

A Search for the Truth of Near Death Experiences

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Introduction

The existence of so-called Near Death Experiences (NDEs), in which dying people report having mystical sensations before being resuscitated, is now widely accepted by cognitive scientists as a respectable research idea. Over the years, various explanations have been put forward for the positive variety of NDEs. Early investigators attached the importance of the transcendental aspects of this experience but these views were challenged by biological explanations. The aim of this paper is to evaluate the different interpretations from a biological and parapsychological perspective as well as in the light of the newer observations of particle physics. Selective survey of the may also help to form a framework for future research. Features of cluster analysis and a case example are given. Cultural differences are noted. Biological and transcendental interpretations have obvious pitfalls. An intermediate position is advanced here – that the NDE is a combination of individual hallucination and true extra sensory perception. The current models of mind are inadequate to explain NDEs. Study of NDEs is useful for a deeper understanding of mind. NDEs can be better explained if the existence of an extra-cerebral component is conceptualised in association with the brain even though this non-physical aspect is unobservable with the present day instrumentation.

Characteristics of the NDE

NDEs are experienced at the moment of imminent or anticipated death but before biological death. They are triggered by various situations such as accident, life-threatening illnesses, suicide attempts and operations or births. Near-death experiencers (NDErs) are quite often clinically dead. Some NDEs occur during an isoelectric ECG or in the mortuary. 37% of NDE - like experiences occur in non-life threatening illnesses, and accidents. They are also reported even in psychotic reactions.¹ The earlier research by Raymond Moody created great controversy in thanatology as his publishers sensationalised his findings.^{2, 3} In his recent publication he has declared null and void his earlier work on NDEs and attempted to reclaim his scientific credibility.⁴

NDEs typically involve a feeling of deep peace, followed by a sensation of floating through a tunnel towards a bright light - even though NDEs are far from blissful for some people. On cluster analysis, these features can be divided into three groups, namely cognitive, affective and transcendental.⁵ Cognitive features include distortion of time and a review of one's life or panoramic memory. Affective features are feelings of peace or joy. Visual images of a heavenly world and deceased relatives are common transcendental features. Other frequent elements include buzzing or rushing sounds, feelings of separation from the body, extra-somatic experience or out of the Body experience (OBE), passing through a void or tunnel, experiencing a bright spiritual light, encountering a border or a limit and the perception of making a conscious choice or being forced to return to the body. There are cases where

OBE involve externally verifiable information. ⁶ After the NDE, the subjects generally keep quiet about their experience; they talk about it only in appropriate situations. 30% of NDErs forget the experience because of the dream-like and dissociative nature of the experience, and the involvement of the amnesia-prone temporal lobe. Some remember it only under hypnosis.

NDErs can experience a reverse cultural shock, undergoing a revolution of values and opinions. They develop decreased fear of death and increased conviction of after-death existence. Non-religious people may become religious or spiritually oriented. They develop more sense of responsibility and give more importance to acquiring knowledge. There are psycho-hygienic effects and NDErs have less suicidal inclinations. All true NDErs cherish nostalgia for the experience and find a comfort in it in tough times.

Michael Sabom, using a Life Changes Questionnaire and the previously developed Religious Motivation Scale, found significant differences between the patients who had had an NDE and who had not. ⁷ The life changes noted included enhanced faith in a supreme power, sanctity of life and a desire for positive human engagement. However, up to a quarter of NDEs are negative. Experiencers of negative NDE also report an OBE and a dark transition zone, but accompanied by unpleasant feelings of fear or panic. They describe encountering bad forces or beings, and entering a hellish environment. But negative NDEs also have a positive life changing effect. Unsurprisingly, negative NDEs are more suppressed than positive NDEs.

A Case of NDE or NDE-like experience

The following account of an NDE from my own case file has some of the ingredients of an NDE, even though there is no evidence to suggest that the subject had a somatic death but was in a physiological crisis. It is not a classic case of NDE and I am quoting this case to illustrate that some of the reported cases of NDE are very similar to normal experiences in physiological crisis.

'I am now an old aged pensioner (aged 77), but over past years have had occasions of being rushed into hospital, more than once on a 50/50 chance of survival. I would like to relate of one such occasion in particular, where I could say, 'Yes I did have a brush with death, but my experience was so vivid and real, I was totally convinced I had died and returned'. Starting from when the anaesthetist put the needle in the back of my hand. 'Just a little prick', he said, and counted up to ten. I remember 7 or 8. My head seemed to leave me empty – a loud buzzing, then a rushing noise and sound as I went into a dark tunnel. It was like being in an express train, but not literally, as I didn't seem to be enclosed and I could see far ahead and notice the open light at the end of the tunnel approaching nearer and nearer all the time, although it seemed endless in matter of time. On leaving the 'tunnel', my first impression was that I was in Heaven. But oh dear, it was nothing that I was ever led to believe from all the beliefs and stories. It was so totally unexpected and out of character. The 'beyond' was so flat and massive, no end in sight! No hills or mounds, no buildings of any nature. No trees or gardens of so called roses, yet it was so tranquil beautiful. No signs or even a hint of what we have on earth planet. You first

step out into space. There is not even ground or earth to walk on; you first float along as a bird would fly. Visions of people were there like a vast community, but there was nothing to touch they had no material body but masses of colour about their spiritual entity. Each one wore a single long garment in the palest of blues, greens, yellows and purple - there appeared no black or white or even red but all other shades of colour. One couldn't describe the garments as they are not manufactured. Just apparitions swathed in mist like – appearances. They just floated around, like walking on a cloud. There was a delightful scent and odour in the air about them but place was very calm and peaceful, I felt totally relaxed and happy. I was at rest within myself. Time seemed non-existent. I wanted to stay there, disappointed only because I cannot recollect seeing or meeting any of my family, friends or acquaintances, as on earth. I sincerely did believe they lived on the other side along with our individual and spiritual guides. However I was drawn back to the tunnel, stepped in, and entered. All the emptiness within me seemed to disappear. I had enjoyed the feeling of love and peace and now I was experiencing a sense of life coming back into my body, but could do nothing myself. There were no thoughts, just unexplainable senses that I was aware of. I just floated along again, but had the strange knowledge that I was not on a level, as I seemed to be flying higher and higher upwards - it didn't seem at all like the tunnel I had previously gone down. As I came out of the end of the tunnel, I had the awareness of something or someone gently smacking my face, then heard my name being called out, and on opening my eyes, the light was overpowering and I wanted to close them again, but once more I was smacked a little more roughly and harder and heard the words 'Come on Mr L -, can you hear me?' Suddenly I realised that I had entered my own physical body! I was back in my hospital bed, alive and back in my ward, and realised or thought it had all been a dream. I have never forgotten that experience and yes, I would say I 'passed over' or had my brush with death but was allowed to return to life and my realities again. But I shall never be afraid of death again; there is nothing to be frightened of anymore'.

Interpretations of NDEs

Even after a quarter of a century of research into NDE phenomena, there is no consensus of opinion among the scientific community with regard to its interpretation. There are organic, pharmacological, physiological, neurological psychological, socio-cultural, paranormal and spiritual explanations. Ernest Rodin (1980) considered NDE as a final psychosis where the dying individual acts as his own judge, jury, accuser, prosecutor, defence attorney and witness.⁸ He or she alone renders the final verdict of guilty or not guilty. According to the pharmacological view, NDEs are the products of the drugs administered during the illness.^{9,10,11} However, there are NDE cases in cultures where no advanced modern treatment is available. In India, where patients are looked after at home, there are full-blown cases of NDE. It is argued that psychotropic drugs only interfere with the perception of NDE and block the memories. The physiological view is that NDE is due to the cessation of oxygen to the brain during the clinical death and represents the last compensatory gasp of the dying brain.^{12,13} CO² accumulation is said to explain the tunnel experience but that does not explain the life review and the Light Beings. NDEs have also taken place when the measured oxygen level was well above the average level. While the possible physiological mechanism

underlying NDEs have been speculated upon, there is no research demonstrating the actual physiological conditions associated with NDEs.^{14,15,16}

According to the biochemical view hallucinatory neurotransmitters and endorphins are thought to be responsible for NDEs.^{17,18} So far, no NDE specific transmitter constellations have been detected. Stress-induced limbic lobe dysfunction is a neurological explanation.¹⁴ Another neurological view is that the 'NDE is similar to the autoscopic hallucination.'¹⁹ In the OBE, the centre of thinking is in the 'second body' and in the case of autoscopic hallucination the centre of thinking is still in the physical body. Electrical stimulation of the temporal lobe has produced NDE-like experiences. However, visual hallucinations in this situation as well as in temporal lobe epilepsy are mere visual disturbances and not intact visual images as in NDE perceptions. The NDE has also been hypothesised to be a protective mechanism to conserve energy and provide necessary brain stimuli.²⁰

Hart (1954) identified 288 published cases in which a person claimed to have perceived events at some distant location while in the extra-somatic state.²¹ It is also worth mentioning that OBE have been reported to occur in healthy individuals and under experimental conditions.^{22,23,24,25} Depersonalisation syndrome occurring at the time of life threatening danger was another speculation.²⁶ Psychologists have postulated that NDEs are the product of mental defence mechanisms – denial, dissociation, wish fulfilment, regression and projection. Yet in the NDE, the subject is not escaping from the situation; he is frequently witnessing the scene of resuscitation. NDEs have common elements and are independent of the belief system. Even when patients are sure to recover, they may still experience an NDE. The replay of birth experience has been a popular psychological explanation.²⁷ Regression is used to explain the mystical elements (regression to a state before ego differentiation). But again, the NDE is experienced with an integrated ego identity.

The tunnel experience is compared to the birth canal experience. New-born children have very poor perception of objects. But NDEers have full perception of objects. Neither is the birth experience a 'positive' one. People who had Caesarean births also have had NDEs. Tunnel experiences are reported to occur with hallucinogenic drugs, hypnogogic and ecstatic states, argued to be the result of over activity of the visual cortex and not announcing proximity of death. The collective unconscious and the archetypes are used to explain NDE. However, OBEs cannot be explained according to Jungian theories. Finally, NDEs have been compared to other mental reactions to perceived threat, coloured by culture and current stress.²⁸

None of the organic and psychological theories explain the externally verifiable information the subjects give after the bodily separation. How can some persons who are ostensibly unconscious, if not dead, nevertheless perceive their bodies from above, and sometimes become aware of events occurring outside the reach of their ordinary senses? The biological interpretations do not adequately explain the enhanced cognitive abilities of the NDEers.²⁹ Parapsychologists believe that enhanced cognitive abilities when the brain is underactive point towards a true involvement of extra sensory perception (telepathy, clairvoyance, precognition). Philosophically oriented investigators think that NDE points towards an intrinsic spiritual reality. They attach even transcendental importance to the reports of Light Beings, making it a symbol of modern mysticism outside the religious field.³⁰ Peter Fenwick's recent studies have revealed several features of NDE that do not conform to the usual

reductionist view.³¹ He states that NDE can occur when a person is unconscious, which suggests that NDEs may not be purely subjective because in the state of unconsciousness, the modules of the brain responsible for the construction of the world are off-line. There are cognitive scientists who hold the view that NDEs are symptoms of dissociative states or post-traumatic stress disorder. But Bruce Greyson's studies suggest that the NDEr's stress response is a normal reaction to an anomalous expression rather than a psychopathological response.³²

Four Swiss physicians claimed to have induced OBE by focal electrical stimulation of the brain of a patient undergoing surgical evaluation for epilepsy treatment, and drew the premature conclusion that the part of the brain that can induce OBE has been located.³³ During the procedure, the patient reported that she was sinking into the bed or falling from a height. *The authors report that 'When asked to look at her outstretched arms during electrical stimulation...the patient felt as though her left arm was shortened; the right arm was unaffected. If both arms were in the same position but bent by 90 degrees at the elbow, she felt lower arm and hand were moving towards her face... When her eyes were shut, she felt that her upper body was moving toward her legs, which were stable.'*³³ In fact, the experience reported might have been an atypical OBE or OBE-like experience. Electrical stimulation is a mechanism and not a cause and in the case of both intentional and spontaneous OBEs, the cause, that is, the external or internal trigger, is still a mystery.³⁴

NDEs and Children

Very young children, as soon as they are able to speak, have reported NDEs they had as infants, or even in the process of being born. NDEs of children are different from the family teachings of death, and their experiences are structured similar to the adult ones. In the OBEs, they see themselves as adults and not as baby spirits. But some have also seen their living playmates in their NDE. Atwater, who herself had three NDEs in 1977, posits that 'children who had near-death episodes are remodelled, rewired, reconfigured and are the refined version of the original.'³⁵ Children who have experienced NDEs display precocious wisdom and certainty about life after death. Frightening childhood NDEs are rare in the literature, but a few have been reported. Such experiences lead to nightmares, restlessness, and prolonged anxiety among the children. These distressing experiences begin or end with a positive note. Near death research is an area where subject matter cannot be observed directly and so it is difficult to do quality research. Children's narration of NDEs is particularly valuable and enlightening because they report accurately what they experience without undue apprehension over the rational interpretation of their experiences.

NDEs of the Blind

Kenneth Ring's study of NDEs among blind persons sought corroborative evidence regarding the authenticity of their unusual experience. He claimed that even those blind from birth reported classic NDEs and the great majority of those claimed to see during their NDEs-eyeless vision.³⁶ A few of them reported visually based knowledge, whose truthfulness was independently verified, which could not have been acquired by ordinary means. In King's and Cooper's study of blind people's NDEs, 80% claimed some visual

perceptions during the NDE or OBE encounters.³⁶ It was also noticed that sometimes the initial onset of visual perceptions of the physical world was disorienting and even distressing to the blind. Near-death researchers who are enthusiastic about cases of veridical paranormal perception generally overlook hallucinatory NDEs, and there is clear evidence that NDErs have sometimes false perceptions of physical world.³⁷ The over-enthusiasm of such passionate survival researchers may have been a defence against the reductionist stance of the last century.

Death Bed Visions

There is another body of evidences in thanatology supporting the paranormal components of the clinical death experience. They are described as pre-death visions and are particularly interesting as they occur in full consciousness.³⁸ These experiences include visions of dead friends and relatives, visions of landscapes from beyond, and heightened sensations of elation or euphoria in the immediate period preceding real death. Some of the ingredients of clinical death experiences are identical to the deathbed visions occurring at the edge of life, which cannot be easily explained away in biological terms. While healthy persons report hallucinations of living individuals, truly dying people claim hallucinations of deceased persons. The visions of dying persons may be considered as a defensive attempt to reduce death anxiety by imagining reunion with familiar persons. However, this view is challenged by cases in which a person near death has reported seeing a recently deceased person of whose death the experimenter had no normal information.^{39,40,41,42,43,44}

Thomas Alva Edison's last words in his death bed were, 'It is very beautiful over there'. He supposedly had other worldly pre-death vision. Fr. Damien of Molokai, who dedicated his life to the outcast leprosy patients from Hawaii, is believed to have had pre-death visions of Jesus and Mary when bystanders noticed that he was staring at a particular spot around his death bed. Death bed visions occur more frequently but less reported even though they provide stronger evidence for post mortem existence.⁴⁵ They may be true departing visions, where as NDEs can be designated only as parting visions.

Shared Death Experiences

Shared death experiences (SDE) are a new addition to survival research even though Myers' mentioned such experiences in his classic book on survival problem. These experiences include persons present at the death of their loved ones experiencing leaving their own bodies, viewing the life review of their loved ones and travelling part-way towards the Light. Such experiences though common, have been rarely reported in NDE literature. Raymond Moody names these experiences as 'empathic NDEs', 'conjoint NDEs' or 'mutual NDEs'.⁴⁶ Like death bed visions, shared real death experiences could immensely contribute to the evidences for discarnate survival. Peter and Elizabeth Fenwick reported a case where the daughter who sat beside her mother's deathbed experienced a 'vision' and during this vision she saw a beautiful garden and hillside from which she saw a dead aunt holding out her hands to her dying mother, and the mother and aunt meeting and going away together.³¹

Raymond Moody recognises seven elements in cases of SDE: change of geometry, mystical light, music and musical sounds, OBEs, co-living a life review, encountering unworldly realms and mist at death.⁴⁷ All the elements are not normally present in the reported cases and a few of the seven elements may be present in individual cases. Moody has recounted his own SDE of his mother in 1994 along with the rest of the Moody family.⁴⁷ *'When my own mother died in 2005, my two sisters, who were at her bedside, shared a similar vision during which they saw my deceased brother – who was a professor of forensic medicine – appearing with a smile and taking the hands of our dying mother, both then moving upwards and disappearing from sight'*. Shared real death experiences cannot be explained away with the biological interpretations of NDEs. Moody proposes that the 'mirror neurons' of the empathic system might contain the clue to explain the mechanism of transmission of SDE.⁴⁷ Dogmatic science may argue that SDEs are merely folie a deux or anecdotal experiences that cannot be replicated

Induced ADCs

After death communications (ADCs) with profoundly loving experiences may assist grieving process. Spontaneous ADCs in the form of auditory, visual, tactile and olfactory forms have been reported. ADC is thought to produce psychological reconnection and resolution where traditional grief counselling only helps achieve a level of acceptance of the loss. During my clinical practice I have come across a number of my patients seeking the help of the psychically gifted to resolve their grief reaction and these professionals attempt to communicate with the deceased or apparently facilitate the departed to communicating with the loved ones.

The Psychomanteum is a mirror room set up to optimise psychological effects such as trance state. Low light, flickering light and a mirror are key feature. Sensory deprivation is helpful for trance induction. The participants first reminisce about the deceased loved ones and gaze at a mirror in such a darkened room. They feel contact from the deceased in the form of messages, visions, touches and a feeling of presence. These experiences do not contribute to evidences of life after death. Raymond Moody uses such rooms as a therapeutic tool to heal grief.⁴⁸ One may remember the psychedelic explorers of the sixties who also experienced 'bad trips'. Mirror encounters could tear apart some of the unsuspecting explorers.⁴⁹

Allen Botkin has experimented with induced ADCs through eye movement desensitisation and reprocessing (EMDR) technique. He posits that multisensory ADCs are similar to NDEs.⁵⁰ ADCs occur to people who are alive and healthy and who experience another who has died, whereas NDEs happen to people who are apparently approaching death. The induced ADC experiencers report that they sometimes go through a passageway before they get to the deceased and are loving encounters. They also report beautiful landscapes, but never claim to have come across the Light Being encountered in NDEs.⁵⁰ It is argued that the quality and psychological impact of both induced ADCs and NDEs are identical though experienced with different perspectives. Botkin's comparison of NDEs and EMDR-induced ADCs, as well as his assertion that such a treatment modality will resolve the sense of loss associated with grief reaction, has been challenged.⁵¹ However, some theologians who recommend the healing powers of prayer and sacramental nourishment consider ADC

through the Psychomanteum and EMDR-induced ADC as perverted forms of healing grief and may even label them as 'black arts'.

Medjugorje Parallels

Craig Lundahl has made a courageous comparison between Medjugorje visionary experiences (1981 -) with NDErs who describe post-mortem existence consisting of two major divisions, with the possibility of a third division.⁵² One of the major division is the 'Cities of Light' with their countryside. The second major division is the 'Realm of Bewildered Spirits'. A third division called 'hell' is suggested by a few NDErs. The distinction between such a realm and the second division is not clear according to most NDErs. The Cities of Light are built of crystal cool light and appear at different levels, with each city more grand than the last one and are characterised by intense level of activity. They are surrounded by countryside with beautiful landscapes of mountains, hills, valleys, fields of golden grass and flowers, meadows, paths, trails, lanes, roads, great forests, brooks, streams, rivers, ponds and lakes.⁵³ The Realm of Bewildered Spirits is described as a dark, gloomy, and hostile environment where there are millions of unhappy and wicked people who are grey, bewildered, confused, miserable, anguished, dreary, angry and uncommunicative and preoccupied with unresolved problems.⁵³

Mother Mary has offered information about different forms of discarnate survival through the percipients of Medjugorje apparitional occurrences and has given them glimpses of post-mortem conditions of time-fullness where past, present and future are blended harmoniously (Heaven), timelessness where there are not any changes (purgatory) and eternal damnation where no changes are possible.⁵⁴ Unlike physical personalities who live in the space-time dimension, discarnate personalities trapped in the timeless dimension (purgatory) cannot bring about changes in their personality swiftly and could be trapped in that stage for centuries. There are different levels in this dimension and they tally with Monroe's description of the four locales found in his extra-somatic voyages.^{55,56}

The Marian apparition has also reaffirmed the existence of negative and positive entities. All the visionaries were shown Heaven, Purgatory and Hell in visions except Mirjana Drgicevic and Ivanka Ivankovic, who did not want to see Hell. Two of the seers, Vicka and Jackov claim that they have been teleported to other realms by the apparition and little Jackov resisted initially having to leave his mother!⁵⁴ Brown H.M. records that these two visionaries were bodily transported to these realms, during which they reportedly disappeared for twenty minutes.⁵⁷ When I interviewed Ivan Dragicevic, the Medjugorje visionary insisted that it was not out of the body travel resulting in paradise-scenes. He also questioned whether such things as OBE really exist, as he had never heard about NDEs. According to Vicka and Jackov they had experienced a true transportation. None of them claim to have encountered the Light Being or historical Biblical figures. The third division with the features of Hell, a realm described by Marian visionaries, has not been established or delineated in NDE studies. The visionaries assert that this realm has a particular environment and strange people.

The Fatima visionaries (Portugal, 1917) were shown a vision of Hell and the Marian apparition at Fatima also made mention of the realm of bewildered spirits and heaven. NDE

narrations propose that the level of the dimension the NDEr travels is dependent upon the amount of energy levels and frequencies of light in the spiritual body of the individual and are based on human behaviours while on earth, possibly depending also on the energy level and frequencies of light of the helpers coming to assist their transition.⁵⁸ In Fatima and Medjugorje, there is indication of a new era in human history, marked by human brotherhood, universal love and peace. A small number of deep NDErs have reported consistently prophetic scenarios for the future of Earth: geophysical changes, meteorological changes, economic collapse and a new era of world peace.^{43,44,59,60} The prophetic vision of a period of peace may tally with Marian apparitional predictions. Nobody can deny the fact that these predicted events are occurring and others could follow, even though majority of the world community is not cognizant of them.

Cultural artefacts

Parting Visions are more talked about in the West than in the East. The studies of NDE Researchers now indicate that it is a universal phenomenon.⁶¹ Western man is educated to be reality orientated right from the cradle and he has been conditioned to experience himself and the events around him as real. Therefore, he is prone to regard his last thoughts as real, whereas oriental people are conditioned to think of the world as unreal (or Maya) and so they might regard their last experiences as also Maya.⁶² Culture shapes NDEs, which in turn contribute to the shaping of the culture.⁶³ In Indian cases, instead of 'Light Beings', they are taken to a Holy Man with a book by functionaries. He discovers a mistake in the book and the individual is asked to return to terrestrial life.⁶⁴ Post-NDE marks are found in some Indian cases,⁶⁵ branded on their body in the other realm. These residual marks resulted from the subjects being forcefully pushed down (generally those subjects who resisted coming back from the other realm). From the psychological point of view, these marks might have been generated like those of stigmatic, due to autosuggestions or intense concentration on the event on the part of the subjects. No review of a former life is described in NDEs of culture believing in reincarnation and this has been used by parapsychologists to indicate that the concept of reincarnation is a misinterpretation of the contact with the earthly life of another deceased human being.⁶⁶ Yet Ian Stevenson has found and reported evidence that would make this seem possible, although without claiming he has proved reincarnation.⁶⁷

NDEs and Particle Physics

Scientists failed to offer an adequate explanation for NDEs mainly because all along they were using a material cause to describe what may be an other-worldly phenomenon.⁵⁸ The view held by classical physicists that two objects cannot occupy the same space at the same time has been the scientific block to believing in the very existence of a non-physical component in association with the brain, and the same confusion is restricting some NDE researchers in considering non-biological interpretations. This view has been challenged by post-Einstein physicists. De Broglie's discovery of the wave-like nature of matter can accommodate most of the alleged paranormal phenomenon.

Klauber (2000) states that two subatomic particles can exist together just as two waves rolling over the ocean heading in opposite directions and passing through each other unhindered, occupy the same area of the water surface.⁶⁸ Physics theorises that all matter, at the basic level, is made up of energy which may be diffused as a field, or condensed as a particle. The discovery of neutrinos has made a breakthrough in the thinking of post-Einstein science. These are tiny, subatomic particles without any electrical charges and because they do not couple with electromagnetic forces their presence goes undetected. Most neutrinos pass through the earth unscathed and at typical reactor energies they can travel 25 light years in lead before deflecting. We perceive only when particles in our sense organs are coupled to the particles transmitting particular properties from the object and if there is no coupling, there is no perception. Trillions of neutrinos are passing through one's body every second and yet no one is able to detect them. They pass through matter virtually without our being aware of their presence. One can only imagine the existence of similar unknown particles not coupled with physical fields, constituting other worlds co-existing with ours. Only the left handed neutrino (spinning in the counter clockwise direction) can interact through the weak nuclear force with another particle and be detected, while right handed neutrinos (spinning clockwise) still escape detection - though they may well exist. Right handed electrons and quarks have been proven to exist. Thus, there may be a variety of neutrino-like particles, in the sense that they are tenuous and imperceptible. It may be conjectured that the extra cerebral component of the 'mind stuff' may be partly or fully composed of such diverse particles. Subtle realms may be made of such 'particle families' coexisting with our physical world without our being aware of their existence. Thus, extra dimensions have been postulated based on elementary-particle physics evidence and the possibility of our consciousness extending to other dimensions has been speculated.^{69,70,71,72}

String theory in physics can accommodate extra dimensions. The three space dimensions that we know are embedded in a 10 or 11- dimensional space-time. In other words, we and all the particles in the standard model are trapped in three dimensions and right handed neutrinos might be free to roam around the multidimensional Universe escaping detection.⁷³ Particle physicists are now in a position to consider the tunnel experience more sympathetically as an extra-cerebral experience, accepting the hypothetical existence of 'the other worlds'.^{74,75} While arguing that the mental state or conviction of the scientific investigator influences the behaviour of the external world in some instances, Becker (1990) states that other dimensions of the universe exist that are objectively real but accessible only to individuals in specific mental state such as the NDED.⁷⁶ NDEs correspond to the quirky nature of wave/particles and the expansion of consciousness observed in NDEs match up to the principles of quantum physics.

The concept of 'mental space' is helpful in understanding NDE or parting visions. A person's physical body is in physical space and his mind exists in a personal mental space - a higher dimensional space existing like a satellite spatial system occupied by minds, or at least components of minds.^{77,78} This concept is now supported by particle physics. Mental events occur in a space that is different from the space we occupy in everyday lives as well from the physical space that physicists describe. For example, the image of a bear that we may hold in our minds (in the absence of a live bear) has spatial dimensions, and we can locate that bear in our minds at a distance from an also imagined river and a salmon in the river at which the bear may seem to lunge. We cannot however speak intelligibly about the distance between an imagined bear and its imagined surroundings, yet we can do so about any

object that we locate perceptually in physical space. Mental space is a very personal one and protected from the intrusions of other person's thoughts. Ian Stevenson, who supports the aforementioned hypothesis, states that the barriers of the mental space weaken on rare occasions, when we experience unusual telepathy and paranormal communications.⁷⁹ The real arena of the NDE is probably in mental space – the complex particle dimension beyond the brain - and it may also be a field of subtle energy system.^{80,81} Weakening of the walls of the mental space may result in getting a glimpse into the locales beyond this subatomic energy system. In the NDE the individual is exploring his own personal mental space fully through the brain and beyond.⁷⁹

The NDE and Lighter Shadow Matter theory

Robert Monroe's researches – along with the plethora of reported OBEs and NDEs – deserves to be afforded attention by the die-hard sceptical scientists of extra-somatic experiences who dismiss such phenomena.^{55,56} Wassermann (1988) made use of the concept of shadow matter in parapsychology, and has brought psychic phenomena within the mechanistic framework.⁸² According to his hypothesis, two interlinked brains exist in human beings: first an ordinary matter brain as described by medical scientists; and secondly a shadow matter brain, made up of shadow matter. He has attempted to explain – mechanistically, rather than neurologically – features of out-of-body experiences and *psi* phenomena in terms of shadow matter theory. Inspired by the shadow matter theory of astrophysics, Wassermann (1993) has proposed that living beings have a twin body that is made up of lighter shadow matter (Shadow Matter Body or SMB) than that of their corporeal presence.⁸³ According to Wassermann, OBEs are due to separation of the SMB from the ordinary physical body.⁸⁴ The SMB perceives its environment through the detection of sphotons (shadow matter body photons) from ordinary physical objects while having extra-somatic experiences. The detection of sphotons by the SMB is carried out through the SMB's shadow matter eyes that are copies of ordinary eyes. Wassermann contends that similar type of perception takes place in the NDE. Lighter shadow matter hypothesis is a fascinating hypothesis, for this may be the realm where NDEs take place and might explain the lack of direct visualisation of NDErs in the OBE state, the NDErs inability to interact with physical objects and the ineffable nature of many NDEs.⁸⁵ According to Wassermann's shadow matter (SM) theory, at the start of NDE, the subject's SMB splits into two parts.⁸⁴ A thin layer remains bound to the top of the ordinary matter body, while the remaining part of the SM body descends down the tunnel that dissociates it from its bonds with the ordinary matter body. The tunnel that is perceived by subjects is the interior human body, through which the shadow matter moves during contraction and expansion. The compression of this shadow matter is due to the release of stored elastic energy. Wassermann elucidates this as follows: ⁸⁴ 'When compression is complete, a reactive event series occurs, with the contracted shadow matter re-expanding and moving up the tunnel towards the thin layer. During this upward movement the thin layer reaches ignition temperatures. It is then perceived by the shadow matter eyes and shadow matter brain of the SMB as the light at the end of the tunnel.'

Wassermann's postulation that the person experiencing the NDE floats freely in the shadow matter ocean has several deficiencies. According to Wasserman, the incarnate individuals perceived by the NDE subject are hallucinatory figures related by the shadow matter brain,

not their discarnate shadow matter bodies.⁸⁴ Assuming that this explanation fits the phenomenon, the resulting conundrum may be resolved by integrating the shadow matter speculations with Smythies' concept of personal mental space. It is significant that the SMB is surrounded by a personal shadow matter or mental space which is composed of shadow matter that is lighter than the dark matter. This hypothesised personal space must be well insulated from the exterior world as our mental contents and processes are private and – except for occasional incursions and excursions during paranormal experiences in which we engage with other persons – they remain unknown to others.⁷⁹ It may be conjectured that SMB is merely floating within this personal shadow matter space once the gravitational bond between the ordinary body and SMB is severed and is capable of exploring the personal shadow matter/ mental space in detail. If the insulation of the personal shadow matter body space weakens, those in the out of the body state might get an opportunity to gain some insight into the region beyond.

Reductionists are not able to find a biological origin for the Light Being. Deviating from a transcendental explanation, it may be conjectured that the Light Being encountered by the NDE subject could be one's own spiritual body. At the start of the NDE, a partial split between the spiritual body and the SMB may be brought about. Wasserman's construction that it is a split within the SMB may be an uneconomical interpretation. In the NDE, the subject is arguably seeing their own spiritual body and their ordinary matter body by way of the shadow matter brain and shadow matter eyes. In a similar way, I share the views of Kenneth Ring, who after analysing 102 reports of NDEs, posited that in the NDE one communicates with one's 'high self' - an aspect of the divine rather than transcendental reality.⁸⁶ NDEs that incorporate an encounter with the Light Being may offer evidence of the existence of the non-biological component that is the spiritual body. The Light Being may be illustrative of the beauty and strength of the spiritual body and the dignity of human creation. All these events are probably taking place in the personal shadow matter space or in an adjacent shadow matter space, and not necessarily in transcendental space. The NDE may be essentially a quantum experience. The concept of quantum mind makes the interpretations of NDE more complex, and the quantum mind can fool the brain beyond our imagination. As shadow matter is not scientifically proven to exist, I feel more comfortable using the term shadow 'matter like-body' rather than 'lighter shadow matter body'.

A belief in the spiritual body tallies with the views of Jay Alfred who hypothesises that a human being consists of a physical biomolecular body that is closely associated with higher-energy and lower-energy ethereal bodies, higher-energy and lower-energy astral bodies and higher-energy and lower-energy causal bodies.⁸⁷ According to this dark plasma theory (formerly known as plasma metaphysics) an 'ethereal double' may support the tissues and biochemical activities in the biomolecular body and give it structural integrity. Astral bodies inhabit the astral universe, which has a space-time signature of four spatial dimensions and one time dimension. Causal bodies inhabit the causal universe, having a space-time signature of five spatial dimensions and one time dimension. The causal bodies may be regarded as equivalent to the spiritual body of the faith traditions.

While acknowledging the triviality of some mediumistic communications, it is still interesting to note that a non-transcendental explanation of the Light Being is offered in the mediumistic literature. For instance, Geraldine Cummins (1949) wrote⁸⁸: 'But there is a special period when we enter the gallery of memory and the pictures of our earth life pass before us. Then

our Spirit (Greater self) is our Judge.’ Blackmore (1993) who considers the OBE only to be a retrospective reconstruction based on sensory cues, may be interpreted as obliquely stumbling upon this when she says ¹⁷: ‘Perhaps the ‘Being of Light’ is myself. In fact in any materialistic view of the NDE it simply must be, because there is no other outside force or entity that it could be. Maybe at some level I am or could be magnificent, golden, awesome, loving and unconditionally accepting.’ The NDE may also be an experience beyond our quantum mind; while the quantum mind immensely contributes to the whole drama, it may not necessarily extend beyond our own personal spiritual dimension. The NDE may be a personal spiritual pilgrimage within ourselves. Blackmore, who has reductionist views, is sceptical about a personal spiritual dimension. The top-down approach is more fruitful than bottom up-approach in NDE research.

Discussion

Investigators of NDEs nowadays arrive at two conclusions. According to one school of thought the NDE is a combination of individual hallucinations and psychological defence mechanisms: by means of the NDE, the brain is just assisting the dying person to die, the NDE being the ultimate tranquilliser of the brain. A moderate view is that the NDE is a combination of individual hallucination and true extra sensory perception, indicative of non-physical realities in association with the brain. According to C.D. Broad’s compound theory, mind consists of an organic factor and a psychogenic factor, the psi component, which is capable of independent existence and may survive physical extinction.⁸⁹ The psi component coexists with the brain, like a coloured aqueous solution and sponge existing together at the same locality even though they have different properties; particle physics might only explain the watery component, with the spiritual factor of the mind represented by the colouring pigment quantum represents the solvent carrying the colouring pigment.

Ehrenwald made a courageous start in linking psychiatry and parapsychology.⁹⁰ He observed that psi phenomena are more likely to occur during deficit states of the organism, and also postulated that psi develops as a compensatory phenomenon. Psi faculties are mobilised to prevent the impending separation and that results in the colourful NDE. Such a phenomenon of mobilising psi faculties is thought to occur before a major psychotic experience, which would explain the NDE in association with psychotic reactions.¹ In my clinical practice, I have come across patients suffering from bipolar disorder recounting NDE-like experiences in the early stages of manic phase. In the NDE ‘the brain–psi component intimacy’ is in peril and the central theme of the NDE is all about rescuing the brain and the psi component from a premature partition, with parting visions as the ultimate defence, since mechanisms of the brain and the psi component seek to coexist. The jigsaw puzzle of the NDE can be solved by introducing the compound theory of the mind into the discussion. Through the NDE the brain is apparently preparing the dying individual for a life beyond the body. Yet negative NDEs pose a problem in this regard. Whatever maybe the chosen interpretation, NDEs have physical substrate containing psycho-bio-neurological components. Enhanced cognitive abilities, the experience of seeing the physical body from a different position in space and paranormal perceptions are features that need further studies. A comparative appraisal of pre-death visions and shared death experiences might give a clearer paranormal insight.

Subjective experiences like NDE may elude scientific explanation. Mystical experiences are internal to the experience itself and are self-validating. Those who have had an NDE claim they 'know' that there is life after death and do not just 'believe' in discarnate survival. The person in my reported case did not have a clinical death but a major physiological crisis, suggesting his NDE was not a true After Death Experience (ADE). Still, he seems to have got rid of his fear of death. A good portion of NDEs fall into this group, warranting a better classification of NDEs, now used as an umbrella term for all the unusual experiences associated with death. There are NDE-like experiences and variable intensity in true NDEs. In general, NDEs cannot be considered as ADEs. NDEs of extreme duration or deep NDEs may contain a few unswerving elements of ADE. Even veridical OBEs do not at all indicate ADE but may only prove that consciousness can exist independent of brain. The NDErs' perception of the other dimensions is comparable to the limited and faulty world perception of a new born child, needing to be weighed against revealed information from the representatives of the transcendental reality (like Mother Mary). NDEs present evidence for the existence of a non-physical component in union with the brain and might offer an indirect evidence for discarnate existence, but not its proof. Likewise, NDE may be indirect evidence for survival after physical extinction. Death bed observations and shared death experiences offer the least complex evidence for after death existence.

There are warnings against too readily making metaphysical and particularly parapsychological speculations on the basis of particle physics⁹² and the present author respects them. Particle physics might unravel certain aspects of Mind but the mind will continue to be shrouded in mystery. After all, quantum mechanics is only a rock-bottom theory of matter.⁹³ Neutrino physics makes the invisible more tangible. Relating shadow matter to the NDE is an intriguing hypothesis but we are still long way from proving the validity, or lack thereof, of this hypothesis.

The theological stance is that all spontaneous psychic experiences including NDEs, visions, out-of-body experiences, and precognition should be carefully evaluated, while the sought-after variety should be flatly avoided.⁹⁴ The observations of the Marian visionaries of Medjugorje may offer some corroboration for the City of Light and the Realm of Bewildered Spirits elements of the NDE from a source other than NDEs.⁵² Lundahl, who has been criticized for incorporating Mormon views into the NDE literature, has demonstrated his open mindedness by comparing and contrasting the NDE with the Marian apparitions. The words of the late Fr Slavko Barbaric, the then spiritual director of the visionaries and who was familiar with paranormal literature are highly significant when he said: 'I think they were permitted to see... so that they could witness to us... so they are naive witnesses- 'we know it exists, we saw it''.⁹⁵ Quoting the words of the Medjugorje scholar, Lundahl wonders whether that is also the message the NDErs who have seen the other world have been trying to give.⁵² Studies of death related experiences are a human search through science to find their destiny in time, and Marian apparitions are a Motherly attempt to guide her children to find their destiny in Eternity.

Post-mortem existence has relevance in debatable issues like euthanasia and capital punishment because it highlights the sanctity of earthly life. The studies of NDEs have usefulness in cognitive science. The different elements of the NDE point towards the multipartite nature of consciousness and thereby contribute vastly to consciousness studies. Study of NDEs may be useful in understanding certain aspects of the psychotic process.

They help us to study the dying process and impart a deeper understanding of the mind. They are useful in counselling grieving families and helping suicidal patients. Neal Grossman, a professor of philosophy involved in NDE research writes: ⁹⁶ *'I have been immersed in this research for 30 years or so, and have been incorporating this material in my courses. I have seen the effect that just reading this material has had on the lives of my students. I have seen suicidal impulses dissipate, relationship with family healed, and directionless students acquiring a sense of direction. I have seen students who were motivated primarily by the desires of the materialistic creed (greed, fame, pleasure and power) begin to think seriously about living according to the Golden Rule ...'*

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