Pekka Rechardt[1]

The Near-Death Experience, an Instance of Higher-Dimensional Phenomenal Consciousness?

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

Abstract: *Phenomenal consciousness has no satisfactory explanation in the strict natural scientific physicalist framework. This may be an indication of consciousness not being a causal outcome of neurophysics at all. If this is the case, there would be no grounds for postulating that the collapse of neurophysical structures at death would dissolve consciousness and its constituent elements. If consciousness does not disappear when neurophysical functions terminate, the near-death experience could be an indication of the continuation of consciousness after the collapse of brain functions. This would be in line with the proposal that higher spatio-temporal dimensionality is involved in the emergence and maintenance of phenomenal consciousness, even after death.*

1. Introduction

1.1. Introduction to this paper

The near-death experience (NDE) consists of a manifold of experiences that people experiencing life-threatening circumstances, or even being medically diagnosed as clinically dead for a while, but then recovered, have experienced during the crisis. The NDE is a universal phenomenon

Correspondence:
Email: nevert@elisanet.fi

[1] Independent researher, Finland.

Journal of Consciousness Studies, **33**, No. 9–10, 2026, pp. 111–38
DOI: 10.53765/20512201.33.9.111

whose main features are known to occur to a large extent similarly in all cultures, notwithstanding the beliefs and attitudes of the person who undergoes the experience, though cultural background can affect interpretations of the experience (Blackmore, 1991). These experiences include out-of-body experiences of consciousness leaving the body and monitoring it from above (OBE), entering a tunnel and encountering an immersive light, encounters with dead relatives, seeing excerpts from your life history flash before you, and meetings with a supreme being who mediates love and mercy. The emotional contents of these experiences are often ones of relief, happiness and love, and less frequently, on the other extreme, scenes of suffering and experiences of hell. Being phenomena that emerge at the borderline between life and death, these experiences happen at the ontologically crucial frontier for consciousness.

The core question that eventually arises is to what extent the NDE can be seen as a creation or consequence of neurophysical events in the brain. The NDE, being a phenomenon that emerges at the borderline between life and death, poses a unique opportunity to explore the relation between neurophysical events and phenomenal consciousness. The dysfunctional, paralysed, and inactive neurophysical state the brain is often in at the time of an NDE poses a particularly big challenge for understanding how the coherent and meaningful scenes and experiences during an NDE can emerge during a life-threatening crisis.

The NDE is a controversial issue. The dual-aspect view suggests that the NDE is a phenomenon that has both spiritual and physical aspects, which are not mutually exclusive (Greyson, 2021). The extreme views that focus more on the ontological primacy of either of these aspects are the spiritual view, according to which the NDE is an indication of what happens to the 'soul' after death (Ring, Elsasser and Myss, 2024), or the physicalist view, according to which the NDE is a phenomenon that is exclusively tied to biophysically functioning human beings, and can be explained on a purely neurophysical basis (Romand and Ehret, 2023).

1.2. About this paper

The following assumptions underlie the present work:

(1) Phenomenal consciousness can be experienced only in the first-person perspective.
(2) Consciousness is not reducible to its neurophysical correlates.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

(3) The constituent elements of phenomenal consciousness are found in an NDE.
(4) The higher-dimensional framework, as well as the necessary and sufficient conditions for the emergence of human experiences, are the same in all states and instances of phenomenal consciousness.

In this paper, the concept of higher-dimensionality of phenomenal consciousness is suggested to apply to all aspects and states of consciousness, including the NDE, and to provide the conceptual and theoretical background against which the NDE is illuminated to make it comprehensible in a coherent and consistent ontological framework.

The term 'spatio-temporal integration' is used in this work to describe both the physical and the phenomenal aspect of higher-dimensional integration (Sections 4 and 5), whereas 'binding' refers solely to the neurophysical aspect.

The aim of this article is not to give a comprehensive presentation of the contents and features of NDEs, but to specify the constituent elements and building blocks common to all states and instances of consciousness, including the NDE. Emergence of these common elements — the Now, qualia, and spatio-temporal integration — is a fundamental feature of NDEs. The esoteric and supernatural aspects of the experience could not emerge if these basic elements were not there as elementary building blocks for the experience. The aim is to explore what the emergence of these basic elements of consciousness during the dysfunctional and impaired states of the brain at the time of an NDE reveals about the ontological relation between consciousness and neurophysics.

The article proceeds as follows: Section 2 deals with the physicalist approach to NDEs and presents empirical evidence that contradicts physicalist claims of the generation of NDEs. Section 3 is about the elementary problems of physicalist explanations of phenomenal consciousness. Section 4 presents an overview of the Transcendence Principle of Detection (Rechardt, 2023), and introduces the concept of the higher-dimensionality of phenomenal consciousness in technical terms. Section 5 is about the unexplainability of the basic elements of phenomenal consciousness — the Now, spatio-temporal integration, and qualia — in the physicalist framework. Higher-dimensionality is suggested to provide the ontological framework for the unexplained aspects of phenomenal consciousness and NDEs. Section 6 deals with the relation between neurophysical and phenomenal items in terms of location and presents the concept of 'bilocality' as an appropriate term

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

to describe this relation. Section 7 presents a scenario derived from the Transcendence Principle of Detection, which deals with the ontological relation between the higher-dimensional perspective and lower-dimensional objects. This scenario is applied to the relation between the domain of human experience and collapsing neurophysical structures. Section 8 presents basic questions, issues, and suggestions related to NDEs. Section 9 presents concluding remarks.

2. Neurophysics and the Emergence of NDEs

2.1. The neurophysical paradigm

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

The phenomenal spatio-temporal frame for experiences during an NDE is experienced as real, and the state of mind is experienced as one of being fully awake and aware of a meaningful and coherent, reality-like, spatially and temporally extended psychological context which is clearly remembered and can be expressed by linguistic means. Whatever the experienced phenomenal spatio-temporal frame for the contents of an NDE is in physical terms, the experience itself is an indisputable implementation of phenomenal consciousness. It seems uncontroversial that the necessary and sufficient conditions for the emergence of human phenomenal consciousness are properly fulfilled at the time of an NDE, and that the mechanism that displays coherent phenomenal events and episodes to be experienced works properly.

Though phenomenal consciousness and human first-person experiences lack exhaustive and credible (neuro)physical explanations (Revonsuo, 2015), it is a commonly entertained paradigm that human experiences go ‘hand in hand’ (correlate) with neurophysical events, whatever the state of mind is at the time of an experience — normal everyday or an altered state of consciousness (Revonsuo, Kallio and Sikka, 2009). According to the neurophysical paradigm, numerous specific brain functions are seen as necessary for phenomenal consciousness, including the contents, qualities, and structures of experience during an NDE (Blackmore, 1991; Romand and Ehret, 2023). If one is committed to the neurophysical paradigm as a general principle, it is eventually seen to apply to all states and instances of phenomenal consciousness, whether reality-oriented everyday or altered states of consciousness, which include e.g. dreams, hallucinations, and the NDE.

2.2. The neurophysical approach to NDEs

Chalmers (1995) divided the problem of consciousness into the easy and the hard problems. The easy problems consist of recognizing and naming the relevant neural correlates of distinct contents and features of consciousness. The hard problem is the problem of how consciousness arises in the first place, and how its phenomenal first-person contents could be created by events at the neurophysical level.

A general observation is that in studies of phenomenal consciousness and the NDE within the neurophysical paradigm, the contents of experience and states of mind are thought to systematically correlate with similarly recurring patterns of neurophysical activity. This approach clearly operates within the easy problems of consciousness.

Romand and Ehret (2023) presented an approach 'via brain functions modified by e.g. drugs, anaesthesia, epileptic seizures, electric stimulation, and modifications of the supply of blood gases to the brain' (p. 9). The goal of this approach is the reproduction of NDE themes 'together with an approach-specific measure of related brain activation or activation changes' (*ibid*., p. 6). Romand and Ehret conclude that 'Approaches in controlled medical and/or experimental settings have been successful to generate perceptual experiences that mimic NDEs' (*ibid*., p. 9).

The fundamental problem of this approach is that it doesn't concern actual NDEs, but neural events and conditions that are found to induce experiences that mimic features of NDEs in controlled conditions in persons who are not in the state of an NDE. From the empirical point of view, proposals within this approach look more like hypothetical suggestions. Examples of this approach are, for instance, (1) 'Changes in activation of the temporal lobe were found when persons had mystical or religious experiences' (*ibid.*, p. 7); (2) 'Themes referring to visual phenomena (seeing a bright light, a dark tunnel, etc.) may depend on altered activity in the occipital cortex, where the primary visual areas are located' (*ibid*., p. 10); (3) 'The experience of seeing excerpts from your life flash before you is not really as mysterious as it first seems… stimulation of cells in the temporal lobe of the brain can produce instant experiences that seem like the reliving of memories' (Blackmore, 1991); (4) '…many features and themes of NDEs including OBEs can be found in reports of persons after electrical stimulation of limbic brain regions' (Romand and Ehret, 2023, p. 7).

Within this approach, recognizing the possible neurophysical correlates of an NDE and its contents is seen as sufficient for understanding

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

the nature of the phenomenon and for locating the esoteric and 'supernatural' features of the experience, at least partly, to a physically explainable part of reality. However, the NDE is a wider phenomenon. In addition to the esoteric and 'supernatural' aspects of the experience, one can name an array of common 'everyday' aspects of first-person experience which are properly displayed during NDEs. Such basic common elements of any human phenomenal experience are most notably the Now, spatio-temporal integration, and qualia. The emergence of these common elements and basic building blocks of human experience during NDEs is not widely discussed. Studies of the NDE are mainly concentrated on the esoteric and 'supernatural' aspects of the experience. This raises the undiscussed question of the spectrum of brain states that might support the necessary and sufficient neurophysical conditions for both the 'supernatural' and common 'everyday' aspects of NDEs.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

2.3. States of the brain and the emergence of NDEs after cardiac arrest

The following presentation is given by Romand and Ehret (2023), and is based on data gathered of human patients suffering cardiac arrest, which is the best studied instance of the emergence of NDEs. The relevant distinction in relation to NDEs is the distinction between clinical death caused by e.g. cardiac arrest, and brain death, which occurs 4–6 minutes after cardiac arrest (*ibid.*, p. 4) and cessation of blood flow to the brain. Brain death marks the ultimate point of no return, after which no resuscitation effort can be successful.

The phase of high activity of neurons, i.e. electrical surges in the gamma range (>30 Hz), beginning about 5 min after cardiac arrest, is suggested to be the neural basis for an NDE (*ibid.*, p. 5). However, it is appropriate to note that these surges are not suggested to explain NDEs in the sense of providing an answer to the hard problem of consciousness (Chalmers, 1995), the problem of how conscious experiences could arise from (neuro)physics, but instead to serve as a possible neural correlate that supports the emergence of conscious experiences during NDEs. It is also appropriate to note that from the empirical point of view, there is the possibility that these electrical surges, described in detail in the next paragraph, are not associated with any conscious experience (see also Mashour *et al.*, 2024, p. 1228).

> With a latency of up to 4–5 min, a phase of activity of chained neurons followed spreading toward neighbouring neurons throughout the brain

> for about 10 min (spreading depolarization). The onset of spreading depolarization marked the start of toxic processes to the neurons, which however, could still be reversed by adequate resuscitation procedures. Finally, there was a transition from spreading depolarization to a negative ultraslow potential signalling the dying and death of neurons. (Romand and Ehret, 2023, p. 5)

'Without medical intervention, brain death occurs 4 to 6 min after clinical death. After about 5 min, substantial injury of the brain cells may begin' (*ibid*., p. 4). 'There is a time window of roughly 5 min of progression toward irreversible damage ending with brain death' (*ibid*., p. 4). 'If early enough rescued from brain death (during the phase of high activity before the brain dies, authors' clarification), the human subjects might have reported subjective experiences equivalent to NDEs caused by the highly active brain' (*ibid*., p. 5).

Different sources give slightly different time frames for how things develop after cardiac arrest. Brouhard (2025) suggests that 'If CPR (resuscitation) is delayed more than three minutes, global cerebral ischemia, the lack of blood flow to the entire brain, can lead to brain injury that gets progressively worse'. 'By nine minutes of delay, severe and permanent brain damage is likely. After 10 minutes, the chances of survival are low' (*ibid.*). However, the timeline is basically similar to that presented by Romand and Ehret (2023), whose presentation includes the following temporal coincidences:

(1) The onset of the phase of high activity in the gamma range (4–5 min. after cardiac arrest) coincides with the start of toxic processes in the brain (about 5 min. after cardiac arrest).
(2) The start of toxic processes (about 5 min. after cardiac arrest) coincides with the beginning of irreversible injury of the brain cells (about 5 min. after cardiac arrest).
(3) The onset of high brain activity in the gamma range (4–5 min. after cardiac arrest) coincides with the beginning of irreversible injury of the brain cells (about 5 min. after cardiac arrest).

The conclusion is that if the phase of high activity that marks the beginning of damaging toxic processes generates an NDE (*ibid*., p. 5), at least some NDErs should show signs of brain damage. Symptoms of brain injury are, for instance, memory issues, cognitive challenges, difficulties in finding words or understanding complex conversations, mood swings, fatigue, headaches, changes in sleep patterns, and changes in senses (Swindell, 2024). However, no mention of NDErs showing symptoms of brain injury can be found in the literature. If no

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

symptoms of brain damage occur, this indicates that NDEs emerge before the onset of electrical surges and the related toxic processes that lead to brain injury. Determining whether NDErs show signs of brain injury is essential for determining the timing of NDEs.

2.4. NDE and the isoelectric state of the brain

Angeli-Faez, Greyson and Van Lommel (2025) provide evidence that NDEs occur in the state that precedes gamma surges, when the brain is in a suppressed isoelectric state, and the EEG displays a flat line due to no electric activity. This state occurs before the brain enters the phase of high (gamma) activity close to eventual brain death. According to Angeli-Faez *et al.*, the electrical alpha (8–13 Hz) and beta (13–30 Hz) oscillations critical for consciousness (*ibid*., p. 4) disappear within 6.5 seconds after cardiac arrest, and overall cortical electrical activity is lost within 10–30 seconds (*ibid*., p.5). These indications display the clinical signs of unconsciousness. The essential observation is that no irreversible damage to the brain evolves during this suppressed or inactive phase, during which resuscitation can still be fully successful in the sense of no visible indications of brain injury having developed.

If consciousness arises from brain activity, as is widely assumed, it seems that conscious experiences (i.e. NDEs) should not occur during this suppressed or isoelectric phase since the brain structures and functions thought to be critical for consciousness are inactive or severely impaired during this phase (*ibid.*, pp. 4–5). Specifying the phase of the dying process when NDEs occur is crucial for specifying the neurophysical conditions that temporally relate to the phenomenon. The apparent temporal correlation of NDEs with isoelectric states of the brain suggests that the emergence of experiences (NDEs) in the end-of-life state is disconnected from detectable and confirmable electrical events at the neurophysical substrate (*ibid.*). This challenges our views of the ontology and nature of the NDE, and phenomenal consciousness more generally. Namely, if the sufficient conditions for the emergence of phenomenal consciousness are properly fulfilled when the brain is in an inactive isoelectric state, this may be an empirical indication of phenomenal consciousness not being generated by neurophysical events at all.

If no electrical brain activity can be detected during an isoelectric state, it is unavoidable that the suggested neural correlates of an NDE are in an inactive state as well. This provides empirical evidence that contradicts physicalist views of NDEs, which propose that conscious

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

experiences during NDEs are generated by neurophysics and the functioning of the relevant neural correlates. The obvious lack of a neurophysical basis for explaining conscious experiences during an isoelectric state can be seen as a strong empirical indication of the ontological independence of consciousness in relation to the neurophysical substrate, and the physical realm more generally. In light of this outlook, it may be that efforts to explain consciousness in a classical physical framework have been a mission impossible from the very beginning (see Revonsuo, 2015).

3. Basic Problems of Physicalist Explanations of Consciousness

3.1. The problem of location

When we focus on the most elementary issues related to efforts to explain the NDE and phenomenal consciousness in a classical neurophysical framework, we see that an explanatory strategy confined to finding the possible neurophysical correlates of experience and to classical interpretations of neurophysics confronts unresolvable problems.

'So, are NDEs in or out of the body? I should say neither, for neither experiences nor selves have any location' (Blackmore, 1991). Here Blackmore, a prominent advocate of the neurophysical paradigm, equates the arrangement during an NDE to the idea that experiences in general occupy no physically verifiable locations in ordinary 3D space (*ibid.*; McGinn, 1995). First-person phenomenal experiences cannot be shown to emerge at verifiable locations of the neurophysical events that correlate with them, nor at verifiable locations outside the brain. As with any state of phenomenal consciousness, the fundamental question arises: where do the intense and clear experiences during an NDE occur? The personnel working at an emergency unit, taking care of a patient who undergoes a life-threatening crisis, can have no sense or idea of where to look for indications of a possible NDE and its contents. Brain event registration may reveal the neurophysical states that temporally coincide with the experience, but the NDE itself and its contents are entirely outside the reach of natural scientific third-person observation.

Defining the location of an event or the locations of the parties involved in a causal relation is an elementary requirement for accounting for them in the classical physicalist framework. In this

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

regard, it is noteworthy that Blackmore, a supporter of the neurophysical paradigm, advocates a view according to which consciousness and its contents cannot be assigned locations in 3D space. It is also noteworthy that the more recent neurophysically oriented studies on the NDE, referred to in this article, are entirely silent on the issue of the location of NDEs.

On the issue of the location of consciousness, and the NDE with it, the non-locational view converges with the higher-dimensional view of consciousness (see Smythies, 2012; Rechardt, 2023). The picture of phenomenal consciousness as a structure that cannot be located or outlined in 3D space is in line with the higher-dimensional view. According to both the physicalist view of Blackmore and the higher-dimensional view, the spatial framework for phenomenal experiences, even during an NDE, has no verifiable or detectable counterpart in physical 3D space, whether inside or outside the brain. However, the physicalist and higher-dimensional views differ starkly in their interpretations of the arrangement. Whereas the (neuro)physical view assigns consciousness and experiences no locations whatever (Blackmore, 1991; see also Dennett and Kinsbourne, 1992), the higher-dimensional view assigns phenomenal consciousness and first-person experiences explicitly a distinct higher-dimensional location and ontological framework (Broad, 1923; Smythies, 2012; Rechardt, 2023).

3.2. The problem of spatial extension of neurophysical correlates

Human first-person experiences contain simultaneous and integrated experiences of a multiplicity of contents and an array of sensory modes. One can walk on a sunny beach contemplating philosophical issues while enjoying the beautiful scene and warm weather (Chalmers, 1995; Dainton, 2003). This integrated, holistic multiplicity of coherent contents and impressions is constituted at distributed neuroanatomical locations of the brain, which are simultaneously involved in generating the array of human experiences at any moment.

However, it is a prevailing paradigm in the scenario of classical physics that physical entities and events involved in causal relations are described as point-like idealizations that occupy exact locations in 3D space. An exemplar of this is the point mass concept used in physical descriptions, according to which the mass of a physical object is thought to be contracted to a point-like location whose volumetric extension in 3D is zero. This contradicts the widespread distribution and

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

connectivity of the neurophysical structures that correlate with the contents of human experiences, as in the example above.

In an ideal classical physical presentation, both parties of a causal relation, the source and the target of causal efficacy, should be described as occupying exact point-like locations in 3D space. If the relation of neurophysical and phenomenal events was seen as a classical physical relation, both the source (events at the neurophysical substrate) and the target (the phenomenal domain of human first-person experience) should be ideally presented as point-like events and entities in 3D space. In the example above, this would mean that both the distributed events at the neurophysical substrate and the corresponding multimodal first-person experiences should be presented as occupying point-like exact locations in physical 3D space.

However, it is obvious that the simultaneous causal efficacy of distributed neurophysical events displayed in first-person experience cannot be described as originating from a point-like source. The distributed structures and widespread connectivity of the relevant compounds and modules are hallmarks of the neurophysical functions that correlate with the contents of first-person experience (Dennett, 1991; Fingelkurts, Fingelkurts and Neves, 2010; Changeux *et al.*, 2020).

At this point, the easy problems of consciousness (Chalmers, 1995), naming and outlining the possible neural causes and correlates of experience, even during the NDE, turn out to be rather hard ones when the causal arrangements and spatial structures involved are taken into account. To the extent that experiences during an NDE, which occupy no verifiable locations in 3D space, are thought to be neurophysically constituted by volumetric neurophysical compounds and modules formed by the brain (Dennett, 1991; Fingerlkurts, Fingelkurts and Neves, 2010; Blackmore, 1991), the arrangement eludes efforts to tackle the issue in the classical physical framework.

4. Introducing the Concept of Higher-Dimensionality of Consciousness in Technical Terms: An Overview of the Transcendence Principle of Detection

In a paper by Rechardt (2023), a Transcendence Principle of Detection (TPD) was introduced. Since the basic proposal of the current paper, the higher-dimensionality of consciousness, is based on and strongly supported by the TPD, an overview of the TPD is in place at this point.

The TPD is presented as a proposed solution to the binding problem, the problem of how distributed neurophysical events can be experi-

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

enced simultaneously, as being simultaneously involved in constituting phenomenal experiences (Section 3.2 above), though there is no known classical (neuro)physical mechanism by which these distributed neurophysical events could somehow 'know' of each other at the time of being simultaneously experienced.

The spatio-temporal simultaneity displayed in binding in relation to distributed locations of the brain, coined the three-dimensional plane of simultaneity, is due to the limited velocity of the highest physically possible velocity (speed of light), a forbidden structure in the scenario of relativity physics. However, velocities detected in the human nervous system are much lower. Signal propagation velocities in the human nervous system vary from 0.5 metres/second to 120 metres/second, depending on the function displayed (Krassioukov, 2002). Velocities in this range cause inevitable and detectable delays in communications between neurophysical locations. When the delays in the transmission of neural signals through the neural pathways of the brain were measured, a 45-millisecond delay was found in a 4-year-old person, and a 20-millisecond delay in a 38-year-old person when a signal travelled from the frontal to parietal regions of the brain (Lindquist, 2023). These delays are noteworthy since long-range connectivity of distant areas of the brain is seen as necessary for the neurophysical functions that constitute the contents of consciousness (Changeux *et al.*, 2020, Section 3.2).

Contrary to these delays, human first-person experience is somehow simultaneously involved in events at multiple three-dimensionally distributed neurophysical locations, thus displaying the structure of a three-dimensional plane of simultaneity in relation to distributed brain events. As an exemplar, sensory modalities (vision, hearing, touch, taste, and smell), constituted at distributed neuroanatomical sensory centres, are experienced simultaneously though there is no known neurophysical mechanism by which events at these distributed sensory centres could somehow 'know' of each other at the time of being simultaneously experienced. Human first-person experience displays spatio-temporal integration of distributed brain events, i.e. a simultaneity structure that is not displayed at the neurophysical level.

The core idea of the TPD is that to gain an integrating simultaneous view of distributed locations of an n-dimensionally extended physical structure, the observation must be made in the direction of the transcendent n+1 dimension. In the classical scenario, which implies limited velocities of physical information transfer, the integrating simultaneous detection of distributed points of an n-dimensional

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

physical structure cannot be attained by classically implemented connections and interactions between locations on the n-plane itself. The observation must be made from 'above' the structure, at a locus of the transcendent n+1 dimension, where information from spatially distributed sources hits the locus of observation simultaneously from different angles, thus creating a simultaneous experience of n-dimensionally distributed items in the phenomenal field.

The core of the TPD is presented by what I term the 'Ladder of Dimensions'. The principle is simple and intuitively self-evident: detecting distributed points of an n-dimensional physical structure from 'above', at a location of an n+1 dimension, creates n-dimensionally spread information in the phenomenal field. To detect a one-dimensionally extended physical structure and its distributed points simultaneously, as displaying the structure of a one-dimensional line-like phenomenal plane of simultaneity, the observation must be made at a locus of the transcendent second spatial dimension; to detect a two-dimensionally extended physical structure and its distributed points simultaneously, as displaying the structure of a two-dimensional plane-like phenomenal plane of simultaneity, the observation must be made at a locus of the transcendent third spatial dimension. When we proceed one dimension further guided by straightforward extrapolation, we have: to detect a three-dimensionally extended physical structure and its distributed points simultaneously, as displaying the structure of a three-dimensional volumetric phenomenal plane of simultaneity, the observation must be made at a locus of the transcendent fourth spatial dimension. When applied to the problem of binding, the TPD states that to experience three-dimensionally distributed neurophysical locations simultaneously, as an all encompassing volumetric structure and as constituting the corresponding experience of volumetrically distributed phenomenal items in the phenomenal field, the detection must take place at a locus of the transcendent fourth spatial dimension (Rechardt, 2023).

An essential feature of human first-person experience is that in whatever spatial direction a spatial separation between distributed phenomenal items is experienced in the phenomenal field, no delays are experienced or detected. We have two spaces with two distinct spatio-temporal structures:

(1) The physical 3D space where physically implemented information exchange between separate (neuro)physical locations happens with temporal delays.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

(2) The higher-dimensional phenomenal space of human experience, where distributed phenomenal items are experienced simultaneously despite the spatial separations displayed.

Human experience somehow overcomes the temporal delays caused by spatial separation in the classical physical domain, and thus displays spatio-temporal integration, the integrative spatio-temporal structure of a three-dimensional plane of simultaneity both on the physical (binding) and the phenomenal level.

No empirically confirmable counterparts for higher-dimensional phenomenal space and items in it can be outlined or detected in 'ordinary' 3D space, whether inside or outside the brain. According to the TPD, higher-dimensionality provides the spatial and ontological framework for consciousness and spatio-temporal integration.

As a technical presentation of binding, the TPD is proposed to provide a strong indication of the higher-dimensional nature of consciousness, and the NDE with it. According to the TPD, the integrative mechanism involved in binding requires higher-dimensionality to work. For a detailed presentation of the TPD, see Rechardt (2023).

5. NDEs and the Basic Elements of Phenomenal Consciousness

When we focus on the most elementary aspects of phenomenal consciousness and first-person experiences, we confront classical issues that have posed unresolvable problems for consciousness studies and the philosophy of mind.

5.1. Elementary aspects

If there are elementary functions, contents, and structures that are always involved in the emergence of phenomenal consciousness, these elements can be seen as vital to consciousness, whatever its state, a reality-oriented everyday experience or an altered state of consciousness. Are there elements and spatio-temporal structures that appear during NDEs, as well as in normal everyday life and in other altered states of consciousness, e.g. dreams and hallucinations? Indeed, such elementary bedrock functions and structures can be recognized. These include at least the following:

(1) The phenomenal Now, experiencing presence at any real, dreamed, illusory, or hallucinated context.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

(2) Spatio-temporal integration (binding), distributed neurophysical and phenomenal items are experienced simultaneously, as displaying the structure of a three-dimensional plane of simultaneity despite the spatial separations displayed on both the physical and the phenomenal level.
(3) Array of qualia, experiencing qualitative properties of the structures, objects, and items one is experiencing.

5.2. Discussion

Broad (1923) and Chalmers (2003) have posed the problem of the place of consciousness (mind) in nature. When a closer look is taken at the issue, one realizes that the grand problem of consciousness can be subdivided into at least three distinct subproblems, all of which have posed unresolved issues for physicalism. One can talk about the distinct problems of the Now, spatio-temporal integration (binding), and qualia, and their place in the natural scientific framework.

They are either entirely strange to classical physics — the Now and qualia — or in conflict with classical physical principles — the structure of a three-dimensional plane of simultaneity displayed in binding and its three-dimensionally distributed volumetric phenomenal outcome. No credible proposals for the neural correlates or mechanisms that would constitute or generate these elementary aspects of human experience are available (see Revonsuo, 2015). Despite this, it is clear that an exhaustive and comprehensive neurophysical explanation of phenomenal consciousness should necessarily include a presentation of how these basic elements of phenomenal consciousness could be causal outcomes of physics, or neurophysics in particular, even at the time of an NDE. In this regard, a heavy, if not insuperable, challenge to neurophysical explanations arises when one acknowledges that these constituent elementary aspects of consciousness are properly implemented and fully functional during the dysfunctional and inactive isoelectric state of the brain during an NDE (Angeli-Faez, Greyson and Van Lommel, 2025).

5.3. NDE and the Now

In the following presentation, the Now and spatio-temporal integration (binding) are seen as inseparable spatio-temporal entities whose presentations go hand in hand and considerably overlap. They are proposed to be intertwined aspects of higher-dimensional spatio-temporal integration, which is displayed both in the relation between phenomenal

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

consciousness and the neurophysical substrate, and in the spatially and temporally extended first-person experience of distributed phenomenal events and items (Rechardt, 2023).

As with any state of phenomenal consciousness, the phenomenal Now, as an experienced spatially extended present context where one experiences oneself to be located, is an elementary and necessary framework for the phenomenal contents of an NDE. The Now can be seen as one core aspect of the hard problem of phenomenal consciousness (Chalmers, 1995), the problem of how phenomenal consciousness and its basic elements could be explained in the framework of physics, or neurophysics in particular.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

5.4. Classical physics and the Now

Einstein's theory of relativity supports the Minkowskian picture of a block universe where every event has its own (individual) spatial and temporal coordinates that define its world point, i.e. location in space and time (Minkowski, 1976). In the presentation of the block universe, every point in space and time (space-time), whether in the future, present, or in the past, is equally real. In this presentation, there is no privileged moment, the Now, which is the necessary temporal framework for a human to experience the flow of time and the temporal perspectives to the past, present, and future.

When his friend Michele Besso died, Einstein wrote: 'Now he has again preceded me a little in parting from this strange world. This has no importance. For people like us who believe in physics, the separation between past, present and future has only the importance of an admittedly tenacious illusion' (Einstein's letter to Michele Besso's son and sister, 1955). Rudolf Carnap wrote:

> Einstein said the problem of the Now worried him seriously. He explained that the experience of the Now means something special for man, something essentially different from the past and the future, but that this important difference does not and cannot occur within physics. That this experience cannot be grasped by science seemed to him a matter of painful but inevitable resignation. So he concluded 'that there is something essential about the Now which is just outside the realm of science.' (Carnap, 1963, pp. 37–8)

To tackle the problem of the Now, Broad (1923) postulated a physically undetectable and indescribable additional independent time-dimension and a corresponding physically undetectable and indescribable quasi-space that moves along the time axis of the tenseless physical block

universe, to account for the human experience of the Now and the flow of time.

Smythies (2014) posed the problem of how neural correlates of consciousness are related to the phenomenal experiences they induce. In line with Broad's views, he drew a picture where the Now is an outcome of an ontologically independent observer, located in a space of its own (phenomenal space), moving along the time axis of the tenseless four-dimensional block universe, to account for the human experience of the Now and flow of time. In this picture, the contents of phenomenal space (Broad's quasi-space), experienced in the evolving Now, are causally related, but not identical with brain events (*ibid.*).

In line with Einstein's views, the presentations of Broad and Smythies do not serve as suggestions of how the Now and the corresponding quasi-space (phenomenal space) could emerge from the physical substrate as causal consequences of physical or neurophysical events. Since the days of Einstein, no decisive breakthroughs regarding the nature and ontology of the phenomenal Now have been achieved (see Muller, 2016).

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

5.5. The integrating human perspective

Minkowski stated that 'nobody has ever detected a time except at a location, or a location except at a time' (Minkowski, 1976). This intuitively self-evident statement, taken from everyday experience, forms the basis for an all-encompassing view of physical reality, according to which both space and time are indispensable aspects of actual physical and neurophysical events and entities. In this scenario, a physical event necessarily occupies a location in both space and time, and in line with this, the neurophysical events and processes that are related to and constitute phenomenal experiences — i.e. neural correlates of contents of consciousness — are both spatial and temporal by their nature. Since neurophysical structures and processes that constitute phenomenal experiences are volumetrically distributed in the brain, binding, experiencing three-dimensionally distributed neurophysical events simultaneously in the phenomenal field, is implied in the presentation of the moving Now and the corresponding phenomenal quasi-space (Broad, 1923; Smythies, 2014).

In the Minkowskian scenario which is supported by relativity physics, time is tied to physical items, each existing in its own individual space-time frame when undergoing its individual spatial and temporal evolution. No common time frame shared by separate physical items is

recognized or allowed in this presentation (Minkowski, 1976). However, in structural contradiction to this, the Now of the observer provides a common integrating spatio-temporal framework for spatio-temporal integration (binding), monitoring spatially and temporally evolving distributed neurophysical events and processes simultaneously, as integrated functional wholes (modules) that correlate with human experiences (Smythies, 2014; Rechardt, 2023).

5.5.1. NDE and binding

Whether binding occurs during NDEs is an open question due to the empirical findings that NDEs seem to emerge during isoelectric states of the brain (Angeli-Faez, Greyson and Van Lommel, 2025). Namely, if there is no neurophysical activity at that state, there obviously are no neurophysical events to be integrated into experience either. However, it is appropriate to acknowledge, at least in principle, the possibility that distributed neurophysical events, after all, correlate with the contents of an NDE at some point of the dying process. A possible scenario is that the phase of end-of-life electrical surges starts off while an NDE is going on, thereby having an impact on the contents of the experience at that point. To the extent that this occurs, the function of binding must be assumed to work properly during an NDE.

To the extent that experiences are neurophysically constituted during an NDE and binding subsequently occurs, higher-dimensional phenomenal space is proposed to provide the integrative properties (degrees of freedom) for this function, in addition to being the spatio-temporal and ontological framework for the experience.

5.5.2. The Now, binding, and higher-dimensionality

The picturee Broad and Smythies present of the moving Now implies a higher-dimensional locus of observation (quasi-space, phenomenal space) wherefrom the three-dimensional neurophysical reality at any moment and its evolution in time is monitored (Smythies, 2014). The picture Broad and Smythies deliver of higher-dimensional time, the Now, assigns, as an implication, higher-dimensionality to the corresponding phenomenal quasi-space as well. To use an expression in line with Minkowski's concept of the union of space and time (Minkowski, 1976), spatial and temporal evolutions of distributed and distinct neurophysical processes (world lines), as well as spatial and temporal evolutions of distributed phenomenal items and events, are experienced as integrated functional wholes in the (integrating) higher-dimensional spatio-temporal framework of human first-person experience. In this

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

scenario, the Now, binding, and spatio-temporal integration are intertwined aspects of higher-dimensional space and higher-dimensional time (see Broad, 1923; Smythies, 2014; Rechardt, 2023).

5.6. NDE and qualia

Some NDEs have been reported to contain strange and esoteric sensory qualities, e.g. colours never seen or sounds never heard, or extrasensory perception (ESP), being aware of things beyond what your senses can usually perceive (see the NDE Content Scale, Martial *et al.*, 2020). However, a well-based suggestion is that, despite these deviations within sensory modalities and extensions of sensory experiences, the basic sensory modalities familiar from everyday life, i.e. sight, hearing, smell, taste, and touch, are experienced and displayed properly during NDEs (*ibid.*). Like the other constituent elements of consciousness, qualitative properties, whether everyday or strange and esoteric, seem to be displayed perfectly during an NDE, despite the often dysfunctional and paralysed isoelectric state of the brain during the experience (Angeli-Faez, Greyson and Van Lommel, 2025) This raises the question of whether qualia during NDEs are neurophysically constituted by brain events at all. If qualia emerge when the brain and the proposed neural correlates are in an inactive or severely impaired isoelectric state (*ibid.*), this raises questions of the ontological origin of qualia, and phenomenal consciousness more generally.

Qualia have been an unresolved problem for brain and consciousness studies. As in everyday experience, qualia during an NDE, whether ordinary or strange and esoteric, seem beyond physical explanation (Chalmers, 1995) and the reach of natural scientific third-person observation (McGinn, 1995). A widely shared view is that there is an unbridged explanatory gap between experienced qualia and events at the neurophysical substrate that correlate with qualia (Chalmers, 1995; Tye, 2021). No known presentation of the neurophysical structures and events that correlate with qualia helps one to understand what qualia could physically be, how they could be included in a physical description, or how they could emerge from events at the neurophysical substrate (Chalmers, 1995; Tye, 2021). No single variable or a combination of neurophysical variables can be shown to be identical to qualia. Parameters of neurophysical variables cannot be adjusted in such a way that the emergence of qualia would somehow be a consistent and expected outcome of the arrangement.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

The spatio-temporal frame for qualitative contents of experience — the Now and phenomenal space — cannot be outlined or observed in physical 3D space, whether inside or outside the brain. Qualia are displayed exclusively in the phenomenal field, the higher-dimensional phenomenal framework for human first-person experience (Broad, 1923; Smythies, 2014; Rechardt, 2023).

5.6.1. Qualia, proposed higher-dimensionality, and the ontology of the NDE

Leibniz's Law states that for two entities to be identical, they must exhibit identical properties. Such property identity cannot be detected when the properties of neurophysical and phenomenal events and entities are compared (Smythies, 2012). To put it straightforwardly, the detected physical properties of neurophysical events and entities fail to display any verifiable similarities with the qualitative properties (qualia) of events and entities experienced in the phenomenal domain of first-person experience (Chalmers, 2003; Smythies 2012). What we confront here is a prospect for ontological 'independence' of the phenomenal domain in relation to the (neuro)physical substrate.

To gain insight into the issue, it is proposed that the gaze of enquiry should focus on the structures, properties, and degrees of freedom of the phenomenal (hyper)space, the higher-dimensional spatio-temporal canvas for human first-person experience, where the constituent elements of phenomenal consciousness — the Now, spatio-temporal integration, and qualia — are displayed and experienced, even at the time of an NDE.

5.7. Explanatory gaps

In the classical (neuro)physical framework, phenomenal consciousness and its elementary aspects and functions are as unexplainable at the time of an NDE as in any state and instance of phenomenal consciousness. (1) Serious proposals for the neural correlates of the Now cannot be found. (2) No convincing explanations of spatio-temporal integration or binding have been given in a classical physical framework. (3) There is a wide explanatory gap between experienced qualia and events at the neurophysical substrate. The essential observation, which poses a hard dilemma for neurophysical explanations, is that the sufficient conditions for the emergence and proper functioning of these constituent elements of consciousness are fully satisfied during NDEs, when the

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

brain is in an impaired and inactive isoelectric state (Angeli-Faez, Greyson and Van Lommel, 2025).

6. Problems of Location and Mechanism

6.1. General discussion

If one takes the neurophysical paradigm and the basic empirical facts of consciousness studies as a framework for enquiry, it looks like the relation between the neurophysical and phenomenal domains is the same during an NDE as in any everyday context. While the neural states during an NDE can ideally be monitored as occurring at locations of the brain, neither the location nor the contents of the experience can be observed as occupying locations in 3D space, whether inside or outside the brain (Blackmore, 1991; McGinn, 1995).

Experiencing reality- and awake-like states in a non-local and undetectable spatial framework during an NDE is a strong indication of the existence of the spatial domain of first-person experience and related mechanisms of information transfer that are not identical to observable classical physical structures and mechanisms in 3D. The target of neurophysical causation, the phenomenal field and the reality- and awake-like mental state during an NDE, is in no way indicated in the information that has been gathered in emergency units during crisis situations or clinical death.

The basic question that eventually arises is to what extent the spatio-temporal domain for experience, and its contents during an NDE, can be defined as causal consequences of neurophysical events. Postulating such a causal relation is problematic if the spatial domain where the causal impacts of neurophysical events occur has no verifiable location (Blackmore, 1991), and cannot thereby be outlined or observed in three-dimensional space (Section 3.1).

6.2. Bilocality

The phenomenal domain of first-person experience cannot be detected as a part of physical space. There is no empirical arrangement where neurophysical and phenomenal events and items are detected to occupy the same location. The term ‘bilocality’ describes this state of affairs. Bilocality can be seen as a pervasive feature displayed in the relation between physical and phenomenal spaces. Relevant here is McGinn’s comment on the differing neurophysical and phenomenal criteria for locations of pain (McGinn, 1995). Another well-known exemplar of

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

bilocality appears when specific locations of the brain are stimulated. The phenomenal events, structures, and qualities (e.g. colours) one experiences as a consequence of brain stimulation cannot be detected in 3D space, neither outside nor inside the brain. The neurophysical and the corresponding phenomenal items and events cannot be assigned the same location.

- Third-person brain research locates the neural correlates constituting phenomenal items and structures to the space of the brain and gives no empirically backed clue on the location, or even the existence, of the corresponding phenomenal structures.
- First-person experience locates phenomenal items and structures to the phenomenal field, outside the brain and the boundaries of the relevant sense-organs, without giving any clue of the location, or even the existence, of the corresponding neural correlates.

The empirical bilocal arrangement displayed in assigning locations to neurophysical and phenomenal items supports the basic proposal of the TPD that they are phenomena of different dimensions. Neurophysical and phenomenal structures cannot be assigned the same location in a coordinate system where a representation of the 3D brain is located, and which represents as an additional coordinate direction the dimension necessary for binding and the emergence of phenomenal items and structures (Rechardt, 2023, p. 127).

6.3. Bilocality and the unaffected displaying mechanism

An essential aspect of the NDE is that the framework and the related mechanisms that display phenomenal contents of an NDE and construct them as coherent and consistent scenes to be experienced do not seem to be distorted by the dysfunctional or paralysed isoelectric state of the brain at the time of an NDE (Angeli-Faez, Greyson and Van Lommel, 2025; see also Van Lommel, 2013, p. 35). In the scenario presented in this paper, the unaffected framework and the related mechanisms involved in the formation of phenomenal contents during an NDE are integrative structures and mechanisms enabled by higher-dimensional space.

In this picture, by definition, events confined exclusively to a lower-dimensional domain do not physically reach higher-dimensional items and structures. In this picture, events confined to the lower-dimensional

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

domain cannot cause corresponding or identical physical events in the higher-dimensional domain, though the higher-dimensional domain serves as a locus for monitoring events at the lower-dimensional domain. The dissolution and destruction of a painting on a two-dimensional canvas does not affect the perspective of one who monitors the event. Transmission of information of events to the higher-dimensional domain does not transmit the lower-dimensional physical events themselves. The structures and perspectives of the higher-dimensional domain would remain intact even if the lower-dimensional structure disappears altogether. Even in this extreme case, the higher-dimensional domain and its perspectives would remain unaffected and intact, and proceed without receiving any more information from the no-longer-existent lower-dimensional structure.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

7. The Ladder of Dimensions Revisited

The core idea of the TPD is that to gain an all-encompassing integrating view of an n-dimensional physical structure, the observation must be made at a locus of the transcendent n+1-dimension (see Section 4, the Ladder of Dimensions). The following presentation is an application of this principle and deals with the dissolution and disappearance of a lower-dimensional structure from the phenomenal field.

If a 0-dimensional point in a one-dimensional world disappears, this doesn't make the locus of observation in 1D, wherefrom it is detected as a point, disappear unless the spatial domain that includes the observation point is somehow created and maintained by events at the 0-dimensional point.

If a one-dimensional line in a two-dimensional world disappears, this doesn't make the locus of observation in 2D wherefrom it is detected as a one-dimensional line disappear, unless the spatial domain that includes the locus of observation in 2D is somehow created and maintained by events at the one-dimensional line.

If a two-dimensional plane in a three-dimensional world disappears, this doesn't make the locus of observation in 3D wherefrom it is detected as a two-dimensional plane disappear, unless the spatial domain that includes the locus of observation in 3D is somehow created and maintained by events at the two-dimensional plane.

If a three-dimensional volume in a four-dimensional world disappears, this doesn't make the locus of observation in 4D wherefrom it is detected as a volumetric structure disappear, unless the spatial domain that includes the locus of observation in 4D is somehow created

and maintained by events at the three-dimensional volumetric structure. What happens in this scenario is that when a lower-dimensional structure is dissolved and disappears from the higher-dimensional phenomenal field, this doesn't affect the higher-dimensional phenomenal field and its perspectives. Only the contents are affected unless the perspective is created and maintained by events at the lower-dimensional domain.

When this scenario is applied to the relation between the brain and phenomenal consciousness, it is concluded that if the volumetric neurophysical structure of the brain is dissolved and disappears as a functional structure, this doesn't make the higher-dimensional locus of experience-detection and the related phenomenal perspective wherefrom it is monitored disappear, unless, as extreme exclusive physicalism would claim, the higher-dimensional domain for human experience and the related perspectives are somehow created and maintained by events at the three-dimensional neurophysical substrate.

In the proposed scenario, this statement is at the heart of the hard problem. Known laws and principles of 3D neurophysics have not been shown to generate and maintain the elementary functions and structures of phenomenal consciousness — the Now, spatio-temporal integration, and qualia. If the higher-dimensional domain where these basic elements of consciousness are displayed and experienced is not created and maintained by events at the 3D neurophysical substrate, it is not well grounded to postulate that the dissolution of neurophysical structures would dissolve the higher-dimensional domain of phenomenal consciousness.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

8. Issues and Questions Related to the NDE

(1) It is widely accepted that neurophysical events and structures, as detected in detailed brain imaging, don't display properties that would assign them a determining causal role in the emergence of phenomenal consciousness and its contents (Chalmers, 2003; Revonsuo, 2015).

(2) The relation between neurophysics and phenomenal experience is one of correlation, not causation. Correlation does not imply a causally determining role for neurophysics in the emergence of consciousness, even in the extreme case where neurophysical structures are dissolved. If there is such a causally determining role for neurophysics, it is not recognized in the image of a relation of correlation.

(3) Is it possible that events at the neurophysical substrate, which have a relation of correlation to the contents of phenomenal consciousness, become causally determining when neurophysical structures collapse? Correlation would turn into causal determination, and after all, events at the neurophysical substrate, collapse of neurophysical functions, would eventually determine the existence or non-existence of phenomenal consciousness.

(4) The traditional picture of physical causation is that the location of both the source and the target of a causal relation can be observed in physical 3D space. If phenomenal consciousness and experience vanish when brain functions cease, this would imply that the collapse of neurophysical brain functions would have causally determining consequences that cannot be verified and whose location cannot be specified.

(5) If it is not possible to read or conclude what is experienced during an NDE from the neurophysical data, this holds even to the extreme case where brain functions cease altogether in death. If the state of the brain is not sufficient for knowing what happens in the phenomenal domain, there is no way to know from a third-person perspective whether some kind of phenomenal experience is preserved when brain functions collapse in death.

(6) A non-reacting state (coma) is not a reliable indication of absence of consciousness (Revonsuo, 2015). Can this principle be applied even to the extreme case of death? The extreme statement would say that the non-reacting state of being dead does not indicate absence of consciousness.

(7) Could it be that the collapse of brain functions just cancels the relation of correlation between experience and neurophysics, whereby the domain of experience would be free to proceed without such a (cor)relation, without any neurophysically mediated sensory data from physical sources, or a relation to the brain, or the physical body?

(8) A naturally rising aspect of the hard problem of consciousness (Chalmers, 1995) is the question of what happens to the phenomenal domain of first-person experience and the array of qualia when brain functions collapse if they cannot be shown to be generated by events at the neurophysical substrate. The (dead) state of the brain is not sufficient for concluding that the domain of phenomenal first-person experience has collapsed as well.

(9) If the spatio-temporal framework for human experience, the Now, is not an outcome or consequence of physics, or neurophysics in

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

particular, the question arises of what happens to the phenomenal spatio-temporal Now when neurophysical structures cease functioning in death. The straightforward conclusion, that the phenomenal Now disappears with the disappearance of functional neurophysical structures, is not well grounded if the phenomenal Now is not an outcome of (neuro)physics in the first place (see Carnap, 1963).

8.1. Afterlife?

Phenomenal experiences during isoelectric states of the brain suggest that consciousness can exist without neurophysical constitution. This empirical consideration supports life after death being a credible option. In this case, collapse of the brain functions would just cancel the correlation between phenomenal experience and neurophysics, whereby the domain of experience would proceed without such a relation, without neurophysically mediated sensory data from physical sources, or a relation to the collapsed brain, or the dead physical body. This is the scenario that van Lommel suggests when he states that 'endless or non-local consciousness, with an apparently unaltered "Self-identity", has always existed and will always exist independently from the body…' (Van Lommel, 2013, p. 39, see also p. 41).

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

9. Conclusion

The core proposal of this study is that none of the basic arrangements and elements of phenomenal consciousness can be described or explained in the classical physical framework. The neurophysical view leads to spatial and spatio-temporal arrangements that are not compatible with basic principles of causation in the classical physical framework. Furthermore, the elementary structures of phenomenal consciousness, the spatio-temporal Now, spatio-temporal integration, and qualia, are structures that cannot be described as being generated by classical physics, or neurophysics in particular. This is highlighted by the emergence of these constituent elements of consciousness during NDEs when the brain is in a paralysed isoelectric state.

The case being that neurophysics cannot be shown to generate consciousness and its elementary structures, it is not well grounded to state that the dissolution and collapse of neurophysical structures in death would dissolve the higher-dimensional structures of phenomenal consciousness. The NDE and its contents may give the experiencer a glimpse of what awaits her or him when the bio- and neurophysical

functions that maintain human life have terminated. In light of the recent empirical findings in scientific NDE research, it looks like we are entering a new era in understanding the core of human existence, phenomenal consciousness and its place in nature.

AI declaration

The author declares that they have not used AI or AI-assisted technologies in any way when writing or working on the article.

References

Angeli-Faez, B., Greyson, B. & Van Lommel, P. (2025) Near-death experience during cardiac arrest and consciousness beyond the brain: A narrative review, *International Review of Psychiatry*, **37** (2), pp. 130–141. doi: 10.1080/09540261.2025.2503729

Blackmore, S. (1991) Near death experiences, in or out of the body, *Sceptical Inquirer*, **16**, pp. 34–35.

Broad, C.D. (1923) *Scientific Thought*, London: Routledge & Kegan Paul.

Brouhard, R. (2025) How long does brain activity last after cardiac arrest?, *VeryWell Health*, [Online], https://www.verywellhealth.com/brain-activity-after-cardiac-arrest-129842.

Carnap, R. (1963) Intellectual autobiography, in Schilpp, P.A. (ed.) *The Philosophy of Rudolf Carnap*, pp. 3–84, La Salle, IL: Open Court Publishing. doi: 10.2307/2183229

Chalmers, D.J. (1995) Facing up to the problem of consciousness, *Journal of Consciousness Studies*, **2** (3), pp. 200–219.

Chalmers, D.J. (2003) Consciousness and its place in nature, in Stich, S. & Warfield, T. (eds.) *Blackwell Guide to Philosophy of Mind*, Oxford: Blackwell.

Changeux, J.-P., Dehaene, S., Mashour, G.A. & Roelfsema, P. (2020) Conscious processing and the global neuronal workspace hypothesis, *Neuron*, **105** (5), pp. 776–798. doi: 10.1016/j.neuron.2020.01.026

Dainton, B. (2003) Precis: Stream of Consciousness, *Psyche*, **10** (1), [Online], http://psyche.cs.monash.edu.au/.

Dennett, D.C. (1991) *Consciousness Explained*, Boston, MA: Little; Brown and Co.

Dennett, D. & Kinsbourne, M. (1992) Time and the observer: The where and when of consciousness in the brain, *Behavioral and Brain Sciences*, **15**, pp. 183–247.

Einstein, A. (1955) Letter to Michele Besso's son and sister, [Online], https://www.christies.com/stories/einstein-letters-to-Michele-Besso-3ecca787d9be4463a8695269259d6c00.

Fingelkuts, A.A., Fingelkurts, A.A. & Neves, C.F.H. (2010) Natural world physical, brain operational, and mind phenomenal space-time, *Physics of Life Reviews*, **7**, pp. 195–249. doi: 10.1016/j.plrev.2010.04.001

Greyson, B. (2021) *After: A Doctor Explores What Near-Death Experiences Reveal about Life and Beyond*, New York: St Martin's Essentials.

Krassioukov, A.V. (2002) Peripheral nervous system, in Ramachandran, V.S. (ed.) *Encyclopedia of the Human Brain*, Cambridge, MA: Academic Press. doi: 10.1016/B0-12-227210-2/00276-4

Copyright (c) Imprint Academic
For personal use only -- not for reproduction

Lindquist, S.B. (2023) Understanding the speed of brain communication, *News Network*, [Online], https://newsnetwork.mayolink.org [27 March 2025].

Martial, C., Simon, J., Puttaert, N., Gosseries, O., Charland-Verville, V., Nyssen, A., Greyson, B., Laureys, S. & Cassol, H. (2020) The Near-Death Experience Content (NDE-C) scale: Development and psychometric validation, *Consciousness and Cognition*, **86**, art. 103049. doi: 10.1016/j.concog.2020.103049

Mashour, G.A., Lee, U., Pal, D. & Li, D. (2024) Consciousness and the dying brain, *Anesthesiology 2024*, **140**, pp. 1221–1231.

McGinn, C (1995) Consciousness and space, in Metzinger, T. (ed.) *Conscious Experience*, Exeter: Imprint Academic.

Minkowski, H. (1976) The union of space and time, in Capek, M. (ed.) *The Concepts of Space and Time*, Boston Studies in the Philosophy of Science, vol. 22, Dortrecht: Springer. doi: 10.1007/978-94-010-1727-5_56

Muller, R. (2016) *Now, the Physics of Time*, New York: W.W. Norton & Co.

Rechardt, P (2023) The phenomenal hyperspace: A study of the dimensional and spatio-temporal structures of phenomenal space and binding, *Journal of Consciousness Studies*, **30** (3–4), pp. 106–131.

Revonsuo, A. (2015) Hard to see the problem?, *Journal of Consciousness Studies*, **22** (3–4), pp. 52–67.

Revonsuo, A., Kallio, S. & Sikka, P. (2009) What is an altered state of consciousness?, *Philosophical Psychology*, **22** (2), pp. 187–204.

Ring, K., Elsasser, E. & Myss, C. (2024) *Lessons from the Light: What Near-Death Experiences Teach Us about Living in the Here and Now*, San Francisco, CA: New Page Books.

Romand, R. & Ehret, G (2023) Neuro-functional modeling of near-death experiences in contexts of altered states of consciousness, *Frontiers in Psychology*, **13**. doi: 10.3389/fpsyg.2022.846159

Smythies, J. (2012) Consciousness and higher dimensions of space, *Journal of Consciousness Studies*, **19** (11–12), pp. 224–232.

Smythies, J. (2014) Many mansions: Special relativity, higher-dimensional space, neuroscience, consciousness and time, *Cosmology*, **18**, pp. 110–118.

Swindell, P. (2024) Understanding brain injury after cardiac arrest, *Sudden Cardiac Arrest UK*, [Online], https://suddencardiacarrestuk.org/2024/07/navigating-the-aftermath-understanding-brain-injury-after-cardiac-arrest/.

Tye, M. (2021) Qualia, in Zalta, E.N. (ed.) *Stanford Encyclopedia of Philosophy (Fall 2021 Edition)*, [Online], https://plato.stanford.edu/archives/fall2021/entries/qualia/.

Van Lommel, P. (2013) Non-local consciousness: A concept based on scientific research on near-death experiences during cardiac arrest, *Journal of Consciousness Studies*, **20** (1–2), pp. 7–48.

Paper received November 2024; revised February 2026.

Copyright (c) Imprint Academic
For personal use only -- not for reproduction