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Towards Resolving the Hard Problem: A Synergistic Network Account of Consciousness

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To resolve the hard problem of consciousness, we propose a systems-level theory of synergistic processes to account for sentience, consciousness, and mind. Subjectivity arises from interactive network processes within and between nature's entangled, relational, and iterative elements. Searches for the physical cause or locus of consciousness and subjectivity are misguided given that consciousness emerges from processes with no single source. To account for the evolution and phenomenology of mind, our synergistic network account of consciousness (SNAC) dispenses with mind–body dualism, it weakens boundaries between the material and the non-material, between the internal and the external, and emphasises synergistic processes and functionalities over outcome. The theory challenges psychology to abandon its cause–effect categorisations and implied mind–body dualism in favour of functional systems-level analyses to better account for relational processes and functions which unfold synergistically within and sustain nature's complex networks of entangled elements.

Keywords: consciousness, systems-level analysis, synergistic emergence

The hard problem of accounting for sentience and subjective experience and resolving questions about their evolutionary origins, their phenomenology, and the sources from which they arise, impacts deeply on psychological science (Chalmers, 1995). This is hindered by lines of systematic enquiry into mind and consciousness that are fraught with controversy and explanatory dead-ends (Montero, 2013; Silberstein, 2001). Our synergistic network model

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of consciousness (SNAC) seeks to account for mind and its relationship with behaviour from premises which break away from conceptual constraints that make accounts of subjective experience a hard problem. The theory's premise is that all elements of complex organisms are relational and dynamically interactive. From early evolutionary beginnings, interactions gave rise to functionalities which actively linked organisms to their surroundings in ways that helped secure survival. With growing organismic complexity, more elements could engage in dynamically interactive processes which by synergy delivered strongly emergent properties and functions that are pervasively present in nature and which differ from those from which they arose. Amongst the many emergent elements are those whose functions pertain to mind, sentience, and consciousness. Subjective experience is a synergistic process phenomenon with functions that are engendered by and sustain interactions. Suspended, so to speak, between these relational elements, sentience and consciousness acquire the fluid and flexible properties that characterise our subjective experience. Crucially, while mind and consciousness are functions which arise from synergistic processes within complex organisms, no aspect of either is an attribute or property of any one of the interacting elements. Searches for a source or root of consciousness are therefore misguided.

In its departure from conventional models which attempt to address the hard problem of consciousness, the advocated theory suggests that the elusiveness of coherent accounts is a consequence of unhelpful constructions of categories in psychology and their presumed linear causative relationships. For instance, the methods and methodologies in common use in psychological investigations endeavour to establish categories (types of cognitions) or classifications (diagnoses) and as such are not attuned to describing process phenomena and functionalities. To encourage psychology to break free from present impasses, we suggest that its enquiries will benefit from shaking off its restricted view of nature which does not fully take account of synergistic processes, iterative interactions, and entanglements within complex organisms (Anderson, 2014). In consequence of its current limitations, psychology faces a replication crisis (Wiggins and Christopherson, 2019) which it shares with other social sciences and with clinical medicine. Baseline presumptions of uniformity and representativeness in samples of study participants are rarely met. Given that the natural order is of repetition co-existing with variation, group means obscure the adaptive value of diversity and the personal significance of idiosyncratic scores. While nature is unceasingly variable, psychology construes variation and variance as unwelcome intervening variables in systematic investigations and clinical trials. Researchers bemoan a lack of clarity in results but a synergistic network perspective points to the value of applauding these findings as being entirely consistent with nature's evolved capacity to combine the recurrent with the unpredictable. A gain for psychology will be an acceptance of the interactive entanglement of all phenomena under

study. The research challenge is not to disentangle elements as in reductionist approaches, but to give accounts of interactions, functionalities, and emergent phenomena associated with synergistic processes. An option in support of these objectives and aims would be for psychology to incorporate systems-level analysis and theory (Noble, 2006). As suggested by this article, to do so offers a prospect of breaking free from constraints that have prevented the formulation of credible accounts about the evolution and phenomenology of sentience, consciousness, and subjective experience.

Breaking Conventional Constructions: Nature as Process

Attempts have been made to bring definitional exactitude to the field of consciousness studies (Beaton, 2009; Pereira and Ricke, 2009) but with little progress toward clarity. Having reviewed and evaluated a list of past attempts to define sentience and consciousness, Reber (2019) cautions against investing time and energy into further attempts to formulate precise definitions of subjective experience. Consistent with this suggestion, our theory takes a folk psychology position about terms referring to mind and consciousness as largely interchangeable, covering the full range from basic forms of sentience to the highest levels of human introspection including the lived experience of subjectivity, awareness, our sense of intent, purpose, agency, fantasy, memory, and dreaming. Attempts to categorise these in the service of imposing order may hold some appeal but such distinctions do not necessarily match the natural order.

If we assume that processes unfolding in complex organisms are dynamically interactive, this is at odds with reductionist presumptions of linear causality. These are part of the reason why the hard problem of consciousness remains. Nagel (2012), in a review of approaches which seek to account for mind, concludes that a materialist reductionist conception of nature is almost certainly false. He suggests why the hard problem persists and infiltrates spheres of psychological science. We suggest that bottlenecks to improved accounts of consciousness endure because of conceptual constraints imposed on matter which do not accord with observations of the natural order. Principally, these distortions originate in Descartes' mind–body dualism which is incorporated in Darwin's theory of evolution and its modern neo-Darwinist perspectives. Such splitting of natural processes and the imposition of boundaries on nature stands in the way of psychology, psychiatry, medicine, and other sciences establishing an evidence base which is resonant with nature's capacity to generate and sustain subjective experiences of mind and consciousness (Block, Carmel, Fleming, Kentridge, Koch and Lamme 2014; Prentner, 2017). In this, the theory accords with recent trends in quantum physics which call for revised definitions of the physical, of causality, and our representations of all that is about us (Barad, 2007). But no discovery has so far identified natural elements which are at the core of mind and subjective experience.

The synergistic network account of consciousness seeks to resolve the hard problem by lifting barriers and impasses that arise from restrictive definitions. It challenges superimposed boundaries and notions of linear causation and suggests that functionalities arising from complex but systematic network interactions should be the focus for future psychological enquiries into mind and consciousness (Silberstein and Chemero, 2015). To counter suggestions that SNAC is but another departure into metaphysics, its account of mind and consciousness is firmly rooted in a systems-level analysis of interactive elements and processes which unfold in complex organisms as well as more generally within the natural order (Noble, 2006).

A Systems Level Account of Synergy and Emergence

Traditional definitions of matter refer to anything of physical substance which occupies space and possesses rest mass, thus conferring the quality of materiality. Our theory asserts that all elements in nature are relational and iteratively interactive. Some of the processes which unfold in these interactions are synergistic and give rise to emergent functionalities. The premise of relationality contrasts with traditional views of matter which emphasise boundaries (body and mind) that are superimposed on the natural order. The physicalist perspective so established requires a linear causal model of change and its associated presumption of preservation of energy. Neither construction is easily reconciled with evidence about systems-level interactions which encompass dynamic interfaces within (intra-action) and between (inter-action) functional elements. An aspect of synergistic interactivity is the potential for an enormously varied number of possible seemingly random or chaotic functions. In practice however, nature delivers a dynamic balance between the structure of the familiarly recurrent in combination with diversity. Exactly how this happens is not known but the processes involved are synergistic and may be studied from the perspective of systems-level analysis and theory.

While network processes involving organic elements and their emergent functions carry a potential of polymorphous diversity, structures such as the human brain that are favoured by nature for survival are secured and continue to develop by similarly complex interactive processes. Process complexity and strongly emergent functions have been features of nature from an early evolutionary stage (Silberstein, 2001). Strong emergence with its associated notion of downward causation is characterised by making a significant impact on ongoing network processes. Examples abound in psychological perspectives on health and illness. Such instances can be found in the adverse influence of functions linked to traumatic memories on survivors' life-course development, in the impact of loneliness on illness recovery, and in prognosis, physical health status and mortality following cancer treatment (Nichter, Norman, Haller, and Pietrzak, 2019;

Smith and Victor, 2019). A process perspective recognises non-linear causality in strongly emergent network interactions which unfold at multiple levels and multiple sites in complex organisms. In developing this argument, Corning presents evidence that synergy and emergence are profusely present in nature and even arise through human interactions (e.g., behaviour) with their surrounding environment (Corning, 2003, 2011, 2014). Processes shaped by downward causation are central to SNAC's account of mind and consciousness.

The Theory

Ample evidence exists to support the theory that organic elements are relational and iterative. Dovetailing with this evidence, nature is revealed as harbouring propensities to generate emergent functions by network interactions rather than by sequences of linear causation (Noble, 2006). Although generally overlooked in psychology so far, natural processes involving relationality, recurrence, and change achieve balances which are retained because they favour survival. This occurs as part of multidirectional dynamic interactions spanning the full range from micro to macroscopic levels which occur between as well as within interfacing entities. It is in these interfaces that sentience, awareness, mind, and subjectivity emerge as functional elements in complex organisms. The suggestion that these arise synergistically from network interactions is key to an account of consciousness. Invoking synergistic processes, emergence and functionality remove the conceptual barriers which have made consciousness the hard problem. Linking synergy and emergence to mind and consciousness bridges the conceptual gaps that plague psychological enquiry. That said, reliance on synergy in an account is to highlight the complexities of unfolding processes. Our theory maintains that progress in understanding these processes can be achieved by using a systems-level network approach. A network perspective allows for the possibility that a functional element can influence the generation of a vast number of emergent elements but the restraints on this are evidenced by structure, repetition, and recurrence in nature.

Although the potential for diversity is massive, the emergent aspect of consciousness is, according to SNAC, a function rather than a fixed and bounded element. The traditional focus on a specific spatiotemporally fixed feature (e.g., outcome) may be conceptually convenient, yet it is nevertheless an imposed construction upon a natural order. Our theory steps away from these conventions of fixed elements and outcomes by inviting examination of synergistic processes, emergence, and functionalities which deliver sentience and mind. Considerations of process in networks offer the prospect that future accounts of consciousness and subjectivity will be more aligned with our experiences of what it is like to be human.

While network process, synergy, and emergence perspectives are at odds with our common construction of nature, they link closely to progressive discussions

about the natural order in biology, chemistry, and quantum physics (distinctiveness, wholes with multiple properties, entanglement). Additional support for the relational perspective comes from the areas of symbiotics and epigenetics. Symbiosis is the process by which changes and developments arise from actively interactive relationships between different species, usually over the longer term. Epigenetics clarifies network processes involved in the flexible progression and changes which unfold between a DNA sequence and its actual expression (Carey, 2011; Guerrero, Margulis, and Berlanga, 2013). The general point here is that contextual influences can promote or inhibit the expression of latent potentials and possibilities, as indicated by the processes which give rise to emergence of functional elements.

To the extent that SNAC implicates network processes in the brain and central nervous system in the emergence of consciousness, the theory is strongly supported by Anderson's (2014) work on the interactive brain. Evidence shows that elements of the brain, from cells to regions to networks, have functional properties which are used and reused in a variety of recurrent and ever-changing ways according to circumstances. These functions confer survival advantage and sustain life through networks of processes from which emerge further functionalities in brain elements in line with influences exerted by social, environmental, neurochemical, and genetic contexts. Recurrent processes establish and sustain functions at one level of organisation which are integral to the generation of other functions unfolding at micro and macro levels of the organism. Silberstein (2016) has taken the implications of this synergistic network perspective a step further by pointing out that the brain functions that Anderson refers to partly arise from and actively engage with influences such as context and environmental niche, which are beyond the individual organism. Consequently, implied boundaries and distinctions between individual and context, and between self and others risk obscuring our view of the natural order and obstruct the development of credible accounts of consciousness and subjectivity. This accords with Silberstein's argument that network interactions, including those which deliver subjective experience, are not fully accounted for by an emphasis upon local brain processing and modularity if this is at the expense of recognising the broad base of cooperation and connectivity in the emergence of functional elements and organic complexity (Corning, 2011).

The term synergy has etymological roots in the notion of working together in process to deliver outcomes that are essentially different from the parts which interact to bring it about (Berthoud, 2013; Reiber and Moore, 2010; Van Cleve and Akçay, 2014). Our theory takes synergy, emergence, and functionality into the realm of psychology, and particularly into studies of mind, consciousness, and subjective experience. While it is generally accepted that emergence of life-sustaining functions requires cell membranes, metabolic processes, and self-replication, the evolutionary status of consciousness has been less clear. Reber (2019) has recently suggested that functions enabling interactivity and

responsivity to circumstance must be present for even the simplest life forms to survive. From these basic interactive, responsive elements have evolved processes that continue to be the basis of sentience and consciousness in all complex organisms. From simple processes, relationality will have brought about more complex interactions leading eventually to awareness, mind, and subjective experience.

Synergy and Emergence in Psychology, Psychiatry, and Medicine

Network analysis, synergy, and emergence have so far made greater inroads in the physical and biological sciences than in the humanities. The perspective offered by a synergy-based theory brings challenging formulations to psychology which bring into question some of the base presumptions of psychological science. These include its domination by positivist perspectives embodied in searches for repetitions and the predictable. Aspirations to emulate the physical sciences are proving problematic, even in controlled laboratory studies. Instead of establishing a body of consistent results, quantitative research engenders findings requiring statistical analysis of variance and consideration of the impact of research participants' individual differences. In consequence, psychology faces a replication crisis (Wiggins and Christopherson, 2019) which it shares with other social sciences and clinical medicine. Baseline presumptions of uniformity in samples of participants are rarely met, even when large groups are studied to average out differences. Group averages are almost guaranteed to differ from the scores of individual participants. Therapy outcome trials recognise this by setting strict inclusion criteria for who can take part in a study. While this is well intended, such selection carries risks of samples not being representative of treatment-seeking populations. These examples suggest that psychology has placed itself at odds with the natural order. For instance, by construing variation and variance as unwelcome intervening variables researchers bemoan a lack of clarity in results and problems with identifying causes. An alternative would be to applaud these findings as being entirely consistent with nature's evolved capacity to combine the recurrent with the unpredictable. The gain for psychology would be an acceptance of the interactive entanglement of all functions and phenomena in the present and through evolutionary time. The challenge is not to disentangle elements but to give accounts of their interactions and the synergistic processes which unfold with their emergent functionalities.

Clinical and counselling psychology are caught in debate with psychiatry and medicine about the complexities of human distress, its course and development over time and how to intervene for relief. All these fields are trapped in confusions arising from an explicit or implicit body–mind dualism. A synergistic network account of consciousness obviates this bifurcation of the material and the psychological by emphasising non-linear causation in and between entangled elements. This perspective promotes problem formulations of distress, illness, well-being,

and health as functionalities to be accounted for as emergent elements with roots in synergistic processes. The generative power of synergy and emergence are already recognised within some sciences and modern therapeutic interventions. For instance, relational network perspectives have informed effective treatments to reduce human hypertension, kill cancer cells, and eliminate infectious inflammations (Shafer, 2017). The field of health psychology harbours consistent evidence of a strong relationship between patients' subjective experiences on the course and development of illnesses (Ene, 2013), treatment requirements over time (Graham–Wisener, Hanna, Collins, and Demster, 2019) and recovery following treatments for cancer (Llewellyn, McGurk, and Weinman, 2007). These are starting points for more coherent roadmaps to achieving sustained health and well-being.

Accounting for Synergy and Emergence

We are often humbled and intrigued by a natural order which delivers emergent outcomes like mind and consciousness by processes we do not understand. Inferring magic or deferring to the supernatural in the face of such complexity is no basis for a rigorous psychological science. A viable alternative, articulated by Noble (2006) for a similar conundrum in biology and physiology, is systems-level theory and analysis. By adopting a similar focus on nature's propensities for interactivity, non-linear causation, emergence, and functionality, psychology could take steps towards a closer alignment with nature.

For Noble, systems-level analysis involves a shift beyond that of describing interactivities and their outcomes, to a focus on the functions and repercussions of these outcomes. Inter- and intra-activity between elements carry a potential of enormous variety to the point of disorder and chaos. But this is not the way of nature where unfolding processes and functional elements combine order based on structure and repetitive characteristics with variation and diversity. Being neither rigid nor inflexible, an unstable equilibrium of variation and order prevails which confers a diversity of possible responses which are essential for adjustment and survival to ever changing circumstances. Giving a better account of how recurrences and variations are achieved is what systems-level analysis aims to do. It is for this reason that systems-level network analysis commends itself to psychology for the study of synergistic processes which underpin emergence of functions like sentience, mind, consciousness, and other high-level human adaptations.

A psychological account of fear and panic, for example, analysed as a systems -level phenomenon, explores the function of evoked feelings and behaviours within the complex interactive fields of changeable psychological states and individual circumstance. The new approach incorporates an evolutionary perspective on the neurophysiological roots of these reactions as revealed by subjective

behavioural, cognitive, and emotional functionalities. These adaptive functions can be considered alongside processes from which emerge the flexibilities of emotional and behavioural response that are associated with increased awareness and subjective experience. In evolutionary terms, responses move from the reflexive to the sentient and then more considered behaviours which are possible because of accumulated life experience, learning, and memory. The fact that evoked fear reactions may be distressing, cause embarrassment, and inconvenience does not preclude them from being adaptive or having survival value, as when the function of fear is to alert a person to threats and dangers. Pursuing this line of systems-level analysis when exploring the functions of physiological reactions and behavioural responses leads us to a perspective that fear responses persist because they continue to confer survival advantages. This is consistent with the lived experience of fear and associated emotions in situations which evoke avoidant behaviours that remove an actual threat. Here, the functionality of interactivities between mind, feelings, and behaviours is uncontroversial. These emergent functional elements are often linked to synergistic processes involving biology-based propensities established over evolutionary time (e.g., fear of heights, seeking attachment) or additionally to an organism's accumulated lifetime experiences (e.g., safety or neglect during formative life stages). In our subjective experience, memory and mind are intimately entangled, and the latter presents opportunities to reflect upon and develop insights about the nature of unfolding interactions and functionalities. From the point of view of the phenomenology of mind and memory, interactive processes can, when functional for survival, engender subjective experiences which transcend distinctions between past and present. Consequently, an account of feelings of fear or distress evoked in the here and now, without immediately obvious precipitants, should take into account mind's capacity to transcend time and make links between current circumstance and the circumstances in which similar experiences were evoked in the past. To establish a conscious link between present and past makes explicit what mind already knew: the functionality of its emitted signal and the survival advantages so served. One of the processes used in psychological therapy to reduce evoked fears involves linking current reactions to earlier formative experiences. These therapeutic approaches recognise mind's capacity to emit warning signals about aspects of the here and now which merge a person's past with the present in ways that can be conducive to resolving problems which compromise current levels of functioning.

Emotions are therefore functional signals about current adjustment and the extent to which current circumstance and behaviour support the evolutionary imperative of fitness for natural selection. At times, the significance of the signal is immediately apparent as is the action which will effect adaptive change. But on occasions, the signal may be coded and calls for deciphering. As with the example of fear, precipitants of evoked emotions are not always immediately apparent and

remedial behavioural steps can remain clouded in obscurity. For these to become apparent, the interactive processes of self-reflection and interactions with others may help decipher the signals which prompt an adaptive behavioural response. For clinical and counselling psychology to adopt this network-process approach with its focus on functionality would mark a radical departure from current preoccupations with symptom elimination, control of unwelcome feelings, diagnosis, and differential psychopathologies.

Currently, psychology is at the start-line of discovering insights gained by adopting systems-level analysis. If developed further, psychological accounts of fear or other emotions will make their adaptive functions explicit. SNAC recognises that feelings or other recurrent psychological phenomena do not emerge by chance or without function. Systems-level analysis opens psychological science to the possibility of focusing on processes which unfold as part of complex relational entanglements and their emergent functionalities. To paraphrase what Noble said of biology in 2006, contemporary psychology looks towards a mature theory of systems-level interactions even if we only have a small glimmering of how it might be possible to develop a comprehensive account of multicausal interactions which give rise to mind, consciousness, and behaviour. In an example of this approach, Dale, Kello, and Schoenemann (2016) have argued that a systems-level analysis is a step towards giving a credible account of the complexities of language. In their view, neurons deliver emergent functions which become integrated in a vast array of relational sensory, motor, memory, dreams and other information modalities, all of which feature in our subjective experience of language. Systems-level analysis, with its focus on function in complex organisms, may eventually reveal a common base for all aspects of lived experience from sentience to subjectivity. To date, biology and linguistics have a head-start on psychology which will benefit from adopting their amended conceptualisations of the natural order along with associated innovations in methods and methodologies for future psychological research and practice.

Darwin, the Relationality of Matter, and Sense Organ Development

Systems-level analysis presents a perspective on evolution complementary to that of Darwin and Neo-Darwinists. These conventional approaches have causal linearity at their core. Whereas Darwin's (1859) evolutionary theory positions mutation and natural selection through competitive advantage as central to developments of physical characteristics, more recent evidence indicates that this is an incomplete account of the full range of evolutionary processes (Corning, 2014; Nagel, 2012). As posited by network analysis, traditional perspectives on evolution have largely overlooked relational and iterative interactions as drivers in evolution. Systems-level approaches deliver different and distinct network accounts of evolution based on synergies, emergence, and functionalities in place

of random mutation. A synergistic network account of consciousness draws on evidence that relationality is a fundamental property of nature and is necessary for survival. A recognition of the pervasive interactivities of entangled elements becomes a premise upon which the evolutionary significance of cooperation, collaboration, and mutual gain can be further explored (Corning, 2014).

Schwille (2018) summarises evidence concerning a coherent account of the way basic molecules of life are formed from their inorganic precursors. From an early stage, viability of survival has been associated with interactivity between elements and their surroundings. As network processes, emergence and functionality come into play; reductionist accounts are incomplete (Noble, 2006). It is not surprising that the physical sciences have not reached consensus on a linear model of the origins of life. According to systems-level analysis, the course of evolutionary history leading to organic complexity, mind, and consciousness, involved networks of multidirectional relational interactions and processes that conferred survival advantage.

Interactivity is supported by genetic analyses of complex organisms which reveal pathways of relational development with roots in early evolutionary history. This is abundantly evident in embryology, human foetus development, and progressive physical changes after birth. Foetal similarities exist between different animal species, especially in the very early stages of gestation. Indications are that embryonic developments occur from a common or near common base. Later phased developments arise symbiotically from network processes in complex organisms (Torday and Miller, 2016) which also fend off maladaptive diversity and variation (Manger, 2005).

Evolution of species-specific sense organs demonstrates that relational interactivity between elements and survival advantages arise from connectivity with their contexts or surroundings. Emergent functions arising from synergistic systems-level processes have facilitated the evolution of species-specific organs and speciation. This accords with a developmental view of early evolutionary history in which sentience and consciousness are emergent elements with functions that facilitated responsivity to circumstance and thereby conferred survival advantage. Photosensitivity would have been an early functionality followed by more complex interactivities as observed in camouflage or animal mimicry. None of these requires conscious awareness. Our theory suggests that with growing organic complexity, early reflexive adjustments would no longer have been enough to confer survival advantage. It would have been at this point that the already evolved relationality of elements would, by synergy and emergence, have given rise to increasingly diverse interactions required for survival. In line with Reber's (2019) advocacy of a cellular basis of consciousness, SNAC offers a viable account of how interactions with surroundings evolved into sentience and eventually consciousness.

The suggestion arises that interactivity with surroundings is as functional for survival as are processes which give rise to cell structure, metabolism, and reproducibility. For instance, single cell organisms are sustained by processes requiring permeable cell membranes. This implies interactivity and connectivity (Davis, 2002) and further synergistic processes would have led to the emergence of functionalities such as self-organisation (Glancy, Stone, and Wilson, 2016; Skopec, 2015), self-replication (Pookollit, 2013), and energy efficiency (Cooper and Purvis, 2010). Genetics confirms this aspect of organic elements in its distinction between an organism's genetic code and the range of its varied expressions as illustrated by epigenetics (Lerner and Fisher, 2013). Many possible functions are yet to be seen, just as many others have become extinct.

Related Theories

A focus on relationality and iteration challenges many conventions but also draws on a rich heritage. Given the complexities which arise from synergistic processes within and between entangled elements, Noble's (2006) advocacy of systems-level theory and analysis is a step towards discovering levels of interactive order and structure in complex organisms without resorting to reductionism and presumptions of linear causation. As shown by Pookollit (2013), from its most basic sub-molecular levels to complex organisms, nature is fundamentally relational and characterised by multilevel processes of interaction with propensities which favour order and structure. At its core, SNAC is emergentist (Ganeri, 2011; Lewtas, 2017; Ruse, 2012) and questions presumptions that linear causality is always operative in nature. Consistent with this, our theory is neutral monist in its rejection of dualism and physical determinism (Nunn, 2013). Corning (2014) asserts that ordered progressive evolutionary developments can be accounted for by interactive combinations of chance, necessity, and sustained structures which combine repetitions with some degree of variation. Findings from the field of epigenetics confirm how recurrence co-exists with variation, and is in no way an impediment to the generation of functions which support survival (Babbit, Haygood, Nielsen and Wray, 2017; Waldron, 2015). With this evidence in mind, perspectives which favour synergistic processes are not readily reconciled with all teleological accounts of evolution by intelligent design.

The same applies to panpsychism, which posits that consciousness is a property which is intrinsic to all matter (Dolbeault, 2017). Debates between panpsychism and pan-experientialism are largely conducted on the grounds of establishing whether entities such as electrons or photons possess consciousness and whether atoms, molecules, or cells are imbued with qualities of experience (qualia), possess feeling, have intention etc. A synergistic network account does not view consciousness in any form as an intrinsic property of all constituent elements of the world in which we live. Unlike anything suggested by panpsychism,

sentience and notions of qualia are not properties of any element but functionalities which emerge from interactive processes in complex organisms.

Conclusion

The theory advocated in this paper seeks to establish a base from which the hard problem might be addressed in new ways. It suggests that the perceived qualities of this problem arise in direct consequence of presumptions about matter which no longer accord with what is known about the natural order. SNAC challenges past conceptual and practical constraints by drawing on evidence of a natural order of elements entangled in network interactions. By synergistic processes these deliver strongly emergent functionalities including awareness and consciousness. Sentience and mind are therefore not properties of a particular element that is yet to be discovered. Aspects of relationality such as responsivity to circumstance and cooperation are driving forces in evolution and day-to-day adaptations for survival. This accords with and supports the position taken by some eminent scientists, as for example in The Third Way initiative, in their resolve to widen the debate about evolution.[1]

The challenges to convention and orthodoxy posed by a synergistic network account of consciousness reach to the core of our personal, professional, and communal relationships as well as our views about our place in the natural order. The gain is that more coherent accounts of the evolution and phenomenology of mind and consciousness are possible, arising out of a conceptual shift which brings into question searches for a reductionist base for sentience and consciousness. Future progress in this direction may bridge the gaps between ongoing controversies about mind and point a way forward to improved accounts of all aspects of consciousness. Subjective awareness is continually generated while we are only starting to have a glimmer of understanding of how this is achieved. While conceptual shifts advocated here go some way towards disassembling the hard problem of consciousness and suggest a viable account of sentience, awareness, mind and subjective experience, they also have far wider implications. For instance, psychology could recognise the current ontological and epistemic constraints which narrow its horizons. It would mean abandoning adherence to mind–body dualism and accepting a natural order of blurred boundaries, non-linear causation, synergy, emergence, and functionality. In the future, an outcome would be made sense of as a transient phenomenon to be given its place in an entangled network of interacting elements. This will deliver a natural order with flexible variations which sustain the balances of the recurrently structured dynamism of lived experience in the service of survival in ever changing circumstances.

[1] www.thethirdwayofevolution.com

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