Conceptual Cognition and Awakening: Insights From Non-dual Śaivism and Neuroscience

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ABSTRACT: This article explores parallels between the theory of conceptual cognition in a Sanskrit philosophical work on non-dual philosophy, the *Īśvarapratyabhijñākārikā* ('Stanzas on the Recognition of Śiva'), and brain processes that filter out a broader perceptual awareness. This philosophy discusses the power of conceptualization as an essential component of the creative process in which all-pervasive consciousness identifies itself with a particular individual/mind-body complex. We show parallels between this framework and research identifying brain networks active in the process of filtering a vast array of perceptual inputs into a narrowly defined individual psycho-somatic subjectivity. This is followed by a consideration of practices designed to reduce the filtering function of conceptuality in the text under consideration and in neuro-scientific studies on meditation and other experiences that include expanded and lucid states of awareness.

In this article[1] we discuss a seminal text on non-dual Śaiva philosophy from medieval Kashmir, the *Īśvarapratyabhijñākārikā* ('Stanzas on the Recognition of Śiva') of Utpaladeva (*ca*. 925-975). The insights of this text will be considered in light of contemporary neuroscientific findings on the default mode network and neural correlates that may correspond to some of the epistemologies, models of consciousness, and practices forwarded by this tradition.

The *Īśvarapratyabhijñākārikā* (ĪPK) philosophically sets forth a non-dual framework for reality and closely examines the role of mind, language, and conceptuality in creating our experience of reality.[2] The text also offers an account of the nature of ignorance, which in this tradition takes the form of non-recognition of our true nature as expanded awareness. It proposes an antidote to this ignorance through practical methods that liberate one from a limited scope of identity to an all-embracing self-awareness. After exploring chapter four of this text, which offers a summation of the tradition's key principles, we will consider how its explanatory model for how consciousnss differentiates into individual minds compares with recent studies in neuroscience on the filtering of perceptual inputs. This will create an essential framework for understanding the tradition's methodology for reducing the filter function of the conceptual mind.

Part I of the article will clarify Utpaladeva's views on reality, the self, and the nature of creation, the process whereby consciousness conceals its innate all-pervasive nature, with a focus on the role of concepts in this process. Part II will explore these questions through the lens of modern neuroscience and examines the

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presence of filters within the brain, which substantially limit our perception of the nature of the universe.[3] Part III of the paper will discuss the awareness practices of the non-dual Śaivas designed to refine and expand cognition beyond dichotomizing concepts and part IV will introduce neuroscience research showing modulation of brain networks that may be associated with this shift in perception. In this way, Parts I and II consider models of consciousness and how it is filtered and Parts III and IV build upon that foundation with a practical consideration of the techniques and corresponding mechanisms by which those filters can be reduced.

Part I. Utpaladeva's Thesis

In tenth-century Kashmir, the philosopher and theologian Utpaladeva composed a systematic treatise intended to demonstrate the validity of the axioms at the heart of his scriptural tradition. He did so by formulating or "translating" these scriptural views on reality into rationally based argumentation designed to be understood by a broader community of non-initiates.[4] The outcome of this effort is his magnum opus, the *Īśvarapratyabhijñākārikā* (ĪPK) or 'Stanzas on the Recognition of Śiva'. This text effectively became the sourcebook for the systematic philosophy of non-dual Śaivism called "*pratyabhijñā*," a term that designates the liberating "recognition" of the identity between the individual self and universal consciousness.

The ĪPK is well suited to interdisciplinary research, a context in which scriptural claims and the vested authority of charismatic teachers carry little weight. Indeed, the persuasive power of this text's analytic arguments was originally designed for people outside the religion of Śaivism to critically assess its views, and if convinced, potentially adopt them. Chapter Four of the ĪPK, entitled the "Summation of Essential Principles," will be the central focus of our discussion of this knowledge system.[5]

Utpaladeva begins the chapter with a concise statement of his core thesis: there is one innate Self that comprises the essential nature of all sentient and insentient beings, and this all-pervasive consciousness is termed "Śiva".[6] In the tantric philosophical environment of Utpaladeva's non-dual view, Śiva is not a form of God that stands apart from the world and the self. Rather, Śiva refers to the creative consciousness that is the dynamic source and substance of this universe. In this tradition, consciousness freely differentiates into every aspect of manifold reality through its inherent capacity of self-representation (*vimarśa*). This consciousness is innate to all beings, but conceals itself in the course of manifesting the world. This process involves freely assuming the limitations of space-time and the structure of cause and effect. In this way, consciousness unfurls a universe populated by countless subjects and environments of experience, which all ultimately shine within and as that consciousness.

Universal consciousness is taught in this tradition as the unified agency within all impulses (*icchā*), cognitions (*jñāna*), and actions (*kriyā*). Moreover, it leaves traces of its all-pervasive nature in the movement of intention, thought, and action in individual beings. This is because there is a continuum between the powers of

universal consciousness and the agency of limited individuals. Given that all beings are endowed with the powers of intention, cognition, and action, and ultimately these powers are undivided and infinite, the very impulse of desire or the flow of thought can serve as a "token" or "sign" that the individual is infinite consciousness. In this way, embodied life itself becomes a medium for recognition (*pratyabhijñā*). This liberating insight, which unfolds beyond the dichotomizing structure of concepts, experientially reveals that individuality is actually just one manifestation of that timeless and all-pervasive consciousness, Śiva, who is in all ways and at all times the intrinsic identity of all beings.

After presenting this core thesis, Utpaladeva immediately turns to the challenging implications of such a radical view of selfhood. This challenge is that if all beings are in fact universal consciousness whose nature is an utterly free and independent power of infinite scope, why don't they experience themselves in such terms? In response, Utpaladeva presents an account of ignorance, which explains how the infinite agency of consciousness becomes exclusively identified with a psycho-somatic individual self:[7]

> The [layers of the self-sense], such as the mind, [breath, body, and individuality,] are included in the domain of objectivity created [by Śiva]. Śiva leads these [objective layers of the Self] into the awareness of being a limited subject in the form of a perceiver.

In the process of creating a world of diverse beings, the layered instantiations of that emanation, including individual awareness, mind, breath, and body are shifted from being objective to subjective realities. In other words, consciousness freely identifies[8] with those realities, which effectively contracts or delimits the scope of identity to a particular individual domain of experience. In this way, it moves from being all-pervasive to an explosion of separate points of consciousness, each an individual knower, seeing themselves and other beings as objects.

What sustains this separate or excluded sense of individuality based on an identification with a particular mind-body complex, Utpaladeva argues, is simply "non-recognition."[9] This is a state of ignorance about the fact that our true identity is the unified consciousness underlying, threading through, and actively becoming everything. Utpaladeva delineates the structure and anatomy of this ignorance.[10] He offers a model that explains the deeply ingrained conviction that beings are discrete individuals, surrounded by a universe that is "out there." This dualistic perception is examined in this way:[11]

> Individual knowers make universals visible as objects of inner awareness according to a linguistic designation such as a specific pot, silver, white, cloth, or cart through the power of conceptualization. Those knowers, conditioned by the experience of those objects, make themselves into objects with notions such as "I am thin" or "I am happy or sad." This very appearance of the difference between subject and object of cognition, which is linguistic, is the binding power of conditioned existence in the state of a limited individual.

This compact description invites elaboration. The key step in the process of all-pervasive consciousness delineating itself as a particularized and delimited locus of

awareness is the "power of conceptualization" (*vikalpanaśakti*). This involves assigning linguistic designations to phenomena, which effectively dichotomizes awareness. It does this by dividing the field of experience through conceptually carving out[12] objects such as a "pot," the stock example given in Indian philosophy.

Importantly, conceptual cognition, which picks out and designates objects, also corresponds to the crystallization of a limited identity. This limited identity is forged through a conceptually constructed image or narrative[13] of self, which gives rise to an identification as a particular psycho-somatic individual. The totality of the pattern of conditioned existence (*saṃsāra*), characterized by the duality between a limited subject and object, obscures a more intimate and expansive access to reality. This shining forth of duality is marked as a linguistic process of conceptualization, and this is emblematic of the way in which Utpaladeva presents duality "as the defining feature of a concept."[14] This dualistic plane of perception is grounded in conceptuality, because the concept (*vikalpa*) of our own identity or any object in the field of our awareness actively carves out[15] a particular reality through a process of excluding all that is different. This act of an all-pervasive consciousness excluding its own vastness in order to give rise to a particular experience of an object can be understood as a process of "filtering."

Utpaladeva summarizes the role of conceptuality as structuring duality within and through the underlying unity of consciousness in the following two verses, which add significant caveats to this discussion:[16]

> The limited world of that [individual subject], which is not common to others, is animated by Consciousness's creative disclosure of the world. Moreover, that completely real limited creation comes into being for the [individual self] who is [actually] one with [Consciousness] through Consciousness's power [of diversification], even though it is not recognized [as such]. That power [of diversification], assuming the form of the fluctuating vital energy, endowed with the activity of conceptual cognitions, and diversified through the various phonemes [that underlie those cognitions], does not allow one to repose in their innate nature.

The conceptual world of experience from a conventional perspective that is dualistic and thus contracted is shown here to have a noble genealogy. Rather than being posited as an ultimately fictitious or fabricated experience superimposed upon reality,[17] this limited world of experience is described as "real" (*satya*), inasmuch as it is disclosed and enlivened by divine consciousness through its inherent power of self-differentiation. This power of diversification is described as the action of conceptualization (*vikalpa-kriyā*). Liberation unfolds through the gradual dissolution of conceptual constructs.

Part II. Contributions to a Limited Sense of Self: Brain Filters that Limit Perceptual Awareness

Utpaladeva refers to concepts that filter our experience of reality and facilitate an identification with a particular mind-body complex. In this section we will explore

a possible neural basis for filters that may contribute to this limited identification with the individual mind and body. One model that psychologists and neurophysiologists have proposed to explain this limited experience of the world is termed the filter theory of human consciousness (Broadbent, 1958). One of the first persons to develop this notion of the brain acting as a filter in his "transmission" theory of consciousness, was the eminent Harvard psychologist William James in the late 1800s and early 1900s.[18] Though most scientists of the era believed that consciousness was produced by brain activity, James and others felt that an alternative view was more viable, that the brain filtered out the contents of a much vaster consciousness (Bergson, 1911; James, 1900, 1912, 1958; Myers, 1903).

This theory of brain processing has been described as similar to that of a receiver/transmitter in modern radios and televisions, with neurons only receiving a small portion of the vibratory information within this vaster reality, due to the many filters within its system (Kelly et al., 2010). Filtering is seen as serving to limit the vast amount of incoming sensory information available, in order to reduce the processing demands on the brain (Broadbent, 1958; Kelly et al., 2010). We propose that filtering networks not only reduce the extent of sensory information available to perception, but may also be operative in the reduction of awareness from the infinite unlimited consciousness that Utpaladeva philosophically posits to the circumscribed sphere of the individual knower.

Research by Broadbent (1958) and others (Driver, 2001) suggests that these attentional filters occur at all levels of the brain, including the sensory receptors themselves, which canalize the vibratory information—like sensible sounds and frequencies of light—into perceptual inputs. There are also higher-level attentional filters that further delimit the information that is consciously registered and perceived. These include the ascending reticular activating system (ARAS) with a central role in filtering and regulation of sensory input, and the wide-ranging default mode network (DMN), also called the narrative or mind-wandering network of the brain because it is the source of the background narratives and stories reverberating continually in our minds (Carhart-Harris & Friston, 2010). The DMN is considered by many neuroscientists to be the source of the ego, the individualized notion of self that identifies with thoughts, emotions, and the diverse social roles one plays in the world (Carhart-Harris & Friston, 2010). Thus, the DMN contributes to the conceptual understanding of the individual as separate from the world.

In addition to the narrative filtering of the DMN, language processing networks in the brain are important conceptual filters. In fact, language has been described as a filter, enhancer, or framer of perception and thought, focusing attention on particular aspects of the world. Strong evidence exists supporting a critical relationship between linguistic and perceptual systems (Vulchanova et al., 2019). For example, research has shown that language regions of the brain are involved in color perception in visual search tasks, and enhance activation levels of portions of the visual cortex. In this way, language regions may affect the discrimination of visual stimuli, prioritizing the perception of some over others (Siok et al., 2009).

In fact, one linguist, Edward Sapir, once went so far as to state, "The worlds in which different societies live are distinct worlds, not merely the same worlds with different labels attached" (Sapir, 1929, p. 209). This is often referred to as the Sapir-Whorf hypothesis (Kay & Kempton, 1984). It has also been said that language helps some things in the world stand forward, and others recede and it defines the way we divide the world and the types of entities we perceive therein (McGilchrist, 2009). In this way, language processing corresponds to Utpaladeva's notion of the conceptual cognition that divides the world up into pieces, with "duality as the defining feature of a concept." In this way, we become enthralled by the dualistic perception of the world, divided by the power of discursive language and conceptuality. However, Utpaladeva does not completely conflate language and conceptuality. In contrast to many other premodern Indian philosophers and contemporary linguists, he argues for levels of language that cannot be reduced to concepts and linguistic conventions.

Another way that the filters of the brain limit perception of a wider reality, is through reverberating internal circuitry that competes with sensory inputs for attentional focus. The DMN and language processing centers are part of the thalamo-cortical loop, a reverberating network between higher cognitive centers of the brain and the thalamus in the mid-brain. Llinás and colleagues (Llinás & Paré, 1996) suggest that the thalamo-cortical loop creates a potentially "closed" system, with the input to the thalamus from the cerebral cortex being larger than that from the sensory systems. This means that, under normal conditions, brain inputs from our current thoughts are more powerful than inputs from the world around us received through our senses when it comes to informing our perception of reality moment to moment. This reverberating circuitry contributes to the experience of the restlessness of the mind and thus inhibits our ability to rest in the pure presence or awareness in the moment. As Utpaladeva says about concepts that similarly flood our attention, they "do not allow one to repose in their innate nature."[19]

One final aspect of brain filtering relates to the function of the left vs. right hemispheres of the brain, and which hemisphere is dominant in a given moment or by habit (McGilchrist, 2009). McGilchrist proposes that modern society, with its focus on a scientific and mechanistic worldview is left-brain dominant, and thus focused on seeing parts rather than a whole. This stance also explains the modern emphasis on rational linear thought rather than global intuition, and may also relate to the loss of the intuitive ability to perceive novelty in the world (McGilchrist, 2009). Thus, this additional attentional filtering process adds one more layer to the dominance of the perception of duality and to the perception of a separation between self and other within the individual.

In summary, these filtering processes of the brain clearly work to limit one's perception of the world to a specific range of energy frequencies (e.g., visual, auditory, tactile) and they produce the dominance of internally generated narratives (created by discursive language and conceptuality) over sensory information through the activity of the DMN and the thalamo-cortical loop. They also limit our awareness to sensory information involving attention to seeing parts rather than a whole, through left-hemisphere dominance that is prevalent in modern cultures. One consequence is the perception of a narrow band-width of the universe, focused

on self-referential internal narratives that veil the connections and interdependences between beings and the ecologies they inhabit. Furthermore, these central nervous system (CNS) filtering networks may correspond to the act of concealment discussed in the ĪPK, specifically, the way that conceptual narratives, which have been related to the DMN, language centers, and thalamo-cortical loop, serve as filters. This is because these networks determine what sensory information will be perceived and determine how this sensory information will be interpreted in ways that support our current conceptual narrative.

Part IIIa. Recognition through the Dissolution of Concepts

Immediately after describing the way in which Consciousness conceals itself in becoming the world, and the role of conceptuality in that process, Utpaladeva's ĪPK introduces two practices designed to catalyze a realization of the all-pervasive nature of consciousness as he envisions it. The first is the "cessation of concepts," a direct and natural method to reduce the filtering function of conceptual narratives. Utpaladeva gives the following description of the practice:[20]

> Śiva's creative emanation [of the world]... emerges [in awareness] from [a perception of reality] that is clear and vivid. That [world] is revealed gradually as the [all-pervasive] state of Śiva by means of dissolving conceptual narratives as a result of one-pointed [awareness].

Utpaladeva here describes the kind of awareness of reality required to behold "Śiva's creative emanation" of the world, which is shorthand for a vision of everything as permeated by consciousness. He says that perception must be clear and vivid. This is a way of seeing that Utpaladeva understands as operating beyond conceptuality, thus illuminating a world of experience no longer encumbered by dualistic perceptions.

Utpaladeva elaborates the means for cultivating this kind of perception accordingly:[21]

> This takes place gradually by completely habituating oneself to the intermittently arising moments that concepts dissolve in the [mental] activity of an individual knower.

In the flow of cognition, there are moments when the concepts that mediate and filter experience are naturally suspended. The practice is for the practitioner to focus their awareness on these gaps, again and again, until they are naturally habituated to that non-conceptual space. A commentator on this text named Abhinavagupta (ca. 975-1025 CE) emphasizes that a key component to this practice is "becoming one-pointedly focused" upon a reality that is "vividly clear," a kind of naked seeing in which the awareness "I am this entire universe" flashes forth.[22] The practice, then, is to remain constantly alert to these moments when conceptual world and all the mental stories we carry fall away, and to then "completely habituate" awareness to that mode of being. This would continue until it becomes the "basis of operation"[23] for a new perception of reality.

In the *Pratyabhijñāhṛdaya*, a pithy and less-technical text based on the ĪPK composed in the eleventh-century by Kṣemarāja, we find more details on this practice. Kṣemarāja adds this:[24]

> Allowing the mind to become deeply settled in the Heart… one dissolves conceptual narratives that impede the ability to naturally abide in the Self by thinking about nothing in particular. Then one naturally attunes to the perception that one's own awareness is the pure perceiver untouched by [obscuring identification] with the body and other [layers of the self].

Instead of allowing the mind to roam amongst objects or internal states, one invites it to deeply settle into the heart and by "thinking of nothing in particular," the dichotomizing function of concepts calms. In order to appreciate the directive to "think nothing in particular," instead of repressing the mind, practitioners shift their awareness from its endless rumination, allowing conceptual stories to fall away and resting in the intervening gaps, which expand over time.

Kṣemarāja concludes his exposition with a citation of a scriptural source that adds further details on what this practice entails:[25]

> Having completely dissolved all mental activities, O Goddess, there is a radiance that results from no longer being dependent upon the flow of the sense-activities. Then [practitioners] who are established in that [radiance], all at once know that supreme state that flows forth as the nectar of wakeful and unparalleled delight.

This verse provides a powerful insight into the fruit of dissolving conceptual narratives: freedom from "dependence on the flow of sense-activities." Conventionally, the information received through the senses is the orienting map for navigating reality. When the conceptual filters are no longer predominant in perception, this tradition argues, experience is no longer confined to the senses and this opens the space for a direct knowing that is conversant with a much broader spectrum of reality. This verse characterizes this expanded state as streaming forth with ambrosial delight, and this emergence of joy is also found in the accounts explored below.

Part IIIb. Recognition: Refinement of Concepts

The ĪPK now transitions from a practice of dissolving concepts to one that involves the practice of engaging certain concepts (*vikalpa*) as a path of awakening in itself. Utpaladeva offers a teaching on the possibility of freedom within the very flux of the conceptual mind. The practice is given in this formulation:[26]

> "This entire [universe] is my all-pervasive power." Maintaining such an awareness, the one whose nature is the universe becomes Śiva even in the stream of conceptual cognitions.

Here we have a concept that the non-dual Śaivas deem to correspond to the inherent expansive nature of the self, an aligned[27] or pure concept (*śuddha-vikalpa*)

articulated as "this entire universe is my all-pervasive power." This concept, even if it does not correspond to a direct experience, is consciously adopted as a view that begins to recalibrate the perception of the world. Abhinavagupta's explanation of the verse concisely captures the essence of this "concept":[28]

> "There is no separate individual limited being that is me. Rather, I am the ultimate, a unified mass of luminous awareness, which is aware of both the perceiver and perceived. I am that and that alone, and nothing else." For this reason, when there is the stabilization of the awareness "the creation of concepts is also my all-pervading power whose defining feature is freedom," even when our conceptual narratives still operate, we are liberated while living.

The goal of this practice is to stabilize this awareness through continually adopting the vantage point that the self is not simply one individual being among many, but a more fundamental and pervasive awareness in which individual subjectivity and its field of objects arises. Abhinavagupta then adds an additional insight about the very nature of conceptuality. The formation of concepts is not an incidental feature that necessarily obscures awareness through its dualistic display. Rather, he describes it as an expression and a crystallization of the energy of consciousness, which is characterized as a creative force whose freedom is unlimited. This understanding itself is an "aligned concept," and for Abhinavagupta it makes possible the impossible: a practitioner can be liberated while concepts are still propagating.

Aligned thoughts are presented as expressions of a unitive insight into a sense of self that is radically inclusive, even though it is still a concept that mediates our experience. They unify instead of dividing the field of experience. Nevertheless, given that they are "concepts," ultimately, they are unable to directly disclose reality as it is. So how do they liberate? Abhinavagupta explains the mechanism by which this happens: the aligned concepts remove all limiting concepts. In the wake of this process of dissolving or "burning to ashes"[29] dualistic concepts based in ignorance, the aligned concept itself eventually "vanishes," in a refinement process in which the concept becomes more and more transparent, until it no longer filters reality.[30] The inner capacity that drives this process of refining the aligned concept of reality that unifies the field of experience is described by the Śaivas as "intuitive reasoning" (*tarka*). This is a higher-order faculty of judgment that allows a practitioner to continually discern and select the pure concept "this entire universe is my all-pervasive power" within the stream of the mind.[31] This *tarka* also identifies and then actively ignores dichotomizing concepts, since it recognizes that they impede or block one from the goal[32] of recognition of the non-dual Self. Below we will consider how this inner capacity of *tarka* may relate to the executive attentional system in the brain.

Part IV. Neural Correlates of Recognition: Modifying the Filters of Experience

There is an emergent body of research that may shed light on the attenuation of the filtering functions found in the brain, which potentially correspond to the non-dual Śaiva's presentation of the dissolution of conceptuality and the use of aligned concepts (Barrett & Griffiths, 2018; Brewer et al., 2011; Carhart-Harris & Friston,

2010). This research includes studies on (a) a number of meditative practices that effectively reduce the activity in the brain's default mode network (DMN), and (b) the role of the executive system in this process.

For example, the research of Judson Brewer and his colleagues tracks these changes in the DMN or mind-wandering network during meditation (Brewer et al., 2011). In one study they made brain imaging scans of activity in the DMN during the meditation sessions of advanced meditators vs. control participants who were new to meditation. The study centered on three methods of meditation: focusing on the breath, loving kindness meditation (fostering acceptance of both oneself and others), and choiceless awareness (broadening the scope of meditation by attending to whatever arises in consciousness, and letting go of any identification with the objects of awareness). A shared goal of all three practices is to reduce the habit of mind-wandering and self-reference.

Across all three meditation conditions they found that the main nodes of the DMN, the posterior-cingulate cortex and the medial prefrontal cortex, were significantly deactivated in the meditation sessions in long-term meditators in comparison to control participants (Brewer et al., 2011). Brewer and his colleagues thus demonstrate that the reduction in mind-wandering during meditation is associated with a decrease in the activity of the DMN. This study thus suggests that the self-referential activity that is the core function of the DMN and which constructs and sustains an experience of a separate self-sense is substantially reduced in advanced practitioners across these three methods (Carhart-Harris & Friston, 2010). Could this decreased filtering and the corresponding awareness that is unbound by egoic referential coordinates be associated with a clearer, more subtle perception of reality? Some neuroscientists have begun to speculate about this (Kelly et al., 2010; Woollacott & Shumway-Cook, 2020).[33]

An article on the perceptual changes associated with his own long-term practice, written by a professor of psychology (Walsh, 1983), speaks to such perceptual shifts in this way:

> The experience feels like having a faint but discernible veil removed from my eyes, and that the veil is made up of hundreds of subtle thoughts and feelings. Each one of these thoughts and feelings seems to act as a competing stimulus or "noise" that thus reduces sensitivity to any one object. Thus, after meditation, any specific stimulus appears stronger and clearer, presumably because the signal:noise ratio is increased. (pp. 43-44)

Though this is a single case, this portrayal of post-meditation perception as removing a "discernible veil" consisting of layers of mental and emotional activity that compete for one's attention is a compelling metaphor for reduction in the function of the DMN. The resulting quality of perception as endowed with enhanced clarity, furthermore, offers interesting parallels to Utpaladeva's description of non-conceptual cognition as a lucid and vivid perception based in one-pointed focus.

In addition, a scientific study examining more advanced states of meditation (Schoenberg et al., 2018) in practitioners of Indo-Tibetan Buddhism, explored changes in their neural substrates associated with progressively deeper states of meditative absorption, culminating in a state described as "brilliantly awake." This culminated in what the authors describe as a unified compassionate experience of oneness. That experience is presented as one in which the residue of self-reference and localization dissipates and an unbounded wholeness and interconnection pervades consciousness. Interestingly, they found that in the period between the meditators' resting state and the first phase of meditation, there was a shift toward a more "effortless" state, associated with a reduction in brain energy[34] and decreased DMN activity. This occurred as they settled into meditation. As they then moved to deeper states of meditation, there was a slight progressive increase in brain energy as the attainment of each state engaged more complex executive attention functioning and active alertness, culminating in a state described as "brilliantly awake." However, they qualify what is meant by this increase in brain energy, saying that it was not cognitively driven through intention, per se, but rather effortlessly sustained by the meditator. This is because global brain energy remained substantially lower than baseline levels.

We might interpret their findings that the executive system was slightly more active in progressively deeper states of meditation as evidence of that system remaining vigilant in inhibiting spontaneous thoughts and emotions from surfacing in awareness. One could argue that this research was conducted by and on persons influenced by the literature on Eastern spirituality. However, this hypothesis is supported by research (Ricard et al., 2014) that shows that the executive system is the cognitive function that is alerted to the distracted nature of mind and actively returns it to the focus of meditation. This finding offers more detail on a key function of the executive system to monitor and ongoingly deactivate the DMN in stabilized awakened awareness.

Moreover, the advanced meditative realizations sustained by this executive function can be fruitfully compared to the capacity of *tarka*, the inner ability to maintain aligned concepts in the flow of the mind. *Tarka* or intuitive reasoning is the discerning faculty that identifies conceptual cognitions and selects for and orients towards aligned concepts that lead to liberation. This inner refinement process eventually becomes automatic and spontaneous, culminating in an unmediated non-conceptual awareness of a vast and inclusive Self. The executive system, similarly, alerts a meditator to a moment of mental distraction, reorients the focus towards the object of meditation, and then sustains that focus (Ricard et al., 2014). In both cases, this capacity is essential to the stabilization of meditative awareness. One plane of analysis to appreciate the functionality of these cognitive systems is the bandwidth of awareness: the DMN is involved with a significantly reduced bandwidth of information, whereas the executive system, in this context, plays a key role in sustaining a vast bandwidth.

An interesting parallel in terms of DMN deactivation is found in a study by Barrett and Griffiths (2018) that conducted a comparative analysis of meditation and psilocybin ingestion and showed that both conditions significantly reduced DMN activity. It is significant to note that in the psilocybin study, the reduced activity in

the DMN was directly correlated specifically with a sense of ego-dissolution and unity awareness. This direct correlation gives additional evidence for the conclusion that the DMN is a filter whose activity blocks access to states of expanded awareness (Barrett & Griffiths, 2018; Carhart-Harris et al., 2012; Thomas et al., 2017). What this study adds, in terms of our own interdisciplinary exploration, is an understanding that a reduction in DMN activity can directly correspond to the dissolution of a limited identity in tandem with the emergence of a broad and unitive awareness. Utpaladeva's understanding of the function of *vikalpa* and its dissolution includes these two factors. Conceptuality is what causes consciousness to identify exclusively with an individual psycho-somatic self, which contracts around a narrow stream of sensory information.[35] The dissolution of that limited self-conception, in Utpaladeva's non-dual philosophy, is the means for the recognition of an all-pervasive Self that encompasses the entire objective universe.

In a study that explored the effect of deep states of meditation on the activity in left-hemisphere language centers and networks involved in spatial orientation, Newberg and D'Aquili (2001) used SPECT (single photon emission computed tomography) to explore changes in brain activation in advanced meditators when they reached peak states of meditation, which were accompanied by a felt sense of unity-awareness. During this time, there was a shift in the state of participants from an experience of individuality to that of being one with the universe. At the deepest point of meditation, there was a decrease in the activity of the left hemisphere language centers as well in its orientation areas in the posterior parietal lobe. The latter is associated with the process identifying personal physical boundaries. This study presents evidence that could be seen as complementary to Utpaladeva's proposition that reduction in conceptual activity (in this case, through reduced activity in language centers of the left-hemisphere) is associated with a boundless sense of self, experienced as coterminous with the universe.

One other area of research that supports the hypothesis that reduced or absent brain activity coincides with the removal of perceptual filters is Near-Death Experience (NDE). This typically occurs during traumatic events, e.g., after an individual has cardiac arrest but is later resuscitated. In this case of "clinical death," hospital records show a lack of cardiac and brain activity that may continue for minutes on end. Additionally, EEG data show that during these moments the entire cortex, including the DMN, is completely deactivated (van Lommel et al., 2001). Individuals have reported that during this period of zero brain activity they experienced profound unity awareness (Greyson, 2021), and very often return to waking consciousness with the profound conviction that they have a connection to a much greater infinite consciousness. Individuals often report an experience and perspective akin to Utpaladeva's elucidation of unfiltered awareness, that is, there is one innate Self, an all-pervasive consciousness, which "comprises the essential nature of all sentient and insentient beings." For example, one woman stated, "My perception is [now] that I am not this body, this individual. I am consciousness, and supreme consciousness… is real and is the substrate of everything that exists" (Woollacott & Peyton, 2021).

Another individual example of perceptual filters being removed comes from a woman who experienced an NDE while in a coma for nine days after an accident in

which she was severely burned (Everts, 2019). She described not only her mystical experience, but also the reduction of filters on her newfound expanded awareness. She offers the following account (Everts, 2020):

> All my senses were wide open. My senses of hearing and sight were so sensitive. I sensed all the material and spiritual levels at the same time. I knew what my husband was feeling, I heard what my son was thinking. . . That's how I learned why the ego is developed, why we need this protective wall. If our senses were that open to everything, we wouldn't be able to focus on ourselves. We'd never say anything bad about people in front of them because we'd know right away what the other person would feel.

Following this experience, she was able to reduce this heightened awareness and although it gradually faded, she continued to have access to this vivid and highly receptive awareness. This case study is important for our inquiry in that it presents an experience in which the DMN was completely deactivated during a coma. This resulted in an expanded bandwidth of receptivity of information, but also led to the vital insight that the filtering function of the DMN serves an important pragmatic role in daily life.

Significantly, all of the above studies offer counterevidence to the conclusions a materialist or "production" model of consciousness might draw from the reduction or cessation of brain function. Materialist views that propose that consciousness is fundamentally a product of brain activity predict that reduced brain activity would result in a deterioration in mental acuity, such as confusion or disorientation, while the complete absence of brain activity would necessitate unconsciousness. In these studies, reduced brain activity resulted in the opposite, that is, increases in clarity, perceptual sensitivity and an expansion of the horizon of awareness.[36]

Utpaladeva describes different methods for accessing unfiltered expansive awareness, namely dissolving concepts by attending to the gaps in the flow of awareness and working with aligned concepts. However, neuroscience research offering experimental data on these practices that may distinguish the regions in the brain to which they correspond is still a desideratum. We would like to now offer a few tentative correspondences that this research may confirm. For example, the underlying changes in brain processing during the practice of "aligned concepts" would likely occur in the linguistic centers of the brain. In this practice of employing concepts that affirm and eventually give way to a much vaster horizon of self, the left hemisphere of the brain—that narrowly focuses awareness upon manipulating objects to benefit the individual and is thereby more self-referential—would likely show reduced neural activity. By contrast, it is plausible that through these practices the right hemisphere, which employs global flexible attention, understanding wholes and intuitive processing, would become dominant. This would allow the individual's attention to be global, thus remaining more consistently rooted in a sense of unity between self and the phenomenal world of experience, rather than marked by a sharp sense of separation or duality.

In summary, though there is no current neuroscience research that differentiates the neural activity associated with the various methods of Utpaladeva regarding a

return to an all-encompassing nondual identification with reality, the studies cited do tell us about what occurs when we enter a variety of states of expansive awareness. These include the reduction in activity of the DMN during meditation and during the neuro-modulatory effects of psilocybin; the reduced neural activity in the left hemisphere of the brain in deep meditation; and the absence of neural activity in NDEs. Much of the data appear to show direct correlation between the reduction of the DMN and the extent to which consciousness expands. This further correlates to new capacities of receptivity. These include the influx of information when brain filters are suspended and the senses are no longer the primary medium for orienting our experience and also the clarity and lucidity of perception in non-dual awakened awareness.

Summary and Conclusions

In this article we have elucidated the non-dual Śaiva philosophy of Utpaladeva's ĪPK ('Stanzas on the Recognition of Śiva'), as set forth in the fourth chapter of that text. The ĪPK introduced the power of conceptualization as an essential step in the process of all-pervasive consciousness identifying itself with a particular individual. Conceptualization, in Utpaladeva's theory, creates a dualistic perception of an object in awareness. It is a function of consciousness that sculpts out[37] a portion of reality as it excludes all that is different. This process can be perceived as an act of filtering, as consciousness excludes its own vastness in order to fashion a particularized object of experience. These conceptual cognitions also coincide with a limited identification with a specific mind-body complex.

We believe there are parallels between the theoretical framework of Utpaladeva and neuroscience research that identifies brain networks that may be active in the process of consciousness being "filtered" or "reduced" into a locus of individual psycho-somatic subjectivity. We have shown, for example, that many levels of brain processing contribute to the filtering of perceptual input. These include the following functions: (a) the limited range of the visual and auditory sensory channels to specific vibrational frequencies, (b) the DMN or mind wandering network, (c) the language and narrative centers of the left side of the brain, which create continual conceptualization further limiting and distorting perception, (d) the ascending reticular activating system (ARAS) with a central role in filtering and regulation of sensory input, and (e) the reverberating circuitry of the thalamo-cortical loop, which allows current narratives to be more perceptually dominant in awareness than inputs of sensory information. These all variably contribute to a narrowing of experience and identity.

After describing how an originally unlimited perception of the world is concealed through the process of creation and identification with a limited point of awareness within a mind-body complex, Utpaladeva goes on to describe methods for recognizing the true nature of reality through the "cessation of concepts" and the cultivation of aligned concepts. The former is described as attuning to moments when the concepts mediating our experience are suspended. In the wake of that non-conceptual knowing one experiences a reality that is vividly clear, with the awareness, "I am the entire universe" emerging in the foreground of experience.

Working with aligned concepts consists in cultivating a "way of seeing." Utpaladeva posits that when this perspective becomes lucid and stable, it actively subverts dualistic conclusions about reality. We have hypothesized that the executive attention system and its salience network may play a key role in keeping a practitioner selectively focused upon these aligned concepts. This involves the meta-cognitive ability to continually let go of dualistic thought. This may relate to one aspect of what the non-dual Śaivas call intuitive reasoning or *tarka*, an intellectual and intuitive capacity that distinguishes between what a practitioner should hold on to and let go of on the path to liberation.

This comparative exercise is not aimed at proving or justifying Utpaladeva's non-dual view and theory of consciousness with the research we have collated from neuroscientific studies. Rather, we are juxtaposing them to enrich a consideration of the filter-function of the mind across these disciplines. One potential outcome of this interdisciplinary collaboration is to outline future avenues of research on Utpaladeva's path of awakening, both dissolving concepts and refining concepts, and assessing the distinctive neurological impact of such practices (in contrast to Vipassana, Psilocybin states, etc.). Combining religious studies scholarship with neuroscience research is not without substantive challenges, but hopefully this study models the potential of this kind of interdisciplinary work to enlarge the perspectives, paradigms, and modes of analysis of each field.

Neuroscience research on practices and events that result in a reduction or suspension of concepts that mediate our experience may shed light on some of the neurological systems involved in the process of awakening that Utpaladeva presents. When there is a reduction or stilling of the activity of the default mode network or language centers in the brain during meditation, psilocybin ingestion, or Near-Death Experiences, a limited and bounded sense of identity dissolves into an awareness that is vast and unitive. As the filtering process is reduced, not only is there access to expanded states of awareness, but in certain cases non-local perception (awareness of the thoughts of others) and vividly clear and penetrating insight. These findings can accommodate materialist theories that correlate brain activity with specific conscious experience, but they also suggest an extensive domain of awareness and experience that is not dependent upon brain function. In the reported studies increased or expanded levels of awareness, surprisingly, are associated with decreased brain activity. These data also resonate with the statements of the Śaiva philosophers' description of the culmination of the dissolution of mental activities as a blissful experience of "wakeful and unparalleled delight."

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NOTES

[1]We would like to thank James Reich, who read and discussed much of chapter four of the *Īśvarapratyabhijñākārikā* with Ben Williams, and also Anne Shumway-Cook, for her inspiration to engage in this collaboration and her encouragement along the way.

[2]Utpaladeva does this in dialogue with imagined Buddhist interlocutors. In the course of refuting Buddhist critiques of the Self, many other philosophical issues are broached, such as the reality of universals, theories of mereology, etc.

[3]We must acknowledge at the outset two prominent views within the neuroscience community on the nature of consciousness: a materialist worldview, which sees it as an epiphenomenon of neural function and a second view, which sees consciousness as a fundamental characteristic of the universe. By exploring the ramifications of the second perspective, our article strives to bridge the insights of cognitive science with the models of reality disclosed in this non-dual Śaiva philosophy.

[4]By deferring to inferential debate and rational proofs to establish the validity of this tradition's ontological claims (further discussed below), this text represents an expansion of an audience beyond the limited ambit of co-religionists or fellow initiates in the Śaiva tantric tradition. On the possible motivations underwriting the widening of an audience represented by the ĪPK, see Torella (2002, p. xiii): "The complex work of exegesis of the scriptures, the reformulation of their teaching and the organizing and hierarchizing of their contents indicate first and foremost its decision to emerge into the open, to escape from the dimension of a restricted circle of adepts—which is what must have been the original nature of these schools—and to offer itself implicitly as an alternative to the dominant Śaivasiddhānta... In order to do this it was necessary to extract a homogenous though varied teaching from the diverse texts; to purge it, without changing its essential nature, of all that it was felt could not be proposed to a wider circle—in other words, of

all that was bound to create an instinctive and insurmountable resistance—by attenuating the sharper points or removing every actually concrete aspect, and finally translating it into a discourse whose categories were shared by its addressees and engaging in a dialogue that would not be afraid to confront rival doctrines."

[5]Although it is less philosophically rigorous than earlier portions of the text, the central points it rehashes are subjected to critical scrutiny in the first two chapters through the pressure of postulated philosophical opponents, most significantly the Buddhists.

[6]*Īśvarapratyabhijñākārikā* 4.1: *svātmaiva sarvajantūnām eka eva maheśvaraḥ | viśvarūpo 'ham idam ity akhaṇḍāmarśabṛṃhitaḥ* 'The One innate Self of all beings is Śiva. One with everything, that Self is replete with the undivided awareness, 'I am all this.' All Sanskrit sources are translated by Ben Williams, unless otherwise noted.

[7]*Īśvarapratyabhijñākārikā* 4.2: *tatra svasṛṣṭedaṃbhāge buddhyādi grāhakātmanā | ahaṃkāraparāmarśapadaṃ nītam anena tat*.

[8]*Īśvarapratyabhijñākārikāvṛtti* ad 4.2 *maheśvarasya jṛmbhāmaye 'smin nirgate tasminn idaṃtāparāmarśe grāhyaṃ yan nirmitaṃ buddhiḥ prāṇo 'tha śūnyaṃ tad vedyaikadeśarūpam ahaṃkārāvamṛśyatāpādanena paricchinnagrāhakīkṛtam* 'When this [universe], which consists in the blossoming forth of Śiva, has emerged, the objects of perception (*grāhya*) that coalesce within objectively-oriented awareness, including the intellect, the vital energy, and the void, which form one fragment of the knowable reality, are transformed into a particular knowing subject. This happens by [Śiva] becoming self-aware as a limited individual.'

[9]*Īśvarapratyabhijñākārikāvṛtti* ad 4.3: *etad eva viśvātmanaḥ parimitatvakaraṇam apratyabhijñānam ucyate | evaṃ cānekabuddhiprāṇādikhaṇḍagatāparāhaṃkāraparāmarśaḥ parāparijñānasaṃjñaḥ | pratyagātmano bahavas | teṣu pramātṛrūpeṣu maheśvareṇa svānandaḥ svakriyaikakartṛtānusāriṇī nirmitā* 'It is precisely this non-recognition that is taught [in this system] as the cause of the universal Self becoming limited. And in this way, the awareness of oneself as the limited self as separate (*aparā*), located in the various fragments [of the objective world], including the intellect and vital energy, is what is known as the non-recognition of the highest reality (*parā*). Individual souls are many. Śiva manifests in those knowing subjects his own bliss [and] his own activity, which conforms to a unified agency.'

[10]In explaining the nature of ignorance, Utpaladeva references a diverse set of resources, including tantric speculation on the role of phonemes in cosmogenesis and Indian philosophical debates surrounding the nature and action of conceptual cognition.

[11]*Īśvarapratyabhijñākārikāvṛtti* ad 4.8: *te vibhinnāvabhāsāḥ sāmānyātmano 'rthās tadanubhavasaṃskṛtaiḥ kṛśo 'haṃ duḥkhī sukhī vāham iti vicitravyapadeśaviṣayīkriyamāṇātmabhiḥ kṣetrajñair vikalpanaśaktyā tattadghaṭarajataśuklapaṭaśakaṭādināmnāntaspratyavamarśanīyatvena. . . ayam eva grāhyagrāhakabhedāvabhāsaḥ śabdamayaḥ paśubhāve saṃsārabandhaḥ*.

[12]This language is indebted to Catherine Prueitt. See Prueitt (2017).

[13]On the function of *vikalpa* or conceptual cognition as a "story" or "narrative," see the insightful elucidation of this term in Wallis (2017), pp. 345-348.

[14]Prueitt (2017), p. 17.

[15]Prueitt (2017), p. 19: "However, conventionally, different types of perceivers carve away various slices of the ultimate to generate concepts."

[16]*Īśvarapratyabhijñākārikā* 4.9-10: *tasyāsādhāraṇī sṛṣṭir īśasṛṣṭyupajīvinī | saiṣāpy ajñatayā satyaiveśaśaktyā tadātmanaḥ || svaviśrāntyuparodhāya calayā prāṇarūpayā | vikalpakriyayā tattadvarṇavaicitryarūpayā*.

[17]Prueitt (2017, p. 19): "The error involved in conventional awareness, then, is not that the conventional concepts of subject and object are simply fabrications with no basis in what is ultimate real. Rather, conventional awarenesses are erroneous in that they only present part of the

truth: they ignore the fact that every moment of awareness is rooted in the infinite variegation of consciousness."

[18]James (1900, pp. 32-33): "Suppose, for example, that the whole universe of material things. . .should turn out to be a mere surface-veil of phenomena, hiding and keeping back the world of genuine realities." James continues (pp. 35-38), "Admit now that our brains are such thin and half-transparent places in the veil. What will happen? Why, as the white radiance comes through the dome, with all sorts of staining and distortion imprinted on it by the glass... even so the genuine matter of reality, the life of souls as it is in its fullness, will break through our several brains into this world in all sorts of restricted forms, and with all the imperfections and queernesses that characterize our finite individualities here below. According to the state in which the brain finds itself, the barrier of its obstructiveness may also be supposed to rise or fall. It sinks so low, when the brain is in full activity, that a comparative flood of spiritual energy pours over. At other times, only such occasional waves of thought as heavy sleep permits get by. And when finally a brain stops acting altogether, or decays, that special stream of consciousness which it subverted will vanish entirely from this natural world. But the sphere of being that supplied the consciousness would still be intact; and in that more real world with which, even whilst here, it was continuous, the consciousness might, in ways unknown to us, continue still." These ideas are further developed in James (1912), particularly in chapter 8, "La Notion de Conscience."

[19]*Īśvarapratyabhijñākārikā* 4.9-10, translated above.

[20]*Īśvarapratyabhijñākārikā* 4.11: [. . .] *caiśaḥ sargaḥ spaṣṭāvabhāsanāt | vikalpahānenaikāgryāt krameṇeśvaratāpadam*.

[21]*Īśvarapratyabhijñākārikāvṛtti* ad 4.11: *tatrāntarāntarodyatkṣetrajñavyāpāravikalpananirhrāsapariśīlanena.*

[22]*Īśvarapratyabhijñāvimarśinī* ad 4.11: *so 'yaṃ sargo yadā vikalpahānakrameṇa tasminn nirvikalpakaparigṛhīta eva spaṣṭābhe 'rtha ekāgratvam avalambya aham idam ity aiśvaryaparāmarśapadaṃ bhavati tadā. . . krameṇa abhyāsatāratamyena paśoḥ paśutvaṃ pratihantīśvaratvaṃ ca darśayati* 'Being one-pointedly focused upon a vividly clear reality that is perceived through a non-conceptual awareness by dissolving conceptual narratives, that divine creation is revealed [in the awareness] "I am this [universe]." When that takes place, the individual's state of contraction falls away and they are revealed to be Śiva. This happens through a method that has gradations of intensity related to the degree of practice.'

[23]This term is often used in the meditation system developed and articulated by Daniel P. Brown.

[24]*Pratyabhijñāhṛdaya* ad 18: *hṛdaye nihitacittaḥ. . . svasthitipratibandhakaṃ vikalpaṃ akiṃciccintakatvena praśamayan avikalpaparāmarśena dehādyakaluṣasvacitpramātṛtānibhālanapravaṇaḥ*. Here Kṣemarāja not only develops themes from chapter 4 of the ĪPK, but also alludes to the description of the divine immersion (*śāmbhava-samāveśa*) taught in the *Mālinīvijayottaratantra*.

[25]*Pratyabhijñāhṛdaya* ad 18: *vihāya sakalāḥ kriyā janani mānasīḥ sarvato vimuktakaraṇakriyānusṛtipāratantryojjvalam | sthitais tvadanubhāvataḥ sapadi vedyate sā parā daśā nṛbhir atandritāsamasukhāmṛtasyandinī.* The text cited here is the *Jñānagarbha*.

[26]*Īśvarapratyabhijñākārikā* 4.12: *sarvo mamāyaṃ vibhava ity evaṃ parijānataḥ | viśvātmano vikalpānāṃ prasare 'pi maheśatā*.

[27]On the translation of *śuddha-vikalpa* as "aligned concept," we are following Wallis (2013), pp. 357ff.

[28]*Īśvarapratyabhijñāvimarśinī* ad 4.12: *na hi pratyagātmā nāma paśuḥ kaścid anyo yo 'ham api tu parigṛhītagrāhyagrāhakaprakāśaikaghanaḥ paro yaḥ sa evāhaṃ sa cāham eva na tv anyaḥ kaścit. ato vikalpasṛṣṭir api mama svātantryalakṣaṇo vibhavaḥ ity evaṃ vimarśe dṛḍhībhūte saty aparikṣīṇavikalpo 'pi jīvann eva muktaḥ*.

[29]*Tantrasāra*, chapter 4: *tathā hi vikalpabalāt eva jantavo baddham ātmānam abhimanyante sa abhimānaḥ saṃsārapratibandhahetuḥ ataḥ pratidvandvirūpo vikalpa uditaḥ saṃsārahetuṃ vikalpaṃ dalayati iti abhyudayahetuḥ* 'To explain, by the power of concepts, human beings considered their own Self to be bound. Misidentification is the cause of one's connection to

cyclical existence. For this reason, it is said that a concept that is opposed [to that limited Self notion] reduces to ashes the concepts that cause cyclical existence. Thus, [that kind of concept] is uplifting.'

[30]On the process by which pure concepts become ever more lucid, described by Abhinavagupta as "the refinement of concepts," see *Tantrāloka* 4.1-10. For a translation and discussion of this section, see Muller-Ortega (2005), pp. 205ff.

[31]Muller-Ortega (2005), pp. 206-207: "The description of *vikalpa-saṃskāra* [the refinement of concepts] could be seen as offering a theoretical outline of what takes place in the application of *tarka*, the attainment of perfected reasoning... Such a vision offers complete knowledge, the achieved intellectual knowledge which is such that the object of knowledge now translucently reveals itself as being composed of ultimacy, even in what might previously have been judged to be its most superficial, external, and gross levels of manifestation."

[32]Sanderson translates the Yogapāda of the *Mṛgendratantra* and its commentary, which cites *tarka* [=*ūha*] as one of the supports of Yoga. The commentator of the text, Nārāyaṇa Bhaṭṭa elucidates the meaning of *tarka* as the capacity to judge what leads one to the goal and what impedes that process. See Sanderson (1999), p. 9: [due to *tarka*] "the Yogin experiences the manifestation of all things rising before him in their real nature and so gradually understands what state is to be transcended, what nourishes that [state], what undermines it, and what nourishes its underminers, and comes to know in the same way the state to which he should aspire, what nourishes that [state], what undermines it, and what nourishes its underminers. It is for this reason that it is this [reasoning] that is the principal auxiliary of Yoga."

[33]Kelly et al. (2010) have performed considerable research on near-death experiences in which a patient has undergone cardiac arrest and the EEG recording of brain activity is flat-lined. See Kelly et al. (2010), pp. 385-386: "NDEs seem instead to provide direct evidence for a type of mental functioning that varies inversely, rather than directly, with the observable activity of the nervous system....Such evidence, we believe, fundamentally conflicts with the conventional doctrine that brain processes produce consciousness, and supports the alternative view that brain activity normally serves as a kind of filter, which somehow constrains the material that emerges into waking consciousness... [This] may lead to drastic alterations of the normal mind-brain relation and to an associated enhancement or enlargement of consciousness." They also note that 80% of near-death experiencers described their thinking during the NDE as "clearer than usual" (45%) or as clear as usual (35%).

[34]In this study, increased brain energy refers to the magnitude of the current density vector in the Anterior Cingulate Cortex.

[35]It may also be the case that the thalamo-cortical reverberating circuit of brain activity, which often dominates attentional awareness with its internally generated thoughts and memories, would be significantly reduced as one follows Utpaladeva's practice. The exercise of "aligned concepts" is a directive to identify with broader and broader horizons of reality, which is designed to open up a direct non-conceptual experience free of the distortion of inner narratives. This practice may coincide with increased access to information coming in and through the sensory channels and increased sensory acuity, clarity of perception, and intensity of experience.

[36]As early as 1898, William James, referring to a wide range of phenomena left unaccountable by a materialist framework for consciousness, made a very similar point. See James (1900), pp. 49-55: "The transmission-theory also puts itself in touch with a whole class of experiences that are with difficulty explained by the production-theory. I refer to those obscure and exceptional phenomena... as religious conversions, providential leadings in answer to prayer, instantaneous healings, premonitions, apparitions at time of death, clairvoyant visions or impressions, and the whole range of mediumistic capacities, to say nothing of still more exceptional and incomprehensible things. If all our human thought be a function of the brain, then of course, if any of these things are facts, and to my own mind some of them are facts, we may not suppose that they can occur without preliminary brain-action. But the ordinary production-theory of consciousness is knit up with a peculiar notion of how brain-action can occur, that notion being that all brain action, without exception, is due to a prior action, immediate or remote, of the bodily

sense-organs on the brain. Such action makes the brain produce sensations and mental images, and out of the sensations and images the higher forms of thought and knowledge in their turn are framed. As transmissionists, we also must admit this to be the condition of all our usual thought. . . But, in the mysterious phenomena to which I allude, it is often hard to see where the sense-organs can come in. A medium, for example, will show knowledge of his sitter's private affairs which it seems impossible he should have acquired through sight or hearing, or inference therefrom. Or you will have an apparition of someone who is now dying hundreds of miles away. On the production-theory one does not see from what sensations such odd bits of knowledge are produced. On the transmission-theory, they don't have to be 'produced', they exist ready-made in the transcendental world, and all that is needed is an abnormal lowering of the brain-threshold to let them through. In cases of conversion, in providential leadings, sudden mental healings, etc., it seems to the subjects themselves of the experience as if a power from without, quite different from the ordinary action of the senses or of the sense-led mind, came into their life, as if the latter suddenly opened into that greater life in which it has its source. The word 'influx', used in Swedenborgian circles, well describes this impression of new insight, or new willingness, sweeping over us like a tide. All such experiences, quite paradoxical and meaningless on the production-theory, fall very naturally into place on the other theory. We need only suppose the continuity of our consciousness with a mother sea, to allow for exceptional waves occasionally pouring over the dam. Of course the causes of this odd lowering of the brain's threshold still remain a mystery on any terms."

[37]On the notion of consciousness or Śiva acting as a "sculptor," see Prueitt (2017), p. 23: "Abhinavagupta picks up on this conception of Śiva as the one who creates the universe from within himself in his benedictory verse to Chapter Six: 'We praise Śiva, the sculptor of variety, who—by his mere will—using the chisel of exclusion, carves out objective entities, which are the mass that is not different from his own self."

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