

Consciousness and Wave/Particle Duality:

Underpinning the Phenomenology of Transpersonal Psychology

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Abstract

One of the challenges of materialism is explaining how phenomenal consciousness emerges from physicality. The theory of panpsychism has been proposed to answer this question by suggesting that consciousness is ubiquitous within the Universe, that the Universe is a mental construct, and that even the atoms and sub-atomical particles manifest a rudimentary form of consciousness or proto-consciousness. If panpsychism or one of its derivatives is true, then evidence of consciousness must exist within simple quantum mechanical atomic structures like the hydrogen atom, which expresses wave/particle duality. Furthermore, it is likely within the wave state that rudimentary consciousness resides. Significantly, if the concept of wave/particle duality is then applied to human consciousness, that our consciousness expresses both a particle state and wave state, then through its ripple effect and quantum entanglement, anomalous psycho-spiritual human experiences that hitherto cannot be explained in terms of physicalism can now be better understood. There is no need for new physics; we only need to reframe what we already know.

Keywords: consciousness, wave/particle duality, panpsychism

Introduction

The equations of quantum mechanics are arguably the most thoroughly tested and successful formulations in modern science (Okon and Sebastian, cited in Gao, 2022). They have led to some of the twentieth century's most significant developments, such as semiconductors, lasers, electron microscopes, digital cameras, LED screens, magnetic resonance imaging (MRI), and nuclear power stations. However, Nobel Prize winner Richard Feynman (1995) stated in a lecture, "I think I can safely say that nobody understands quantum mechanics". Feynman alluded to paradoxes within the quantum world, which include molecules, atoms, and subatomic particles like protons and electrons. Although seeming to act like particles, these minute substances have proved not to be material particles but rather waves of probability, which only become fuzzy points when measured or

observed. These distinct states are known as the wave/particle duality, with the wave only assuming a particle state when consciousness is involved.

Furthermore, the equations suggest that the particles in a wave state can paradoxically be everywhere and nowhere simultaneously. When a particle transforms into a wave, it becomes impossible to predict where it will end up within a range of probabilities. This is known as the measurement problem (Golub & Lamoreaux, 2023). Physical science likes clear deterministic outcomes, which quantum theory stubbornly rejects, and the entanglement with consciousness (observation and measurement) creates a further uncertain mystery.

The nature of consciousness is another enduring enigma, brought into focus by Chalmers' (1995) *Hard Problem of Consciousness*. Science can explain the mechanistic working of cognitive systems but cannot explain why we experience perceived reality states the way we do, which Chalmers called phenomenal consciousness. Moreover, if the Universe's fundamental structure is physical, how does consciousness emerge from it? This has led some theorists to suggest that consciousness, or *mind*, must be inherent within the Universe, even at the level of sub-atomic particles (Skrbina, 2017), and that the Universe is a mental construct (Henry, 2005).

This article draws first on the observations of quantum mechanics, particularly concerning wave/particle duality, then focuses on different anomalous expressions of consciousness before suggesting that seeing our consciousness in terms of wave/particle duality provides valuable insights that go some way to explaining some hitherto intractable consciousness problems.

Background to Quantum Mechanics

Quantum mechanics emerged in the latter part of the nineteenth century and early in the twentieth century through exploration into the molecular, atomic, and sub-atomic worlds. Various researchers, like Max Planck, Albert Einstein, Louis de Broglie, Erwin Schrödinger (See Fig. 1), and Werner Heisenberg, developed mathematical equations based on experiments that established the theory (Golub & Lamoreaux, 2023). One of these experiments involved Young's famous double-slit experiment, carried out in 1801 to demonstrate the wave expression of light, which hitherto had been considered solely composed of discrete particles. The experiment entailed shining a narrow light beam through two slits onto a plain background. When the light was shone through one slit, a

single band of light appeared on the screen as expected. However, when the light was shone through two slits, a series of bands emerged as the waves interfered with each other. This is rather like dropping two pebbles into a pool of water and watching the ripples interact with each other, increasing and negating the amplitude of the waves. In the light experiment, the light stripes on the background screen show a constructive and destructive interference pattern, demonstrating the light's wave function (Dimitrova & Weiss, 2008).

Wave/Particle Duality

The 1921 Nobel Prize in physics was awarded to Einstein for his contributions to theoretical physics, which included demonstrating that light was a discrete localised quanta of energy, now called photons. This re-established the particle concept of light (Golub & Lamoreaux, 2023). However, in 1927, researchers Clinton Davisson and Lester Germer from the USA showed that electrons also displayed a wave function (Weinert, 2009). This evidence confirmed the wave/particle duality hypothesis of subatomic particles, one of the foundation theories of quantum physics. When streams of particles are fired from an electron source through the double-slit experiment, they display wave properties on the background screen as striped bands of light. However, when a single electron is fired, something strange happens. The particle leaves the gun and becomes a wave of probability passing through the slits before collapsing again when it hits the detection screen. Problematically, from the moment of emission, there is no way of determining where that particle will emerge on the screen. Known as Heisenberg's uncertainty principle, after the German Physicist Werner Heisenberg, it was discovered that the more an attempt is made to nail down a particle's position, the less is known about its momentum and vice versa. Unlike Newtonian physics, where an object's mass, velocity, volume, and trajectory can accurately determine where an object, like a football, will land, the same is not valid in the quantum realm, where randomness rules. This led to an Einstein quote from correspondence with Max Born (2004): "God does not play dice (with the universe)". If God does indeed play dice, the question is to try and understand why.

However, this apparent randomness of electron scattering is not entirely without order. If the experiment is carried out over a sufficient period, the series of particle impacts conforms to the wave pattern of electrons, presenting on the detecting screen a series of interference stripes similar to that displayed by light. What is inescapable is that when emitted from the electron source, the particle becomes a wave of probability (potential)

displaying random patterns that can only be partially determined mathematically and practically (Gao, 2019).

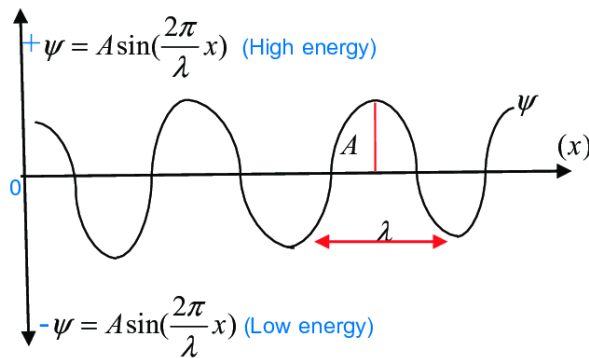


Fig. 1 – Schrödinger's Equation shows the wave function of a particle where ψ = the wave.
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The Collapse of the Wave Function

There turned out to be another twist in these experiments. To discover the particle's position at any given moment, a detecting device was set up before one of the slits to count the particles that passed through it. Strangely, this device caused the collapse of the wave function, and the electron particles remained particles, thereby creating two bands of impact on the background screen, corresponding with the two slits. This experiment has been repeated many times and in different forms, but in each case, observation causes the collapse of the wave function. Moreover, as observation, even through a remote mechanical device, is an expression of conscious human intent, consciousness somehow impacts the wave/particle function, which in physics is known as the observer effect (Golub & Lamoreaux, 2023).

Quantum Entanglement

One other aspect of quantum mechanics is relevant to this article. When two particles become entangled, they become one distinct system known as quantum entanglement. If these particles are separated, their entanglement remains, and it can be shown that they will display similar patterns even if the distance separating them is vast. For example, if the spin of one particle is changed, the other changes instantly at potentially faster-than-light

speeds. Quantum entanglement shows that once established, a connection can be maintained no matter how far apart they are (Golub & Lamoreaux, 2023).

Atoms and Molecules

Before leaving quantum mechanics, a few words need to be shared about the building blocks of our physical world. The simplest atom in the Universe is hydrogen, which contains one positively charged proton and one negatively charged electron. Like electrons, protons are also primarily waves, which additionally can collapse into a particle state. Hence, wave/particle duality and polarity might be considered fundamental to the Universe's basic structure.

Summary

Quantum mechanics gives precise information about the working of molecules, atoms, and sub-atomic particles, yet it also contains anomalies. The findings can be summarised as follows:

1. Sub-atomic particles, atoms, and some molecules display wave/particle duality
2. Until observed, waves are always in a superposition state, which appears random
3. Observation of a system causes wave function collapse
4. When particles become entangled, they will operate as one system even over vast distances

Consciousness

Exploring the nature of our being and our place in the Universe has ancient origins. People of the past constructed their myths on how the world came into form and their relationships to the natural forces that were part of their daily experience. In some cultures, such as ancient Egypt and Sumeria, these myths were written down so that we can now look back and consider the beliefs of people who lived more than five thousand years ago. Others, like the ancient Kalevala myths and legends of the Finnish people, were transmitted orally and only committed to paper in 1835 (Lönnrot, 1835/1985). The consensus of what has come down to us, based on the perceptions and beliefs of hundreds of different cultures and millions of people, is that in addition to the creatures of their physical world, there were realms filled with supernatural beings. From the gods of Ancient Egypt to the fauns and satyrs in Ancient Greece to the selkies and mermaids of Scotland and the gnomes of Scandinavia, consciousness was perceived to be everywhere in these *unseen* forms. These mystical perceptions of reality, regarded today as hallucinations (Jaynes, 1983), likely arose

because past cultures saw the world through two very different lenses based on the bicameral brain, which we can call *intuitive* and *rational* (McGilchrist, 2009). According to Jaynes (1983), *true consciousness*, a stage beyond perception and intention, is associated with language development and did not emerge until about 1000 BCE. It is, therefore, a peculiarly human quality. Indeed, through the extraordinary and successful developments of the physical sciences and the scientific method, these bicameral beliefs are generally regarded as superstitious nonsense. Physicalism was and still is, for the most part, the only show in town. This attitude is best summed up by the mathematician William Thomson Kelvin when he stated:

In physical science, a first essential step in the direction of learning any subject is to find principles of numerical reckoning and practicable methods for measuring some quality connected with it. I often say that when you can measure what you are speaking about and express it in numbers you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind: it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of *science*, whatever the matter may be (Kelvin, 1891).

Within the field of quantum mechanics in what became known as the *Copenhagen interpretation*, physicists in the latter half of the twentieth century took a pragmatic decision that if something could not be measured, it was meaningless and should be ignored (Jammer, 1974). As the wave function of a particle fell into this category, it was pointless speculating on its relevance or meaning. Furthermore, as so often occurs within orthodoxy, even questioning this dictum had, by the 1980s, become regarded as heresy and unprofessional (Baggot, 2023). So, what does this have to do with consciousness, and is consciousness only experienced in the human brain?

Echoing the implications of dualism within quantum mechanics, the debate on the nature of consciousness and its relation to mind and body had become compromised by the distinction between the mind and the body. This dualistic theory, espoused first by Plato (2015) and later by René Descartes (Westphal, 2016), believed that the mind (soul) and body could be conceived as two distinct elements or aspects. Dualism was the predominant view until the early twentieth century. However, as the materialist reductionist philosophy gained ground and, possibly, to purge religious ontology from a scientific perspective of

human nature, dualism has now given way to monism, which considers that both mind and body are derived from a single substance of either mind (idealism) or matter (materialism) (Gross, 1992). Any notion of the existence of a soul was regarded as either scientifically unsound or irrelevant. Despite the word *psyche*, as in psychology, meaning *soul* in Ancient Greece, the word "soul" receives no mention in Gross' book on psychology (Gross, 1992). However, the reductionist belief that consciousness was no more than the product of a material brain proved unsatisfactory for some philosophers. Eventually, in an article entitled "Facing Up to the Problem of Consciousness" (Chalmers, 1995), and further expanded in his book *The Consciousness Mind* (1996), David Chalmers highlighted what he termed the "hard problem of consciousness".

The Hard Problem of Consciousness

Chalmers conceded that many aspects of consciousness, the easy problems, can be explained in terms of neural networks and electrical impulses, as reductionist science describes. However, what cannot be explained satisfactorily by this means is why we experience things the way we do (Chalmers, 1995). In this sense, Chalmers defines *consciousness* as our unique phenomenological experience of the world, such as the perception of colour or pain. This is the "hard problem" that materialism cannot readily answer because how can conscious experience emerge from something purely physical?

For the past twenty-five years, Chalmers has continued to develop and test his ideas. In the *Journal of Consciousness Studies* in 2018, in an article titled "The Meta-Problem of Consciousness", Chalmers explored why people consider consciousness a problem that physicalism cannot readily explain. In the article, he considers the challenges to the hard problem raised since he first articulated the idea. While attempts have been made to refute his theory, such as the suggestion that the hard problem is only an easy problem waiting to be explained by further developments in neurological science (Dennett, 2016), there have been no conclusive rebuttals. Chalmers's thesis is that reductionist science cannot explain phenomenological experiences, such as why we feel love or shame. In a similar context, there are many other human phenomenological experiences that materialism cannot explain, some of which fall into the category of anomalous experiences, which we will now consider.

To Sleep, Perchance to Dream

Once every twenty-four hours, humans and many animals pass through a sleep state. Physiologically, this is a well-defined process, with the brain rhythms dropping from a normal waking state through a brief dreaming state before entering deep sleep. In the sleep cycle, our consciousness moves from the unconscious into a dreaming sleep, detected initially through rapid eye movements (REM) and then back again. These cycles repeat between six to eight hours until we eventually return to full waking consciousness. Many people do not remember their dreams, but some do, and some with great clarity. This latter experience is known as lucid dreaming, where the dreamer can consciously enter into and interact with the dream, knowing they are in a dream. For lucid dreamers, this can be a powerful experience in which reality takes on a new dimension, and everything is controlled by mental perception or thought. For example, I have often experienced flying like Superman in my lucid dreams, moving through the air simply by willing it. One of the hard problems of consciousness is explaining why we dream in the space between deep sleep and full wakefulness.

Altered States of Consciousness (ASCs)

Physically, brain rhythms in the sleep cycle move from the beta and gamma rhythms of ordinary waking consciousness through alpha rhythms associated with daydreaming to theta rhythms of dreaming sleep before entering the delta rhythms of deep sleep. Different levels of these states can be induced by a general anaesthetic, where consciousness is forced into a deep sleep state, or through mind-changing psychoactive substances, such as Psilocybin or Ayahuasca, or induced or self-induced trance states. Into this latter category falls daydreaming, meditation, and trance. ASCs operate through the intuitive half of consciousness and produce a vast range of inner experiences, from ecstatic bliss in deep mediation to terrifying images of monsters that sometimes appear in psychedelic trips. In explaining ASCs, Flor-Henry et al. (2017, p. 3) state:

The normative end of the ASC spectrum involves alterations in the auto-biographical sense of Self, from expanded states of absorption (such as creative flow and meditative practices) to hypnotic trance; culture- and religion-specific practices including shamanic states of consciousness (SSC); and various modes of extra-sensory perception. Drug-induced psychedelic trances, synesthesias, savant capacities, and near-death experiences lie in the middle of the scale, while pathological ASC conditions include dissociative trance disorder, lycanthropy and related cultural

practices, dissociative conditions such as Dissociative Identity Disorder (DID) and psychogenic fugues, and neuropsychiatric syndromes, such as temporal lobe epilepsy, schizophrenia, and affective psychoses where the sense of Self may be radically altered or lost. One important corollary is that trance and altered states are not necessarily associated with psychopathology and may in fact be therapeutic.

Hypnotic Regression Therapy (HRT) is one of the regularly used methods of inner exploration. HRT uses a trance state to explore intuitive consciousness, which can be induced in most people through simple guided imagery and relaxation techniques. This method allows the mind to drop into a form of daydreaming, where open questions, like "Tell me where you are and what you are experiencing?" can bring to the surface a wealth of detail, some of which can be cathartic but ultimately beneficial and revelatory. This method has been used to release childhood trauma (Zinser, 2010), intrauterine trauma (Grant & Kelsey, 1974) and past-life trauma (Tomlinson, 2012). Furthermore, it has been used to explore perceived between life states (Newton, 1995). Whether these experiences are objectively true, in the sense of what we perceive through our waking rational self, is irrelevant if the subjective experience proves beneficial or, in some cases, life-transforming (Furlong, 2022).

Who are we?

These inner therapeutic journeys have led to the development of ontological concepts to make sense of the complex nature of our inner world. Most people have a perception of the "I" or the primary self part of our being, which experiences. This waking state part is usually termed the *primary ego*. Below this waking state level lies the unconscious or sub-conscious mind that seeps into consciousness during dreaming sleep. Apart from maintaining bodily functions, the unconscious or subconscious is less well understood than normal waking states. However, over the past hundred years, psychologists and therapists have begun naming different inner-world components. The origins of this journey go back to Freud and psychoanalysis but include several other eminent practitioners, like Jung, Adler, and Assagioli. In more recent times, psychotherapists have discerned sub-conscious aspects of the personality, perceived as "discrete centers of self-awareness" (Braude, 1995, p. 67), which he calls *alters*. These inner world characters have been given other names, including *ego-states* (Watkins & Watkins, 1997), *sub-personalities* (Rowan, 1991; Berchik et al., 2016), or simply *parts* (Schwartz, 1995). They appear to reside within our unconscious as distinct

psychic personalities, only to periodically emerge, mainly when triggered by some outer-world experience or comment. Therapists and their clients perceive these characters differently, yet their reality is accepted and experienced as part of the therapeutic process (Schwartz, 1995; Zinser, 2010). Sometimes, they emerge into consciousness through anomalous auditory experiences or hearing "voices" in their heads. Instead of ignoring or denying their existence, the modern approach is to dialogue with them (Kluft, 1999; Schwartz & Sweezy, 2020). These characters, often holding trauma and stuck in the past, can be helped by acknowledging them, re-evaluating their experience, and finally, by helping them release their emotional charge. Although little research has been done, therapists maintain that working with these parts can dramatically benefit their clients (Furlong, 2022).

In addition to these inner-world characters, therapists have also connected to a deeper part of the psyche, which has been called the *Self* with a capital "S" (Jung, 1968; Schwartz, 1995); the *Transpersonal Self* (Assagioli, 1971; Grof, 2012) and the *Inner Self-Helper* (Allison, 1999). The role of the Self or Transpersonal Self is less well defined than the primary ego or the sub-personality parts. This aspect of our being, which can be contacted within therapy, would appear to have an innate complete over-view of the psyche and its inner workings (Zinser, 2010). In Internal Systems Therapy (IFS), Schwartz (2001) suggests the Self possesses the qualities of compassion, confidence, courage, creativity, curiosity, calmness, connectivity, and clarity – the eight 'c's. Schwartz (2001, p. 13) goes on to state:

Let's continue examining what the Self is like. To clarify this discussion, I find it useful to differentiate between what people report while meditating—while being reabsorbed into the ocean—and what people are like when their Self is actively leading their everyday lives while being a separate wave of the ocean...Here we are more concerned with what people are like when they bring some of that awareness, spaciousness, and energy to their daily tasks and relationships—again, when they are a wave rather than the ocean. What qualities do they report and display when they live in the world, yet hold the memory of whom they really are?

In Allison's hypnotic regression system, the Self is conceived as the *Inner Self Helper* (ISH), which has a complete overview of the psyche and an awareness of the different sub-personality parts (Allison & Schwartz, 1995). Allison asserts that we all possess this wise inner Self that can give clear instructions on the steps needed for healing the inner world

when consulted. Schwartz (2020) maintains that we are all born with a Self, but where does this inherent wisdom stem? We will address this question again later in this article.

Shamanic Trance and Channelling

According to Flor-Henry et al. (2017), Shamanism, which works through induced ASCs, has very ancient, pre-historical origins and is found today within different tribal cultures as a way of maintaining cultural cohesion. Trance states are induced through repetitive drumbeats, sometimes accompanied by dancing and sometimes using psychoactive substances, causing subjects to move into alpha and theta state awareness. When in a trance state, modern adherents report through their visions meeting different human, animal, and plant spirit entities with an extended sense of awareness that cannot easily be described (Shanon, 2002). Sometimes shamans embody through a form of possession, some supernatural being that communicates through them (Flor-Henry et al., 2017).

This type of communication has found expression within Western society through an ASC process known as *channelling*. Within this state, the channeller opens their consciousness to allow a perceived entity or spirit guide to communicate through them with personal or philosophical messages. Examples include the hundreds of teachings of White Eagle through the medium Grace Cooke (2014), which gave birth to the White Eagle Lodge, and Silver Birch through the medium Maurice Barbanell (2013), which is promoted through the Spiritualist National Union in the UK. These teachings purport to give insight and awareness into the essence and origin of the transpersonal dimension of human nature and our place within the greater scheme of reality. Another source that gained popularity in the 1970s was communicated through the medium Jane Roberts, in an extensive series of dialogues known as the 'Seth' material (Cunningham, 2010). A sample of Seth's insights is given below:

(Y)ou form the physical body that you know at a deeply unconscious level with great discrimination, miraculous clarity, and intimate unconscious knowledge of each minute cell that composes it. This is not meant symbolically. Now because your conscious mind... is not aware of these activities, you do not identify with this inner portion of yourselves. You prefer to identify with the part of you who watches television or cooks or works - the part you think knows what it is doing. But this seemingly unconscious portion of yourself is far more knowledgeable, and upon its smooth functioning, your entire physical existence depends. This portion is conscious, aware, alert. It is you, so focused in physical reality, who do not listen to its voice, who

do not understand that it is the great psychological strength from which your physically oriented self springs (Roberts, 2012, p.5).

In the 1990s, psychologist Tom Zinser (2010) reached an impasse with his clients after working therapeutically with regression techniques for several years. Some methods proved successful, but others did not, especially when some aspect of the psyche appeared to be blocking the process. This impasse eventually caused Zinser so much frustration that he considered giving up his practice. Serendipitously, a colleague at work mentioned that she had developed mediumistic channelling skills and offered her services to see if it might help. With nothing to lose, Zinser began collaborating with a guide named Gerod, who communicated specific information on Zinser's clients (with their permission) over twenty years to provide insight and awareness of the situations within the client's inner world.

Additionally, Gerod provided a comprehensive background into the nature of the spiritual dimension of the Universe. The value of this approach was that the information provided by Gerod could be applied practically and effectively in clearing the blocks that Zinser had previously encountered. Moreover, Gerod's cosmology was broadly commensurate with that channelled through the other guides named here.

NDEs and Out-of-Body Experience

Another range of human experience that might loosely be called out-of-body awareness falls into two categories – trauma-induced and non-trauma-induced experiences. The trauma category was first brought to public attention through the research of forensic psychiatrist Raymond Moody in the 1970s. He interviewed many patients who had recovered from heart attacks and discovered that a significant proportion of them had experienced a feeling of being separated from their bodies. Some described travelling through a tunnel of light before meeting with dead relatives and occasionally a being of light, who conveyed valuable information but indicated that it was not yet time for the individual to pass over and they would need to return to their bodies. Moody went on to write up his research in his book *Life After Life* (Moody, 1975).

Since Moody's book, many studies have been conducted concerning NDEs (Alexander, 2012; Greyson, 2022; Kadagian, 2022; Ring, 2023; Sartori, 2014; van Lommel, 2010). All attest to the similarities of these experiences, which can be summarised as the ability of some aspect of consciousness to sufficiently separate from the body so that there is an altered perspective on reality. Observations from these new perspectives, such as looking

down at the body from the ceiling, have occasionally been validated through gleaned information that could not possibly have been made from the body's awareness state (van Lommel, 2010). Furthermore, meeting and communicating with deceased relatives is highly suggestive that some aspect of consciousness continues to experience a different realm of awareness after physical death.

Non-trauma-induced out-of-body experiences (OBEs) are also not uncommon, although less researched (Peterson, 2013). The primary distinction with NDEs is that OBEs usually only involve connections with the elements of the physical world rather than accessing some other dimension of consciousness. For example, I attended a meeting with a known spiritual teacher and meditator many years ago. There were about forty of us sitting in a circle in a room. This teacher began his session with a meditation, and some intuitive part of my being suggested that I look at what was happening in the room from an ASC or psi state, which I had learned to self-induce. Shortly after the guided meditation started, I was aware that some distinct part of a person sat on the other side of the room, separated from his body, floated up to the ceiling, and observed the rest of the meditation from that perspective. He only came back into himself at the end of the meditation. When scanning psychically, determining the exact person who had the experience is often difficult. However, after the teacher had answered several questions, someone on the opposite side of the room put up their hand and then shared the same experience I had witnessed, of first separating from their body and then witnessing the proceedings from above. These experiences, which have been anecdotally widely reported, indicate that human consciousness can experience perspectives from outside of the body (Lindsey, 2011).

Psychic or Psi Experiences

This field covers an extensive area of human experience termed paranormal because it stands outside of what is accepted as proven within the rational world. The most common forms include telepathic communication, mediumship, clairvoyance, and clairaudience, perceiving apparitions such as ghosts, strange serendipitous coincidences, and distant healing. One of the significant claims of reductionist science is that no known physical laws govern these experiences, so they can readily be dismissed as illusory or chance events. Moreover, when they are studied, such as the research into telepathy by J. B. Rhine at Duke University (Pratt et al., 1940) or psychokinesis by R. Jahn (1982) at Princeton, their discoveries have often failed to be duplicated, leading to understandable claims by

reductionist scientists of inadequate controls against fraud, statistical errors, or experimental bias. Nevertheless, extraordinary anecdotal experiences persist in everyday life, which I have witnessed on several occasions, particularly concerning spiritual or psi healing.

In 1988, cardiologist Randolph Byrd conducted a study of four hundred patients admitted to his hospital with severe cardiac conditions. The patients were divided into two groups: one that received only state-of-the-art medical attention and another supported by distant prayer. The prayed-for patients' first names and some basic information on their condition were distributed to Protestant and Catholic prayer groups throughout the USA. When the results came back, it was as though the prayed-for group had been given a new wonder drug that lessened the impact of all the side-effect issues, such as the need to take antibiotics that the control group experienced (Dossey, 1991). These studies suggest that simple intent allows minds to become entangled, even when the patient's full name is withheld for confidential reasons.

However, subsequent trials showed a mixed response. For example, a randomised trial of a thousand prayed-for cancer patients in Australia indicated a small but significant improvement in spiritual well-being (Olver & Dutney, 2012), while a trial by Aviles et al. (2001) conducted between 1997 and 1999 into 799 patients showed no significant effect on medical outcomes. We might wonder what determined the significant difference between the outcomes of these trials.

The effects of spiritual and distant healing were extensively reviewed by Benor (1992, 1994). Based on hundreds of studies, the evidence suggests that healing is an effective modality despite having no credibility in reductionist science. As Benor states:

Two thirds of the controlled studies...demonstrate that psi healing is effective. When enzymes, yeasts, and bacterial cells and laboratory culture, plants and animals respond significantly to healing... something more than suggestion is taking place... I submit that it is adequately demonstrated that healing is an effective treatment modality. Healing offers a potent complement to conventional therapies (Benor, 1992 p. 301).

The above studies have been backed up recently by an extensive research project involving 200 patients, carried out by the University of Birmingham, UK, into the value of healing when treating irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD) (Lee et

al., 2016). Although not discounting the placebo effect, the conclusion of the positive benefits shown from the study stated, "the size of the benefits observed suggests an alternative mechanism and the value of any mechanism should arguably not be discounted where it confers symptomatic relief." (Lee et al., 2016, p. 118).

If distant or non-contact healing is a reality, and the evidence suggests that it is, then this implies that there must be some form of connection, or entanglement, between the healer's mind and the receiver's mind, which allows information to be exchanged immediately over short or long distances (Edwards, 2017). We might also infer that another level of entanglement exists between the mind and body, allowing that healing energy to find its rightful place within us.

Religious and Mystical Experiences

It would be appropriate to conclude this section by referencing the extensive range of mystical experiences recorded in historical times. It is easy for reductionist scientists to dismiss these experiences as hallucinatory aberrations of the mind. Nevertheless, like the epiphany of St. Paul or the visions of Joan of Arc, some have enormously impacted human development. One of the most authoritative studies of these experiences was carried out by the philosopher William James (1902/2018) in his book *The Varieties of Religious Experience*. James argues that mystical and religious experiences are fundamental to human experience and cannot be reduced to superstition and delusion. The challenge is accounting for all these experiences within the current scientific paradigm, specifically within quantum mechanics.

Quantum Consciousness

To develop a theory that might explain anomalous experience, we first need to examine the nature of consciousness and how it manifests within human beings and other life forms and states within the Universe. The central question is whether consciousness can only be a product of a physical brain, which is the current materialist belief. As stated during the eighteenth and nineteenth centuries, the mind/body debate focused on whether mind and body were two separate substances, a theory known as dualism. Eventually, Western science agreed that the mind and body had to be composed of the same essence yet expressed in separate ways, known as monism. This theory might be likened to a coin composed of the same metal yet with two distinct faces.

If we accept this belief, there are three principal ways of describing this state – physicalism, idealism, and dual-aspect monism. Physicalism, the dominant theory in Western science, suggests that everything can ultimately be reduced to physical particles. Idealism, on the other hand, switches the polarity to consider that everything is an aspect of the activity of the mind. Finally, dual-aspect monism suggests that there is inherently only one primary substance that can be expressed as either mind or body (Walach, 2020). These two latter ideas broadly fall into a perspective on reality known as *panpsychism*.

Panpsychism and its Derivatives

Panpsychism is derived from two Greek words, pan, meaning "all", and "psyche", meaning soul or breath. However, since the nineteenth century, the word psyche has come to refer to the mind; hence, psychology is now taken to mean the study of the mind, not the soul. In panpsychism, mind rather than matter becomes the universal force permeating and underpinning the Universe (Henry, 2005). As Skrbina (2017) informs us, panpsychism has ancient origins, dating back to the Greek philosopher Thales of Miletus, who lived around 600 BCE. It was notably espoused by Socrates, Plato, and Aristotle but fell into decline in the nineteenth century (Skrbina, 2017). The development of new insights in quantum physics saw a renaissance in the idea. For example, the astronomer, physicist, and mathematician Sir James Jeans (1930, p.154) stated in his book *The Mysterious Universe*, "(T)he Universe begins to look more like a great thought than a great machine. Mind no longer looks like an accidental intruder into the mind of nature". Many other scientists, such as Eddington, Haldane, Huxley, Bateson, Bohm, and more recently Goff, Kastrup, and Skrbina, have taken a similar view. However, the pragmatic Copenhagen interpretation stance of modern physics, where that which could not be measured was considered irrelevant, has prevailed as the present dominant materialist view of reality. If the computer works, it is immaterial whether it contains some inherent consciousness other than that which science has imbued it. In addition to related mental health issues, the downside of such a stance is that it has divorced human consciousness from any sense of connection to a spiritual perspective of the Universe, arguably allowing for the exploitation of the planet and its resources in the rapacious way we see today. To address this issue, we need to understand how the element of mind might exist at a subatomic level.

The Hydrogen atom

The first atom in the periodic table is hydrogen, from which all atoms subsequently emerged. Hydrogen can, therefore, be seen as the primary or fundamental atom of the physical Universe. Hydrogen atoms comprise one positively charged central particle known as a proton and one negatively charged orbiting electron. Both electron and proton synchronistically display wave/particle duality. Protons also contain other elementary particles like quarks, but these are not relevant here. If the hydrogen atom is an expression of mind, wherein might that mind-state lie, and how might it be related to consciousness? Human beings express consciousness with a high level of complexity commensurate with a large brain capacity. Based on this perspective, we might consider, along with humans, that simians, cetaceans, and possibly family pets such as cats and dogs are conscious, at least bicamerally so, but not lower life forms such as reptilians and certainly not trees and plants. From this hierarchical perspective, consciousness would play no part in the world of sub-atomic particles.

To address this issue, researchers like Hobson (2009) believe that some form of proto-consciousness must exist at a rudimentary level. Skrbina (2017, p. 10) has suggested, "Certain terms seem to be the most general and least restrictive; these might include *mind*, *mentality*, *experience*, and even *qualia*. There are good arguments for certain intentional qualities, like *will* and *belief*, to serve as universal properties." This list seems a tall order for a hydrogen atom and would be hard to prove. We know that when particles, such as electrons or photons, are fired through a double slit, they appear to choose where they will be detected, which physicists cannot predict. This intent, if that is what it is, implies a form of free-will choice, however, limited. Ellis (2011, p.142) picks up this idea when he states: "An individual photon can make a free choice despite the fact that the collective pattern is random." Conway and Kochen (2009) take this one stage further in their equations in their article "The Strong Free Will Theorem", where they attempt to substantiate this free-will expression of sub-atomic particles. They state: "Our provocative ascription of free will to elementary particles is deliberate, since our theorem asserts that if experimenters have a certain freedom, then particles have exactly the same kind of freedom" (Conway & Kochen, 2009, p.230).

Additionally, the wave collapse, when observed, might suggest some limited form of self-awareness. Anything further cannot be deduced from this experiment. However, one of hydrogen's molecules, H₂O or water, potentially offers further insights.

Water, which comprises two hydrogen atoms and one oxygen atom, has been subject to many studies. Water molecules combine effortlessly together and demonstrate wave function in their fluid state. Water would also appear to hold memory; indeed, Homoeopathy, although controversial, is based on this premise. Homoeopathy, conceived by German physician Hahnemann in 1796, creates remedies by dissolving a substance in water and then, through succussion and continued dilution, producing a remedy where no molecules of the original substance remain. These potentised drops of water are then added to a neutral absorbent stable base to create the final tiny tablet. Within orthodox medicine, this process makes no sense, and although homoeopathy has many adherents, clinical trials have proved inconclusive, which has led to discrediting the effectiveness of the remedies.

Nevertheless, in 1988, Jacques Benveniste, a French immunologist who was researching allergic responses to different substances, published a paper in the distinguished Journal *Nature*, which suggested from rigorous trials that very high dilutions of an antibody could prove effective when treating allergic responses (Davenas et al., 1988). This study seemed to support the homoeopathic dilution concept. However, subsequent tests, carried out by Maddox, the then editor of *Nature*, and an arch sceptic and stage magician James Randi, failed to support Benveniste's findings, and his work became discredited. Despite this setback, a study by a pan-European group of four laboratories in 1999 supported Benveniste's dilution discoveries (Belon et al., 1999; Milgrom, 2001).

Another researcher, Masaru Emoto, suggested in his bestselling book *The Hidden Messages in Water* (2004) that human thought could influence the structure of water, which could be shown manifesting in its crystalline structures when in a frozen state. However, like Benveniste, his work was debunked by the scientific establishment because of a lack of clear evidence in the process he used. His Wikipedia (2023) entry refers to him as a pseudoscientist. Despite these negative comments, there is still evidence that water has the potential to hold memory, as some laboratories have replicated Benveniste's findings (Reilly, 1988). Therefore, if H₂O holds memory, there are grounds for believing that hydrogen atoms hold memory. When added to "will" and "awareness", there are valid reasons for asserting that hydrogen atoms, and by extension all atoms, hold some form of rudimentary or proto-consciousness, which the theory of panpsychism maintains. As Seth, speaking through Jane Roberts, states:

Nevertheless, the atoms and molecules ... do possess their own kind of consciousness. The atoms and molecules that make up the pages of this book are also, within their own level, aware. Nothing exists - neither rock, mineral, plant, animal, or air - that is not filled with consciousness of its own kind (Roberts, 2012, p. 7).

We can also deduce that because it is in the waveform, in the double slit experiment, where choice is made, then consciousness is predominantly expressed through, or held within, the wave state of the particle. Moreover, the wave state cannot be easily observed or measured. This observation implies that all expressions of consciousness can be seen in terms of both waves and particles. For example, if the hydrogen atom is perceived as the most rudimentary expression of particle consciousness, then by comparison, human consciousness might be considered a solar system or even a galaxy in comparison. Another analogy would be to consider the atom as a single note in a vast human consciousness orchestra. It is the same essence but of a much higher order of complexity. The following section will explore wave/particle duality through the complexities of human consciousness.

Wave/Particle Duality of Human Consciousness

When considering human consciousness, indeed all living things, the central question is how consciousness emerges from the developing embryonic, fetal, and infantile state to adulthood, a process known as bottom-up panpsychism, or the "Combination Problem" (Kastrup, 2018, p. 129). As Chalmers states:

Any version of panpsychism that holds microexperiences (experiences of microphysical entities) combine to yield macroexperiences (experiences of macroscopic entities such as humans) is in trouble (Chalmers, 2017, p.180).

Kastrup goes to great lengths to show that bottom-up panpsychism poses as many problems as physicalism when assessing how consciousness emerges from proto-conscious states. He suggests, quoting Shani, that:

(T)hat the Universe may be an indivisible whole has proven tempting to those seeking an alternative to bottom-up panpsychism, so as to avoid the subject combination problem: they posit that 'the cosmos as a whole is the only ontological ultimate there is and that it is conscious' (Shani, 2015. p. 408). With this, there is no longer any need to explicate how lower-level subjects combine to form higher-level subjects, for the highest-possible-level subject is already the starting point (Kastrup, 2018, p. 134).

Kastrup (2018) calls this form of panpsychism, *cosmopsychism*. A universe comprising waves of consciousness on many levels of awareness, including an ultimate, appears to answer many problems. However, Kastrup fails to explore and explain what "ultimate consciousness" might mean, save within human terms. His solution to the emergence of human consciousness is that excitations within the universal field give rise to a "*dissociation of cosmic consciousness [that] leads to the formation of relative subjects*". Each relative subject is an "'alter' of cosmic consciousness" (Kastrup, 2018, p. 142). Within psychology, it is recognised that "alters" arise from trauma (Braude, 1995; Kluft, 1999; Schwartz, 1995; Zinser, 2010), and therefore it does not seem an appropriate analogy to imply that the emergence of human consciousness stemmed from cosmic trauma; albeit the recognition of multiple internal psycho-spiritual states is helpful.

Moreover, Kastrup's hypothesis does not explain how alters or subpersonality parts are created within us, which some psychologists and therapists believe we all possess to different degrees, as already cited. The specific agency of these discrete mind state centres cannot be measured or observed directly through physical means, although their impact can be detected in different brain wave states (Flor-Henry et al., 2017). Humans would already appear to be complex systems of wave state consciousness with several, perhaps many, discrete individuated centres of awareness within us. Moreover, we all seem to possess an innate overseeing part that has full cognisance of this inner world and its characters, which sits in the background distinct from, and in some senses superior to, our ordinary conscious "ego" mind. Kastrup's excitations in his cosmopsychism do not explain these complexities. Something else is needed.

Human consciousness

Another way of explaining human consciousness, commensurate with the insights listed here, is that a complex, fully aware, and life-giving individuated wave of our consciousness existed before incarnation in a pre-conception state. At conception, our wave-state consciousness (WSC) entangles with the atoms of the embryonic egg cell and continues to further entangle itself with the developing brain and fetus through to adulthood. Put another way, this hypothesis suggests that individuated complex WSCes exist within the Universe, independent of physical embodiment. In humans and animals, conception allows individuated WSCes of different orders of complexity to experience particle-state

physicality. Within us, there is substantive evidence to support the view that our WSC existed before our conception.

Studies into monozygotic twins have thrown up fascinating insights into the nature of consciousness. Although genetically identical and displaying strong physical and psychic bonds (Playfair, 2012; Spector, 2012), their psychological profiling is always unique, sometimes in extraordinarily diverse ways. At the start of his book *Identically Different*, describing two such twin girls, Laden and Laleh, Spector (2012) states:

Laden liked animals, whereas Laleh preferred computer games, which Laden, who preferred to pray, could not stand... When asked they would both agree that Laden was the talkative extrovert and Laleh was more introverted.

How could the differences in personality of these two girls be explained? They were genetic clones with exactly the same DNA structure and every one of the 100 trillion cells of their body contained the same 25,000 genes...They had spent every day of their lives together, gone to the same school, attended the same university; they had the same friends and the same diet. They also had a special and unique bond: they were literally inseparable. They were Siamese twins conjoined at the head. (Spector, 2012, p. 2-3).

Spector uses the relatively new science of epigenetics to try to explain these differences. The primary explanation suggested here is that they both existed in a wave-state before conception. As science informs us, wave-states cannot be measured directly, only through their manifestation within us and within other living things.

In recent times, our pre-existence has been explored through *Regression Therapy* (Jue, 1988; Kelsey, 2008; Lucas, 1993; Newton, 2002; Tomlinson, 2012; Wambach, 2000; Weiss, 2020; Woolger, 1987; Zinser, 2011). It is also affirmed from guidance through *channelling* (Barbanell, 2013; Cooke, 2014; Roberts, 2012; Zinser, 2011), and historically, through Plato (2016), Socrates (Plato, 2015), and Pythagoras (Pellò, 2018). It is a perceived belief in *Shamanism* (Flor-Henry et al., 2017; Huguelit, 2013) and a central tenet of *Hinduism* and *Buddhism*. Finally, it has been supported through scientific research by Stevenson (2001).

The non-locality of WSC has best been observed in out-of-body states such as NDEs, where individuals meet with deceased beings, such as friends and relatives, in an interdimensional non-local state of consciousness (Moody, 2001; Ring, 2023; Sartori, 2014;

van Lommel, 2010). In an attempt to understand these experiences and relate them to modern physics van Lommel (2010) has offered the following:

We do not know yet if and to what extent quantum physics can help us find answers to all of our unanswered questions. But, in my view the foundations of quantum physics, such as wave-particle complementarity, entanglement, and a non local space with probability waves, which have been accepted by most quantum physicists might be crucial to our understanding the mind-brain relationship and the non-local aspects of consciousness itself (van Lommel, 2010, p. 228).

Kastrup's (2018) top-down panpsychism or cosmopsychism makes sense and resolves the combination problem if we consider an ultimate supreme level of consciousness, or Ultimate Mind, which came first before creating dissociated WSC parts of itself, in all its multiple forms, to experience, wave and particle states within the Universe, thereby adding to the Universe's complexity and evolution. Indeed, the 'evolution of consciousness' may be the *raison d'être* behind this process.

This highest level of consciousness is glimpsed in many mystical traditions as a conception of the "Absolute", such as the *Ain Soph* or the *Ain Soph Aur* of Kabbalistic tradition (Halevi, 1979). Lancaster (2004) suggests four levels of enquiry into the nature of consciousness, of which the highest is listed as *spiritual* and *mystical*. Only through the experience of these illuminating transcendent states can the Ultimate underpinning consciousness of the Universe be intuitively perceived or dimly sensed (Taylor, 2018). Cosmopsychism appears valid if we consider disembodied levels of consciousness way beyond the limitations of human brain function.

The over-arching concept of panpsychism, "all is mind", is that consciousness must exist both within the time-space continuum in its particle state and outside of time and space in its wave state. When anchored within us in its particle state, it is held in space-time, yet it still can express its wave state through our dreams, intuitions, creativity, and psycho-spiritual experiences. Going further with this proposition, we might posit that mind/consciousness is the fundamental reality that expresses wave/particle duality both within space-time and outside of space-time. Based on these fundamental assumptions about reality, consciousness can be expressed as *Particle State Consciousness* (PSC) and *Wave State Consciousness* (WSC), which will be explored in the following two sections.

Particle and Wave State Consciousness

Particle-State Consciousness (PSC)

The particle component of human consciousness is well-understood in its expression through chemical reactions and brain functions that run the mechanical expressions of our life, such as breathing, heartbeat, digestion, walking, moving, and so on. Over the past hundred years, incredible advances in biology and chemistry have better understood the physical nature of our makeup and the ability to treat many diseases. Psychology, too, has played an essential part in giving insight into the workings of the mind. We usually perceive ourselves as a singularity, the "I" or primary ego self. Our particle selves, locked in time and space and subject to entropy, will eventually collapse and die, as do all living organisms. Exploring physicality has been of extraordinary benefit to humankind, giving rise to the astounding developments of the physical sciences, which are moving with incredible speed toward developing sophisticated artificial intelligent machines. However, the wave-state element of our consciousness has been less studied and, hence, less well understood because of the predominance of physicalism. Focusing on one side of the coin has come at a cost because it has disconnected us from part of ourselves and, by extension, the consciousness which sits within all things. It has arguably led to widespread mental health issues and the mindless expression of egos willing to inflict pain and suffering on their fellow human beings and other sentient creatures.

Wave-State Consciousness (WSC)

WSC, manifesting predominantly through the brain's right hemisphere (McGilchrist, 2009), can explain many everyday experiences. As far back as 1934, Haldane presaged this concept when he stated:

If the mind is to be regarded as expressive of the wholeness of the body, or even of the brain, it should probably be thought of as a resonance phenomenon, in fact part of the wave-like aspect of things. (Haldane, 1934).

When typing this article, the physical activity involved PSC to express my thought intent. Yet, musing on its concepts stems from a very different level, which we can equate with a wave state. Imagination expresses a wave state, while physical activity is more of a particle state. PSC is locked in time and space, while WSC is outside of it. Through memory, we can reflect on past events; through imagination, we can see ourselves in different places or envision the future. Furthermore, WSC expresses itself through our creativity, and a perfect example of this expression is a painting, sculptor or musical composition. When we look at a

Leonardo painting or listen to a Beethoven symphony, we connect through resonance to the WSC that brought these works of art into being.

Additionally, minds, like sub-atomic particles, can seem to become entangled and exchange information, telepathically or kinesthetically, even over great distances (non-locality), as is often experienced between monozygotic twins (Playfair, 2012) and between humans and their pets (Sheldrake, 2000). In his book *Entangled Minds*, Dean Radin (2006) provides numerous examples and detailed research information on the psi connection between people, which he believes stems from quantum entanglement. He also highlights research problems in laboratory conditions, where experiences often revert to inconclusive particle states, especially if the researcher is biased against the study. This bias, known in science as the experimenter effect, became prominent through Rosenthal and Fode's (1963) famous rat experiment.

When scrutinised through the concept of wave/particle consciousness, what is suggested here is that the rats intuitively picked up that human bias through conscious entanglement and acted it out. This psi level interference becomes significant in studies of subtle responses such as psi research and the memory of water because the researchers' beliefs then become significant, even when double-blind tested. If the fundamental belief of the researchers espouses physicalism, then research findings will tend to support that perception. Likewise, if the researcher accepts idealism or the perception that consciousness can act like waves, then results will favour that belief, such as the research of Rhine (1934), Jahn (1982), and Benveniste (Davenas et al., 1988).

Additionally, there has to be a transition between WSC and PSC within our brains, which may be as Hameroff and Penrose (2014) have suggested:

(T)hat consciousness depends on biologically 'orchestrated' coherent quantum processes in collections of microtubules within brain neurons, that these quantum processes correlate with, and regulate, neuronal synaptic and membrane activity, and that the continuous Schrodinger evolution of each such process terminates in accordance with the specific Diósi- Penrose (DP) scheme of 'objective reduction' ('OR') of the quantum state (p. 39-78).

Other neurological interfaces between WSC and PSC, such as within our hearts or digestive tract, may exist. Epistemological research into these ontological ideas will ultimately provide further insights and answers.

We live in an ocean of electromagnetic waves passing through and around us, which we cannot detect except through a suitable device such as a mobile phone, TV or radio set. Conversely, it is posited here that physicalism and its devices cannot detect multi-layered WSC that infuses the Universe; only our minds can do that. All the anomalous psi experiences listed here can be explained in terms of different levels (octaves) and complexities of WSC, which physical devices cannot directly detect. Moreover, if human WSC pre-existed conception, then surely it will continue to experience after the demise of the physical body. Table 1., highlights the wave/particle duality differences that make up human consciousness.

Particle State Consciousness	Wave State Consciousness
Focused in time and space (local)	Outside of time and space (non-local)
Attention and concentration	Imaginative, creative thought
Rational, logical thought	Emotions and feelings like love and anger
Mind-body actions, like walking and talking	Alpha, Theta, brain wave states
Beta and Gamma brain wave states	Consciousness radiating from the brain and heart in waves of complexity
Consciousness located in the brain	Entangled consciousness connecting to other people and animals
Non-entangled consciousness within the Self	Can exist eternally in a disembodied state
Only exists in an embodied state subject to entropy	It can give rise to mystical, transpersonal, and anomalous states

Table 1. – Expressions of Wave and Particle State Consciousness

Walach (2020), in his article on "Inner Experience", presents a strong case of how our ontology about the nature of reality shapes our epistemology, or how we gain knowledge about the world. If our mindset is centred on physicality, it becomes fixated on the material aspects of reality, which is a manifestation of PSC. Through this approach, we disconnect from an essential innate polarity balancing aspect within our being, which is then reflected out into our research projects. The lessons of quantum mechanics show that reality at a subatomic level expresses both PSC and WSC. The paradigm shift that is urgently needed now is to acknowledge and embrace this reality and not ignore it. Therefore, our ontology

should accept that this duality exists in all living things, and especially within us, which can become our transcendental epoché moment. We all need to recognise the WSC of our being and explore where it leads us.

Conclusion

Quantum physics, arguably one of the most successful and thoroughly tested scientific theories, has yet to give insight into the nature of consciousness. It is suggested here that the answer to Einstein's puzzlement and missing ingredient on the apparent randomness of the quantum world, a question that plagued him all his life, is *mind*. If superposition and its manifestation in quantum fields stem from choice, everything falls into place. Moreover, if some form of proto-consciousness can be seen as inherent when particles enter a wave state, then the essence of wave/particle duality is implicit in all consciousness. Particle consciousness in the sense of brain function is well understood in physicalism.

Unfortunately, many other elements are ignored or denied by focusing solely on this material aspect of consciousness. In its waveform, consciousness is non-local and can exist independently of embodied states. Understanding its nature best explains the many anomalous psychic and mystical human states, such as psi function, NDEs, and transpersonal experiences. It is further argued that consciousness, as perceived in panpsychism, is the ubiquitous and fundamental state of the Universe.

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