

DECODING THE ENTROPIC BRAIN WITH LIGHT & SOUND



There is no subject more fascinating than Consciousness and there is no discussion about Consciousness that does not include the Brain. We are incredibly fortunate because now creative Consciousness/Brain research is at an all-time high. It was just a few decades ago that the standard of care for psychological problems was a combination of mind paralyzing drugs, physical restraint, electroshock and frontal lobotomy. It was also taught in medical school that the adult brain simply declines with no hope of positive neurological change.

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Just consider any one of these active research domains as an example:

- Brain Neuroplasticity;
- Connectome Harmonics & Brain Network Dynamics;
- Entropic Brain Theory;
- Psychedelic Information Theory & Research;
- Sensory Enrichment;
- Complex Adaptive Systems;
- New Miniaturized Biophilic Wearable Technologies.

Whatever the state of your brain today, it can be better tomorrow. That is the claim of the medically revolutionary field of Brain Neuroplasticity. The obvious question then is...how? Bumper sticker memes like "Fire It to Wire It" come to mind along with "The Brain Changes What Matters". When it comes to Brain

Neuroplasticity, the methods require three core factors and a "secret sauce" fourth factor. A method, regardless of type, requires:

- 1) Sustained attention;
- 2) Marginal demand;
- 3) Open minded willingness/belief;

And the complex neurochemical psycho-emotional "secret sauce"...

- 4) Enjoy!

There is no better way to unwrap this bundle than to start with a brief exploration of Entropic Brain Theory. In my opinion, Robert Carhart-Harris and his team at the Centre for Psychedelic Research, Division of Brain Sciences, Faculty of Medicine, Imperial College London are successfully recognizing the fundamental dynamics of macro-brain activities with studies in the brain as influenced by psychedelic compounds. The research is not to glorify psychedelics but rather to understand the range of adaptive capacities of the brain when energies move it into and beyond critical limits (aka new learning).

Here is the super short synthesis:

The original brain of the early human being went through a remarkably fast neurological expansion. Although there are many theories, no one knows why. Our homo sapiens brain became a more free-wheeling organ that allowed conscious processing to more easily enter upwards into less defined certainty of consciousness (in the model, towards more disordered chaos aka "entropy"). Such "entropic" expansion offered a new wide range of possibilities while also paradoxically introducing higher degrees of uncertainty. As a consequence, further brain evolution demanded a counter-measure that would suppress the entropic expansion and maintain a regular ordered state.

Essentially, our brain evolved a “limiter function” for the biological efficiency of survival at the expense of radical exploration. Fortunately, we kept the key for expansion hidden in our neurological back pocket.

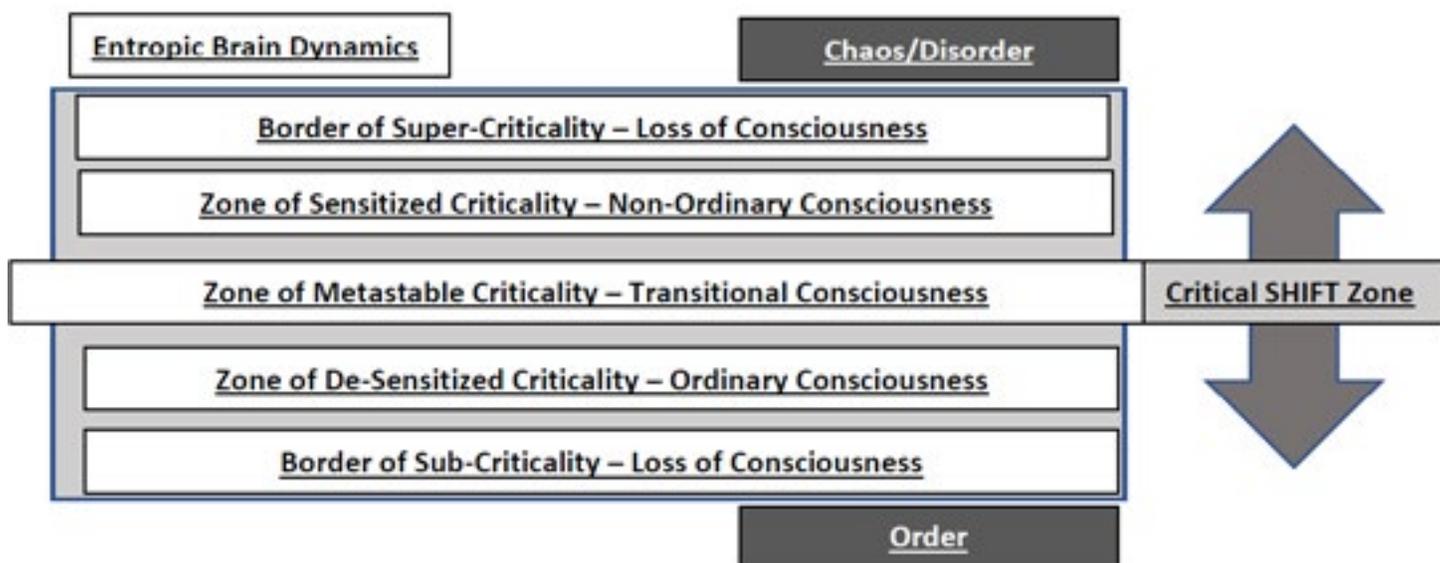
The state involving the early entropic expansion is called Primary Consciousness and the counter-measure entropic suppression is Secondary Consciousness. Primary Consciousness is characterized with uncertainty, disorder, increased possibilities, new learning and creative insights. Secondary Consciousness is characterized with certainty, regularity, order, predictability and repeatability.

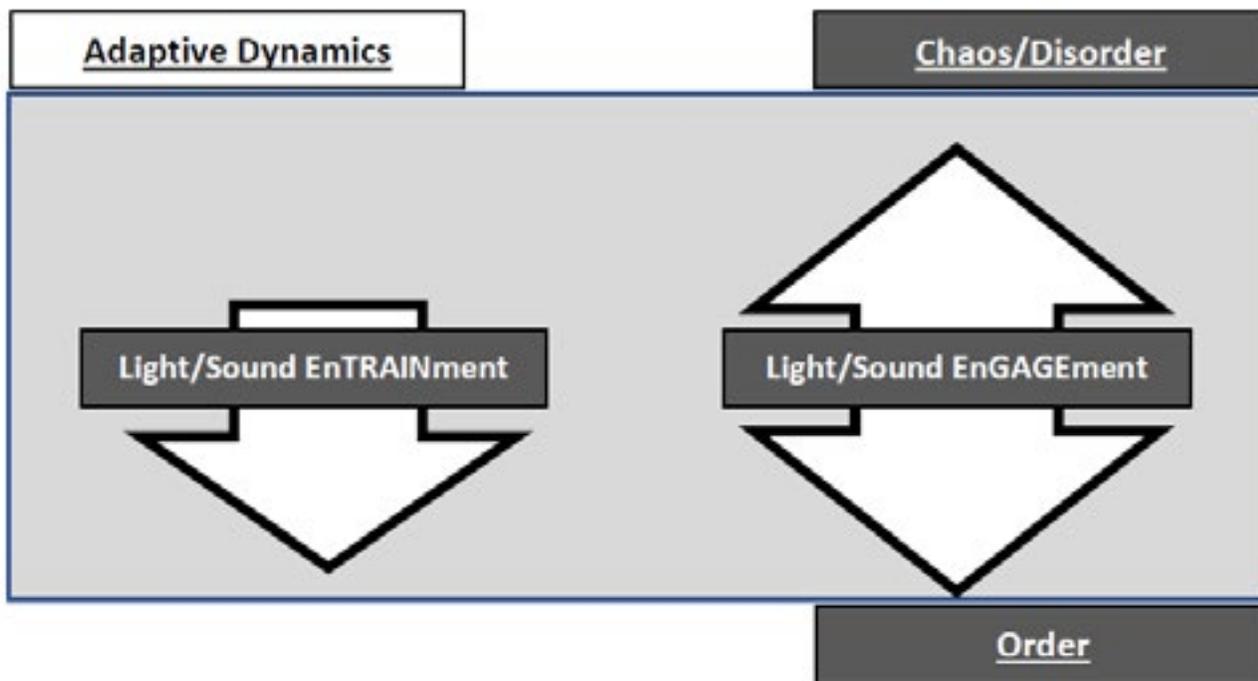
We normally function in Secondary Consciousness because it serves us well for biological survival. We also have the ability to shift into Primary Consciousness and do so every night when sleep invites in our dream

states. Waking experiences of Primary Consciousness are more uncommon or “non-ordinary” (NOCS) and are often labeled as “altered states” (ASC). However just because Primary Consciousness is “non-ordinary” does not make it abnormal. With the appropriate conditions, we humans have the “normal” ability to shift from everyday Secondary Consciousness into periods of Primary Consciousness.

The dance between Primary and Secondary Consciousness is called “criticality”. When enough energetic stimulation is introduced into the brain, the stability of the ordered Secondary Consciousness begins to “wobble” and at a critical point, a shift begins to occur and access to Primary Consciousness starts to open up. Criticality is functionally more of a “zone” than a strict point or line.

An obvious question emerges – how does one trigger a critical shift from ordered common Secondary





Consciousness into exceptional expanded Primary Consciousness...and return to Secondary Consciousness with learning and adaptation?

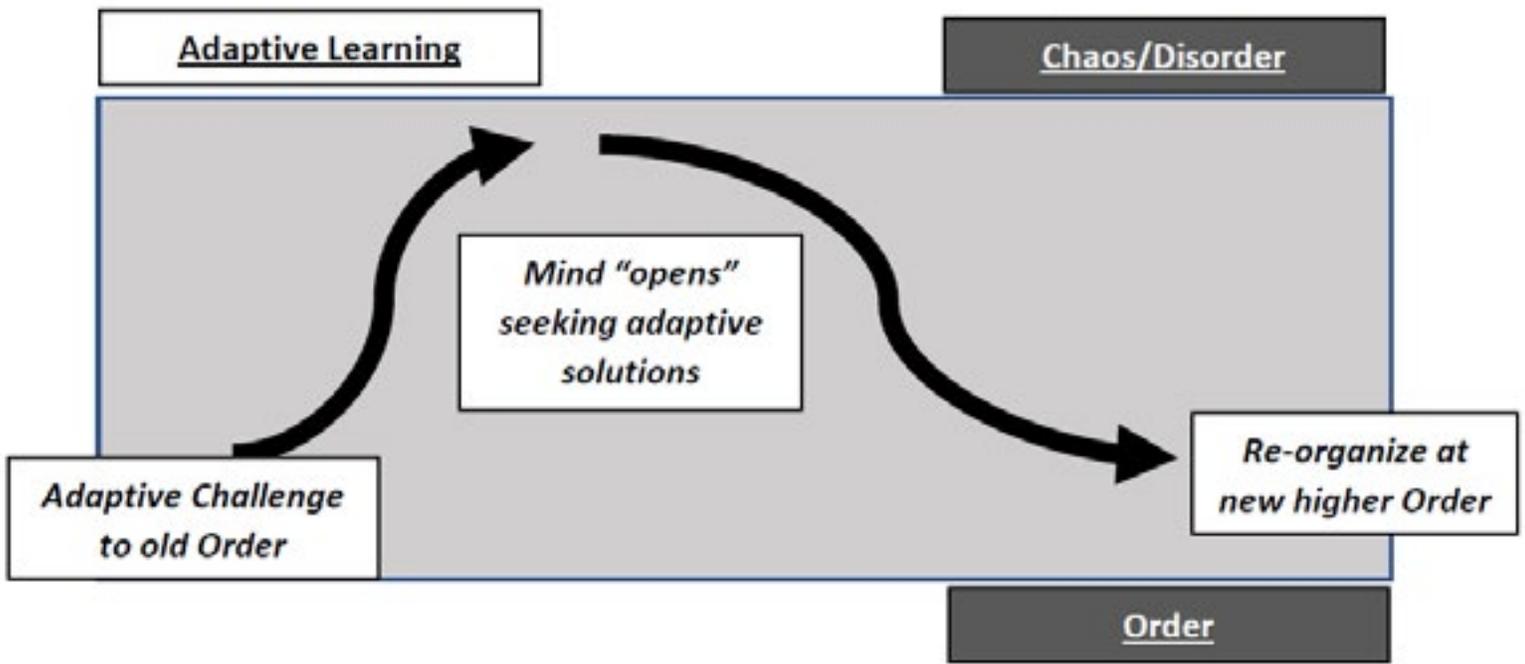
As mentioned above, we apparently make the critical shift every night when we dream. Dream experiences are famously fleeting. Freud called dreams the royal road to the unconscious. There are those that develop lucid dreaming as a way to mine the rich resources that are stored there. If dreams are the “royal road” then psychedelic compounds may be a “superhighway”.

The proposal here in this short paper is that properly designed integrated light and sound stimulation can act reliably as a disruptive psychedelic dynamic and stimulate the critical shift from Secondary to Primary Consciousness.

Crafted Light/Sound experiences can perform on their own to trigger critical shifts or act synergistically with low micro/meso doses of psychedelic compounds.

It is easy to appreciate that Primary Consciousness by its very uncertain character is not one singular condition. It varies by degree and along a spectrum of qualia. Risking over simplification, one of the cardinal features of Primary Consciousness is the dissolution of the “mental movie of me” state we call the “self” or the “ego”.

Recent research can help solve this puzzle. One of the key understandings found in brain neurology is that our brain has a number of neural networks that act to express certain important functions. When it comes to the self/ego/me experience, the Default Mode Network (DMN) is the primary generator of that experience. A critical shift from common Secondary Consciousness into uncommon Primary Consciousness involves the destabilization of the DMN. Psychedelics do this very well (and often, for many hours at a time). Crafted Light/Sound stimulation can also destabilize the DMN



and in a more controlled fashion by degree and time of destabilization.

Another intriguing element in the sustained order we call self/ego/me is the persistent presence of the alpha brain waves (8 – 13hz) in certain brain areas. These brain waves appear to be a fundamental feature of the entropic suppression mechanisms that help us “keep our shit together” and in biological survival mode. In the critical shift induced by psychedelic compounds, alpha brain waves are themselves suppressed, leaving the “doors of perception” (thank you, Aldous) wide open. Again, properly crafted Light/Sound stimulation can obstruct alpha brain wave dominance and support the critical shift into Primary Consciousness.

As a side note – it is fascinating that the intoxicating romance with alpha brain waves and related brain entrainment techniques remain in place and unquestioned in popular culture in the face of the recent exceptional research into applied neurology.



In crafted Light/Sound stimulation, a few core design principles are required when intending to trigger critical shifts in consciousness. Basically, signaling should be templated with a “vector” (or theme). This vector is a technical integration of the well-known “set and setting” psychedelic wisdom and a determined “intentional state”. In this template, there must be periods of “tempered destabilization” that interact with core vectored frequency stimulations. There will also be short periods of “conflict demands” with returns to “theme vectored” signaling. This may sound a bit strange or complicated. There is actually a generally formulized principle however this short paper can only serve as an introduction.

“Our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the flimsiest of screens, there lie potential forms of consciousness entirely different. ... No account of the universe in its totality can be final which leaves these other forms of consciousness quite discarded. How to regard them is the question, for they are so discontinuous with ordinary consciousness.” (William James, “Varieties of religious experience”, 1902)

“As long as men have reflected about their world, a basic issue has divided them. Some have regarded man’s conceptual models as straight foreword reflections of reality. Others have looked upon these models as a fragment imposed by the limitations of man’s consciousness upon the unlimited variations of his internal and external world.

The eminent philosopher, Henri Bergson, took the latter position, maintaining that the function of our brain is basically eliminative. The nervous system attempts



to protect us from being overwhelmed and confused by the mass of irrelevant knowledge available to us. It shuts out most of what we should otherwise perceive at any moment and leaves only a small selection which is useful in practical situations.”

(The Hypnotic Trance, The Psychedelic Experience and The Creative Act, Stanley Krippner, PhD, The American Journal of Clinical Hypnosis, Vol. VII, Number 2, October 1964); (Mind Energy, Bergson, H., New York, Henry Holt, 1920)

Aldous Huxley follows the same view and states:

“According to such a theory, each one of us is potentially ‘Mind at Large’. But in so far as we are animals, our business is at all costs to survive. To make biological survival possible, ‘Mind at Large’ has to be funneled through the reducing valve of the brain and nervous system. What comes out at the other end is a measly trickle.” (The Doors of Perception and Heaven and Hell, Huxley, Aldous, Baltimore, Penguin Books, 1959)



ABOUT GARNET DUPUIS



Garnet was born and raised in Canada and is a naturalized USA citizen. He is an Integrative Health and Wellness expert, teacher & inventor with specialties in inter-disciplinary methodologies. With a wide experience in advanced technologies, Garnet has taught neuromodulation applications in major USA universities, professional sports teams, the Marine Corp and Naval Hospitals and lectured in European and Asian countries. Garnet has a broad education including college, university and graduate trainings in Classical and Clinical Homeopathy, Oriental Medicine, Massage Therapy/Bodywork, Hydrotherapy, Remedial Exercise, Biofeedback, Psychology and English Literature. Garnet is co-founder of Lucid Studios/neuroVIZR, Thailand. He currently resides in the tropical mountain rainforest in Northern Thailand. He is a life-long meditator and practitioner of Tibetan Dzogchen. Garnet is active in wild animal rescue and conservation and has built, manages and funds a sanctuary for SE Asian apes.

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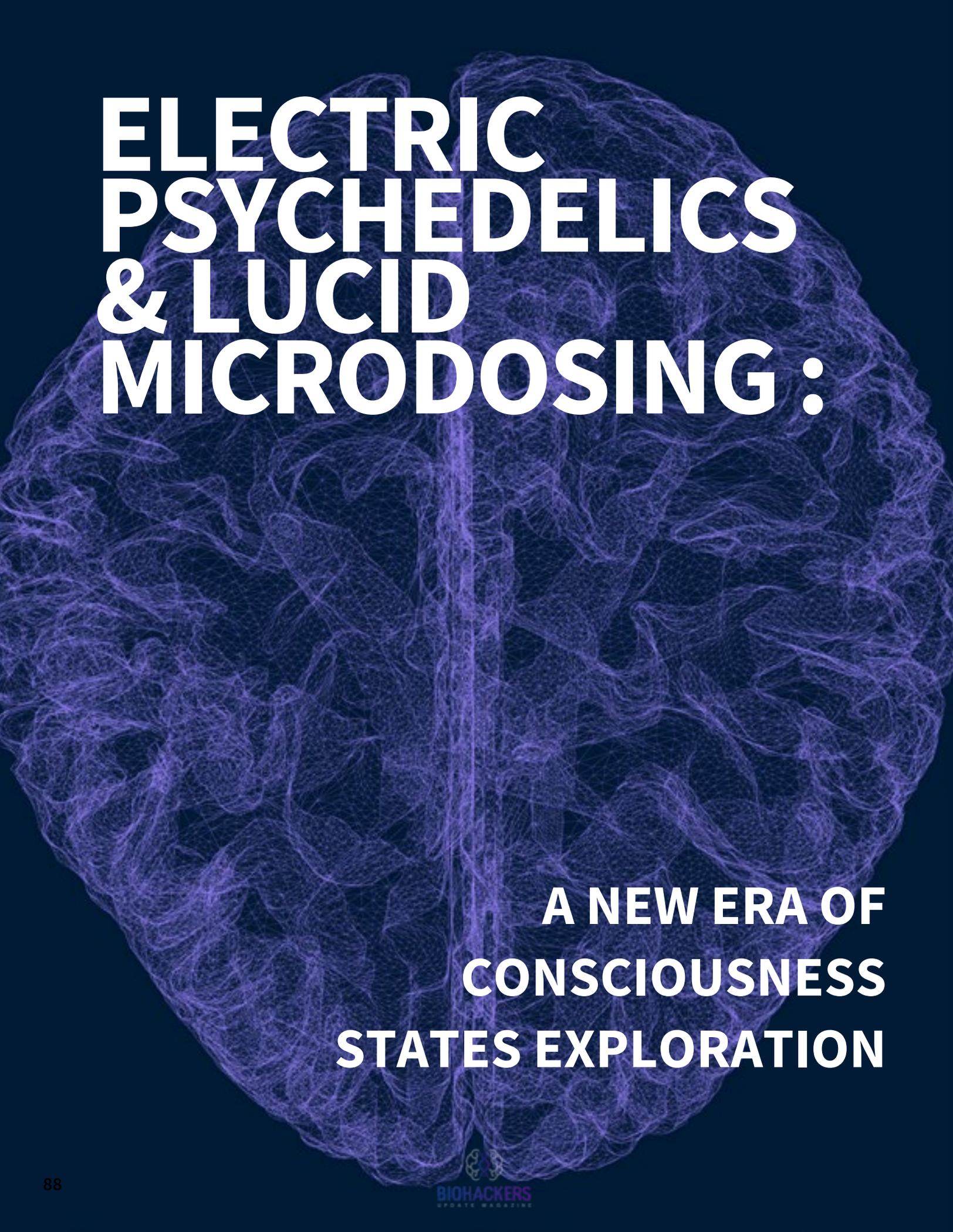
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ELECTRIC PSYCHEDELICS & LUCID MICRODOSING :

**A NEW ERA OF
CONSCIOUSNESS
STATES EXPLORATION**

INTRODUCTION:

Let's start at the roots of the subject. The experience of consciousness itself remains a mystery. Explanations of consciousness range dramatically from the unitary foundation of all existence to an illusory epiphenomenon of physical nerve activity. Whatever the truth(s) may be, the qualities and types of conscious experience are broad and numerous.

Classically, consciousness is categorized as wake, dream and sleep. Anyone with any introspection at all will disagree and point out that only these three are entirely insufficient. Perhaps splitting conscious experience into two very broad categories with many subsets might give us more latitude in which to explore – let's consider then Ordinary and Non-Ordinary consciousness - with Non-Ordinary being of most interest here in this short paper.

Non-Ordinary Consciousness States (NOCS) are sometimes also referred to as Altered States of Consciousness (ASC). The words we use to describe things and experiences are inseparably linked to our culture. This fact is further complicated when we realize that the various states of consciousness themselves are valued and interpreted very differently depending on the era and type of culture in which they are manifest. The same manifest experience can be praised in one time/culture while being considered pathological in another.

The pivotal point here is that although a certain type of conscious experience may be “non-ordinary” or “uncommon” does not make it negative and abnormal simply because it occurs less often in the flow of “ordinary” or “mundane” life experiences.

Non-Ordinary Conscious States (NOCS) are normal – the human nervous system is inherently capable of shifting for periods of time into expanded atypical modes of perception and cognition. To quote William James - “The faculties of our brain are adapted in advance to the features of the world in which we dwell”.

A New Era of Electric Psychedelics and Lucid Microdosing.

AGENTS & ACTIONS:

Aside from specific “psychedelic” compounds (eg. LSD, psilocybin, mescaline, DMT, etc), there is also the consideration of the Non-Ordinary Consciousness States themselves. Not only is there a varied list of “psychedelic” compounds that act as “agents” to induce a NOCS, there are also many other “agents” that may induce a NOCS.

1) Long periods of darkness are well known to induce phosphenes and entoptic internal visualized light experiences (eg. the “prisoners cinema” of dungeons):

2) Sustained physical stresses and labors are known to induce internal light visualization:

3) Physical injuries, pathologies and diseases are well known to be potential causes of hallucinations and internal light experiences:

4) Social group drumming, dancing and singing could induce uncommon or altered states of consciousness conducive to internal light visualization.

5) Serious sustained hunger and starvation can induce hallucinations and internal light visualization.

6) There are impressive “spiritual/yogic” practices and traditions that have crafted numerous techniques that reliably generate novel, expansive shifts in consciousness.

7) Various plant and animal-based hallucinogens are potent triggers of strong and impressive “psychedelic”



visual experiences and may have been accidentally or purposefully ingested.

The conclusion we can make from the information above is that the human nervous system is primed for NOCS and this end point “action” can be induced by a variety of “agents”. The “agents” themselves do not “create” the NOCS but rather trigger or enable the expression of the NOCS. Which opens the door to Electric Psychedelics and Lucid Microdosing as unique new “agents” that may induce the same intended “action”.

ELECTRIC PSYCHEDELIC:

Properly crafted Light/Sound stimulations have a profound effect on the neurology of the brain. These effects can often replicate neurological changes induced by known psychedelic compounds.

It is known now, for example, that common psychedelic compounds both disable the Default Mode Network (DMN) in the brain as well as suppress alpha brain waves in the visual cortex. The disabled DMN acts to dissolve the egoic feeling of “me” and yields the open sense of “oneness” while the suppressed visual cortex alpha releases the cascade of visual colors and geometrics. Interestingly, properly designed Light/Sound stimulation can achieve the same neurological effects on command and for prescribed periods of time.

LUCID MICRODOSING:

Psychedelic compound based microdosing is becoming increasingly more popular and, with well-designed research validation, holds significant promise for numerous beneficial applications. It is but a small conceptual step to move forward from the Electric Psychedelic premise to Lucid Microdosing applications.

Consider the following:

- 1) Limited low-level stimulation is capable of engaging dynamic adaptive measures in the brain;
- 2) Destabilization of common neural relationships are capable of generating a variety of uncommon states
- 3) The primary visual cortex is highly susceptible to excitation when networks are destabilized especially when combined with alpha power suppression;
- 4) The Default Mode Network which normally maintains the quality of “me-ness” or
- 5) ego-identification is capable of being temporarily destabilized with a quality of “oneness-with-all” or ego-dissolution resulting.
- 6) Neuroplasticity of the brain is an ongoing function even in the adult brain and this positive process can be enhanced in novel ways that are complementary to the measures listed.

In the consideration of our topic in this paper, some foundational concepts regarding neuroplasticity are very helpful in answering questions regarding “microdosing” in any form.

In one popular approach, neuroplasticity is regarded in four interrelated and overlapping stages. The four are:

- 1) Functional Neuroplasticity:
 - a. Takes place in “moments” (seconds to minutes to hours);
 - b. Preexisting under-functioning synaptic connections that already exist are aroused into higher levels of efficient function;
- 2) Synaptic Neuroplasticity:
 - a. Takes place over days to weeks;
 - b. New and different synaptic pathways are created to accommodate new demands;
- 3) Neuronal Neuroplasticity:
 - a. Takes place over months;
 - b. New and different physical nerves (neurons) are

created to allow the new synaptic connections and patterns.

4) Systemic Neuroplasticity:

- a. Takes place over years;
- b. The new physical neurons and their evolving signal connections and pathways are integrated into all of the global systemic metabolic, adaptation and self-regulatory aspects of the organism as a whole. (The “First Language” and Neuroplasticity, March 2018 – Garnet Dupuis – amended July 30, 2021)

For an even deeper look at neuroplastic dynamics that is more directly applicable to the “microdosing” concept and its protocol structures - There are four basic stages or steps that happen as the Brain as a Whole responds to Neuroplastic Change:

- 1) Neuro-Stimulation (the “**input reaction**”); 0 - 2 hours
- 2) Neuro-Modulation (the “**reaction response**”); 2 - 8 hours
- 3) Neuro-Relaxation; (the “**relief response**”); 8 - 24 hours
- 4) Neuro-Differentiation (the “**relief result**”) 24 - 48 hours



It is interesting to note that this timeline corresponds to the classic Fadiman 3 day Microdosing Protocol.

Now let's break these down to better understand.

1) **Neuro-Stimulation** is like giving information/food to a hungry brain. It has an appetite and is hungry for the info/food because it is the way it can keep the learning going and solve the problem.

2) **Neuro-Modulation** now kicks into gear and all of the multiple Brain Networks have an improvement of functions. This decreases the super-sensitivities that have formed as the Brain has been lacking certain Adaptive responses.

3) **Neuro-Relaxation** happens after the Neuro-Modulation does its work by re-setting the "arousal levels" and calming those "super-sensitivities. All the Brain Networks and associated circuits get to "Rest & Restore" themselves. Catching up on sleep is important for brain healing - in deep sleep it's known that the brain undergoes a sort of cellular clean-up process.

4) **Neuro-Differentiation** is the resultant long-lasting stage when enduring positive learning can be integrated into the Stable State brain functioning. Now the new habits take charge. The recovered brain is now in a position to start re-learning lost functions. (The Super-Dynamics of Neuroplasticity - Garnet Dupuis - Amended August 13, 2021)

Do Neuroplasticity & Microdosing have a Relationship?

There are different types of change as we can see from the neuroplastic information stated above. Essentially, in the simplest view, the changes can be short term or long term. Short term is typically labeled "state change" and long term is "trait change". Semantically, it reflects the difference between the original Greek terms of "elastic" and "plastic". "Elastic" would be comparable to "state change" in that it is a more temporary shift that will likely return to its original ordered condition once the provocative influence is withdrawn. "Plastic" would be like "trait change" that tends to persist once the shaping influence ceases. This dual dynamic is much discussed in



psychedelic forums as it applies to whether a person can maintain and integrate into their life insights experienced when “tripping” or whether the insights simply disappear as in a dream. Elastic or plastic?

The concept of change implies a movement from one ordered state and into another new and different ordered state. Microdosing expects that brain/mind change is possible and this expectation is in alignment with modern neuroplastic principles.

Destabilization & Chaos:

Psychedelic compounds reliably induce an interruption of normal neural organization, disrupt certain key neural networks and permit an unfiltered flood of unpredictable sensory stimulation throughout the brain. In effect, they successfully reduce Order and introduce Chaos for a sustained period of time ranging from 2 to 12 hours.

It is suggested that we recognize the serotonergic psychedelic substance as a temporary “destabilizer” of ordered processes.

In full “macro” dose applications, the destabilization is profound with evident modifications in consciousness. In “micro” dose applications which are sub-perceptual, the expectation is that the “glue” of Order and Habit is just slightly softened permitting neural-energetics to proceed along their habitual courses with a mildly increased degree of liberty and choice not typical of their metabolic set points.

The proposal in this paper is that there are other available neural “destabilizers” which can reliably trigger “microdose” levels of adaptive regulation – specifically, in this case, uniquely crafted Light/Sound Lucid Microdose Experiences.



Tempered Instability:

The Ordered state of efficient Adaptive Learning, has strong integrity that resists breakdown. The Predictive nature of habitual brain functions makes it very difficult to rearrange neural responses while the patterns remain cohesive. Fortunately, like all CAS (Complex Adaptive Systems), the brain is always dancing at the edge of Chaos and this drift into Chaos can be induced and sustained within reasonable limits. It is when the “filters” weaken and “noise” is allowed to increase that the doorways to new adaptive learning open up. This is the basis of neuroplastic change and rests at the heart of compositional designs and is especially prominent in the **Lucid Microdosing Protocol Collection**.

Using special Light/ Sound signal structures, it is possible to induce and temporarily sustain an unstable condition in the brain. In positive processes, it is critical that the degree and length of the destabilization be controlled to match the neuroplastic capacity of the individual. This is the basis of the term “Tempered Instability” as it respects the relation of the neuroplastic demand with the common neuroplastic capacity of the human brain.

In the composition, Tempered Instability is used judiciously to first “soften the glue” of Order and trigger a positive degree of Attention without pushing it too far into Vigilance or, worse, Threat. Later in the composition, one or more periods of Tempered Instability are typically reintroduced as “message challenges” with the purpose of reinforcing the cardinal new information.

At a foundational level, once the initial Tempered Instability is introduced and the Attention (Attention is the key trigger in any neuroplastic action) has been aroused, the composition immediately introduces the Primary Attractor which carries the signals aligned with the main theme or “vector” of the composition. After injecting the Primary Attractors, the Secondary Attractors are introduced which complement the Primary Attractors. The Secondary Attractors help create a messaging “context” for the Primary Attractors (Central Tenets of Neuro Reality Processes; Garnet Dupuis; July 6, 2018; amended July 31, 2021)

Tempered Instability & Lucid Microdosing Sessions:

Tempered Instability is a fundamental dynamic of a “microdosing” process using low dose, sub-perceptual destabilization generated by the psychedelic substance. Adequate degrees of destabilization can also be achieved using properly crafted light/sound stimulation techniques.

The degree of Tempered Instability in psychedelic microdosing is managed by the amount of the substance that is ingested combined with the frequency at which the dose is administered. In a Lucid Microdosing composition, the degree of Tempered Instability can be managed more precisely by modifying the light/sound signal characteristics along a number of technical parameters. As in the use of substances, the frequency of the dose is also an important factor.

LUCID MICRODOSING - PROTOCOLS:

A user may “stack” the Lucid Microdose experience with any preferred compound or, for whatever reasons, use the Lucid Microdose “solo” without any psychedelic compound. There is also the opportunity to alternate with and without.

ABOUT GARNET DUPUIS



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