands of reports now extant. Hence, these experiences do not have to be seen as extra-corporeal journeys, forced into a mould that requires an ascent into some imagined higher realm, power, or collective (cosmic) consciousness, or seen as incoming divine messages

¹⁶⁵ Fenwick & Fenwick 1998, 212

influencing cerebral substrates. In the literature which I have been analysing, no ECE respondents have been subject to the kind of work-up which (nowadays) would be required to uncover latent susceptibilities to non-ictal auras of the temporal lobe, or temporo-parietal junction. That is most important, because such latent abnormalities could provide the definable criterion which distinguishes those who have ECE from those who do not. Indeed, there is an emerging literature which buttresses my case, as outlined below.

V.6.1 The Emerging Critical Relevance of Latent Temporal Lobe Dysfunction

In a study of 1096 apparently healthy young individuals drawn from a university undergraduate population, it was found that 45% of this sample (Studies 1 and 2) claimed to have experienced repeated clinical symptoms suggestive of latent temporal lobe damage, after having completed the relevant and appropriately-designed questionnaires¹⁶⁶. The damage was related to previous episodes of closed head trauma or severe febrile illnesses throughout childhood and adolescence. From an additional series (Study 3) of 600 consecutive hospital-based referrals, 15 patients were selected by the same investigators for further evaluation of temporal lobe dysfunction. Seven of those patients gave past histories of closed head injuries, another seven had been subject to febrile illnesses, and one was exposed to a lightning strike. All fifteen patients demonstrated symptoms indicative of seizural (temporal lobe) activity. In two other independent studies¹⁶⁷, similar forms of symptomatology responded to specific anti-epileptic drug

¹⁶⁶ Roberts R, Varney N, Hulbert J, Paulsen J et al, *Neuropsychol* **4**: 65-85, 1990

¹⁶⁷ Tucker G, Price T, Johnson V, McAllister T, *J Nerv Ment Dis* **174**: 348-356, 1986; Neppe V, Kaplan C, *Clin Neuropharmacol* **11**: 287-289, 1988

therapy [carbamazepine], suggesting originating focal (temporal lobe) discharges in these subjects.

Another large, heterogeneously selected group (n=1071 subjects), comprising undergraduates, artistic people, and clinically relevant patients with either post-traumatic stress disorder, anxiety-depression, exotic dissociation, or temporal lobe epilepsy, was investigated prospectively over a 10-year period. Each recruited subject completed a set of questionnaires¹⁶⁸ based on phenomena previously reported by another cohort of subjects¹⁶⁹ and correlated with electroencephalographic activity over the temporal lobes. Responses included memory fragments, vivid visual and auditory hallucinations, intense personal meaning given to the experiences reported, vibrations, sudden insights, ego-alien intrusions, and mystical encounters¹⁷⁰. Each group was given a "T" score. The data revealed increasingly abnormal scores (in comparison with age/sex-matched controls for whom "T" = 50 ± 10 : $m \pm sd$) through the artistic people to the clinical groups. The latter exhibited the greatest "T" values, those with suspected partial temporal lobe seizure activity achieving the highest scores. Thus a spectrum of personality changes and dispositions, related to "T" score, was demonstrated, indicating a progressively greater influence of the temporal lobe (and its intrinsic latent damage) on the dispositions and natures of the subjects examined. The issue here, of course, is whether all these substantial groupings are a representative microcosm of society at large. It is certainly a possibility.

Without doubt, this is important work. It provides the first, definitive empirical evidence for one possible type of mechanism that explains why only a small proportion of the

¹⁶⁸ Persinger M, Makarec K, J Clin Psychol **49**: 33-45, 1993

¹⁶⁹ Makarec K, J Res Personal **24**: 323-337, 1990; Makarec K, Persinger M, Percept Motor Skills **60**: 831-842, 1985

¹⁷⁰ Gloor et al 1982; Wieser 1983

general population has a propensity to undergo NDE. Indeed, the hypothesis could be offered that temporal lobe stimulation, through either electrical stimulation¹⁷¹ or spontaneously through auras (with or without the subsequent ictal phase) and triggered by other extraneous factors, yields a variety of mystical and other experiences analogous to the phenomenology of NDE. The baseline electrical sensitivity within deep temporal lobe structures is a reflection of the activity at any given time of its neuronal networks in each individual¹⁷². That sensitivity or liability to activity¹⁷³ is evidently related to previous traumatic insults, such as closed head injury, hypoxic episodes, high fever and delirium, and the stresses of daily life (including accidents, heart attacks, bereavement, suicide bids, severe allergic reactions etc), and, hyper-ventilation¹⁷⁴ which is one form of breath control (eg, anapanasati) common to certain Eastern meditative practices¹⁷⁵. These extraneous factors increase the predisposition to the experiencing of symptoms associated with the temporal lobe. Since in general, the psychological and behavioural characteristics of an individual at any time are dependent on the metabolic activity of particular brain centres or networks¹⁷⁶, factors that impinge on pre-existing temporal lobe damage may define an increasingly abnormal spectrum of psychical and mystical experiential beliefs and behaviour throughout any population. Indeed, such stresses may hypersensitise neurons to

¹⁷¹ Penfield 1958, 1960; Jasper & Rasmussen, *Res Publ Assoc Res Nerv Ment Dis* **36**: 316-334, 1958; Persinger & Makarec 1993

¹⁷² Persinger M, *Percept Motor Skills* **59**: 583-586, 1984; *idem*, *Percept Motor Skills* **64**: 1112-1114, 1987;

¹⁷³ Fenwick et al, 1985; Rocca W, Sharbrough F, Hauser W, Annegers J, Schoenberg B, *Ann Neurol* **21**: 22-31, 1986; Guidice M, Berchou R, *Brain Injury* **1**: 61-64, 1987

¹⁷⁴ Gotoh et al 1965; Allen T & Agus B, *Am J Psychiatr* **125**: 632-637, 1968; Kennedy R, *Am J Psychiatr* **133**: 1326-1328, 1976 [Case 1]

¹⁷⁵ Laughlin C, Mcmanus J, d'Aquili E, *Brain, Symbol & Experience*. New York: Columbia Univ Press 1992, 211 and 303

¹⁷⁶ Chugani H, Phelps M, *Science* **231**: 840-843, 1986; Posner M, Peresen S, Fox P, Raiche M, *Science* **240**: 1627-1631, 1988

lower seizure thresholds¹⁷⁷: this is demonstrable during deep sleep¹⁷⁸ at which time there is some degree of hypoxia.

Now, it is on that background that Britton & Bootzin¹⁷⁹ investigated, for the first time, 23 ECE subjects and compared them with 20 age/sex-matched controls without a pre-existing history of stress-related life events. Those within the NDE group revealed more (20%) inter-ictal epileptiform waveforms in their electroencephalograms in comparison with the control group (6%). They also showed highly significant differences on the Complex Partial Epileptic Signs ($p<0.01$) and Temporal Lobe Symptoms ($p<0.005$) Inventories. On the Dissociation Experiences Scale¹⁸⁰, there was less of a detectable difference between control scores ($m=7$) and NDE subjects ($m=11$; $p<0.1$) in comparison with subjects with post-traumatic stress disorder ($m=30$) or dissociative disorders ($m=35$). This work indicates that NDE subjects do not necessarily constitute a specifically dissociative group of individuals, a conclusion endorsed by Greyson's recent analysis¹⁸¹. The NDE group, however, revealed EEG evidence of abnormal inter-ictal spiking (22%) and reported more temporal lobe epileptic symptoms than their age/sex-matched controls (6%)¹⁸². In that regard, they exceed the prevalence of allied symptomatology in other reported "normal" control populations (0.4%), non-epileptic clinical subjects (2-3%), and even individuals with a previous history of head trauma and loss of consciousness (~6%)¹⁸³. Notably, the EEG abnormalities were left-sided¹⁸⁴. The obvious difficulty here is that the original

¹⁷⁷ Benviste H, Drejer J, Schousboe A, Diemer H, *J Neurochem* **43**: 1369-1374, 1984

¹⁷⁸ Malow B, Lin X, Kushwaha R, Aldrich M, *Epilepsia* **39**: 1309-1374, 1984

¹⁷⁹ Britton W, Bootzin R, *Psychol Sci* **15**: 254-258, 2004

¹⁸⁰ Stewart J, Bartucci R, *Am J Psychiatr* **143**: 113-114, 1986; Carlson E, Putnam F, *Dissociation* **1**: 16-27, 1993

¹⁸¹ Greyson Bruce, *Lancet* **355**: 460-463, 2000

¹⁸² Britton & Bootzin, 2004

¹⁸³ Shintani S, Tsuruka S, Shiigai T, *J Neurol Sci* **182**: 129-135, 2001

¹⁸⁴ Holmes M, Dodrill C, Kutsy R, Ojemann G, Miller J, *Epileptic Disorders* **3**: 137-141, 2001

sample numbers were very small. Furthermore, based on detailed reviews of published cases, Blanke and Mohr¹⁸⁵ (2005) found that ~70% OBE occurred with right-sided temporo-parietal forms of pathology. Despite that, the studies of Britton and Bootzin are of enormous value in being the first to demonstrate latent cerebral pathology, not only related to OBE, but also in a significant proportion (~20%) of NDE subjects. Nevertheless, the data indicate that subclinical proneness to complex partial auras arising from the temporal lobe (and in the absence of ictal development) identifies a cohort of individuals possibly at risk for NDE in response to a variety of stress-inducing circumstances.

V.6.2 Transports of Joy, Love and of Ecstasy

Fenwick and Fenwick¹⁸⁶ raise another question as to why such rapturous *'feelings, different from ordinary happiness and joy, should be encoded in the brain'*. Consider: *'I was just in a wonderful peace and wellness [sic] in a beautiful landscape setting of grass, lawns, trees and brilliant light, diffused ... with a feeling of being surrounded by wonderful love, joy and peace ...'* (idem, p75).

This excerpt speaks for the majority of respondents, I suggest, in terms of the emotionally-charged "loving feeling" that seems to encapsulate the entire ND experience. In attempting to re-capture the underlying essence of that blissful elation, I was struck by two respondents who had used the adjective *orgasmic* as a means of articulating the overwhelming vividness and wonder during such an ineffable uplifting, experienced as an intensive affective backdrop to the accompanying beauty of the scene perceived. The first

¹⁸⁵ Blanke O, Mohr C, Brain Res Rev 7: 189-195, 2005

¹⁸⁶ Fenwick & Fenwick 1998, 72

is from Ring concerning a man who nearly drowned in a boating accident¹⁸⁷. The victim stated: *'It's tough. Use euphoric. Use orgasmic. Or use high. It was very tangible, very real. But it was doing magnificent things to me. You know, afterward I looked at that lake and I said, "That lake made love to me". It really did, it felt like that'*. A similar statement comes from Howard Storm, whom we previously met because of a very protracted hellish experience while awaiting surgery for an intra-abdominal emergency during a cultural trip to Paris. After praying for an end to that part of his NDE, he entered the light. Storm continues¹⁸⁸: *'...and I was ware that the light was a Being. And all these things I knew immediately. That the light loved me. That it knew me. That it was really powerful and good. And we went out of that place, and there was a strong sense of moving upwards very rapidly. And we travelled together and I was in ecstasy ... if you can imagine having orgasms of every sense and of your intellect ... that's what I was into. It was wonderful...'*

Above, (this chapter, p250ff), I referred to manifestations of disturbed temporal lobe function in subjects who expressed intense episodes of supreme ecstasy which wholly or partly comprised pre-ictal auras. In many cases with latent dysfunction, the aura occurs without the ensuing motor fit¹⁸⁹. Such occurrences amply satisfy the Fenwicks' query. The brain can, indeed, conjure appropriate phenomenological expressions of ecstasy, even when damaged or functionally impaired. They should also be informed that of those few signal occasions in life when intense, exaltation is experienced, an orgasm (sexual) is one. Moreover, orgasms are "hardwired" in the brain. We do not have to be taught how to have one: they even occur in children. Usually, they arise naturally and spontaneously, when

¹⁸⁷ Ring 1980, 42

¹⁸⁸ Wilson 1997, 143

¹⁸⁹ Williams 1956; Cirignotta et al, 1980; Devinsky et al 1989; Vuilleumier et al, 1997

either men or women are dreaming, and at other appropriate times and circumstances. Unfortunately, none of the latest cases that I cited from the literature was subjected to functional brain-scanning techniques, so the precise cerebral loci of these ecstatic auras, and their further direction of cortical spreading remain, so far, undiscovered. Yet there are additional considerations to be exemplified and drawn out.

In order to explicate further, my emphasis will be on the neurophysiology of the orgasm, for the reason that it provides one possible analytical approach to the neurophysiology of ecstatic bliss encountered by many ND subjects, and specified in the two commentaries noted above. Its basis lies in the brainstem's ascending dorso-medial reward system [A10 dopaminergic neurones in the ventral tegmental area, VTA, and which project to the orbito-frontal cortex]¹⁹⁰, and which is clearly relevant to the overwhelming sense of invincibility gone through during intravenous heroin "rushes" or sexual climaxes. During these events, brain scanning procedures reveal increased cerebral blood flow in the mesodiencephalic areas of the upper brainstem, including the VTA, as well as other important neocortical regions [anterior cingulate, putamen, insula, pre-frontal cortex, cerebellar hemispheres]¹⁹¹.

A further piece of important information relevant to our quest for the ecstatic event, although omitted by all key writers on ECE phenomenology, is that temporal lobe

¹⁹⁰ Sell L, Morris J, Bearn J, Frackowiak R, Friston K, Dolan R, Eur J Neurosci **11**: 1042-1048, 1999; McBRide W, Murphy J, Ikemoto S, Behav Brain Res **101**: 129-152, 1999

¹⁹¹ Tiihonen J, Kuikka J, Kupila J et al, Neurosci Lett **170**: 241-243, 1994; Holstege G, Georgiadis J, Paans A et al, J Neurosci **23**: 9185-9193, 2003; Bartels Andreas & Zeki Semir, NeuroReport **11**: 3829-3834, 2000; Breiter H, Golub R, Weisskoff R et al, Neuron **19**: 591-611, 1997

dysfunction gives rise to orgasmic auras, with or without a subsequent tonic-clonic fit¹⁹². Conversely the activity involved in sexual intercourse, possibly a result of hyperventilation, will also precipitate an orgasmic psychomotor episode¹⁹³. The literature contains reports of over forty subjects¹⁹⁴ with temporal lobe dysfunction associated with veridical orgasmic climaxes which are to be distinguished from genital auras originating from the medial sensory cortex [paracentral lobule]. The brainstem ventral tegmental area [VTA] targets the pre-frontal cortex, and limbic anterior cingulate, so that [with disinhibition of GABA-ergic inter-neurones,] exceptionally heightened activity within the VTA dopaminergic neural network ensues¹⁹⁵. Interestingly, some patients being treated with L-dopa for Parkinson's disease may suffer the unwanted side-effect of uncontrolled improper hypersexuality.

There is associated activity within the posterior hypothalamus which serves as the neural gateway to the endocrine and autonomic nervous systems¹⁹⁶. The hypothalamus secretes oxytocin [from the paraventricular nucleus], levels of which rise considerably during sexual arousal¹⁹⁷ and which can be inhibited by naloxone whose influence reduces somewhat the accompanying excitement¹⁹⁸. There is here a clear neurophysiological relationship between temporal lobe activation and the neurohypophyseal elaboration of

¹⁹² Hoenig J & Hamilton C, *Acta Psychiatr Scand* **35**: 448-456, 1960; Freeman F & Nevis A, *Neurology*, **19**: 87-90, 1969

¹⁹³ Gautier-Smith P, *Rev Neurol (Paris)*, **136**: 311-319, 1980

¹⁹⁴ van Reeth P, Dierkens J, Luminet D, *Acta Neurol Belg* **58**: 194-218, 1958; Currier R et al, *Arch Neurol* **25**: 260-264, 1971; Crevenna et al, *Br J Psychiatr* **176**: 300-303, 2000; Warneke L, *Canad Psychiatr Assoc* **21**: 319-324, 1976; Jansky et al, *Neurology* **58**: 302-304, 2002; Jansky et al, *Seizure* **13**: 441-444, 2004; Fadul C et al, *J Neuro-Oncology* **72**: 195-198, 2005

¹⁹⁵ Sell et al 1999; Bocher M, Chisin R, Parag Y et al, *NeuroImage* **14**: 2001, 105-117

¹⁹⁶ Redoute J, Stoleru S, Gregoire M-C et al, *Hum Brain Mapp* **11**: 162-177, 2000; Arnow B, Desmond J, Banner L et al, *Brain* **125**: 1014-1023, 2002; Karama S, Lecours A, Leroux J et al, *Hum Brain Mapp* **16**: 1-13, 2002

¹⁹⁷ Carmichael M, Warburton V, Dixen J, Davidson J, *Arch Sex Behav* **23**: 59-79, 1994

¹⁹⁸ Murphy M, Checkley, Seckl J, Lightman S, *J Clin Endocrinol Metab* **71**: 1056-1058, 1990

oxytocin. Because of its critical role in sexual activity, pair-bonding, lactation and nursing of suckling young, oxytocin contributes significantly to the experiential aspect of the "deep feelings of love" accompanying these facets of biological behaviour¹⁹⁹. Another important corollary of many of these brain scanning investigations is that the classical limbic system [amygdala and hippocampus] is *de-activated* during heroin "rushes" and sexual orgasms. Neither is it activated during the playing of "spine-tingling" music²⁰⁰, arousals secured through the portrayal in film clips of pornographic material and sexually explicit activities, or when pictures of loved ones are being observed²⁰¹. Little more can be said at present, because the neurophysiological and neurochemical basis of these experiential qualia still remains to be more extensively explored. Still, care needs to be taken in ascribing all (ECE) pleasure to the limbic system alone. Of further interest is that in temporal lobe epileptics, involvement of the meso-temporo-amygdaloid complex invariably causes widespread feelings of fear, disgust and anxiety²⁰², but very rarely sensations of pleasure – a pointer indicating that this type of brain pathology is unlikely to be directly related to ECE, or NDE in particular.

Conversely, attempts to increase orgasmic intensity are witnessed in erotic hangings. The partial cerebral ischaemia/hypoxia induced with a controlled self-hanging event during autostimulation, achieves that end: unfortunately, mistakes lead to the death of the subject by asphyxiation²⁰³. Another means of achieving exhilaration at the point of orgasm²⁰⁴ is to inhale amyl nitrate: the resultant generalised vasodilatation induces mild hypotension, a

¹⁹⁹ Insel T, Psychoneuroendocrinol **17**: 3-35, 1992

²⁰⁰ Blood A & Zatorre R, Proc Nat Acad Sci **98**: 11818-11823, 2001

²⁰¹ Bartels & Zeki, 2000 NeuroReport **11**: 3829-3834, 2000

²⁰² Rauch S, Shin L, Wright C, Ann N Y Acad Sci **985**: 389-410, 2003

²⁰³ Resnik H, Am J Psychother **26**: 4-21, 1972

²⁰⁴ Luria Donald B, Med Asp Hum Sex **4**: 89, 1970

reduction in cerebral blood flow, and a sexually dreamy euphoric blissfulness. These observations are relevant to the perceived vividness and accompanying ecstatic affective sensations of the NDE, indicating that temporary arterial hypotension (as the brain recovers) may be a further contributory factor in their genesis, and, to their obvious intensity. We should also recall the greatly enhanced vividness of perceived colours during NDE, and when associated with posterior cortical ischaemia (above, p242-6). I thus conclude that the ecstatic transcendence associated with NDE is more likely to reside in the upper diencephalon rather than necessarily within the limbic-amygdaloid system. The rewards of pleasurable gratification, achieved from whatever aetiological source, are not cortically-based cognitive functions, but primitive, hard-wired stimulus-response systems embedded in the paleo-evolutionary brain.

These considerations obviously open up entirely new vistas and insights derived by my bringing to notice these specific (orgasmic-ecstatic) temporal lobe auras, in addition to the activity and disinhibition of the mesolimbic dopaminergic reward system in the physiology of heightened erotic and ecstatic pleasure. My view is that the temporal lobe, the ascending mesolimbic reward system and the orbito-frontal cortex, offer crucial links to ECE phenomenology, as manifested by the intensity of the ecstatic feelings of joy, love and longing they generate, and which so incisively demarcate those responses. Time will come when the neurophysiological basis of these experiences will be more finely discerned and explained.

V. 7 THE FUTURE OUTLOOK

We are now witnesses to a revolutionary scene regarding the neurophysiology of the temporal (and parietal) lobes which, over 50 years ago, would have been inaccessible to

Dr. Williams at the National Hospital, Queen Square, London. As should be likewise evident, the material and views which I have expressed expand greatly the diminutive contributions to possible aetiology provided by Ring (1980), Sabom (1982: 1998), Grey (1985) and Fenwick & Fenwick (1998). Their books remain standard texts regarding the phenomenological and mechanistic background to ECE. My account illustrates their defective evaluations in excluding much work regarding disturbed temporal lobe function which was in the public domain before their respective times of publication.

A few pages above (this chapter, p250) I made the comment that this was an unsatisfactory state of affairs. It is unsatisfactory, firstly, because the temporal lobe has been afforded such a superficial and poorly-covered approach. Secondly, because Ring's book²⁰⁵ is effected *'in a scientific spirit of enquiry and conducted using scientific procedures'*, Sabom²⁰⁶ declares himself to be writing a *'scientific study'* while Fenwick²⁰⁷ refers to himself as a *'scientist'*. The books written by these persons continue to be portrayed as balanced approaches to ECE phenomenology: they are widely accepted as canonical expositions on the subject. If that is the case, then I must defer from that position.

Thirdly, if we selectively consider the neurophysiology of the temporal lobe, and in particular, its increasingly recognised subclinical or latent modes of expression, we are able to see what it can contribute to our further understandings of ECE. The contribution of the empirical data now to hand concerning aberrant functioning of the temporal lobe

²⁰⁵ Ring 1980, 15

²⁰⁶ Sabom 1982, 5

²⁰⁷ Fenwick & Fenwick 1998, 197

provide much needed insights into a likely source of the experiential expressions of NDE of which so many respondents speak. We need further scientifically-organised study of NDE phenomenology to consolidate these recent neurophysiological advances. As an ancillary study, it would be useful to subject the narratives of temporal lobe epileptics, ECE experiencers, those with known cerebral vascular insufficiency, migraineurs and subjects able to recall their dream-state modes to a panel of "blinded" judges, to determine to what extent each sample of experiences is separable, or distinctive. The methodological techniques used by dream-state researchers would be invaluable in this type of analytical setting.

Furthermore, we must remember the idiosyncratic contours of each ECE experience, both in terms of the cultural, social and religious backgrounds which colour the reports sampled, and because other feature-contents of these narrated experiences would be exclusive to the particular life-history of each subject under scrutiny. It is precisely for that reason that the idea of the "depth" criterion for any ECE is so vacuous, since it is no more a measure of "depth" than the duration of the experience which, I have shown, is transient. Likewise, the "core experience" is an invalid proposition because progressively fewer subjects penetrate the further reaches of the idealised event. Moreover, because these experiences are so personally idiosyncratic, no one evolutionary schema could ever capture the essence of any single, individually-reported narrative sequence.

Fourthly, there is another incisive point concerning the "core experience" which I wish to deal with. Ring²⁰⁸ states that *'the core experience tends to unfold in a characteristic way ... the later stages manifesting themselves with systematically decreasing frequency: that*

²⁰⁸ Ring 1980, 39

is, a "*thanatomimetic narrative*"'. My over-riding objection to that proposal is that the experience, especially in respect of the underlying brain, is of a progressive re-awakening, and not of a progressive, agonal brain death. The ECE is not about death nor death-parroting sequences. But it has everything to do, contra Ring, with a return to life.

Fifthly, Ring's suggestions are inconsistent with other data. For example, it is not the case that a peaceful feeling is the first sensation universally undergone by every experient: that is also evident if the percentages of many series are expressed as mean averages. On that basis, the entire set of data appear to express a bell-shaped distribution for NDE, with the peace and joy associated with the other-worldly realm within the light (60-80%) and apprehension of other person(s), achieving the highest number of hits. This comes after the tunnel (if present) which is exhibited by only 10-30% people. Much lower percentages (10-20%) account for the remaining aspects of the erroneously-idealised sequence, such as the life-review, judgement, and calls to return to earth. We should be aware of the fact that only ~60% all experients appear to see a light, even though it is regarded to be of great significance either in terms of '*consciousness, God and knowledge*' or as '*hallmark of mystical experience*'²⁰⁹, while for Ring²¹⁰ it represents an '*ascension into a higher ("fourth") dimension – even a glimpse of astral reality*'.

I therefore refute, in their entirety, the views of Ring (1980) and of Grey²¹¹ that ECE represent the escape of consciousness from a dying brain (as has also more lately and

²⁰⁹ Fenwick & Fenwick 1998, 57: 64

²¹⁰ Ring 1980, 239-240

²¹¹ Grey 1985, 41

unconvincingly been taken up by Kelly²¹² and her colleagues, and, progressively espoused by Fenwick²¹³), thus to rise to the fourth dimension and thereby enter some other "mystical" realm whether achieved through holography, kundalini energy rising up through the spinal cord, or by access to the universalism of cosmic power. I submit that ECE phenomenology occurs either physiologically in a quiescent (non-sensorially challenged) brain and which is therefore akin to a hypnagogic hallucination, or one that is in the process of returning to full conscious-awareness after some kind of temporary ischaemic/hypoxic (acute cardiac arrest or cardio-pulmonary crisis) or other physiologically stressful insult (anaphylaxis, haemorrhage, N₂O intoxication, epileptic discharge). In respect of that claim, based on the evidence provided, I would urge that a detailed prospective examination of potential ECE subjects should be undertaken. Greyson & Stevenson²¹⁴ called for a prospective trial in 1980, in order to eliminate retrospective bias and resulting interpretational errors, although the extent envisioned was far slimmer than the ideas I am promoting. Despite that call Greyson, who is director of IANDS research, has continued to publish retrospective papers²¹⁵ based on IANDS members responding to advertisements, or other self-selected subjects lacking independent corroboration of their ECE backgrounds, and hence subject to all the biases he and Stevenson sought to eradicate over twenty five years ago. Those biases not only include the use of IANDS subjects, but also the disproportionately high numbers of female IANDS subjects and the use of small numbers which, for statistical purposes, are liable to skew results and therefore interpretations.

²¹² Kelly E, Greyson B, Stevenson I, *Omega* **40**: 513-519, 1999-2000

²¹³ Fenwick 2004a,b,c

²¹⁴ Greyson & Stevenson 1980, 1196

²¹⁵ Greyson 1983, 1985, 1990, 2000; Greyson B & Bush N, *Psychiatry* **55**: 95-110, 1992

It is not my intention to advance an entirely negative portrayal in light of my justified criticisms of much previous work. There is hope. The obvious need is for a major, prospectively-organised study, based on multi-regional centres, designed to obtain as much third party objective data on ECE phenomenology as possible by imaginative, and new methodological approaches. To my mind, only by that means would it be possible to decide the vexing, yet unanswered question, as to the predisposing role of abnormal brain activity and the extent to which the latter identifies that small proportion of the population (c20-30%) at risk for ECE. Ideally, studies would be planned, co-ordinated and data collected by key regional centres (university departments of neurology, psychiatry, cognitive neuroscience or experimental psychology). Neurological, psychiatric, cardiac, accident and obstetrical departments would be major sources of 'victim' subjects. These would include arteriopaths with known angina who would be potential cardiac arrest and stroke victims, people with severe depression and potential suicide victims, and obstetric cases likely to go through difficult labours or other operative procedures. Many of these cases would, in the event of a non-NDE, provide the necessarily high numbers of age/sex-matched individuals required as controls. The circumstances of any alleged ECE would have to be made wholly available through third party witness and backed up by pertinent collateral evidence. Much needed data from control, and targeted 'victim', populations could be collected and electronically stored for ultimate cross-referential analysis. Data would accumulate from detailed histories of all subjects and referable to past head injuries, febrile convulsions, infections, and physical and sexual abuses²¹⁶, the application of a battery of questionnaires (Hoge, DIS, DES, MMPI, PPI, TLS, CPES, etc), together with EEG and brain scans as means of identifying the extent of latent predisposing brain pathology within the population. As outlined above (Chapter III, p145-6) cohorts of

²¹⁶ Rocca et al, 1987

temporo-parietal stroke victims should be prospectively followed because of their generalised vascular disease and propensity for a cardiac crisis, together with age/sex-matched controls. Other groups²¹⁷ of subjects shown to have latent temporal lobe foci could be prospectively randomised into carbamazepine/placebo groups. This pharmacological approach derives from the process termed "kindling" whereby intermittent subclinical seizure activity, in time, potentiates further cumulative abnormalities in cerebral function and behaviour, and which has been shown to be amenable to this therapeutic approach²¹⁸. Such objective studies would indicate the extent to which defined brain lesional dysfunction, either inhibits (as with stroke patients, and dreaming), or pre-disposes towards (latent temporal lobe seizure activity), the phenomenology of ECE.

This is but a brief, yet necessarily incomplete, outline. But it is clearly evident from the burden of my approaches in the foregoing chapters that ECE research, rather than progressing still further into the realms of the psychical or other Eastern esoteric philosophies, needs to be firmly re-oriented towards the brain. In this way, it will be possible to address the many unanswered questions concerning ontology which, in view of recent advances in neurophysiological research, now await urgent clarification. The critical issue here is that data should be accumulated from as many subjects, 'victims' or controls as possible, and where appropriate, to as many subjects as possible, pre-, and post-, event. Large numbers of subjects, prospectively investigated in order to eradicate

²¹⁷ Britton & Bootzin 2004; Persinger 1984, 1987, 1994; Persinger & Makarec, 1992, 1993

²¹⁸ Goddard G, McIntyre D, Leech C, *Exp Neurol* **25**: 295-330, 1969; Post R, Uhde T, Putnam F, Ballenger J, Berrettini W, *J Nerv Ment Dis* **170**: 717-731, 1982; Stevens J & Livermore A, *Neurology* **28**: 36-46, 1978; Tucker et al, 1986

retrospective and other forms of bias that render existing studies valueless or questionable, are crucially necessary. The most efficacious method of procuring useful (computerised) data would involve multi-regional, or multi-national, co-operative trials, statistically validated. Such a study is now required to supplement the work of Britton & Pootzin (2004), and thus to confirm that their data are representative of the public at large, and relevant to the likely neuropathological origins of ECE phenomenology. This kind of study is vital in order to bring small, disparate groups together under one controlling administrative influence. That would avoid the many methodological mishaps which have plagued existing studies, and to overcome the woefully small (and often biased) numbers of experiments, unevenly matched male to female ratios, and statistical errors arising through use of small group analyses.

Important new insights, addressing the questions which I have raised, and meeting the challenging impact of the latest neurophysiological advances, can only be generated and effected by this type of disciplined and generalised approach to the phenomenology of ECE. Small group work is never likely to offer the prospect of providing robust answers to these critical questions. On those grounds, local studies that continue to exhibit these recurrent biases would neither be worth pursuing – nor reading.

CHAPTER VI

ULTIMATE CONCERNS

The ND experience exhibits a complex, two-sided phenomenology, comprising other-worldly and this-worldly perspectives. From the latter perspective, hardly attended to by any authors, there arises the need, firstly, to assess how subjects, themselves, have interpreted their NDE and what meanings they derived from them. Secondly, to determine how the lives of subjects undergoing their particular experiences were subsequently modulated and conditioned. Thirdly, to evaluate how the changed attitudes to themselves and towards others among this growing corpus of experients could be deployable, collectively, in fostering enhanced respect and dignity for people in today's society. Our conclusions derived from the above bear significantly on theological precepts of personhood.

From the other-worldly perspective, an interpretation of NDE can be accomplished through two other criteria, eschatological and revelatory, neither of which has been properly addressed in the literature. The NDE is widely alleged to offer new insights into phenomena that supposedly occur after death, and in bringing forward testimony to those phenomena through the narratives of ND experients. Thus there is an imperative to examine these experiential and phenomenological claims within the framework of Christian orthodoxy, doctrine and tradition, a comparison hitherto not effected by the core authorship considered here. Now, understandings of eschatology also overlap into how the

person should be properly regarded theologically. Both eschatology and the person impinge on the origins of consciousness in leading to the acquisition of mind, and secondly, on the problem of the ontological status of soul as pertinent to immortality and to individuals' prevailing (earthbound) spiritual lives. Furthermore, the idea of having a soul needs counterbalancing against future possibilities of resurrection. Finally, all hope of Christian aspiration to a resurrected existence in the hereafter is ineradically predicated on the raising of Jesus Christ from the dead, and most importantly, on the post-Resurrectional appearances to his disciples.

My first quest lies in determining whether a realistic affirmation of NDE "eschatology" is possible on the evidence published. NDE eschatology implies either the escape of soul (Sabom 1998) or free consciousness (Ring 1980, 1985, Gray 1985, Fenwick 2004a) from a brain that is supposedly moribund, if not "dead". To my mind, the concept of consciousness departing from the brain from whence it is derived (dead or alive) is a logical impossibility. Conversely, the attribution of soul to a subject implies a continuity, out of corporeal existence, through death, into immortality. Given the abrupt termination of the NDE, one must necessarily concede that "immortality", in whatever manner achieved, has now to be acutely reversed to "mortality" on the subject's full recovery to conscious-awareness. Such a reversal, like free consciousness, is difficult to comprehend. Nevertheless, I attempt a comparative evaluation of the hereafter between NDE phenomenology and orthodox traditional (Judeo-Christian) perceptions of post-mortem existence, embracing aspects of personhood and resurrectional eschatology.

The second theological perspective is tied to the issue whether an NDE can justifiably be regarded as veridical revelatory, or truly spiritual encounter with the divine. This is another important issue since it raises the problem as to how God communicates his

messages in making them knowable by earthbound subjects, and, importantly, how the brain is involved. At one extreme, the abnormal cerebral basis of hallucinatory communications with the divine is exemplified by the schizophrenic, migraineur or temporal lobe epileptic. In these cases, the aberrant source of these messages is internal and brain-centred. That claim is justified on the grounds that the phenomenology can be suppressed or eradicated by appropriate drug therapy or extirpational surgery. The antithesis of the purely brain-based divine hallucination is reflected in the commands given to the prophet Muhammed and to the exile, S John, during his banishment to the island of Patmos. For the latter, one like the Ancient of Days appeared and commanded him to write down letters to each of the Seven Churches. In both cases, however, it seems that their brains were employed solely as teleprinters, merely transmitting the Holy Words onto paper for whom they were intended.

But there is a middle ground. In Chapter III, it was recalled that God addresses humankind through dreams or the sending of His Word, these being interpreted as literary devices acknowledging the divine-human interaction. Implicit in these interactions is the recipient's understanding of the message thereby imparted. Without understanding, no message could be interpreted and thence acted upon. Neurophysiologically, there is unlikely to be a specific "centre" referable to a predilective site of implantation. The varied pathologies of schizophrenia, migraine or temporal lobe epilepsy make that clear. The issues of divine-human interaction can be no further rarified. We can only acknowledge that, somehow, the message gets in and enters the selected person's conscious-awareness. The perception of divine implants into the mind may be immediate or evolve temporally. Such effects could apply internally as with a sudden thought or a cognitively-perceived series of ideas or realisations becoming apparent over time.

Likewise for externally understood events. In noting that, we have to accept that secular thinking occurs in precisely the same manner. I conclude that there is no specific cerebral locus nor form of thinking which distinguishes secular from religious cognitive receptivity, understanding, or its consequential dependent actions.

I have drawn the conclusion (Chapter III, p142-3) that during NDE, no divine message is vouchsafed to the experient, worthy of transmission to, or for the benefit of, humankind. The issue is whether (and indeed why) God would wish to bring certain people to "heaven" and reveal to them its contours. There are several difficulties with this view. Why only those who think they are dead? (irrespective of whether they are dying). Why only a very small percentage of those actually brought near to death? Are reports of English green fields or cottage gardens, or sightings of one's deceased relatives wearing the same old daytime clothing, to be sensibly believed as truly revelatory encounters with Heaven and the Almighty, given the marked idiosyncratic variations in the descriptions given? In order to further dissect the NDE as a spiritual encounter, I have taken particular note, comparatively, of William James' classical account and of William P Alston's book *'Encountering God'*.

In moving in this direction it might be queried, in light of my incisive neurophysiological stance, why I should be concerned with these aspects of ECE (OBE and NDE). My case, so far, (Chapters II-V) argues strongly the thesis that ECE have a brain-based ontology, as against contrary claims that a new or novel spiritual typology has emerged that envisions an encounter of mind (or soul) with an otherworldly realm, outwith corporeality. In briefly re-iterating this case, in order to represent it in context with such metaphysical postulates, I re-assert that I am not persuaded that an OBE has any distinct spiritual, "mystical" or

"psychic" claim on itself, or on the experient. Rather, it is a direct sequela of disturbances in those regulatory centres of ego/paracentric space in the temporo-parietal cortex (most probably the superior and inferior parietal lobules). The OBE arises when visual, haptic and proprioceptive afferences are severely reduced or absent, being due either to physiological or pathophysiological antecedents (Chapter IV). On those grounds, I do not propose to discuss OBE any further either within the eschatological, or spiritual, framework.

In respect of NDE, I have argued why speculative ideas about "core experiences" and postulated "depths" of experiences undergone lack authenticity. Indeed, the concept of "depth" is artefactual heresy. I know of no subjects, after regaining conscious-awareness, spontaneously declaring to their respective author-interviewers that they had just undergone a "deep" (or presumably its converse, a "shallow") experience. A "deep" experience is in the mind of the investigator, not the experient. More simply, and less contentiously, the "depth" of an experience can be viewed as related directly to its temporal duration. From that I conclude that the longer the event, the more bits and pieces of its phenomenology (the so-called "core") will be sampled (and, perhaps, remembered). Rather than being construed as otherworldly journeys, I regard NDE to be related to the normalisation of brain function following one of several forms of medical crisis or an altered state of mind, but during which, normal conscious-awareness is again being re-established. By an altered state of mind, I mean in its widest sense, conditions associated with reduced afference as occasioned by severe depressive illness, abject loneliness, bereavement or other willed activities such as meditation during which (among other factors altering sensory afference) breath control may result in transient cerebral hypoxia. Finally, I regard either commands, "barriers", or decisions tinged with an irresistible

urgency towards earthbound claims, duties and responsibilities, to be indicative of the return of higher cortical controlling mechanisms ['moral' content associated in part with frontal lobe function]. These higher controlling mechanisms become co-ordinated with other cortical centres in the full re-establishment of conscious-awareness. Moreover, the eruption of conscious-awareness is taken to represent a progressive incursion into the receding subconscious, dream-like mentation which exemplifies the earlier phases of the ND experience. Specific examples given (Chapter V, p237ff) illustrate clearly the progressive influence of cognitive processes during the return to normal (neuro)physiological function.

That brief ontologically-based account of the neurophysiology of NDE must be considered in parallel with subjects' own interpretations of the event, that is, whether ontologically generated from within or without. In general subjects are staunchly convinced that NDE are generated from without and that the experience furnishes a vivid glimpse of the supposed afterlife, or for some, encounters with either God or Jesus and of the heavenly realm. Thus, NDE phenomenology could derive either from a distinctive ontological base whether physical (as I maintain) or out of the metaphysical domain. The latter view as espoused by so many subjects must, of course, be respected, irrespective of any derivative third party views on the matter: there is therefore a case to be answered in terms of eschatology, and of spiritual encounter. But first, I proceed in analysing subject-perceived conceptions of the phenomenological and epistemological meanings of NDE in order to tease out further what new and additional precepts are elicitable from the corpus of published material.

VI. 1 SUBJECTS' INTERPRETATIONS OF THEIR NDE

For all that has been written, hardly anything has been offered to indicate how subjects, themselves, perceive the ND event. Qualitative descriptions of the experienced phenomenology abound, often elicited through use of leading or other forms of suggestive questioning, and based on what is (and not) remembered. It is important to observe that the verbal narrative obtained is both a stylised, retrospectively rehearsed account given by the subject, and subsequently interpreted and incorporated by each of the authors into their respective texts. What has been signally ignored by all authors was the opportunity to ask of each subject not what was simply remembered, but, what meaning the NDE was deemed to have offered these subjects. Indeed, we need to remain aware that authors' constructions deriving from the narratives they received would, excluding Sabom, be hardly recognised by their respective subject base. For example, none of Ring's or Grey's subjects confirmed, or indeed asserted, that they had ascended to the *'fourth dimension'*, been directly involved in *'holographic phenomenology'*, or almost become united into a *'universal cosmic brotherhood or consciousness'*.

We have statements from subjects who, in their judgement, did not consider themselves to have been dreaming or hallucinating. I have previously suggested that experiencers, in general, cannot be conversant with the variety of dream-state modes that have been identified and defined neurophysiologically. Even in retrospect, it is not clear how subjects can know or be possessed of such certainty and therefore to categorically assert that they had not been in one such oneiric mode of subconscious mentation. Even normal people cannot make that categorical distinction. On the other hand, hallucinatory hypnagogic and hypnopompic dream imagery is intensely vivid and memorable, rather like that induced by toxic-delirious states, or the dream sequences of aircrew regaining conscious-awareness

from centrifuge-induced episodes of unconsciousness. Thus, for example, there are obvious and distinctive neurophysiological parallels between hypnopompic dream-offset modes and the abrupt awakening from an NDE.

Certainly, dream-states and NDE are classes of mental activity quite different from the ordinary world of wakeful consciousness. But neurophysiologically there is another most important distinction. Dreaming (apart from a few pathological/genetic exceptions), is a natural process and thus an ordered, neurophysiologically-coordinated event. On the contrary, the NDE results from disordered cerebral physiology arising in 80% subjects from a variable period of unconsciousness due to an antecedent cessation of cerebral blood-flow (possibly up to an hour during the resuscitative procedure), severe haemorrhage, drug overdose, or the pain, stress and N₂O intoxication associated with childbirth. The process of returning from that abnormal base to a continuation of full conscious-awareness could hardly be expected to occur via ordered neurophysiologic processes. Recovery is dependent on the type and severity of insult, the speed with which appropriate resuscitative measures are instituted, the subject's age, the degree of atheromatous arterial degeneration (remembering that atheromatous vascular disease accounts for the greatest proportion of ECE), and the possibility of anomalous [Circle of Willis] or obstructed vessels within the cerebral circulation, thereby inhibiting or impairing collateral flow between the anterior and posterior cortical supplies. The particular amalgam of each of these factors ultimately determines, for each individual, the duration and the idiosyncratic mix of hallucinatory forms that will constitute the experience up to the return of full conscious-awareness. This is an area where further insight is needed. Since the neurophysiology and neurochemistry of the transition from dream-state to conscious-awareness is not, at present, fully understood, it is difficult to

suggest immediately any useful ways forward for gaining further insights into the likely recovery process(es) from NDE. It is also intriguing why such a sense of reality and vividness pervades the remembered near-death event, particularly since it is unlikely to have been a veridical journey outwith the body.

In previous sections, we have encountered the varied NDE-associated descriptions of Jesus and the overriding certainty that he was truly encountered. I have criticised these accounts because of their overwhelming anthropomorphic imagery and their inter-personal discrepancies. They are quite unbelievable. Such idiosyncratic depictions suggest the impact of previously-remembered realisations as presented either in religious iconography or on the secular-based settings of cinema and television. Our gospel-oriented descriptions of Jesus give no indications whatsoever of his appearance or demeanour. Geza Vermes¹ pointedly refers in his introduction to *'Jesus the Jew'*, *'...but of his [Jesus] earthly career the faithful are told next to nothing, save that he was born and died'*. That is far too severe a judgement. Yet there is a marked contrast between the stark yet attractive Jewish face adorning the covers of Vermes' Jesus Trilogy and western-type, screen-based imagery that is invariably recounted by ND experiencers. Each, nevertheless, represents mental images forged in the minds of the artist, or Warner Brothers' costume and make-up department.

I refer also to a memorably striking remark by Leslie Houlden² in his book, *'Jesus: A Question of Identity'*. There, he comments (p56) on two essays about Jesus which had appeared in another collection of essays edited by Anthony Harvey³. Houlden remarks,

¹ Vermes Geza, *Jesus The Jew*. London: SCM Press 1983, 15

² Houlden Leslie, *Jesus: A Question Of Identity*. London: SPCK 1992, 56

³ Harvey Anthony (ed), *God Incarnate: Story & Belief*. London: SPCK 1981. Chapter 5 (p42) is Harvey's: *Christology and the Evidence of the New Testament*, and the other is Vermes' (Chapter 6, p55) entitled, *The Gospels without Christology*.

'...two authors, AE Harvey and Geza Vermes, contributed not wholly dissimilar essays. Both give an account of the historical context of Jesus and of conclusions that may be drawn ... [and that] notice many of the same features; but the former proceeds to a position where belief may follow, the latter does not'. Even scholars, despite working from identical source material, beg to differ within the theological milieu when drawing out the varied nuances pertaining to Jesus' earthly life. Our agnosia applies to the intellect as much as to visual illusion and imagination. To what extent, therefore, can NDE imagery be taken seriously? Other experiencers only sense the presence of Jesus or of God, a possibility more suggestive of cerebral activity with the right temporo-parietal cortex, while hearing their voices likewise could imply activation of the auditory association cortex.

Other experiencers are convinced of the reality of their visions of heaven or glimpses of the afterlife. I note that no definitions of what 'afterlife' might mean are offered by experiencers or authors. The belief is tenaciously held despite the geomorphic contours descriptively applied to the 'location'. Subjects seem to be of the view that they hurtled or twisted through a "tunnel" in order to gain access to the otherworld domain. The absurdity of such a construct is that a tunnel (idiosyncratically tied to each person's interpretative perceptions) can neither exist with geographic nor metaphysical coordinates. Criticisms of this kind must surely obliterate any pretensions to any such physical or non-physical reality. Indeed, the criticism indicates that the perception is entirely dependent on hallucinatory brain activity. In my view, the first perception of darkness indicates the initial glimmering of consciousness, while the apparent 'movement' from the dark towards a small light which rapidly increases in size, is most parsimoniously explained by activation of central associative connections of the vestibular system within the temporal

cortex, assisted by the appearance of golden (or blue) light typifying partial re-vascularisation of the posterior and middle cerebral circulation to the pre-striate, and higher associative visual centres of the temporo-parietal-occipital junctional cortex (Chapter V, p242ff).

Finally, neither subjects nor authors seem to have any concerns about the abrupt termination of NDE. My view is that this is similar to awakenings from sleep (especially the hypnopompic sleep-offset subtype) although the neurophysiological mechanisms underlying these state transitions await more precise definition. Unlike others, I have stressed the importance of the precise correspondence between the termination of NDE and the re-appearance of conscious-awareness, just as happens after dreaming. From that time-point, it is possible to extrapolate backwards in real time (using narrative word counts) to demonstrate the ephemeral nature of the NDE. Interestingly, those NDE not due to circulatory embarrassment are often the most prolonged, as occasioned by a toxic-delirious state (Drythelm: Chapter II, p63) or (surgically-induced) hypothermia (Pam Reynolds: Chapter II, p48). To my mind, the NDE is a subconscious reverie betokening re-vitalisation of the brain, but like dreaming, seems to be of little intrinsic value terminating just when, phenomenologically, things start to become interesting.

From the above perspectives, I conclude that subjects' narratives, and their sparsely reported insights into these events, have contributed little of interest theologically, in terms of revelatory insights to, or of God, Jesus, and heaven. I now examine the consequences of experiencing NDE on the subsequent lives of those subjects. The tabulated data of Ring (1980: 1985) and Sabom (1982: 1998) provide us with some useful, context-relevant leads.

VI.2. THE NDE AND THE SUBJECT: CONSEQUENTIAL OUTCOMES

One of the most striking consequences for ND subjects, compared with non-NDE controls, is that they become far less afraid of dying or of facing the ultimate prospect of biological death⁴. In keeping with that perception, there is, comparatively, an enhanced conviction about the reality and tangibility of some continuity after death⁵. Although his methodology is not well clarified, Ring scored each of his subjects before and after the NDE to determine whether the event itself influenced beliefs in an afterlife (idem, 1980, p168-9). Non-NDE subjects scored 2.73 and 3.03 respectively, while NDE subjects scored 2.10 rising to 3.92 ($p<0.1$) post event. These data are important in indicating that it is the NDE and the opportunity to sample the properties of 'otherworldliness', and not the near-scraper with death itself, which are determinative. But these considerations pose further enquiries in regard to subjects' 'spirituality' and 'religiosity', pre- and post- the ND experience. Sabom⁶ administered a Spiritual Beliefs Questionnaire to his group: unfortunately, pre-NDE data were only obtained once the NDE had occurred. Nevertheless >40% subjects affirmed that their inherent religious beliefs had not been altered by the experience. The questionnaire is very fundamental, containing direct assertions that hell exists, the Bible is God-inspired and inerrant, and that Satan is a real person and is the source of today's evils in people and the world. These questions and responses seem to confirm that, for the majority of subjects, ecclesial and hence doctrinal choices, do not alter as a result of the NDE. Neither was there any change of belief in God's existence, or in heaven, or hell⁷. Subjects manifested a greater motivation towards

⁴ Ring 1980, 174-5, Tables 27,28: $p<0.005$; Sabom 1982, 212-3, Tables XIV, XV: $p<0.005$

⁵ Ring 1980, 168-9, $p<0.01$; Sabom 1982, 212, Table XIV, $p<0.01$

⁶ Sabom 1998, 107ff: Table 6, 229

⁷ Ring 1980, 166

activity within their church communities⁸ and professed an increase in their "intrinsic faith".

Now 'religion' and 'religiousness' are loose terms⁹ that can be more effectively defined in terms of external and intrinsic orientation or religiosity, or ER and IR. Church attendance, when a manifestation of ER, is often related to high socio-economic status, educational achievement, resulting in a sense of self-justification, sociability and even security that involves connotations with aspects of revelation, election ("chosen people") and theo(auto)cracy. Conversely, IR embraces brotherhood, equality and compassion, and is closely allied to spirituality – that is, the non-profane and non-secular. In a secular environment, spirituality entails a willed effort to live a life devoted to one's chosen church, faith and doctrines assisted from above by grace imbued through prayer and sacramental (baptismal and eucharistic) congress with the deity. This would accord most closely with Gordon Wakefield's assessment of spirituality in his Foreword to the *SCM Dictionary of Spirituality* (1983).

While external religiosity is not influenced by NDE, it is clear as Sabom indicates, that IR is deepened following such experiences¹⁰. In order to substantiate that claim, he used Hoge's Intrinsic Religious Motivation Scale¹¹. This is a 10-item questionnaire which elicits the kind of relationships denotative of a life lived according to its underlying credal values and motivations. Because it eschews doctrinal issues, Hoge's instrument is applicable to a variety of belief systems either within the Christian tradition, Judaism or

⁸ Sabom 1998, 226, Table 3

⁹ Allport G & Ross JM, *J Pers Soc Psychol* **5**: 432-443, 1967; Bouchard T, McGue M, Lykken D, Tellegen A, *Twin Res* **2**: 88-98, 1999

¹⁰ Sabom 1998, 96-7

¹¹ Hoge D, *J Sci Stud Rel* **11**: 369-376, 1972

Islam. In a later, independent study¹² of a mixed series of adults (n=346), the mean IR (Hoge) score achieved was 26 ± 8 (m \pm sd). This latter study revealed that anxiety about death was inversely proportional to IR scores, a result likewise obtained albeit by different means by Groth-Marnat & Summers¹³.

Sabom, in presenting his data, seems to wander between Hoge's 10-point score and a 5-point cluster derivative of the Life Changes Questionnaire (LCQ)¹⁴. For the ND positive group of 47 subjects, their average Hoge score was 31.5 (idem 1998, p88), ranging for his three different subgroups from 25.1, 28.2 to 36.1 compared with two groups of non-NDE cardiac control patients, one group (n=81) whose mean score was 27.8 (p<0.05), and a second (n=26), whose score was 26.2 (idem 1998, pp97, 234: p<0.001). The 5-point LCQ cluster cites 42 ND experients compared with 32 control cardiac cases (p<0.01). These data, therefore, seem to be consistent with Ring's, in that some increased sense of inner spirituality does ensue from the actuality of having an NDE, as opposed to the experiencing of a death threat alone.

In addition, Sabom cites individual, post-NDE Hoge scores. He wondered, for example, whether the NDE affected the faith of "GL" and whether the resultant increase in IR, in turn, influenced her survival and recovery (idem 1998, 182). Her post-ND score was '*an amazingly deep 38! Thus, it appeared that GL's near-death experience had deepened her [IR] significantly*' (idem 83-4). For "GR", '*his NDE strongly increased four [5-point cluster] and somewhat increased one of his intrinsic faith items ...*' (idem 88). Then there was "DA" whose '*near-death experience ... strongly increased all [her] intrinsic faith*

¹² Thorson J & Powell F, J Clin Psychol **46**: 379-391, 1990

¹³ Groth-Marnat G & Summers R, J Hum Psychol **38**: 110-125, 1998

¹⁴ Sabom 1998, 133-134

items, scoring a near-perfect 39 on Hoge's scale' (idem 90), as did "RA's" score post-NDE. These anecdotal figures look impressive, but without pre-NDE data, their significance is considerably diluted if not rendered entirely void.

Ring used his own devised Religiousness Index in evaluating the relationship between religiosity and NDE¹⁵. However this score is a measure of ER in eliciting views about beliefs in God, life after death, heaven and hell. There was no demonstrable relationship between the duration ("depth") and qualitative ("core") aspects of the NDE and pre-existing religious traits, but an increased religiosity as defined by this Index compared with non-NDE subjects¹⁶. This Index bears scant relationship to Hoge's inventory which is much more aligned to IR. From more anecdotal material, Ring concluded that, in general, NDE subjects felt closer to God, prayed more, and became far less oriented toward organised religious activity, this latter conclusion being noticeably at variance both with Sabom, and with Groth-Marnat & Summers. Ring's conclusions appear to lead him in asserting that the spirituality, rather than religiousness, of post-NDE subjects was intensified (idem 1980, 80 and 171). He again revisits this scene in his later book *'Heading towards Omega'* (1985) by means of a different Religious Beliefs Inventory¹⁷.

VI.2.1 But Can We Believe Ring?

To my mind, Ring's later research (1985) is grossly flawed on methodological, and interpretative, grounds. There is bias, in that his original core sample of 26 ND experiencers

¹⁵ Ring 1980, 133-4;

¹⁶ Ring 1980, 171:Table 26, $p < 0.005$

¹⁷ Ring 1985, 144 and 282-3

was expanded by the introduction of 146 members from the International Association of Near-Death Studies or 'IANDS' (of whom 40 were NDE subjects, 30 had near death crises but no NDE, and 66 other 'interested' members who suffered neither an NDE nor a medical crisis). The entire group was divided into formal 'Christians' and 'All Others', the latter comprising a heterogeneous collection of Jews, non-institutional believers, followers of other religions, believers with no specific religious affiliation, and others without any religious preferences. That, for statistical purposes is, by no means, what could sensibly be considered an unbiased, homologous, representative group. Although the analytical instrument looks at religious beliefs¹⁸, it poses a series of propositions biased towards a universal world religion for all, open to the possibility of re-incarnation, and favouring a personalised, anti-church form of spirituality involving prayer, and an internalised sense of God. The quest begins with a religious beliefs approach, although results are expressed as a numerical "Universality Index". In my view¹⁹, items 4,5,6,10,12 are not doctrinal beliefs which can be directly assented to, or not. Items 1,2,3,8,9,11 are either ambiguous or meaningless, viewed from a wider Christian perspective. Item 7 asks whether the "doctrine" of re-incarnation is implausible: note the subtle negative here.

The numerical Universality Index (U_s), is calculated from the formula

$$U_s = [\Sigma (U_a - U_d)] - [\Sigma (C_a - C_d)]$$

where U refers to universality, C conventional religion, and "s" a shift to one or other. An increased (a) or decreased (d) "agreement" with items 1-6 (U) or 7-12 (C) is assessed as +

¹⁸ Ring 1985, 282-3

¹⁹ 1: The essential core of all religions is the same; 2: I believe there is a heaven and a hell; 3: No matter what your religious belief, there is a life after death; 4: It is important to attend church regularly; 5: Private prayer is more important in the religious life of a person than is attendance at public church services; 6: More and more, I feel at home in any church; 7: I find the doctrine of reincarnation – very implausible; 8: Eternal life is a gift of God only to those who believe in Christ as savior and Lord; 9: God is within you; 10: In order to live a truly religious life, the church ... is an essential; 11: The bible is the inspired word of God; 12: A universal religion embracing all humanity is an idea which strongly appeals to me.

or -, respectively: while zero indicates no change. The positive and negative scores for U and C are each calculated with respect to sign, and then subtracted from each other. A "shift" towards U requires a value >6 (Table 2, p316). We note, however, that a zero score can never be used in an algebraic (or logarithmic) series because of the impossibility of assigning a value to it. We therefore do not know how many non-rated scores resulted from this procedure, neither the degree of bias introduced into each subject's final calculated U_s score. There are no prospective data for U_s , pre- and post- event, for either ND, or for non-NDE, subjects. Neither are we given any indication of the degree of variance of U_s for each group, so that the interpretation by Ring that "*shifts*" in beliefs occurred in all groups (that is, giving the implication that subjects' opinions were, in fact, significantly altered) is totally unwarranted, and indeed, is hardly likely. Thus the U_s values given for mainline Christians, either for NDE (4.45), non-NDE (4.92) or non-crisis controls (4.41), are by no means indicative of any deducible "shift" in view, given the very small numbers involved. I suggest there are no significant differences between this set of data for main-line Christians. It is only possible to infer that the heterogeneous "All Others" group did raise its score, but the level of statistical significance is not given. A χ^2 test for all respondents with U_s scores >8 (ND+ 37; ND- 9; and nil event, 10) gave a comparative significance level $p < 0.0005$. Many readers might therefore be taken aback by Ring's conclusion that his data re-inforce the view that having an NDE "*shifts*" a person's viewpoint towards a '*universalistically-oriented spirituality*' (idem 1985, 145). Ring's data certainly do not warrant that conclusion for the Christian group: indeed, it is difficult to explain why those subjects collectively exhibited such a low U_s score. Perhaps, like me, they found the propositions in the Inventory of little relevance to their individual spiritual leanings.

Theologically, a religious world view that, in fact, points to a '*non-ecclesial, universal spirituality*' dissolves into a nothing theodicy. God belongs to the monotheistic traditions of Judaism, Christianity, Deism, and Islam. If we lose those doctrinal systems, any remaining "religiousness" evaporates into either a multi-patheon (as was characterised by Mesopotamian, Grecian and Roman cultures), a naturalistic pantheism, or some form of Eastern-based philosophy from which God, so defined, is absent. The type of "spirituality" that Ring is pressing for in '*Omega*' would not be owned by the spirituality embraced by monotheism, as conventionally envisioned within its contributory components. There are other worrying trends about Ring's approach to this subject as emerges in his later book. First, his approach indicates a notably careless drift away from good statistical analysis: '*these words [of experients, he says] will convey what statistics can never do*', that is, Ring puts an ever increasing reliance on the persuasiveness of anecdotal material²⁰. Second, for Ring, belief in God (post-NDE) means '*whatever adherence to a notion of God we may find in such people ...*' (idem, p86). That is a non-definition of God or of theistic belief. Indeed, Ring now thinks '*that the NDE represents [one] means towards an awakening into a new evolutionary and higher mode of consciousness – "planetary consciousness" – based on the writings of de Chardin (idem, p252), and capable of bringing about this transformation in millions of people*'. A generalised conviction of the authenticity of this view '*will ensue by data marshalled from this published [NDE] sample*' ...(albeit biased towards ~80% female responders: (idem, p29)and '*not written solely to satisfy the empirical canons of scientific enquiry (idem, p307) ...but to provide the most cogent overall framework within which to understand the significance of NDE. This is "H. noeticus"*' (idem, p256ff) *on his transcendent journey to whose radiance, as a species, we are all being increasingly drawn. The key to the meaning of NDE lies in the study of their*

²⁰ Ring 1985, 6

after-effects '.

Apart from my own criticisms of Ring's research regarding religious beliefs, there may be other, more subtle factors hovering in the background, as elucidated by Sabom²¹. In 1980 Ring, as president of IANDS, cautioned against mingling the religious and spiritual implications of [ECE] research, noting the narrow line separating questions of religious import from religious doctrine. *'If NDE research ends up simply providing new swords with which to wage old religious wars, I will resent very bitterly my involvement with this work'*²² Yet, based on his Religious Beliefs data²³, Ring now claims that in assessing *doctrinal views*, ND experiencers are likely to "shift" towards a universalistically-spiritual orientation²⁴ transcending traditional Christian perspectives. *'Indeed the strongest evidence of ND experiencers' universalistically spiritual orientation' ... is their belief in the underlying unity of all religions and their desire for a universal religious faith that will transcend the historical divisions of the world's great religions'*²⁵. *Thus the real significance of the NDE may not be simply that it promotes spiritual growth [that is IR] as much as the kind of spiritual growth [that is religious doctrine] it promotes'*²⁶. This indeed is a call for a new world religion extending beyond the limits of classical monotheism. But can such an unwarranted interpretation be drawn out of Ring's meagre findings, as I have critically presented them above? I think not.

Sabom²⁷ expresses concern that the independence of the replicated NDE studies by many of Ring's associates might be compromised, and thus not wholly representative, because of their reliance on IANDS members (NDE subjects, near-death crisis individuals, and

²¹ Sabom 1998, 131ff and 143ff

²² Ring K, J Near-Death Stud 1: 14-16, 1980

²³ Ring 1985, 312-315

²⁴ Idem 1985, 145-147

²⁵ Idem 1985, 162; my emphases

²⁶ Idem 1985, 144

²⁷ Sabom 1998, 136-137

interested parties without any antecedent event). However, in contradicting Ring's concern as to why NDE so often lead to a "shift" in a person's worldview that embraces re-incarnation, one of his Masters degree students showed the opposite. Amber Wells²⁸ questioned three groups of individuals, comprising NDE experiencers and non-NDE crisis victims mainly recruited from local IANDS members. But she was smart enough to engage a third casual group made up of shoppers emerging from a local grocery stall in Connecticut. Of the two former groups, 70% of NDE+ and 71% non-NDE IANDS members claimed to have a strong belief in re-incarnation, as opposed to 30% for the shoppers. The national US rate for a belief in re-incarnation is 23%²⁹. Importantly, not one of Wells' subjects was able to declare that '*any direct understanding of the nature or process of re-incarnation*' had arisen from the near death event itself³⁰.

Clearly, the high rate of belief in re-incarnation in Wells' groups, composed of IANDS associates, indicates that other influences due to reading, or promotions, or an increased awareness and interest occasioned through personal or group contacts, are relevant, and effective, here. Ring's data³¹ indicate changes in beliefs about re-incarnation of ~60-65% : Sutherland³² found an increase of 80%, while Atwater³³ declared that '*for most, it [re-incarnation] becomes as a fact of life*'. From the foregoing, it is clear that the progressively divergent variation in these results suggests some kind of bias, but occurring *post-NDE*. For it should be evident that the ND experience, of itself, is most unlikely to induce any subject to adopt, or become sympathetic to, the idea of re-incarnation: that simply does not make sense, and is, indeed, inconsistent across published series. For example, it is not a

²⁸ Wells Amber, J Near-Death Stud **12**: 17-34, 1993

²⁹ Wells 1993, 25; Sabom 1998, 138; Gallup G & Newport F, Skept Enquirer **15**: 137-146, 1991

³⁰ Wells 1993, 25

³¹ Ring 1985, 317, Tables 3 and 4

³² Sutherland Cherie, J Near-Death Stud **9**: 21-31, 1990

³³ Atwater Phyllis, Coming Back To Life. New York: Ballantine 1988, 151s

consequence of the experiences of Sabom's patients: neither does it figure in the accounts of English subjects portrayed either by Fenwick and Fenwick (1998), or by Grey (1985).

In contrast to these sets of data, Sabom's patients came from another area (a southern, 'Bible-belt' region of Atlanta), who were recruited clinically from consecutive (prospective) admissions to his cardiac service and deficient in IANDS personnel. This group revealed a belief in re-incarnation of ~22%, a figure well within the national US average. Moreover, those in his series, like the subjects carefully studied by Groth-Marnat & Summers³⁴, did not change their church affiliation, nor their doctrinal creed, and neither did they migrate from a church-based, to a non-ecclesial, form of 'spirituality' favouring a strong bias towards re-incarnation. Usefully, the data of Groth-Marnat & Summers are backed up by independent, statistically-controlled responses to questionnaires from immediate informed controls (usually comprising spouses or other intimate, within-family persons) who were able to substantiate the spiritual outcomes of their kin in the NDE group. Again, contrary to much American work, in both UK studies (Grey 1985: Fenwick & Fenwick 1998), re-incarnation did not surface as a major post-NDE outcome. However, Grey's interpretations, not borne up by the data she offers, are seemingly driven by her irresistible preference for anecdotal fragments and an overriding urge to engage in broader psychical and cosmic discussion. Contrary to other properly controlled analyses, Grey³⁵ erroneously sees a "shift" (here Ring's terminology creeps in again) *'away from theological doctrines to a more spiritual ideology, a "number" of respondents either becoming non-denominational or turning to theosophical or psychical associations, as former religious affiliations were unable to provide answers to the questions they were so ardently seeking to understand'*. These changes of attitude, wrought by the NDE, included

³⁴ Groth-Marnat & Summers, 1998

³⁵ Grey 1985, 108-110

a more internal sense of God, a loss of interest in outward forms of religious practice and a newly-sensed cosmic spirituality. It is highly unlikely that any "blinded" observer, presented only with the tabular data provided in her book (idem 1985, pp101, 107, 110), would have been empowered to come to the same conclusions or been enabled to develop the same form of cosmic outlook offered by Grey. Grey, and Ring, both appear to have been led on and deceived by their own rhetoric and universalistic-spirituality manifesto. What is read into a study is quite different from what legitimately might be read off a study: that is the important interpretative problem arising out of their studies.

VI.2.2 More Psychical Problems

This section deals with the alleged occurrence of psychic phenomena in the wake of an NDE, on the grounds that much is made of this in Ring's later book, *Heading Towards Omega*. According to Ring the '*empirical evidence supporting the claim that NDE ... trigger psychic activities is very impressive indeed*'³⁶. Ring actually believes that the NDE facilitates the spiritual awakening and transformation of the subject, and thus '*resembles a full-blown mystical experience – and this is the key – the effects of [NDE] also resemble those that stem from a mystical experience*' (idem 1985, p170). I am unable to clarify the grounds upon which this overwhelming assertion is claimed by Ring. Moreover, I shall be giving reasons below why I think NDE are not "mystical" experiences. Neither is there much to suggest that, in the mainline monotheistic traditions, "mystical" experiences lead to any widespread enhancement and outward manifestation of psychic ability.

Ring's Psychic Experience Inventory aims to elicit changes wrought in subjects' psychical

³⁶ Ring 1985, 166

powers (clairvoyance, telepathy, pre-cognition, déjà vu, OBEs, and so on) and secondly, to measure alterations in belief(s) concerning the spiritual, psychic, and occult worlds. He found that 80% of his subjects became more *'intuitive'*, 96% claimed *'to be more in touch with an inner source of knowledge or wisdom'*, while ~50% became *'more clairvoyant and experienced more pre-cognitive flashes, déjà vu phenomena, and contact with spiritual guides'* (idem 1985, pp172-3). These conclusions are not given in a regular, tabulated form, but just stated. In assessing pre- and post-ND beliefs (with the use of an arbitrary scale: -2,-1,0,+1,+2), 64% came to believe in ESP, 84% in spiritual and psychic healing and 68% in spirit guides (idem 1985, p317: Table 4). These findings seem to parallel other similar studies³⁷.

However, there are considerable methodological problems with these studies. Ring's numeric data are scanty and difficult to interpret. Table 4 (idem 1985, p317) is particularly opaque, and I am not sure that I have been able to understand what his figures are supposed to tell us. Greyson's study was based on advertised recruits who were members of IANDS, while Kohr obtained his sample from a research base of the Association for Religion and Enlightenment (ARE). Kohr, at least, used a control cohort that exceeded his NDE group by the correct ratio of 4:1³⁸. Nevertheless, all studies were in part retrospective, uncontrolled for the circumstances or nature of the NDE, unblinded, and heavily biased towards female respondents. Without those caveats being strictly addressed and the societal (IANDS and ARE) biases totally removed, the data cannot be taken as definitive.

These data also need to be evaluated in the light of other studies of the paranormal in the

³⁷ Greyson Bruce, Theta **11**: 26-9, 1983; Kohr R, J Am Soc Psychic Res **74**: 395-411; Kohr R, Theta **10**: 50-53, 1982

³⁸ Kohr, 1982

general population, and concerning which the NDE was not the central issue. Ross & Joshi³⁹ studied 502 subjects from a larger cohort of residents in Winnipeg, Canada. Their male:female ratio was more balanced than in Ring's and Greyson's studies which both suffered from a predominance of (IANDS-associated) females. Overall, ~66% Canadians reported having one paranormal experience, and 10% more than four. Importantly, subjects traumatically or sexually abused as children revealed a clearly increased susceptibility to paranormal experiences than non-abused subjects ($p < 0.001$). The prevalence of déjà vu phenomena was so common (~55%) that the investigators hardly thought it worth considering them as true psychic events. The occurrence of pre-cognitive dreams (18%) and mental telepathy (16%) was high, although Gallup and Newport (1991) observed 25% of their US poll admitting to telepathic events. Non-dream pre-cognition showed a prevalence of 6%. It is not easy to compare item for item in this, and the other studies referred to above. Nevertheless, the point must be emphasised that psychical phenomena are extremely common throughout the (North American) general population, occur more frequently in younger persons, and are associated not only with childhood traumas, but may also be the sequelae of preceding brain damage, such as infections, closed head trauma, or other types of intrinsic cerebral neuropathology. This clearly is in line with discussions (Chapter V) pertinent to latent temporal lobe disease.

Sabom's⁴⁰ investigations revealed no difference pre- and post-NDE for "visionary" and "pre-cognitive" activities, although in comparison with non-NDE cardiac controls, both events were significantly more common. Neither was there any difference in OBE frequencies between NDE subjects and controls (idem 1998, p151). These latter data are at

³⁹ Ross C & Joshi S, *J Nerv Ment Dis* **180**: 357-361, 1992

⁴⁰ Sabom 1998: visions 40% vs 15%, $p < 0.001$ (p157); pre-cognition 56% vs 21%, $p < 0.001$ (p162)

variance with those of Ring and of Greyson⁴¹. Thus, Sabom's data highlight the possibility that the NDE is not the principal predisposing cause of increased psychical activity, but that other factors such as those I have mentioned above (brain trauma or infections in earlier life, as especially pertinent to latent temporal lobe dysfunction; Chapter V, p251ff) are more than likely to be antecedently operative. To have clarified that issue would necessarily depict Ring's and many other studies on this subject in a completely different light.

Indeed, for any further work to be understandable, it is vital that the studies should be conducted on the following lines. Critical requirements would include the gathering of pre-NDE statements of beliefs and psychic events through administration of the appropriate questionnaires, brain scanning and allied investigations, the prevalence of earlier traumatic influences on personality, together with an adequate representation of appropriate control groups. A far greater effort is required to independently corroborate the psychic powers allegedly acquired by NDE subjects. I note that this was difficult to achieve in the study of Groth-Marnat & Summers⁴², even through the use of informed close family members, such as spouses, who completed relevant questionnaires. Earlier on, I referred to Charles Tart's difficulties, under fairly tight laboratory conditions, to monitor paranormal phenomena, despite the odd 'hit' ⁴³. If these events evade capture through use of conventional scientific technologies, then the need for more stringent documentation becomes absolutely necessary. Since psychic phenomena vary with age, the numbers of recruited subjects should be large enough to permit intelligent statistical analyses of 10-15 year-cohorts throughout the adult age span. Prospectively-organised

⁴¹ Ring 1985, 317, Table IV; Greyson 1983, 28, Table 1

⁴² Groth-Marnat & Summers, 1998

⁴³ Tart, 1998

studies are now mandatory and would permit recruitment of other NDE subjects independent of the bias created vicariously through retrospective studies and excluding (or at least diluting) the engagement of well-rehearsed members of IANDS or ARE. A comparative European study would be a useful counter to the bias inherent in current US work. Psychic phenomena are now happily coming into the province of psychiatric practice. It would be useful to itemise and define each type of psychic experience in order to introduce uniformity and comparability into the field. Another crucial requirement is in ensuring that all questionnaires are designed by those competent in this discipline. Questionnaires should include control questions (known in the trade as "red herrings") that provide the necessary internal consistency for validating respondents' answers given. In studies as complex as these, it is essential that statisticians are co-opted so that adequate numbers of subjects, controls in the correct proportion, and appropriate methodologies are employed in order to answer the questions posed by the research. A renewed scientific rigour and candour is called for, which should replace the hitherto anecdotal reportage and interpretation of much NDE and allied phenomenology to date. Until all these issues are clarified, elucidated and adopted, some of us might still be a little reticent in supposing that an NDE is a key gateway opening up the possibility of increased psychical awareness, or to the attaining of a higher cosmic consciousness, or unity.

VI.2.3 The NDE and the Exaltation of Personhood

Finally, in this section concerned with theological aspects of personhood, I turn to the influence of NDE on the subsequent changes wrought in subjects' lives, attitudes and behaviour. It is commonly agreed that post-NDE subjects are more likely to attribute to themselves a greater degree of self-respect, motivation and outlook towards life than was

previously the case. They also exhibit an increased tendency to help, show compassion, tolerance, and acceptance towards others, and display a more focussed ability to listen to different points of view and to understand other people's problems, and to empathise with them. Coupled with this tendency⁴⁴ is a resurgence of respect, love, and involvement with family groupings and in family affairs. In determining whether these changes in personality were due to being near death, or to having the NDE, Sabom compared responses to (Ring's) Life Changes Questionnaire⁴⁵ between ND experiencers and 32 cardiac controls: the difference was significant⁴⁶. Sabom refers to a German study⁴⁷ of 28 cardiac survivors, none of whom seemed to have undergone an NDE. Of this latter group, 68% considered their subsequent lives unchanged, 25% thought that there was limited change, while only 7% indicated there had been a positive alteration in life attitudes. The combined data show that rather than the acute medical crisis itself being a factor, it is the NDE itself which engenders the subsequent modifications in the personality values of these subjects.

These observations are important, deserving far greater concern than has been afforded them hitherto. That assertion follows, irrespective of how the NDE is viewed, either as a neurologically aberrant event arising as the brain is rapidly regaining consciousness, or as a veridical trip of free consciousness, or soul, into the realms of eternity. From another perspective, however, the post-NDE influence on later behaviour cannot be regarded as unique. Changes in behaviour consequent upon many forms of crisis or deeply moving personal events are surprisingly common. Folk psychology articulates these changes which is emphatic of their foundational 'cultural consciousness'. *'My husband'*,

⁴⁴ Ring 1980 138ff; Grey 1985, 101; Sabom 1998, 79ff; Groth-Marnat & Summers 1998

⁴⁵ Ring 1985, 122ff and 276-279

⁴⁶ Sabom 1998, 96 and Table IV, 227

⁴⁷ Roewer N, Kloss T, Puschel K, Anasth Intensivther Notfallmed **20**: 244-250, 1985

laments the housewife, '*was never the same after coming out of hospital for his operation*'. Or: '*We never knew he had it in him*', opine neighbours when a local and somewhat reserved army recruit wins a prestigious medal for bravery during a fierce military engagement in which he suddenly displays enormous bravery and courage. Likewise, it is noticeable that the survivors of attempted suicide bids from the Golden Gate Bridge emerged as wholly 'different' people. They no longer sought an end to their lives, but subsequently found renewed vigour, outlook, insights and hope in their futures, and new perspectives on society. The neurophysiological mechanisms corresponding to these abrupt changes in metamorphosed personhood, as well as the manner by which the brain comes to be 'reset' after many forms of 'crisis' events, are currently poorly understood. These occurrences are, nevertheless, very common, disparate, but widely recognised⁴⁸. In the following excursus, I wish to capture something of the essence of these events in relation to NDE, but also to elaborate on the wider meanings of what becoming a person entails, whether in life or in the face of extinction.

In his trilogy on God, Christ and Man, John Macquarrie picks up the notion of human "becoming" in the volume dealing with mankind: '*In Search of Humanity*'⁴⁹. It is not that we are human *beings*, but humans (in process of) *becoming*. He envisages the sense of our human nature deriving from the Latin meaning to issue forth or develop: '*Keeping and making humanity human*' is not so tautologous as would be, for example, if applied to cats or dogs (idem 1983, p1-3). But, within that lifelong process of becoming is implied the incompleteness or unfinished aspect of the human project. In considering death, we see it as a reflection of the meaningless and failure that imposes itself upon life, and which

⁴⁸ Wallace A, Int Rec Med Gen Pract **169**: 761-774, 1956; Pahnke W, Harvard Theol Rev **62**: 1-21, 1969; Gellhorn E & Kiely W, J Nerv Ment Dis **154**: 399-405, 1972

⁴⁹ Macquarrie John, In Search Of Humanity. New York: Crossroad Publishing 1983

inevitably dogs so much of human existence. The late Colin Gunton, in writing about the final enemy⁵⁰ sees this incompleteness, or even failure, in life's accomplishments in the many published obituaries even of prominent men and women. He continues: *'Certainly, every life is highly particular, bearing its achievements and failures in different ways. If eschatology is to bear upon the way in which we envisage our human particularity, it is especially relevant at this place, where we face not only the question of the relative failure of those who die full of years and sometimes of honour, but also the lives of those who die apparently before their time, especially young children and young people. In that sense, it is death that defines the limits and so the eschatological reality of each human life'*. In another context, the Greek Orthodox theologian John Zizioulas⁵¹ describes death as *'the tragic 'self-negation' of the natural hypostasis (body and individuality) which in trying to affirm itself discovers that its nature has led it along a false path towards death'*. There is a tension between life and death. But life is also about possibilities, potential, and their actualisation. Clearly, that actualisation begins in the womb (as we will see below), but may never come to have been fully realised or completed when death supervenes.

Of the many aspects which Macquarrie evaluates in his quest for true humanity, he considers human transcendence as one predominating feature in the realisation of potentiality. This he sees as a striving, a continuous process of development and creativity, deriving from the exercise of personal freedom (versus a deterministic universe). In those episodes of becoming, we cross ("transcend") apparent barriers into new realms and vistas, towards new goals, and emergent opportunities and developments. It is a *'becoming more'* (idem 1983, p26). We see this illumination in the reconstructed lives of NDE subjects, where living now exemplifies concerns for others, an ability to listen and weigh

⁵⁰ Gunton Colin, *The Christian Faith*. Oxford, Blackwell 2002, 160

⁵¹ Zizioulas John, *Being As Communion*. Crestwood [NY]: S Vladimir's Seminary Press 1993, 51

sympathetically other points of view, in the fostering of relationships within families and the neighbourhood, and in the promotion of love where there may have been previous breakdowns in respect, or personal relationships.

These newly-found characteristics influence NDE subjects whether of a religious leaning, or not: and indeed, there is no reason to deny to either group these enriching and ennobling acquisitions to their personalities. As for those with previous religious convictions, the NDE intensifies prevailing beliefs and aspirations. Here we see, in its partial realisation, the biblical theme of mankind as fashioned in God's image and likeness. It is in this image, according to Irenaeus, that human life manifests a progression from creation, through growth to mankind's strengthening. That in its strengthening, mankind should abound thus to recover from iniquity and sin, and hence be glorified. And in being glorified, mankind should see the Lord⁵². That is, from potentiality ('image') to the realisation of the glory in becoming closer to God ('likeness'). Or as S. Paul, *'from glory into glory'* (II Cor 3.18), or S Peter, as *'partakers of the divine nature'* (II Pet 1.4).

The ND experience is of profound significance to the majority of those who undergo this type of phenomenological transformation. Indeed, I would go so far in stating that the importance of the post-NDE transformation has far greater meaning than the NDE itself, and of all the speculative superstructure that has been attached to the latter, and about its "cosmic" significance emphasised by various authors. Furthermore, that greater, transcendental meaning has not been effectively drawn out of these experiences by the authorship considered in this present work. That authorial failure has been due to a lack of sensitivity to the revealed narratives as against preconceived ideas as to what the events were thought to have signified. We see that tendency grossly exemplified in the writings

⁵² Macquarrie 1983, 33

of Ring, and to a lesser extent in Grey. If I were to make yet a further critical observation of such influences on the lives of so many experiencers engulfed by this post-experiential transcendence, it would be to ask to what degree, and in what manner, this transcendent state has been translated into acts of mercy or good faith towards other persons, in the way that these subjects have testified. The current literature is silent on that issue, and that clearly is a grave error that points to a major defect in the interpretation of NDE and its revelation to the public. This is a subject for much future detailed research and investigation.

VI. 3. THE NDE & ESCHATOLOGY: MIND, SOUL & RESURRECTION

In previous chapters, I drew attention to the egocentrically-oriented references to the self in ECE narratives through pronominal usage. Second, I criticised the sequential temporality reflected in these narratives, each successive phase being introduced by *'then'*, *'after that'*, or *'my next memory is of ...'*, as also typifies dream recall. Third, my defence of the assertion that NDE are idiosyncratic centred on the view that the phenomenology is played out on a background of memory and perspective unique to each personal history. There are some phenomenological resemblances across ECE events but that is hardly surprising, given the neurophysiological constraints under which recovery from the precipitating insult is repaired in the brainstem and cortical superstructures. On those grounds, I have severely criticised Moody and Ring for publishing idealised experiential ECE sequences when no such predictable sequence could ever be guaranteed to arise in any designated subject. Furthermore, the accounts of the heavenly realm and the portraiture of God or Jesus are widely disparate thus casting considerable doubt on the authenticity of the 'realm' so inhabited albeit temporarily, and the reports subsequently offered, by experiencers.

Despite these strictures, I believe that it is not possible for us, as humans resident in the

earthly domain, to envision the eschaton without a certain sense of the personal, or of a temporal sequentiality. If we were to take the NDE account as typical, its eschatology would embrace (whether preceded by the tunnel artefact, or not) the experient's arrival in a realm of great beauty – scenically and often musically – conveying both a great sense of heightened ecstasy, light and warmth and an encounter with spiritual beings (sometimes God or Jesus). In some instances there is an experience of marked horror and torment accompanied by threatened physical attack, or pain or humiliation, and invariably succeeded by repose in a heavenly place. The encounter with heaven-bound beings may involve conversation, despite being somewhat monosyllabic, unenlightening, and coercing the subject to return to earth. Others have 'flashbacks' of their previous lives and experience a form of guilt as if subject to a judgement followed by a pressing desire to return in order to assume former responsibilities.

VI.3.1 Judeo-Christian Eschatology

The evolution of eschatology within the Judeo-Christian tradition has been of a different character and temper. Not only has there been the unsatisfactory compromise between neglect of the Hebraic view of mankind in favour of Platonic thought-forms of soul and body⁵³, but Christianity has continued (and still does) grapple with the problems of immortality versus resurrection, the parousia, and personal as against cosmic judgement. We also have to deal with the somewhat mechanistic catechetical definition of the 'Last Things' as death, judgement, heaven or hell, eternity. Gunton⁵⁴, whom we met a few pages above, has complained of such a cramped and errant theology. Cramped because the view

⁵³ Stacey D, *The Pauline View Of Man*. London: Macmillan 1956, viii

⁵⁴ Gunton 2002, 157ff

on offer is so limited, and errant because although eschatology has a directional future, it starts not with death but surely with Jesus' proclamation of the Kingdom (Mk 1,5:13) as adumbrated in Jewish scripture as 'The Day of the Lord' (Joel 2.1ff). Both are eschatological, denotative of *καιρός* –a significant divine event anticipated, or imploding, into historic time, *χρόνος*. Much theology is weakened in emphasising death without reference to resurrection, or through the implication of an immortality fulfilled in the eternal properties of soul. Yes, death has to be overcome, but resurrection is the gospel by which it is overcome, superseded, destroyed.

NDE literature curiously bears a thin reference to theological doctrine. It portrays immortality as a direct continuity of the person, and of glimpses of a heaven-like realm and sight of individuals glossed with a quasi-divine status. (Can there not be another view of eternity based on ideas other than nominally Christian or pseudo-religious?). That continuity is assumed in the escape of free consciousness outwith the brain purportedly undergoing its agonal death throes, or, in Sabom's estimation, as release of soul from corporeal bondage. In our predominantly westernised secularism, Heaven is scornfully viewed as the product of wishful ('pie in the sky') thinking rather than a hedonist's materialistic here-and-now. Thus it is notable that most authors (Ring, Gray, Fenwick) are prepared to propose an immortality envisioned as an escape of consciousness into the heavenly realm.

It is difficult for us, as humans, to envisage ourselves as non-corporeal 'spiritual' entities. Our anthropomorphic egocentric natures render the incorporeal idea of being blind, deaf and without sensations, emotions or thoughts, as known on earth, a prospect that is fearful, phenomenologically unthinkable, and, physiologically vacuous. We cannot imagine or conjure ourselves to be other than mind and body. So for the believer, the reality of

eternity rests on faith and hope in the revelations that have been vouchsafed to us. Beyond that, any materialistic or further metaphysical view of the persistence of consciousness outside, or beyond, the brain bears little value, or meaning. But what of soul and immortality? The notion of the persistence of something contained or continuous with the corporeal body, as a marker of immortality, is slowly being eroded in certain theological and philosophical circles. Thus Macquarrie: *'Certainly, it ought to be said that any worthy conception of the [individual's destiny] must be purged [of all] egocentricity ... arguments for immortality or for the continued existence of the individual are infected by a worrying kind of self regard. If the fulfilment of individual existence is to be somehow like God, then this means learning the love that loses itself by pouring itself out: and this might mean that the individual ... must be prepared to vanish utterly into the whole for the sake of the whole'*.⁵⁵

VI.3.2 The Evolution of a Modern Epistemology of Soul

From that base, we can assimilate a different perspective on soul, in terms of the emerging development of each person. That development begins *in utero* and continues throughout the earthly life. As we have seen from Macquarrie's approaches in *'In search Of Humanity'*, possibility and potential lie at the very foundations of each person's existence and lifetime evolution⁵⁶. At birth (and from about the 25th week of gestation⁵⁷, and probably even earlier) the human infant is conscious despite its marked cerebral immaturity. Consciousness seems to be basic: it is either present or not. The ensuing changes wrought upon that pre-existing, basic consciousness are manifested through the

⁵⁵ Macquarrie John, *Principles Of Christian Theology*. London: SCM Press 1966, 321

⁵⁶ Macquarrie 1983, 257ff

⁵⁷ Flower M, *J Med Philosoph* 19: 237-251, 1985

progressive acquisition by the brain of higher-order attributes, attributes dependent on its continued growth and the maturation of the neuronal networking, especially of expanding synaptic connectivity. The mental capacity of the neonate may hardly differ from that of a goldfish. The difference lies post-natally and beyond, during which the new human individual is subject to intensive training and prolonged conditioning through maternal, familial, societal, and environmental influences. The development of mature mental capacity (or "mind") and a fully grown brain requires at least one-quarter to one-fifth of expected life-expectancy. That could be viewed, biologically, as an extreme, costly evolutionary gamble: but within that gamble could be perceived possible divine intent.

The gradual emergence of an individual's mind entails possession of personal self-awareness, self-consciousness and the capacity for embarrassment (and its physiological correlate blushing), the ability to engage in abstract thought and logical reasoning thus to initiate purposive aims and actions, the acquisition of language thus permitting the undertaking of personal relationships without which any semblance of "personhood", or human "becoming", could never arise. Moral reckoning serves to condition and thus modify personal and social behaviour, while memory (declarative or knowing that: procedural or knowing how) serves to anchor the person historically and socially.

Self-awareness affords a certain understanding of person or "I-ness" which subsumes one's sense of corporeality and body image that, with the additional attributes of mind, creates an integral sense of personal uniqueness. That is, of an introspective wholeness perceived to be complete, unified, and exclusive for each individual. In addition to speech and language, other characteristics demarcate humans from animals. These include the realisation of personal mortality and possibility of a hereafter, the ability to behave spiritually in the apprehension of the divine and of other-worldly spheres, as well as to ask

the question 'Who am I?'. The after-effects of experiencing an NDE also pervade the experient's search for meaning in life and the hereafter. The propensity to be aware of, and to reflect upon life, one's bodily mortality, who one is, and the possibility of a future eternal life, raises questions about how we view the hereafter and whether the soul is a realistic model upon which to predicate a potential locus of immortality.

I do not consider it of relevance here to enter into the historical metaphysics of soul, whether on Plato's view as substance capable of inhabiting successive bodies, as the Aristotelian entelechy for enlivening the flesh, nor of Aquinas' appropriation of the latter as an ecclesial account of spiritual immortality. That aside, there is a growing move in asserting⁵⁸ that soul approximates to the attributes of "personality" for each individual. By personality, I understand this to comprise the totality of mind, together with the additional characteristics of the individual's disposition, considered as conscientiousness, openness to other opinion, demeanour, degree of intro/extraversion and the expression of stability or lability of affect, determination and drive, physical vitality, and spiritual orientation. On this construction, soul would be conceived as an emergent property of cerebral activity and of the outcome of personal becoming in relationship with other humans, (and where appropriate) conditioned by divine grace through sacramental action in communion with the divine. Also, that at death, the soul, being thus defined as derived biologically and socially, would cease. That is to regard death as a certain, but radical, disjunction between earthbound existence and the eventuality of a future spiritual existence.

The problem of bodily non-continuity can be overcome from two perspectives, as I now expand. The first sees the establishment of a second spiritual hypostasis originated through

⁵⁸ Macquarrie 1966, 64-6; Hanson Anthony & Hanson Richard, *Reasonable Belief*. Oxford: Oxford Univ Press 1981, 201; Swinburne R, *The Evolution Of The Soul*. Oxford: Oxford Univ Press 1997, 161:262; Ward K, *In Defence Of The Soul*. Oxford: Oneworld 1998, 134

baptism and co-existing in parallel with the biological ontology during life. This theology is derived from Greek Orthodoxy, and grounded on Eastern patristic literature. The second is the conventional view based on Judeo-Christian apprehensions of the afterlife in terms of resurrection of those who are dead. On both counts, the idea of "soul" as agent of continuing life in eternity is lacking.

VI.3:3 The Baptismal Ontology in Eastern Orthodox Theology

The complete dissolution of the body, and its soul as envisioned as personality, is a stark reminder of our mortality. It contrasts markedly with the anodyne descriptions of the afterlife so redolent of ND literature. And while my own view here of death as a radical rupturing of the continuation of one's existence may seem disturbing, it is still consistent with doctrinal confessions of a resurrection of, or from, the dead, whatever those contours could mean and entail. Nevertheless, there is another route whereby a person may envision a future continuation, not as soul nor flesh-bound personality, but as a spiritually-realised ontology appropriated through baptism.

That theology, expressed by John Zizioulas, Archbishop of Pergamon, is thoroughly Orthodox and thoroughly Trinitarian, a viewpoint not always prominent in western theological thinking. It involves taking a closer look at the meaning of person, defined in its apotheosis as "personality" (this chapter, p306). But by so defining, we are in danger of picking out not the *who*, but the *what*, of personhood, thereby adding another quality to being itself. So Zizioulas intends: the answer to '*Who am I?*' is crystallised wholly in the response '*I am who I am*'. Viewed thus, personhood now has the claim of absolute being, or of a metaphysical claim inbuilt⁵⁹. *Being*, in this metaphysical sense, is the transcendence of being, by insisting that being truly *is*. The *is* offers the claim to

⁵⁹ Zizioulas 1993, 33

uniqueness, someone unrepeatable, a person's hypostasis, as opposed to 'whatness' that derives solely from other shared characteristics ('he's a doctor': 'she's the one who drives the Porsche'). Here there is an echo of God's self-definition – אֱהִיָּה אֲשֶׁר אֱהִיָּה – and a parallel with the three Trinitarian hypostases. These are defined as Persons: God as Father, God as Son, and God as Spirit of one divine substance: not as divine substance carved into three people⁶⁰.

There is no survival of the biologically-determined personality at death: continuity is achieved through reproductive success and natural selection. The survival of the unique biological hypostasis of person, the *who is*, is secured by a new birth through baptism by which another regenerate existence now becomes spiritually hypostasised - and effected *'through God the Father in whose great mercy has begotten us again into a living hope through the Resurrection of Jesus Christ, and into an inheritance incorruptible and undefiled ... reserved in heaven by the power of God through faith unto salvation ... ready to be revealed at the moment of the end'* (ἐν καιρῷ ἐσχάτῳ) (1Pet 1:3-5;23). That is, being born anew from above: *'...no man can see the Kingdom unless he is born again* (ἄνωθεν) *... you must be born* from above (ἄνωθεν) (Jn 3:3,7). It is therefore within the ecclesial (rather than secular) communion that the new spiritual ontology will acquire citizenship and call the Father, as of the triune Godhead, "Father", not the biological father progenitor of the contiguous earthbound, mortal ontology⁶¹.

A further nuance obtains from this theology of personhood. The ontological person, baptismally ordained, is maintained in communion eucharistically with all other baptismal ontologies within the church and with the hypostases of the Triune unity. The baptism *de*

⁶⁰ Zizioulas John, The Cappadocian Contribution. In Schwobel C (ed), Trinitarian Theology Today. Edinburgh: Clark 1995, 47-48

⁶¹ Zizioulas 1993, 27ff

novo of the newborn, or especially of a severely brain-damaged conceptus incapable of acquiring any future personality/soul, brings such creations into a new ontological relationship with others and with the Godhead. By this means, the baptismal ontology is 'known' by God (Mt 25:12; 34-40) and will persist in the knowledge of the Godhead even though the biological hypostasis will have died and its flesh and brain become corrupted. Thus a form of continuity is envisaged through this theological viewpoint, a continuity not construed in terms of consciousness freed from the bonds of flesh, nor of a soul released from corporeal imprisonment, but as oneness in, and with, God as our spiritual Father.

VI.3:4 The Afterlife as Expressed in the Idea of Resurrection

That current perception of soul as the fullest manifestation of body and mind, and its abrupt cessation at death seems to align itself with early Hebraic notions of the body. In "P" (c600-500 BCE)⁶² humankind is created in God's *image* (...בצל־מוֹ), both male and female, to live as His viceregents on earth, in harmony with each other in an exclusive relationship with Him (Gen 1:26). That contrasts with the older "J" (Yahwist) tradition, c1,000BCE, in which the breath of life (נִפְשׁ-חַיָּה) vitalises the earthen vessel destined for humanity (Gen 2:7) thereby establishing both a physical origin and, an end (חַיָּה-מָת), as the breath departs (Gen 35: 18). There is no perception of immortality⁶³. The ontology of being is resolutely that of a fulsome life lived to old age. Through a man's son came the continuing embodiment of his name, in perpetuity. The hovering of the dead 'spirit' in the 'lower pit' (שְׁאֵל) was a vague, and undeveloped, concept. Interestingly, there was no

⁶² Gibson J, *Language And Imagery In The Old Testament*. London: SPCK 1998, 37

⁶³ Barr J, *Bull J Rylands University Library (Manchester)* 51: 11-26, 1986

definitive word for a body in biblical Hebrew: over eighty body parts⁶⁴ are described each of which, by synecdoche, are capable of alluding to the entire person⁶⁵.

Perhaps the first reliable intimations of a changed perspective are seen in the hope of rescuing those martyred for the faith of Israel (II Macc 7:9,14) and Daniel's (7:14,18) conception of existence beyond the grave. This does not discount the additional possible influences of Zoroastrian notions of life after death on exilic and post-exilic Jewish thought⁶⁶, and within the emerging Pharisaic strand of Judaism. That life in the hereafter, in response to Sadducean taunts, would be so radically different was indicated by Jesus' response. There will be no spiritual marriage, nor the implied sexuality beyond the grave. That, I take to mean, that there will be no sense whatsoever of corporeality beyond death. Moreover, contrary to those fondest wished-for future reunions envisaged at times of bereavement, we may be unable to recognise any of those loved ones, with whom the very fabric of our earthly life was intertwined, once we have all passed from mortality into immortality. Life as we know it on earth cannot go on for ever⁶⁷: death is final.

That is the radical nature of death: and with death is extinguished all faith and hope. But the eschaton is not so bleak or devoid of promise beyond our demise. The clue is given in Macquarrie's *'love that loses itself by pouring itself out'*. That ultimate kenotic love tilts towards the earthly life of Jesus and his redemption of mankind in his teachings and sacrificial ransom for us, and in the final triumph of his vindication by God in the Resurrection. Although there is no immediate parallel between Jesus' Resurrection and our

⁶⁴ Robinson J, *The Body: A Study In Pauline Theology*. London: SCM Press 1957, 11

⁶⁵ Johnson A, *The Vitality Of The Individual In The Thought Of Ancient Israel*. Cardiff: Univ Wales Press 1964, 37

⁶⁶ Nigosian S, *The Zoroastrian Faith*. Montreal: McGill-Queens Univ Press 1993, 96-7; Boyce M, *Zoroastrians*. London: Routledge 2001, 50-51, 76-77, 98-99

⁶⁷ Muddiman J, 'I Believe In The Resurrection Of The Body'. In : *Resurrection*, Barton S, Stanton G (eds), London: SPCK 1994, 128

own, the event is the basis of the hope which dashes the materialist's view that death signifies the end of all corporeal, earthbound existence. There is no doubt that Jesus' Resurrection is a special and unique eschatological case but, moreover, that it is crucially foundational and catalytic for personal resurrectional faith and (credal) belief. *'For if the dead are not raised, then Christ is not raised. And if Christ is not raised, your faith is worthless, and you are still in your sins'* (1Cor 15: 16-7). That is a devastating judgement on Christian faith by S Paul. It is a judgement requiring critical analysis if the basis of a resurrection of the dead is to be firmly undergirded, thus to indisputably supplant notions of soul as agent binding continuity of earthbound existence to that of immortality.

The Resurrection matters⁶⁸, not necessarily because God has the relevant power, or that it provides grounds for the afterlife, or represents Jesus' exaltation to God's right hand on high in manifesting a singular 'kairos-event' – an eschatological sign that the 'end-time' is upon us, or because it was the 'Son of God' who was raised. On the contrary, and for John Barton this is its most telling aspect, it is the vindication of Jesus' supreme and absolute moral goodness, as man *qua* Man, that so pointedly avoids the entire episode dissolving into folksy mythology. Jesus is very God of very God, but incarnately dispensed into the perfection of a human person on earth. That is the key. Thus John Austin Baker⁶⁹ in *'The Foolishness of God'*: *'...if Herod the great had risen from the dead [that would indicate] a God who ratified monstrosity [but] could never satisfy us as a source of goodness. Jesus' vindication alone supplies the crucial testimony'*. The crucial test of that ratification is, thus, to demonstrate continuity between the earthly Jesus and the risen Christ, as paradigmatically revealed in the *'most heart-stoppingly...story of the walk to Emmaus* (Lk

⁶⁸ Barton J, Why Does The Resurrection Of Christ Matter? In: Resurrection, Barton S, Stanton G (eds), London: SPCK 1994, 108

⁶⁹ Baker John A, The Foolishness Of God. London: Darton, Longman & Todd 1970, 278

24: 13-35) ... *the recognition of the stranger as the Jesus already known'*⁷⁰.

The appearance stories are crucial in that Jesus is only recognised after he performs a sign – the breaking of bread in a traveller's inn, his call to Mary in the garden, the public exhibition of his wounds– linking him indisputably to the former Jesus known to his circle in Galilee. On those grounds, these events cannot be illusory or hallucinatory⁷¹. His Resurrection body is undoubtedly changed, different, and not immediately recognised for what it is. It appears and disappears through walls and locked doors, but, the recognition comes only with a sign, a sign that is validatory – linking the *now* with the *past*. Therefore the case that post-Resurrection appearances were due to single or mass hallucinatory phenomena⁷², that is, an apparent *immediate* recognising of Jesus - chimaera or not – seems less convincing an explanation. For Goulder, such an interpretation resulted in his loss of faith.

It is the connection between Christ's Resurrection and the resurrection of humankind to which our attention must focus. But that focus must be (and was) totally grounded on the visionary experiences of seeing someone or something (a travelling companion: a gardener: bread broken: the blood-caked, gouged-out muscle), then recognising through such signs those experienced visions to be Jesus himself, then synthesising the pre-and post-Resurrection data, and concluding that Jesus had been for real, his prophecies upheld: and, that the Apostles would now be empowered by the Spirit to evangelise to the ends of the earth. *'A meeting with Jesus who had been dead but was now alive could mean ... that God has begun to raise the dead ... that the Kingdom was in the here and now: winter was*

⁷⁰ Barton 1994, 113

⁷¹ Dodd C, The Appearances of the Risen Christ. In: Studies Of The Gospels, Nineham D (ed), Oxford, Blackwell 1957, 33; Barton John, Love Unknown. London: SPCK 1990, 46; Muddiman J, 1994, 133

⁷² Badham P, The Significance Of Jesus' Resurrection. In: Christian Beliefs About Life After Death. London: Macmillan 1976, 30ff; Goulder M, The Baseless Fabric Of A Vision. In: Resurrection Reconsidered, D'Costa G (ed), Oxford: Oneworld 1996, 48

over and the spring arrived ... the first sheaf of the harvest [עומר] had been reaped' ⁷³.

From the late Jewish perspective, and the raising of Jesus from the tomb, came belief in the credal formulations of the resurrection of the body and life everlasting⁷⁴. Although metaphorical, these confessions imply a reality suggestive of a rising *into* new body, rather than rising (Christ-like) *from* a body⁷⁵. The doctrine emphasises that the hereafter will not merely be a stoking and rekindling of old embers (idem 1994, p134-5) but a radical severance between the corporeal and what lies ahead. To harbour thoughts of continuity (albeit non-corporeal or non-mental) may indicate self-oriented narcissistic urges not to have lost oneself, not to have been annihilated. If God can create anew a fleshly body *in utero*, he can certainly re-create anew a spiritual body on Zion's holy hilltop. (Isa 11;1-9). Resurrection is not merely a *standing up* (ἀνίστημι or ἐγείρω): resurrection faith '*means a new creation, receipt of a new uncorruptible "body", a taking up into a "World" that is entirely new, unambiguous and imperishable, and in which the community of those raised to be in Christ will find an everlasting home*' ⁷⁶. It emphasises that it is God who is, and will be, the source of that future life. And yet, despite that, we cannot be certain how our human lives will be reconfigured, if at all, in the new creation.

A preferred silence on this matter, therefore, contrasts sharply with the vivid, coloured panoramic scenes of heaven and of God or Jesus to which we have become accustomed in the ND literature. That depiction is far too simplistic and redolent of half-remembered truths from childhood impressions or vicariously acquired through life's journey, too geocentric, and too anthropomorphically-oriented for it to have any serious claim as

⁷³ Barton 1994, 47

⁷⁴ Kelly JND, Early Christian Creeds. London: Longman 1972, 298, 369, 387

⁷⁵ Muddiman 1994, 128

⁷⁶ Hebblethwaite B, The Essence Of Christianity: A Fresh Look at the Nicene Creed. London: SPCK 1996, 189-190

eschatology. However real the encounters experienced by ND subjects are regarded to have been, their accounts do not align with conventional orthodoxy. Neither do they afford such newer or original insights that would compel us to review traditional doctrinal assertions, uncertain though they are. I have briefly shown above that the eschatology of real, in-depth theology has much to articulate pertinent to the wider significance of the hereafter and the role played by God, its author, and by Christ, its Redeemer and Judge.

VI.3:5 On Judgement

At this point, I wish to dwell on judgement, because it has received scant reference in relationship to other coverage of NDE phenomenology. Thus Moody⁷⁷:

'Again and again, my near-death subjects have described to me a panoramic, wrap-around, full-color, three-dimensional vision of the events of their lives ... [for some] major events ...[for] others, ... every single thing they had ever done or thought ... the good things and all the bad ... instantaneously ... frequently in the presence of a "being of light" whom some Christians have identified with Christ [who asked], "What have you done with your life?" ... [a]t this point ... a kind of judgement took place: when people saw selfish acts they felt extremely repentant [and] when gazing upon those events in which they had shown love or kindness they felt satisfaction ... the judgement came from within the individual being judged'.

This is how respondents expressed the event (idem 1977, 35):

'...everything in my life just went by for review ... I was really very, very ashamed of a lot of the things that I experienced ... that the light was showing me what was wrong, what I did wrong. And it was real'. 'It was like there was a judgement being made... [then] ...the light became dimmer and there was a conversation – but in thoughts ... it showed me not only what I had done but even how what I had done had affected other people'.

Or: ...

'there was instant communication. My entire life was like that [snapping fingers] ... things that, I mean, He, God knew. Right off the bat. I felt ashamed, I was ashamed of certain things ... that were wrong: these things just came back. I was encompassed by the greatest

⁷⁷ Moody 1977, 31ff

*feeling of love ... instant communication'*⁷⁸.

It should be observed that for other authors, the "life review" of many of their subjects lacked judgemental character. Furthermore, the events varied from vivid to meagre recollections of occasional historical moments. Thirdly, the events were personally idiosyncratic, being experienced by 25%⁷⁹, 15%⁸⁰, and 2%⁸¹ of the respective samples analysed. Finally, on the varied data published, it is evident that the life review hardly constitutes a thorough, independent judgement on one's past life.

Judgement, theologically, entails far more than the personal encounter characterised by the NDE. There will also be a judgement of the nations and of the cosmos⁸². Moreover, personal judgement cannot always be purely individualistic, since individuals are in relation to others. We are free people (within certain physical, legal and social constraints), we can make choices, live and learn to regret those choices and past actions: so can peoples, kings, rulers and politicians. Thus groupings become of serious eschatological relevance and importance⁸³. Abraham's plea to God over Sodom suggests that the collective righteous (even ten) may influence, not the punishment, but justice for offenders. From that arises the issue whether God could ever destroy a sinner, for if so, He would have failed to secure universal salvation and perfection in the created order.

Since Christ has borne God's judgement on the cross, we are all in the Pauline '*not-yet*' of full salvation. We are judged on what we are, have received, and done. That work, and not the worker, may be consumed with fire (1Cor 3:15). Thus judgement may be an ongoing process during life, rather than at a divine judicial assize, as commonly thought, after

⁷⁸ Grey 1985, 82

⁷⁹ Ring 1980, 67

⁸⁰ Fenwick & Fenwick 1998, 113

⁸¹ Sabom 1982, 50

⁸² Macquarrie 1996, 315; Gunton 2002, 161ff

⁸³ Gunton 2002, 167

death. Our final vindication will be of transformation, a resurrection into a new body, as Christ's earthly body was likewise transformed into another type of body – *'We shall all be changed ...'* (1Cor 15:51-2). What is also unclear is whether that judgement comes immediately after death, as presupposed or assumed by authors reporting ND events. Furthermore, in those latter sequences we have the anomalous juxtaposition of a supposed arrival in heaven, followed then by judgement. Some theologians regard a later time for judgement as necessary, during which the individual's purification is progressively achieved. Prayers for the departed have always been offered, but the idea of a waiting period during which that purification occurs, and based on the 12th Century 'doctrine' of purgatory⁸⁴ undermines both the work of the Cross and the consequent eschatological notion of transformation.

Comparatively, there are other features of ND testimony which militate against an authentic eschatology. The accounts see the subject in a passive role, there is no expressed repentance nor penance, and no implied resurrectional transformation, only a subsequent bodily transcendence once the subject has 'returned to earth'. If there was a sense of remorse, it was the subject's, possibly to be taken as heralding the return of conscious-awareness, since the review often co-incides with the imminent earthbound return. The latter, as noted above (Chapter V, p246ff), reflects the burgeoning influence of conscious-awareness on the subject's mentation, and with it, the increasing intrusion of moral sensibility. In accord with that view, I pointed out the reluctance of individuals, at this later stage in the NDE, to traverse barriers which they had no difficulty in traversing as the escape from body was being initiated. I am therefore of the opinion that the component of the life review and judgement moiety of NDE, in the relatively few people in which it occurs, is not a paradigmatic depiction of any realistic eschatology, neither one which

⁸⁴ Gunton 2002, 65

could command, nor demand, further detailed introspective analysis or revision.

I.4. THE NDE & THE SUPERNATURAL: GOD'S CALLING OR A CEREBRAL PHANTASM?

In addressing this issue I consider what subjects themselves thought was happening to them as their NDE unfolded. It might be recalled that elsewhere (Chapter V.2) I assessed authors' interpretations of their received narratives. I rejected the metaphysical constructs⁸⁵ of ascension to the fourth dimension, holography, and hints of Eastern ingredients of rebirth or re-incarnation. Fenwick & Fenwick⁸⁶ were very undecided in their interpretations from which specific conclusions are difficult to draw, even though they seemed to hint at, or even desire, a non-corporeal mystical outcome. Sabom⁸⁷ viewed NDE as truly spiritual events. However Sabom's subjects, deriving from the southern US 'bible belt' were believers to variable degrees, compared with <70% in Ring's sample (no other authors give this type of information). Therefore, it is likely that the majority of Sabom's subjects would have identified themselves with his interpretations of NDE: I doubt whether that would be the case for Ring or Grey.

My aim in this section is to assess and compare the ontological and epistemic aspects of NDE, from subjects' perspectives, with the phenomenology of "classical" accounts of spiritual experiences. By that means, I wish to determine if NDE are assignable to the same category, that is, a metaphysical experience or, indeed, a true manifestation of God. Next, to what extent, if at all, these accounts can be deemed to reflect the supernatural,

⁸⁵ Ring 1980, 218ff; Grey 1985, 186ff

⁸⁶ Fenwick & Fenwick 1998, 223-224

⁸⁷ Sabom 1998, 193ff

eternal realm. In doing so, my analysis will embrace other types of illusions purporting to have been encounters with the divine, but which are due solely to internal neuropathology since they are eradicable by appropriate therapies targeting the brain.

There is a general acceptance, at the mundane level, of the many ways in which alterations in brain metabolism directly influence conscious-awareness. Some people deliberately use recreational drugs to achieve ecstatic "highs": analgesics dull somatic pain, neurochemical modulators relieve depression or suppress mania, other pharmaceuticals dampen epileptic seizures, while anaesthetics in raising pain thresholds and securing agnosia permit the execution of unpleasant surgical procedures. Yet from another standpoint, it is evident that hallucinatory and psychic phenomena, not necessarily denotative of serious underlying neural pathology and yet seriously affecting conscious-awareness, are commonly experienced within the general population⁸⁸. The following two studies are, in part, illustrative of the extent of the illusory phenomenology extant within defined populations.

Ohayan⁸⁹ questioned over 13,000 unselected British, German and Italian correspondents (representing 0.1% total population of the three nations) and found an overall hallucination rate of ~40%. For daytime hallucinations, 3.2% were visual, 3% sensory, and 0.6% auditory, being often related to anxiety, psychosis, recreational drug usage, or accompanying toxic/organic disorders. ~6% subjects experienced OB events, those occurring most frequently being related to psychiatric disorders or prolonged somnolence. Nocturnal hallucinations (~2.5%) arose most frequently at sleep-onset (hypnagogic) associated with vestibular sensations of falling down, or, of a "presence". 7%

⁸⁸ Palmer J, *J Am Soc Psych Res* **73**: 221-251, 1979; Kohr 1980; Gallup & Newport, 1991; Ross & Joshi, 1992

⁸⁹ Ohayan M, *Psychiatr Res* **97**: 153-164, 2000

hallucinations were hypnopompic (sleep-offset) comprising sensations of falling into an abyss, being physically attacked, or awareness of a "presence".

From another slant, Mott and colleagues⁹⁰ conducted a comparative analysis of hallucinations in three samples (each n=50) of alcoholic, general medical, and acute schizophrenic patients. The alcoholics with acute-on-chronic brain degeneration revealed the highest prevalence of hallucinations (auditory 76%; visual 70%; sensory 8%) comprising encounters with spiritual persons, persecutions, and verbal instructions. 76% acute schizophrenics declared the occurrence of hallucinations (auditory 66%; sensory 28%; visual 24%) involving external persecutions and controlling instructional commands. Only 34% general medical patients described hallucinations (auditory 32%; visual 18%; sensory 10%) which concerned spiritual persons or sightings of dead relatives. Although only 21% of all subjects believed their auditory and visual hallucinations to be veridical, there was widespread engagement with people seen (70%) or heard (60%), despite being thought unreal by the remainder of the subjects studied.

These varied aberrant experiences drawn from wide-ranging groups of individuals raise issues of critical importance. First comes the problem of deciding whether these phenomena are due either to external influences beyond the effects of drug usage, illness and alcohol, or internal brain-generated processes. Second, if they are due to internal, brain-generated processes, we should ask whether the outcomes are physiological (as with hypnagogic or hypnopompic hallucinations, and OB events), or due to some form of underlying neuropathological state, either latent or overt. In respect of latent or overt neuropathological processes, I have cited numerous examples of subjects with temporal

⁹⁰ Mott R, Small I, Anderson J, Arch Gen Psychiatr 12: 595-601, 1965

lobe disease whose auras either involved visions and/or auditions of God, visits to heavenly realms or the apprehension of celestial scenes and artefacts [angels, music, harps], and who believed these experiences to be indisputably veridical. Furthermore, the use of appropriate anticonvulsant therapy or curative temporal lobe surgery, in many cases, resulted in an abatement of the "mystical" phenomena, indicating clearly that for many such subjects, explanatory brain-engineered aberrations of mentation, rather than revelatory insights entering into the brain from on high, were directly causal⁹¹.

Both studies reported above could be criticised on the grounds that no systematic investigations of possible underlying local brain damage or pathology were sought, or excluded. Nevertheless, the problem remains of discerning between the polar extremes of spiritual experiences arising directly from brain-based pathology, or to the possibility of having been generated from the eternal realm, that is, directly implanted by God (or other agency) into the mind of the subject. Thus, when is divine presence indicative of God's direct call as opposed to phantasms engineered by brain-induced interference? Two exemplary vignettes further highlight part of this dilemma:

Let us consider Hildegard of Bingen, entered by her parents into a life of monastic servitude as a child-oblate (aged 8 years). She had visionary experiences throughout her life, beginning when she was three years old⁹² when she '*saw an immense light that shook her soul*'. These luminous visions continued intermittently until she died (aged 82 years) in 1180. Charles Singer and the neurologist, Oliver Sacks⁹³, are in no doubt that she had

⁹¹ Dewhurst & Beard 1970; Devinsky et al 1989

⁹² Maddocks F, Hildegard of Bingen. London: Headline 2001, 54

⁹³ Singer C, The Visions of Hildegard of Bingen. In: From Magic to Science, New York: Dover 1958, 199-239; Sacks O, Migraine. London: Picador 1995, 299-301

migraine. This view is buttressed by her paintings which simulate structural peculiarities typical of work created by current members of the Migraine Society. Here, then, are intensely vivid hallucinatory visual auras which, for Hildegard, were considered to be divine interventions. Despite their infrequency, they were clearly instrumental in facilitating, driving and giving exquisite meaning to her life, dedicated wholly to the monastic ideal in the worship of God. For her, those auras provided a '*substrate of supreme ecstatic inspiration*' for her onward work and impressive accomplishments⁹⁴. In this case, Hildegard's auras did not constitute, for her, "proof" of God's existence or of His actions through her, but did act to buttress her pre-existing grounds for faith and belief. On the other hand, let us consider the hallucinatory phenomena which typify schizophrenia. Society recognises that the "voice of God" heard by a schizophrenic subject is more than likely to be the result of intrinsic brain neuropathology. Moreover, if that "voice" were to command any such subjects to kill the first person they encountered, it is generally accepted that incarceration in an approved forensic psychiatric institution would be required of such individuals until their further risks to society had been reduced or annihilated.

Now, if we proceed further in considering NDE phenomenology, we likewise have to deal with certain individuals who actually regarded themselves to have seen God or Jesus, and believed that they had been in Heaven. I have taken these particular assertions to represent the 'high water-mark' of NDE phenomenology, thus being usefully comparable to the 'mountain top' perceptions of the divine described by William P Alston⁹⁵. In his essay '*Perceiving God*', Alston shows that in exactly the same way that sensory perception is a

⁹⁴ Sacks 1995, 301

⁹⁵ Alston WP, *Perceiving God: The Epistemology of Religious Experience*. New York: Cornell Univ Press, 1993

veridical expression of the world about us (forsaking natural or other artefacts like mirages, UFOs, crop circles, and so on), so also spiritual perception is a direct veridical presentation of divine presence or revelatory disclosure (and which, for Alston, are taken as grounds for belief in God). Alston's criteria for veridical spiritual presentation can be employed comparatively in evaluating, from the same perspective, NDE phenomenology. His exemplary testimonies, some of which were used by William James in his 1902 Gifford Lectures, are given below⁹⁶, abbreviated and abridged. They also provide a contrast with the other two examples given above for Hildegard, and for schizophrenia:

'All at once I felt the presence of God ... as if his goodness and power were penetrating me altogether. I begged him ardently that my life might be consecrated to doing his will ... I felt his reply ... [that of] doing his will in humility, poverty : Then slowly the ecstasy left my heart ... [it] had neither form, colour, odour nor localization. God was present, though invisible; he fell under no one of my senses, yet my consciousness perceived him'. (Anonymous experient: James 1902, 67-8).

'The soul perceives a certain fragrance', and:

'One day when I was at prayer ... I saw ... or was conscious of ... Christ at my side ... I saw nothing with my eyes [external eyes or internal soul]'. (Life of S Teresa of Avila; Alston 1993, 13).

'God surrounds me like the physical atmosphere. He is closer to me than my own breath. In him, literally, I live and move and have my being'. (James 1902, 71).

'He [God] sheds his sweetness, but does not display his brightness ... his beauty is not seen. He is surrounded by darkness ... for he does not yet appear in the light ... he appears in the fire, it is the fire that warms rather than illumines'. (Richard of S Victor; Alston 1993, 52).

In comparison with the above, there is a vast difference from NDE testimonies, reference to which was given in my preceding chapters. Let us remind ourselves of some NDE narratives in order to drive home the differences:

'At the end of the tunnel was a glowing light ... like the sunset in the afternoon. I remember hearing voices ... I think it was Jesus Christ who was talking to me'. (Sabom 1982, 40).

⁹⁶ James W, *The Varieties of Religious Experience*. New York: Longmans, Green & Co 1902

'I couldn't see myself but I was standing on something high ... below was just the most beautiful greenest pasture ... looking down on cattle and sheep and shepherd. It was a bright sunny day and he was standing on a round knoll. He had his back to me, but like you see in the bible [sic], ...He had on this long robe and a cloth over his head with a band around it'. (Sabom 1982, 45).

'I could see mother and Christ saying 'Come home' and waving their hands at me. She had a long sparkling silver gown on, and so did Christ ... long hair ... long beard .. they were both smiling'. (Sabom 1982, 169).

*I was aware of moving down a dark country lane with high hedges. At the bottom of the lane was a small cottage with a light on in the window'. (Fenwick & Fenwick 1998, 51).
'I seemed to find myself in some type of building ... pervaded by this beautiful golden light. Many people about me were milling about. I saw my parents approaching [saying] 'We've been waiting for you'. It was telepathic communication. The surroundings appeared to be marble ... a crypt and stairs. I arrived at a place ... I can only describe it as heaven ... more a bustling city than a lonely country scene. I felt enlightened and cleansed. I saw Jesus Christ. I recognised my [deceased] mother [and S.] Peter [and S.] Paul [and] Wilson Carlisle [founder of the Church Army]. In heaven there is light, peace, music, beauty, and joyful activity, but above all, love'. (Grey 1985, 51-2).*

Alston's analytical critique of the marks of spiritual perception⁹⁷ sees it as the direct presentation of God to the experient's consciousness, just as an object X would similarly present itself to an observer within the physical world of sensible perceiving. Either form of perception differs from other modes of cognitive apprehension such as thinking about, forming mental images or analysing the properties of, remembering, or deriving beliefs (doxastic or epistemic) about the character of X. "Mystical" perception of this type is basic, unanalyzable, non-reducible: *'in fact, it just is what it is'*. (idem 1993, p5ff). Alston, like James, resists the vivid, sensory content of other forms of religious experience, taken as visions of God, saints, Virgin Mary, the heavenly city and attributions thereof (idem 1993, pp19,25,59,67). And while speaking of a direct awareness and presentation of God to their consciousness, true mystics do not refer to any other presented or perceived object associated (perhaps through the subject's religious tradition) with God (idem 1993, p23): *'in the nature of the case, this argumentum ad silentium is all that we can expect'*.

⁹⁷ Alston 1993, 9-67;190; 228ff

This portrayal of the true spiritual experience contrasts sharply with the florid and intense egocentric subjectivity of the sensory aspects and feelings characteristic of NDE. These latter narratives are rationalised into their ultimate semantic constructions for presentation to the outside world, in retrospect, by each subject. The experiences recorded are detailed descriptive accounts of God or Jesus, or of heaven, as opposed to a direct, but quietly focussed perception of divine presence as if entering into the subject's consciousness. That is a most important distinction. Furthermore, the oft-recorded sightings of deceased parents, grandparents, and other dead relatives or friends, often appearing as they were last remembered on earth, or doing worldly things and, in particular, telling experiencers that they cannot stay and must return home are, by comparison, extreme foreign intrusions that are emphatically lacking in the reports cited by James and Alston in what they regard as purer mystical events. Indeed, according to Alston, these latter reports are invariably '*dim, meagre and obscure*' (idem 1993, p208) and not overburdened by complex visual imagery. They are more full of affective ascriptions to God, Jesus or the Holy Spirit of tenderness, warmth, consummation, and articulated by linguistic similes appropriate to sensory perception, such as sweetness to the taste or gentleness of touch. Words, if communicated, are direct but gentle, re-assuring and directional, and hence of immediate relevance to the experiencer's future life. The communications are not about stern commands to go back, that the time is not right, or that staying around is no longer permissible or desired:

'...I heard his voice say, 'Go back!'. I said, 'Why me, Lord?' and whoever spoke said my work on earth wasn't over yet ... All I heard was his voice: it was loud, thundering, just like a clap of thunder coming out of nowhere ...' (Sabom 1982, 54).

'His [not identified] face was very serious. He returned to the discussion and then in a beautiful voice, very loud, he said. 'She must go back' '. (Fenwick & Fenwick 1998, 103).

True mystics do not have to tumble and gyrate through the absurdity of a "tunnel" so as to reach the so-called heavenly light. Nor are they frustrated by silly, garden-orientated physical barriers (gates, hedges, walls, trellis, fencing, or bridges over streams) which invariably terminate NDE. Rather than having to go to some outer location, the presence of the divine is directly instilled into the mystic's own body: that is a further important distinguishing feature:

'God was present ... my consciousness perceived him'.

'He appears to the soul by a knowledge brighter than the sun'.

'But as I turned ... I received a mighty baptism of the Holy Ghost [who] descended through me ... like a wave of electricity ... in waves of liquid love ... I could not express it in any other way'. (Alston 1993, 14-15).

ECE, by comparison, are forthright, bright, technicoloured vistas of trees, clouds, sky, flowers, in addition to the very detailed "eyewitness" descriptions (albeit so non-uniform) of Jesus that dominate these narratives (Chapter III, p125).

William James defines the marks of mysticism or spiritual encounter, or of a *'mystical state of consciousness'* ⁹⁸ as ineffable, noetic, transient and passive. He takes ineffability as the *'handiest'* of these defining criteria, by which I take it he means the most prominent or important. It is a characteristic that defies verbal capture and for which no adequate report on the pertinent experiential content can be effected in words. Likewise, in respect of NDE phenomenology, certain authors devote special emphasis to the ineffability of the

⁹⁸ James 1902, 371-372

experiences undergone, especially Fenwick & Fenwick⁹⁹. Ring, on the other hand, found that only 60% of his sample were lost for words¹⁰⁰, while Moody¹⁰¹ merely re-iterates James' criteria. Sabom (1982: 1998) and Grey (1985) appear not to be concerned with this aspect of the phenomenology. Clearly, these authors display no consistency on this point. Alston¹⁰² signally rejects such inexpressibility as a criterion of mystical perception. *'One cannot be struck in our examples and elsewhere, by the constantly re-iterated insistence that the experience is indescribable'*. Alston takes the widespread assumption and insistence on ineffability as blown out of all proportion. Despite such varied observations, subjects do, indeed, manage to say *'quite a lot about their experiences and about what they take themselves to be explaining'* (idem, p32). The denial of inexpressibility he takes to mean literal expressivity, such that recourse to simile, metaphor, analogy, symbolism and allied devices permits the offering of many useful and detailed accounts. And that situation pertains not only to mystical presentations, but also to the sciences, religion and philosophy. I think it is generally accepted that the use of linguistic tropes permits articulation of the inexpressible, and without such measures, our culture, knowledge and understanding would be that much the poorer. I would agree with Alston here. It is clearly evident that for any spiritual insights, whether from the purely *'dim, meagre, obscure'* presentations of God, or from ECE, much has been said that gives meaning and insights into highly personal forms of experience. How could so many books about NDE have been published containing so many testimonies by so many subjects if all was truly ineffable?

If NDE are not ineffable, are they noetic? James regards the meaning of "noetic" to

⁹⁹ Fenwick & Fenwick 1998, 22, 220

¹⁰⁰ Ring 1980, 84

¹⁰¹ Moody 1977, 99

¹⁰² Alston 1993, 39

encapsulate *'far-reaching intellectual (cognitive) insights, illuminations and revelations into the depths of truth'*.¹⁰³ Precisely how that interpretation of mystical noetics applies to NDE is difficult to analyse. We derive from some NDE narratives the alleged acquisition of "all knowledge" absorbed either from vast libraries or gained as answers to the imponderables concerning life and existence:

'It seemed that all of a sudden all knowledge – of all that had been started from the very beginning, that would go on without end – that for a second I knew all the secrets of all ages, all the meaning of the universe, the stars, the moon – of everything ... As the Bible says, "To you all things will be revealed". For a minute, there was no question that did not have an answer'. (Moody 1977, 10-11).

'For a moment – it was like I knew all things. I thought whatever I wanted to know could be known'. (idem, p14).

The acquisition of such vast knowledge, insights and understandings seems not to have any implications for the subsequent lives of these experiencers. Furthermore, the acquisition of all knowledge is not the exclusive preserve of NDE. It typifies hypnagogic hallucinatory sleep-onset phenomenology (Chapter II, p104ff), and like NDE, the data revealed are not remembered once the subject has emerged from that subliminal subconscious state and regained full conscious-awareness. In either case, since these (cosmic) revelations and insights cannot be remembered, they have unfortunately conveyed nothing of value to the possible benefit of the subject nor of civilisation: we are none the wiser. On the other hand, it might be insisted that the noetic element involves encounters with divine persons. Yet these NDE-associated encounters seem to be fruitless episodes, on the grounds that the conversations only involve commands to subjects to return to earth forthwith, since it is *'not their time'*. That could hardly be taken to comprise a worthwhile noetic revelation. I am therefore led to the conclusion that ECE lack the

¹⁰³ James 1902, 371

noetic criterion articulated by James¹⁰⁴.

These considerations bring us to James' criteria of transience and passivity. I have drawn attention to the fact that some NDE subjects are (passively) told to return to earth. Indeed, the major proportion of all NDE phenomenology is passive. That includes (if undergone) the experiencing of the tunnel, light and decisions to return. Other subjects appear to make the decision themselves, but I regard that as the intrusion of conscious-awareness, and, in particular, of the re-appearance of organised frontal lobe activity as the source of the moral dictate to return earthwards. This is relevant to the transience of NDE, which occupies those brief moments, not when the brain is inoperative, but as it is regaining normal functioning while wakefulness and full conscious-awareness are being re-established.

Not all spiritual perceptions, as have been recorded through time, would necessarily satisfy Alston as to their authenticity. Moreover, from my own neurophysiological perspective, some of the examples given continue to illustrate the empirical uncertainty of deciding between a divine, or cerebral, ontology. Consider:

*'Then it began to dawn on me that I was not alone in the room. Someone else was there, located precisely about two yards to my right front. Yet there was no sensory hallucination. I neither saw nor heard him, but he was there'.*¹⁰⁵

That account could be indicative of a "unilaterally felt presence"¹⁰⁶ and in this example suggestive of a right-sided temporal lobe focus. "Felt Presences" are commonly expressed

¹⁰⁴ James 1902, 373ff

¹⁰⁵ Alston 1993, 17

¹⁰⁶ Brugger P, Percept Motor Skills 79: 1200-1202, 1994; Brugger et al, 1996; Brugger et al 1997

phenomena within the community¹⁰⁷. In >60% of 31 published case-reports, the invisible presence was sensed to the right of the subject, arising from disruptions to the mechanisms controlling ego-/para-centric space, as explained throughout Chapter IV. There are varied types of lesional pathology underlying the phenomenon, involving the temporal, temporo-parietal, and junctional temporo-parietal-occipital cortices of the right hemisphere. They include epilepsy, tumours, migraine, acute and chronic infections (viral, syphilitic) and cerebral trauma. The "presence", invariably a projection into the subject's para-centric forward space, is usually that of the subject, and towards which a feeling of closeness, empathy and familiarity ensues. Other examples quoted by Alston suggest that the perceptual disturbances could have arisen from severe depressive illness, despair and acute loneliness:

*'When I was middle-aged and the Second World War was upon us, there came a night when I was in **deepest distress of mind** [my emphases here and below]. I was **alone** in my bedroom, pacing the floor ... suddenly, I heard a voice firmly say, 'Be still and know that I am God!' It changed my life. I got into bed, calm and confident'*¹⁰⁸.

*'At the time, I reached **utter despair and wept** and prayed to God for mercy instinctively and without faith in reply. That night I stood with other patients in the grounds waiting to be let into our ward ... Suddenly someone stood beside me in a dusty brown robe and a voice said 'Mad or sane, you are one of My sheep' ...this has been the pivot of my life' (idem, p18).*

In this section, I have been at pains to draw the distinctive contrasts between NDE regarded by some authors as "mystical" experiences¹⁰⁹, and the 'mountain top' examples given and pursued by Alston as evidential demonstrations of the presence of God. The ontological basis, and epistemic value, of mystical perceptions as defined by Alston, represent divine influences on the percipient's mind and consciousness. The

¹⁰⁷ Suedfeld P & Mocellin J, Environ Behav 19: 33-52, 1987

¹⁰⁸ Alston 1993, 19

¹⁰⁹ Fenwick & Fenwick 1998, 229; Sabom 1998, 214ff

phenomenology of NDE, in comparison, is different. Here we see experiencers seemingly travelling "outwards" on a journey through a "tunnel" into (the) "light", describing vividly coloured panoramas, and having sight of God or Jesus – sightings which are totally lacking in uniformity of description, and then "returning" because of moral doubts about going further. We would do well to consider the validity, even propriety, of these overtly anthropomorphically-based accounts:

'He was tall ... he had a white robe on ... his face was beautiful ... his skin was glowing and absolutely flawless'. (Sabom 1982, 49).

'She [her mother] had a long sparkling silver gown on, and so did Christ. .. [he had] long hair ... long beard ...' (idem, p50).

'I was walking across this wooden bridge over this running beautiful stream of water and opposite ... there was Christ [with] a very white robe. He had jet-black hair ... very black short beard. His teeth were extremely white and his eyes were blue, very blue' (idem 76). [the form] had blond-gold hair and it had a beard, a very light beard and a moustache. It had a white garment on. And from this white garment there was all this shining gold ...' (Ring 1980, 62).

'...the light got brighter and I saw him. I saw Christ. He was incredibly beautiful ... his feet were bare. He was wearing a bright garment. The bosom was open and you could see his chest. He had hair down to his shoulders and a beard. There was light coming out of his head like a star' (Fenwick & Fenwick 1998, 86).

These major inconsistencies, to my mind, devalue the general phenomenological claim that any NDE constitutes a veridical viewing of the afterlife, of God, or of Jesus. How can anyone accept these multiple illusions as a credible realisation of the hereafter? These images are all based on the usual precepts available from current forms of iconography attributable to ecclesiastical or secular cultural portrayals. A further paradox is uncovered by these considerations. While all authors I have considered variously try to make the

NDE a venture into some outward metaphysical realm, the experiencers themselves bring back narrative accounts of their so-called other-worldly journeys which, by contrast, are extraordinarily geomorphic and anthropomorphic. These specific examples are tied to pre-existing visual memories of others' attempted solutions as to how they thought Jesus, in particular, might have looked and appeared. There are considerably fewer realised images or descriptions of God or the Holy Spirit. The latter is rarely expressed in visual art-form, while the few images of God find portrayal, for example, in the severe Byzantine mosaics of God as Pantocrator, or the paintings of Michelangelo and Blake. These neither have the widespread public appeal nor the same impact as do the depictions of Jesus typified either in religious iconography (stained glass windows or Sunday school pictures), or more recently in popular dramatisations by cinema or television studios.

Alston and James allow their considerations to apply only to subjects with presumptively normal brains. Neither author specifically refers to the formal possibility of neuropathological aetiologies for divine perceptivity. In a later chapter Alston¹¹⁰ offers a general dismissal of analogous causal aetiologies, since we can never be sure precisely how God might intend to reveal himself, through whatever means. While accepting these strictures, I have brought forward sufficient reasons to make possible the belief that NDE, in general, arise from brains involved in, and recovering from, major vascular and metabolic insults. These disclosures are not the function of normal, but on the contrary, temporarily abnormal brains. That is a most important corollary which has to be borne in mind. They are thus directly analogous to the specifically 'God-centred' aberrations occasioned by cerebro-vascular abnormalities, migraine, or temporal lobe pathology, as I have demonstrated in previous chapters. Clearly, the ontological basis of these latter

¹¹⁰ Alston 1993, 228ff

experiences of the 'divine' must be conceded to be brain-based, on the compelling grounds that either curative surgery (for temporal lobe auras and seizures) or the application of targeted drug therapies (for schizophrenia, migraine and epilepsy) eradicate entirely all future sightings and auditions of the Almighty throughout the subjects' remaining lives. Furthermore, the epistemic value of such visionary experiences, analysed dispassionately by independent observation, would have no greater significance, insights or predictive value than those occasioned by any other common hallucinatory event, of which we spoke above. Nevertheless, phenomenologically, as Alston cannot avoid, any such experience can be very real to the subjects undergoing them, irrespective of causal antecedent. It is for that reason that I have considered the impact which NDE stamp on the further lives of those who have experienced NDE.

To summarise, in this section I have been concerned with two issues that have a bearing on the ontological status of NDE. Firstly, whether NDE could be spiritual (and therefore divinely-inspired) experiences enjoyed by subjects as they pass through some form of medical crisis. Or, secondly, whether the resultant phenomenology more directly reflects brain-based perturbations arising from those crises, but more specifically to the processes effecting the recovery to full conscious-awareness. That would be similar, analogically, to the religious auras known to result directly from the seizure perturbations deriving from temporal lobe damage. Nevertheless, if my reasoning that pathological perturbations of brain functioning may lead to varied forms of religious phenomenology is correct, then the epistemic value of NDE, at least to the dispassionate third party observer, would be of little significance, viewed from theological perspectives. We do not consider the schizophrenic's voice of God to encapsulate authentic revelatory disclosure.

In considering whether NDE, therefore, could be deemed to represent some form of

"mystical" experience, I compared the most spiritually-oriented narratives with the forms of mystical experience discussed by James (1902) and particularly by Alston (1993). Alston considers the true mystical experience to be '*dim and meagre*', and like James, is inclined to be sceptical towards overt visual or auditory hallucinations, stigmatization, healings, and varied automatisms. Certainly, there is a marked difference between the shadowy mysticism portrayed by these authors and the florid, full-blooded panoramas of heaven characterising NDE, together with their less common, but strikingly anthropomorphic portraiture of Jesus. The latter, I noted, affords a non-uniform portrayal reflective of religious iconography or other imagined representations originating from cinema or television. The presence of tunnels, and physical barriers that frustrate continued residence in the other-worldly domain, are other stark differences from the true mystical encounter. NDE are overly represented by geomorphic references that seem to preclude any feel of authenticity suggestive of divine initiative. I am led to the conclusion that NDE fail to portray the hallmarks of truly spiritual encounters with the divine. Neither do they inspire much hope in providing models for the temporary escape of mind or consciousness into a higher dimension, or of privileged access to some kind of cosmic consciousness. Furthermore, I have cited numerous examples of intrinsic cerebral pathology generative of putative spiritual encounters with God or heaven. More incisively, I have quoted cases in which appropriate surgery or drug therapies eradicated the visionary mystical or God-driven illusions from the subsequent lives of these patients. These data indicate that some spiritual encounters and their resulting phenomenological certainty are generated by specific brain-states. There is, therefore, no reason to doubt the neuropathological ontology of some types of religious experience.

Since I am not persuaded that the content of NDE, or their epistemic value, is indicative of divine encounter or revelation, I conclude, together with the other scientific evidence

offered in earlier chapters, that the most parsimonious explanation for NDE is that they, too, are neurophysiologically-grounded phenomena arising out of the antecedent causes generating the abnormal subconscious mentation. Therefore, from the arguments which I have presented, that the ontology of NDE is cerebrally-determined and akin to that accompanying the "religious" content of temporal lobe auras, the epistemic significance of NDE can be accorded little metaphysical, spiritual, or religious value.

Another possibility is that NDE could be analogous to the biblical dream through which God 'appears' to humankind. From Joseph bar-Jacob (Gen 37: 5ff) to Joseph, son of another Jacob and husband of Mary (Matt 1: 16, 19), there have been many accounts of dreamers believing by these means to have been in receipt of communications from God. It is likely that these recorded dreams are literary devices permitting the writer a means of addressing divine interactions with the world and the minds of humankind. But even the great prophet Jeremiah railed against false prophets who imagined that they had received, and were communicating, God's holy message to Israel (Jer 23: 16ff). Any critical examination of NDE conversations reveals that few words, if any, come directly from God or Jesus. Furthermore, the messages convey somewhat crude commands to go away. All too often these 'divine' commands are relegated to proxies, usually grandma or parents who also, unrealistically, force their offspring to return to earth. One could hardly insist, in these circumstances, that anything of divine import had been vouchsafed to the subject. Nor could we be confidently reassured that NDE phenomenology represents to us a credible spiritual realm comprised of entry tunnels, barriers constructed with earth-bound props, non-uniform anthropomorphic caricatures of Jesus dressed in worldly attire, and culminating in forcible commands to the most recently arrived immigrants to turn tail and get back to their worldly responsibilities.

VI.5 OVERVIEW & RECAPITULATION

The extra-corporeal experience (ECE) embodies notions of out-of-body, and near-death, phenomenology. Whether conflated, as is usual, or taken as separate experiential constructs, they have been regarded by the authors cited in this thesis as a veridical manifestation of post-mortem survival experiences. Upon that premise, and the narratives received, their conclusions postulate that as the brain dies, either consciousness (Ring: Grey: Fenwick) or the soul (Sabom) vacate the brain or body, respectively, thus to gain access to and glimpse the features of hereafter.

That is a view which I reject. That consciousness can exist outwith the brain¹¹¹ and upon which its origin must surely be grounded, is to me unintelligible. Neither is it evident precisely what these authors mean by consciousness. On my definition, consciousness is a basic awareness of the prevailing environment which can be recognised in so immature beings as 20-week-old fetuses under appropriate hospitalised neonatal intensive care. That level of more-or-less-wakefulness (as opposed to frank unconsciousness, or some intervening mode of subconscious existence) is incomparably different from those qualities of mind which any neonate would have acquired on reaching its 25th birthday. Throughout those years, the progressive aspects of mind and of personality (this chapter, p304ff) would have evolved and been erected upon that initial basic state of primitive awakeness.

Sabom's account of soul is very much based on the traditional understanding of

¹¹¹ Here I think it is necessary to distinguish between conscious-awareness which arises from the brain, and the outward extensions of para-centric space, as well as our perceived exterior visual panoramas, but whose locations are brain-based and therefore also "intracranial".

insubstantial essence encased in flesh, possibly acquired around the time of conception, and taken as agent of immortality. At death, the soul escapes, and, in continuity ensures the personal being, memories, qualities and achievements of that deceased individual. I reject that interpretation of soul, as I am uncertain as to what, in the Christian tradition and its liturgy, is precisely implied by that word. There are now theologians who view the soul, according to their varying degrees and opinions, as equivalent to ideas about personality, as I have defined it above. That definition rests on corporeal (body + mind/brain) attributes whose existence will surely cease at (non-resuscitable) death. True death represents a radical break between corporeal existence, with which we are all familiar, and the kind of spiritual existence awaiting those who so believe in the appropriate belief systems in the hereafter. I avoid use of terms "heaven" or "eternity" because they imply egocentric concepts of location and temporality, neither of which can be properly thought, faithfully, to characterise the hereafter. At this time of writing, one is reminded of Mrs C F Alexander's hymn predominating the Christmas run-up: ' and He leads His children on/ to the *place* where He is gone/...where like stars His children *crowned*/ all in *white* shall *wait around*'. That Jesus has gone to a '*place*' where everyone is '*crowned and dressed in white*' then having to hang '*around*' (for ever and ever) creates imagery not too removed from the typical narrative adorning the pages of relevant ND literature. '*That*', as David Brown¹¹² has remarked in a similar vein, '*will not do*'.

Credal definitions behove our orientation towards '*resurrection of the dead and the life everlasting*', not on immortality vested in the receipt of eternal, immortal soul. That assent to resurrection, as I emphasised above (this chapter, p310ff), is predicated firmly on the reality of Jesus' Resurrection. Nevertheless, the declaration ἀνάστασιν νεκροῦς in the

¹¹² Brown D, Tradition and Imagination. Oxford: Oxford University Press 1999, 85

Nicaeo-Constantinian promulgation of CE 381 ¹¹³, implies only the standing or rising up of the "dead", but little more. Christ's earthly body was transformed and of a different quality in its appearances to the disciples, but an unlikely manifestation of the Second Person in the triune hypostases. How our own personal transformations 'in resurrection' will come about, and what that renewed status will entail, has not been revealed: and that we have to always bear in mind. We have to be content with metaphorical language and poetic metaphor nuancing the reality of things about which we must confess, in humility and honesty, to have no direct knowledge. There is silence in the grave and beyond, a contrast that jars with ND narrative accounts purporting descriptions of the life hereafter in glorious, vividly-coloured, three-dimensional imagery so unacceptably anthropomorphic and geocentric.

Given the widely varying biological circumstances under which each brain recovers (Chapter V, p204, 278), every descriptive narrative offered is idiosyncratically fashioned, reflective of the memories and lifelong impressions unique to each professing individual. These aberrant mental images are not culled through any other-worldly journey but as a thorough-going, this-worldly event, occasioned by the re-awakening to conscious-awareness of a brain subjected (in c80% subjects) to major antecedent circulatory/hypoxic insult. The return to full conscious-awareness can only be envisioned as a chaotic process of re-perfusion and re-oxygenation, terminating abruptly as conscious-awareness re-emerges from the world of subconscious, dream-like mentation.

My strategy for demonstrating the validity of that claim was to argue from a vast neurophysiological literature, exemplifying the varied brain-states capable of generating

¹¹³ Kelly JND, *Early Christian Creeds*. London: Longman 1972, 297

analogous, idiosyncratically-determined, personal mental imagery. The ephemeral nature of these mental excursions, referable to minutes or seconds of real time, is secured by extrapolating retrogradely from the defined time-point of congruence - the NDE terminating with the re-establishment of conscious-awareness. The narrative word-count (as with dream research) provides the evidential basis of that assertion. The NDE thus emerges as a rather pointless, imagined trajectory into some sort of subconscious, mentally-contrived otherworldly domain that, of itself, signifies very little.

VI.5:1 Of True Resurrection and the Hallucinatory Metaphysic of the ND 'Otherworld'

To the dispassionate observer outwith the immediate circle of interest, ECE phenomenology occasions some curiosity or even fascination, but it has done little generally to inform the social mores, nor to dissipate death-anxiety from those not directly involved with this movement. Theologically, there is scant basis for an ND eschatology capable of meaningful interaction with Judeo-Christian concepts of an afterlife, as thoroughly grounded in the raising of Christ from the dead; and, as paradigm for faith and hope in a spiritually-realised ontology beyond the grave. The silence of revelatory disclosure and the need for quiet persevered-for hope in faithfulness to scripture, creed, and ecclesial tradition contrasts sharply with the unlikely, non-uniform provenance of ND subjects' idealistic heavenly abode. Nor its earthbound portraiture, where seemingly encountered, of God or Jesus. Neither is ND phenomenology recognisably apocalyptic, as reminiscent of the theophanies vouchsafed to Paul on the approaches to Damascus (Acts 9: 3-4) or to the exiled John on Patmos island (Rev 1: 12ff). This position must, at least, be

acknowledged and recognised in contradistinction to the ECE literature otherwise engaged. There we read of consciousness ascending to higher levels of cosmic awareness and unity, engagements with holographic frequency analysis and reception, and recruited into the promise of future re-incarnations.

Attempts to secure alignment of ND experience to the classical contours of eschatology, spiritual encounter or revelatory disclosure of the divine are hard to effect. From all this, my conclusion is that the ND experience cannot be construed in any theological sense as related to the heavenly realm, or Deity. Acknowledgement of the possibility of neurophysiological explanation, moreover, renders the otherworldly edifice hitherto constructed the more dependent on authorial presupposition, weakening considerably any claims on truth, or hard reality. Such conclusions should have been tied properly to the narrative disclosures of authors' subject clientele. Moreover, the methodological criticisms (this chapter, p285) reasonably applicable to certain parts of this literature afford a further disclaimer on authentic interpretational analysis of the experiential case-load deployed by particular authors.

Specific characteristics of NDE, to my mind, render any sensible apprehensions of the varied narratives published well-nigh impossible. For example, the illogical antitheses between early-, and late-, phase subject behaviour (barriers initially crossed without difficulty and subsequently offering insuperable resistance to further progress. Or the initial abandonment of concern for family or work, thence to be later sensed as urgent and morally compelling - Chapter V, p246-9). Also the banality and bizarreness of many published narratives, the absurd content of some of the reported conversations with either divine or deceased persons, their ephemeral nature, and the abruptness with which many

experiences terminate. The phenomenology, viewed critically, is more akin to subconscious oneiric experience than to robust, credible accounts of an authentic, veridical glimpsing of the hereafter. That subjects recover surely must re-iterate the point that they were never dead. Moreover, if they, or their brains, were dead the question arises as to how they were able to bring back memories (assuming these to be *true* and not completely fabulous) of their supposed encounters, when such memory function depends on the cerebral organisation of the appropriate neural circuitry. That could only happen in viable brains in their recovery phase. Interestingly, in comparison (and again gone unnoticed by the authorship cited herein), the data disclosed to subjects during their NDE, the global knowledge alleged to have been acquired, insights gained, answers to 'unanswerable' questions given, are *never* retained for subsequent use, or for the enlightenment of those never privileged with such experiences. These observations further corroborate my argument that the ECE is not some kind of outward-bound trip into the hereafter. It represents an inward-bound medley of pre-existing memories and presuppositions that come into the subconscious mental state as the brain is recovering from (for most subjects) an ischaemic/hypoxic insult.

Now, the predominant pre-ECE affective-cognitive thought mode should be apparent. It is the fear of imminent death and human extinction. The resulting mental imagery represents the idiosyncratic perceptions of each of these subjects as to what the afterlife will entail for each of them. That a profound cognitive-affective issue can influence subsequent mental imagery thence to spread and involve other parts of the brain has been exemplified by the female epileptic after receiving information on her brother's war-grave, together with other similar cases (Chapter V, 239-241).

I therefore claim that the neurophysiological challenge put out by Ring (1980, 216; and

Chapter I, p12) has been completely neutralised, if not eradicated, by my pursuit and deployment of in-depth neurophysiological explanation and possibility.

VI.5:2 The Forgotten Potential of the Post-Experiential Subject

I come now to my second concluding point. ECE phenomenology is not a one-sided event concerned with otherworldly matters. Like death itself it faces backwards, Janus-like, on subjects' lives not only before the crisis overtook them, but, significantly, afterwards. Indeed, it is my view that post-event phenomena for the subject as a person continuing to live on earth, are of far greater importance than the disproportionate attention given to 'otherworldly' experiential concerns. This view, while emphatic of the dimorphic nature of ECE phenomenology and its otherworldly mythology, also lays particular stress on the reality of the changed lives of subjects, once recovered from the precipitating event. Those who do survive to tell the tale were clearly never dead, in the normal meaning of that word. Indeed, in the absence of any further non-neurophysiological explanation (that is, eschatologically or spiritually orientated), we are forced back onto the influential outcomes of this type of phenomenology on subjects during their subsequent life histories. This aspect of the literature is particularly defective. We are here concerned, therefore, with the important subject of personhood. Personhood on earth rather than in heaven.

We have seen above (this chapter, p298) that human *becoming*¹¹⁴ – or becoming that which *is*¹¹⁵, as the unique attribute of individual personhood, requires freedom and transcendence. Freedom of personal action derives from our cognitive and affective

¹¹⁴ Macquarrie 1982, 2ff

¹¹⁵ Zizioulas J, On Becoming a Person. In: Schwobel C, Gunton C (eds), *Persons Divine & Human*, Edinburgh: Clark 1999, 34ff

capacities, but also in not being part of a fixed, deterministic universe where control is effected as if by divine puppetry, or through dream-state mode mentation. That capacity to act and reach out is what encapsulates transcendence. I regard the post-experiential change wrought in subjects' lives as the resultant of undergoing an ECE, to constitute an important manifestation of personal freedom and the will towards transcendence. That remarkable translation is seen in the reduction in the fear of death, and even in the aspiring towards a strengthened belief in the reality and tangibility of a continued existence in the hereafter.

Moreover, in the continuing earthly life of these subjects, there arises an increased degree of personal motivation and self-respect. From that arises an urge to employ that changed perception of the self towards the well-being of other people, expressed as compassion, tolerance, empathy, and equanimity in respect of other points of view. Another emergent tendency embraces the promotion of family values, friendship and goodwill where these may have been lacking hitherto. For those subjects with a pre-existing religious belief, post-experiential belief in God, church attendance, or denominational affiliation was not altered. What did change was a heightened sense of internal religiosity in faith, strength of belief, increased spirituality and the meaning of the religious conviction in their lives. Such attitudes are at variance with the disputable conclusions of Ring and Grey¹¹⁶ that post-experiential subjects are more likely to eschew their previous faith systems and ecclesial preferences in favouring individually-tailored spiritualities, psychical expression and yearnings towards re-incarnation. Other studies by Sabom and Amber Wells¹¹⁷ clearly argue against such unexpected findings.

It is regrettable that post-experiential personal behaviour has been ignored with so little

¹¹⁶ Ring 1985, 198-201; Grey 1985, 107

¹¹⁷ Sabom 1998, 186-187; Wells 1993, 17

emphasis and recognition paid to its importance, against a misplaced enthusiasm for esoterically-based, speculative interpretations oriented towards otherworldly outcomes. Clearly more studies are desirable so to evaluate more deeply the impact of changed attitudes on subjects' lives, and their knock-on influences where other people are concerned. These issues have not only been singularly neglected, but hardly recognised or perceived at all as relevant. There is a passing interest by many who have never been directly caught up in ECE phenomenology in forms of otherworldly experiential occurrence, but scarcely any vicarious appreciation of the implications or potential impact of the way in which subjects' lives are so radically turned about, as a means for good or the promotion of inter-societal relationship. Yet we are informed¹¹⁸ that possibly 8 million US citizens have undergone ECE. Ring rejoices in this number as potential recruits for his universalistically-spiritualised world religion, but misses the obvious point that there is a vast potential for harnessing those changed values for the amelioration of society, here, on earth. That is a major sociological task, but one still awaiting investigation and application. It is an area where future research focus should be directed. Surely this would be of greater value than trying to determine whether ECE subjects out-of-body can "see" marked cards deposited on top of operating theatre lights and cupboards. For these reasons, I regard this side of ECE coinage of far greater import than its so-called otherworldly obverse.

McCord Adams in her recent book¹¹⁹ notes the transcendence in nature, from energetic physico-chemical process, through plants and mobile animals from which life can interact with environment, be self-sustaining and self-replicating, thence to the endowment of humankind with self-awareness, self-consciousness (idem 2000, p165), and the capacity

¹¹⁸ Ring 1985, 254

¹¹⁹ Adams MM, *Horrendous Evils and the Goodness of God*. Ithaca: Cornell Univ Press 2000, 165

for self-reciprocating love and relationship. These, as subsumed into personality (above, p306) as contemporary-based view of soul, are characteristics through which transcendent outreach is manifested. It is noteworthy that we use the word apotheosis (ἀποθέωσις) to encapsulate the sublime heights of human striving and endeavour, the attempt to realise the divine. Within the Christian orbit, as Zizioulas¹²⁰ noted of patristic (Orthodox) theology, θεώσις ("God-ness" or "divinization" of humankind) represents the projection of a person's newly-born baptismal ontology into communion eucharistically with the divine Godhead. The (apo)theosis of being is who, not what, *is*: a transcendent state capturing the essence of *imago Dei*, and less a physically-conceived resemblance (...בצלִמוֹ), but an incorporation of hypostasis into Hypostasis, or as S Paul would have expressed it, of being ἐν Χριστῷ

But that projected view of personhood is lop-sided, however resurgent, courageous, glorious. Death, in its abrupt excision of life, reduces human transcendent striving to nought, forcing relinquishment of work uncompleted, business yet to be conducted, personal affairs unconsummated. That is the '*tragedy*' of corporeal ontological existence upon which death brings radical disruption¹²¹. Not only in death is life in its fullness cut down like the grass of the field, to wither. At its other extreme there are victims of early brain damage, acquired defects of cerebral and mental function, starvation, disease and malnutrition, or brutality of civil war whose lives are robbed of that capacity for freedom of action and transcendent over-reach. In parenthesis, these reasons surely give hope (against all reductionism and nihilism) that life is not all. That there must be some kind of respite in another world as reprieve for annihilation, loss of potential, the scourge of non-entity. Even in 'normal' development, McCord Adams, rightly, has recently reminded us of

¹²⁰ Zizioulas 1995, 55-56; idem, *Sobornost* 5: 644-652, 1969

¹²¹ Zizioulas 1993, 51-52

'inefficient adaptation strategies', the entrenched aberrant viewpoint enforced on the developing child, the later *'distortions of perception and behaviour'* – a state of *'impaired adult freedom'*, and the ever-present death-anxiety overshadowing all that is yearned for, accomplished, but, come the end, never achieved¹²².

Zizioulas¹²³ deems this *'incapacity'*. We observe this incapacity widespread in our midst. In context of today's secularism which eschews all notion of the hereafter people are no longer, indeed, can no longer be regarded as truly one, absolute or irreplaceable but either collectivised masses or lone things, - mere objects. We no longer have neighbourhoods, from which the cognates neighbour and being neighbourly derive, but "communities" (a term lacking corresponding grammatical predicates) implying anonymity and separation. Vague communities "come to terms" with unsettling events or disaster through "counselling" in the ever hoped-for expiation of "compensation". After such catastrophies shocked residents depict their quiet localities as "close-knit" despite apparently being devoid of all mutual interaction, interference or inter-dependence. Conversely, the cult of "individualism" is rife within today's society. Insularity potentiated by the mobile phone, lap-top, personal stereo-player, laws forbidding physical reassurance through a comforting hug. The indifference to otherness is manifested brashly in the latest designer "shades" thereby obviating the eye-contact crucial to fiducial encounter: that is, true relationship with and towards others. Each antithesis implies not an I-you, but I-he or I-she or, at worse, an I-it relationship of repudiation, and of frequently aggressive attitudes towards others as worthless, useless, racially abhorrent, verminous, resulting in physical or sexual abuse, or wanton injury – and even senseless murder. Humanity as a commodity is so much expendable, commercial, social or political event.

¹²² Adams 2000, 37

¹²³ Zizioulas John, Scot J Theol **28**: 401-448, 1975

This assault in repudiating relational values so crucial in establishing the meaning of person has another culpable determinant in scientific reductionism. The assault on the idea of personhood from this direction has made its mark. Mankind's exuberance in intellectual and artistic freedom and spiritually-transcendent outwardness characterising many societies throughout human conscious evolution¹²⁴ cannot be simply reduced to what Crick¹²⁵ termed '*a bundle of neurons*' generative of electro-ionic and chemosynaptic impulses. That denigration of mind fails to account for those qualia-like mental properties of conscious life¹²⁶ opening out for us the uniqueness of experienced being – of *love* in its nervous and breathless faltering growth between two persons, of *meaning* arising from transmitted speech or words, or the *tension* springing forth from the dynamic of musical or dramatic act. These exemplary, experiential typologies realised in the exhibition of our highest cognitive-affective mental powers in extending conscious being, serve to magnify us, to become greater than our component parts, not diminished to their most elementary atomic states.

Scientific reductionism cannot assume a pre-eminent metanarrative to the detriment of other explanatory claims¹²⁷. Indeed various developments in neurogenetics, neuropsychophysiology and neuropsychopathology have elucidated further the cognitive attributes of the cortical neopallium and its reciprocal interactions with the genome and environment, giving an especially original nuance to the ever-widening concept of personhood. Contrary to the denigrating influence of 'incapacity'¹²⁸ lies mankind's undoubted *capacity* to act beyond his historic and physical constraints, exceeding the

¹²⁴ Bowker J, *The Sense of God*. Oxford: Oneworld 1995, 44ff; Torrance R, *The Spiritual Quest*. Berkeley: Univ California Press 1994, 278ff

¹²⁵ Crick F, *The Astonishing Hypothesis*. London: Simon & Schuster 1994, 3

¹²⁶ Foster J, *The Immaterial Self*. London: Routledge 1991

¹²⁷ Midgley M, *Philosophy* 58: 365-377, 1983; *Idem*, *Science as Salvation*. London: Routledge 1992, 32ff

¹²⁸ Zizioulas J, 1975, 401

empirical or biological contingency into one of obvious transcendence.

In developing the pursuit of becoming what *is*, it becomes clear why I posit the post-experiential ND alteration in the subject as so vital, clearly extending beyond anything usefully salvageable from the NDE phenomenon itself, as manifesting brain-recovering chaotic mentation. The tangible outcome of ND phenomenology is the measurable qualitative alteration in subjects' behavioural profiles towards themselves, and importantly, to others. Here there is an echo of transcendence derivative of the successive parables of the virgins, talents, and sheep and goats (Matt 25). From these stories tractable key-words emerges - preparedness, resourcefulness, watchfulness: that is, calls for outward personal motivation and action.

Transcendence is conceivable as a movement outwards from the bodily confines of introspection, the latter maintaining separation and distance. Such an experiential transcendence gives shape to the idea of what *is*, that is, the 'ec-static' standing beyond self through, and into, relationship. Being, that which *is*, is constituted in relationship with and towards others, human and divine¹²⁹. Mankind's relationship-through-person reflects that perfection of relationship (divine Love) of God in the Person of Father (idem 1993, pp46,88,91,98). Given this tangibility of personal effect, there is derivable benefit in deploying these newly-discovered qualities, talents, capabilities in the further development of personhood, of relationship in ec-stasy, and in the fostering of good relations between ordinary folk, and for the improvement and well-being of society. Incapacity into capacity, applicable to those for whom life means continued stress, poverty, indignity, abuse, deprived opportunity.

It is here that seams of untapped treasure lie dormant, ignored, awaiting mobilisation and

¹²⁹ Zizioulas J, 1993, 88

application from now transformed subjects to the needs and ills of people, society, its structural corporateness. Here is potentially practical outcome of NDE, one outweighing any possible virtue in free-consciousness ascending to a fourth dimension, of holographic wizardry, even the prospect of re-incarnation in the hopelessness of endless biological recycling, or of unity in some undefined 'cosmic brotherhood'. I do not promulgate a programme: only to urge recognition of the potential, of possibility, which at present lies dormant in awaiting thought, application, action.

VI.5:3 Salvation within the Judeo-Christian Eschaton, not the Near-Death Illusion

Ultimate salvation comes with the provision of true, revealed relationship, not in any ND brain-based hallucinatory commerce with an illusory "heaven" or so-called "beings of light". These conjured beings, ill-defined in ontological status, lack the credentials of the Triune Persons revealed through prophet, scripture and tradition. Salvation is achieved through ec-static freedom of willed conscious (not subconscious) choice, action through love¹³⁰. Love is the ultimate basis constitutive of all authentic relational-otherness, with humans ('love your neighbour ... enemy') and, perfectly, within the Triune Godhead. Love obtained in the knowledge of the divine, gained through transcendent yearning for "Otherness", and resident in the dynamic of individually-transcendent being. But as a willed phenomenon, spiritual transcendence ceases, like faith and hope, on death of mind-brain. Mind-brain and its emergent personality offer no inbuilt guarantee of post-mortem resurgence. That is correct since resurrection life is not for our taking, assumption, or choosing, but divine gift purchased through Christ's Resurrection and Ascension to God, as Father.

¹³⁰ Zizoulas J 1993, 49

Since baptismal hypostasis for mankind is incomplete, an ultimate eschaton or τέλος guarantees existence beyond natural life, borne of faith. History, the apostolic past, and the eschatological future are indrawn with the many into the One (1Cor 10:17), each new baptismal spirituality partaking of the eucharistic elements to become one-in-Christ (Gal 3:28; 2Cor 11:2; Eph 2:13). That is the revealed pledge or down-payment (ἀρρωβον) of the Pauline *'not-yet'* of salvation – of promised ontological being within the triune Godhead. The indrawing is manifested by the coming together of all believers in ecclesial communion (not community), being the human locus of earthbound, but spiritual relational-otherness, reflected in the Godhead not as primary or secondary substance¹³¹, but as divine Person. True death is rooted firmly in the inexorable decay of all fleshly existence, not a pseudo-death capable of later resuscitable recall, accompanied by dream-world illusory elements which, above, have been investigated and found likely to be neuropsychologically-determined constructs.

The spiritually-endowed baptismal hypostasis, incomplete through its co-contingent biological ontology, will thence emerge to become the new resurrection body with, and in, Christ. Precisely what shape that new resurrection body will take we cannot know, since the achievement of resurrection may have already entailed loss of all our worldly ties, mental and physical, as we assume the new creation, our unique resurrection "self". Only in steadfast faith borne up with our increasing transcendent outreach to the divine promise, and vouchsafed to us in prophecy, true spiritual revelation and sacramentally-received grace, can we be assured that eventually we shall arrive, even if lacking many of our long-accumulated, cherished earthbound props and luggage.

¹³¹ Mackinnon D, 'Substance' in Christology – A Cross-Bench View. In: Sykes S & Clayton J (eds), *Christ Faith and History*. Cambridge: Cambridge University Press 1997, 279

The least we might expect is that we shall come face-to-face with the reality of the Triune Unity of our former desires and hope, beliefs and faith, as expressed most simply, but with quiet confidence and assurance, by the Psalmist¹³²:

'אני בצדק אחזה פניך אשבעה בהקיץ תמונתך'

¹³² *ψ* 17;15: 'For myself, in righteousness shall I gaze upon your face: then, in my awakening, shall I be replete with your image' (my translation).

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