

Healing Trauma With Neural Annealing: Is annealing the key condition for successful psychedelic psychotherapy?

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Abstract

Mystical-type experiences mediate the therapeutic benefit of psychedelic-assisted psychotherapy (Griffiths et al. 2016)(Ross et al. 2016)(Yaden and Griffiths 2021). In this talk we will explore why this may be the case and how we might improve this effect. On the one hand we can interpret the effect of mystical-type experiences through the lens of belief and attitude change(Carhart-Harris and Friston 2019). But beliefs that are not deeply felt are unlikely to have much of an effect. Why would mystical-type experiences in particular cause deeply felt belief changes? On the other hand, one can interpret the effect of these experiences to be healing at a low-level: they allow the reconfiguration of the microstructure of our experience in beneficial ways. The first lens suggests that these experiences change what we believe and think about, whereas the second lens suggests that the experiences change how we feel. In this talk we will unify these two lenses and argue that neural annealing(Johnson 2019) underlies high-level changes in beliefs and attitudes as well as low-level microstructural healing of internal representations. This paradigm ties together the puzzling effects of mystical-type experiences by interpreting them as uniquely strong versions of neural annealing. We suggest that traumatic memories are indeed implemented with low-level microstructural dissonance in the internal representations(Gomez-Emilsson 2017). Not only are they about something bad, they also feel bad. In turn, neural annealing targeted towards these internal representations can heal and transform them from dissonance-producing to consonance-producing. More so, neural annealing also enhances the information propagation fidelity of the nervous system, allowing the healed representations to update the state of the rest of the nervous system. This insight, along with careful study of annealing dynamics under psychedelics, can allow us to target the annealing process in order to heal these internal representations more effectively. We conclude with empirical predictions for what to look for in order to identify the signatures of successful neural annealing under psychedelics and suggest methods to piggyback on the natural well-trodden paths of beneficial annealing (e.g. meditation, yoga, music, creativity) to optimize such experiences.

phenomenological information the participants gain access to is generally discarded as it goes through the low-dimensional information filters of standardized questionnaires. There is no real buildup of phenomenological information or an effort to integrate it across participants (participants don't generally talk to each other). The model does excel at generating copious high-quality neuroimaging data.

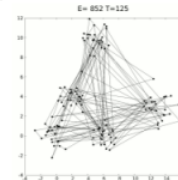
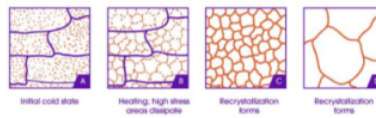
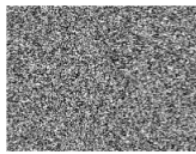
Model (2) suffers from the problem that the idiosyncratic beliefs of the psychonaut tend to "anneal more deeply" (see the next slide for a more through description of this) with each trip. Unless they were to focus on the phenomenal character of the experience rather than the intentional content, what tends to happen is that specific high-level beliefs become energy sinks and they dominate the exploration. Recall how DMT's world-sheet "crystallizes" around objects and ideas you can recognize. Thus, as you take psychedelics over and over, the realms of experience one goes to will tend to follow recurring themes along the lines of what the most successful energy sinks from previous experiences have been. The explorer usually does not develop technical models of the phenomenological effects, but rather, tends to focus on the metaphysical or philosophical implications of the experiences.

Model (3) is like that of a think tank. Ever since writing articles like *How to Secretly Communicate with People on LSD*, we have received a lot of correspondence from pretty smart people who enjoy exploring exotic states of consciousness. The multi-year dialogue between us and them and each other has resulted in a lot of generative model building for which we can then get feedback. Grounded in common background philosophical assumptions [Johnson 2016] and a drive towards phenomenological accuracy, the type of output of this model tends to look much more like *The Hyperbolic Geometry of DMT Experiences* than either a neuroscience paper (model 1) or a book about the *Earth Coincidence Control Office* (model 2).

Which of these information-processing architectures would you use if you were trying to figure out the truth of how psychedelics work? If they were diagrams for a neural network architecture, which one do you think would model and integrate information most effectively? Ultimately, we should think of these models as complementary. But since model 3 is novel and largely unexplored, it might be sensible to pay attention to what it outputs.

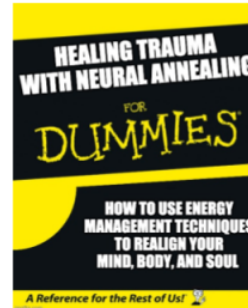
Neural Annealing (Johnson, 2019)

- Neural annealing is an algorithmic account of the process of updating bayesian priors
 - Analogies to metallurgy: heating a metal above its recrystallization temperature, keeping it there for long enough for the microstructure of the metal to reach equilibrium, then slowly cooling it down, letting new patterns crystallize
 - As an global optimization algorithm
 - Advantages to gradient descent, branch and bound when finding an approximate global optimum is preferable to a precise local optimum bounded by time



The Good Annealing Manual: From Psychedelic Alchemy to a Chemistry of the Mind

1. Energy Raising
2. Energy Dampening
3. Energy Shifting
4. Neuroacoustics Diagnosis
5. Information/Valence Trade-Offs
6. State Stabilization Techniques
7. Dealing with Limit Cycles
8. Dealing with Noise-Driven Chaos
9. Identifying and Addressing Negative Attractors
10. Harnessing the Negentropy of Peak States
11. Spectral Considerations: Frequency Transforms
12. Preventing Information Destruction
13. Leaving a Breadcrumb: Placing Tethers Between States



This slides illustrates the sort of topics and problems that a “Good Annealing Manual” would need to cover. As an integrated “energy management” strategy, such a manual would describe how to raise energy, how to dampen it, how to translate it from one domain into another, how to stabilize a state, how to get knocked out of an unhelpful limit cycle, and so on.

REBUS

(R. L. Carhart-Harris and
K. J. Friston, 2019)

<https://pharmrev.aspetjournals.org/content/71/3/316>

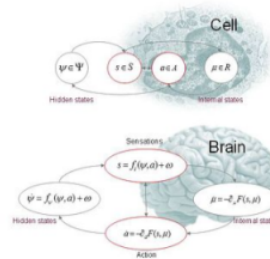


Image from: Melting Asphalt <http://35.161.88.15/neurons-gone-wild/>

(Carhart-Harris and Friston 2019)(Simler 2021)

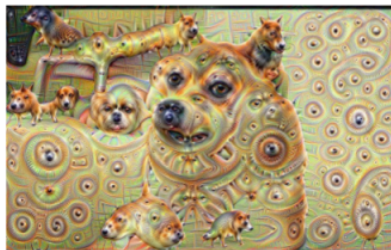
FEP: Computational Self-Organization

- The brain as a system which seeks non-equilibrium steady states which minimize variational free energy
- Computational account of the brain as a Markov blanket minimizing difference in model with sense perception



(Carhart-Harris and Friston 2019)

SEBUS or REBUS?



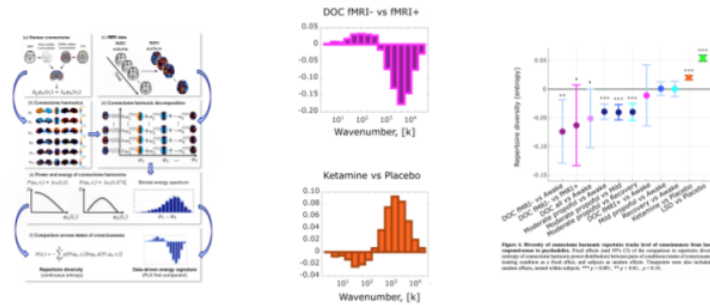
Strengthen Beliefs Under Psychedelics? (Safron, 2020) - <https://psyarxiv.com/zqhq4b/>

(Safron 2020)

Note: I should have cited Michael Schartner's work (and more generally the work coming out of Anil Seth's lab which applies the predictive processing paradigm and neural network feature visualization to model the effects of psychedelics). Apologies for this omission. Importantly, all of that work (in addition to REBUS and SEBUS) lives at the computational level of analysis. What QRI is bringing into the picture is how the implementation level based on

principles of harmonic resonance and the Symmetry Theory of Valence underlie predictive processing. More on this below.

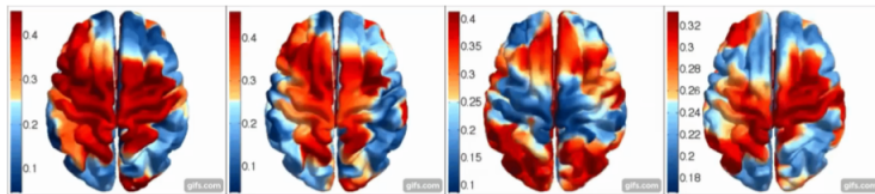
Annealing at the Implementation Level: CSHW



Luppi, A. I., Vohryzek, J., Kringelbach, M. L., Mediano, P. A. M., Craig, M. M., Adapa, R., Carhart-Harris, R. L., Roseman, L., Pappas, I., Finola, P., Williams, G. B., Allanson, J., Pickard, J. D., Menon, D. K., Atasoy, S., & Stamatakis, E. A. (2020). Connectome Harmonic Decomposition of Human Brain Dynamics Reveals a Landscape of Consciousness [Preprint]. *Neuroscience*. <https://doi.org/10.1101/2020.08.10.244459>

(Luppi et al. 2020)

What Do The Harmonics Look Like?



Selen Atasoy, Isaac Donnelly, and Joel Pearson (2016)

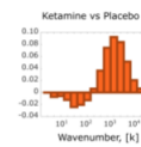
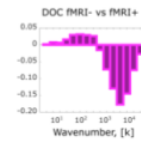
(Atasoy, Donnelly, and Pearson 2016)

Annealing at the Implementation Level: CSHW

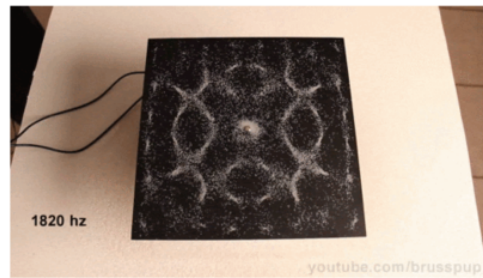
Reduced energy in the lower harmonics takes away the "frame" that organizes experience.

Increased energy in the higher harmonics and the ensuing increased repertoire diversity may explain the anarchic quality of the state.

This highlights the importance of grounding.



Duality Between Vibration and Standing Wave Pattern



One of the interesting ideas of Steven Lehar is applying the duality between standing wave patterns and resonant modes of objects to the brain. A lot of psychedelic phenomenology suggests that there is a duality between the vibe of the state and the geometric layout of the multi-modal hallucinations. In other words, each phenomenal object has a corresponding way of vibrating, and this is experienced as a holistic signature of such objects. (cf. Resonance and vibration of [phenomenal] objects). (See also: Hearing the shape of a drum).

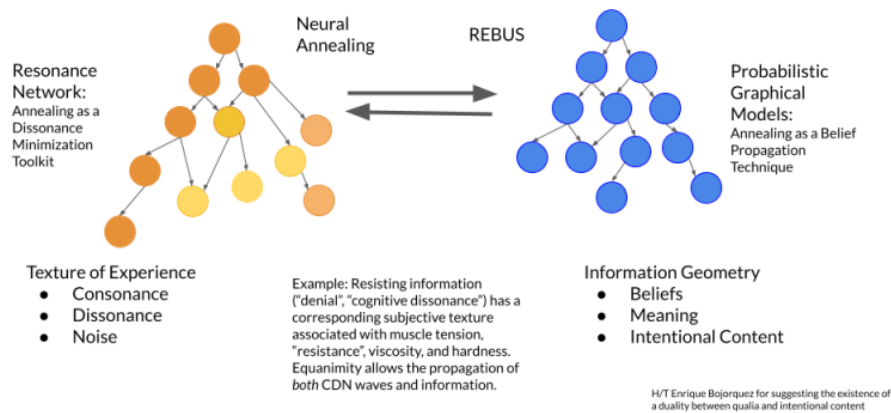
Valence Structuralism



In the context of this presentation, the most important idea of this slide is

that the duality between standing wave patterns and the vibe of the experience showcases how symmetry and valence are related. Blissful “heavenly realms” on DMT are constructed in ways where the resonance of the phenomenal objects with each other is consonant and their structure is symmetrical. Likewise, the screechy and painful quality of the DMT “hell realms” comes along with asymmetries, discontinuities, and missing components in the phenomenal objects that make up experiences. The overall vibe of the space is the result of the intrinsic vibratory modes of each phenomenal object in addition to each of the possible interactions between them (weighted by their phenomenal distance). An analogy readily comes to mind of an orchestra and the challenges that come with making it sound consonant.

Hypothesized Duality Between Phenomenal Texture and Computational State



From Mike’s Why we seek out pleasure:

A good algorithmic theory of cognition will collect, unify, and simplify a lot of things that look like odd psychological quirks, and recast them as deeply intertwined with, and naturally arising out of, how our brains process information. I’m optimistic that Symmetry Theory will be able to do just this- e.g.,

Cognitive dissonance happens when two (or more) patterns in your head are battling for your neural real estate, and they’re incompatible- i.e., they’re collectively dissonant/asymmetrical.

Denial is what happens when your brain attempts to isolate/quarantine such patterns, and is actively working to prevent this tug-of-war for neurons.

This model implies that your brain can evaluate the “internal consistency/harmony” of a neural pattern, and reject it if there’s a negative result- and also the “simulated relative compatibility/harmony” of

two neural patterns, and try to keep them isolated if there's a negative result. I'd suggest the best way to understand this is in terms of projective geometry, resonance, and symmetry: i.e., to evaluate a pattern's "internal harmony" and whether it 'runs well (is stable) on existing hardware', the brain uses principles of resonance to apply certain geometric projections (high-dimensional-to-lower-dimensional transformations) to the pattern to see if the result is stable (unchanged, or predictably oscillating, or still strongly resonant) under these transforms. Stable patterns are allocated territory; unstable ones (=dangerous neural code) are not. The internal mechanics of this will vary across brain areas (based on the specific resonance profile of each area) and emotional states, which might contribute to how certain types of information tend to end up in certain brain regions. Likewise, this could explain how moods coordinate information processing—by changing the resonance landscape in the brain, thus preferentially selecting for certain classes of patterns over others. A core implication of this model is that different kinds of dissonance will drive different kinds of behavior (feel like different kinds of imperatives), and based on what action is needed, a mood may create (or be the creation of) a certain kind of dissonance.

Why we seek out pleasure: the Symmetry Theory of Homeostatic Regulation(Johnson 2017)

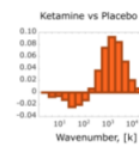
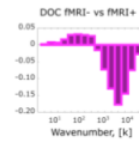
Now applying annealing to the above, we hypothesize that: (1) On the one hand, at the implementation level neural annealing works as a method to reduce dissonance by escaping local minima. (2) On the other hand, at the computational level simulated annealing can be used as a method to reduce prediction errors (cf. message passing and belief propagation). We hypothesize that there is a kind of duality between these two levels of abstraction. We are very interested in cleanly formalizing it so it can be empirically tested. But the facts seem to suggest that there is something here. What this duality says is that for any transformation that you do to the resonance network there will be a corresponding effect on the belief network and vice versa. For example, in this light, you will always find that denial or cognitive dissonance will come along with the phenomenology of "resistance" in one of its many guises (such as muscle tension, feelings of viscosity, or hardness). If you can address the muscle tension directly with progressive relaxation (or yoga, massage, etc.) you will also be implicitly addressing the integration of information into your world-model. At the same time, you may use specific beliefs in order to relax specific muscles, and some aspects of meditation may involve doing this to an extent (e.g. "now is all there is" and "the self is illusory" are beliefs that would seem to result in particular patterns of mental and physical relaxation).

Annealing at the Implementation Level: CSHW

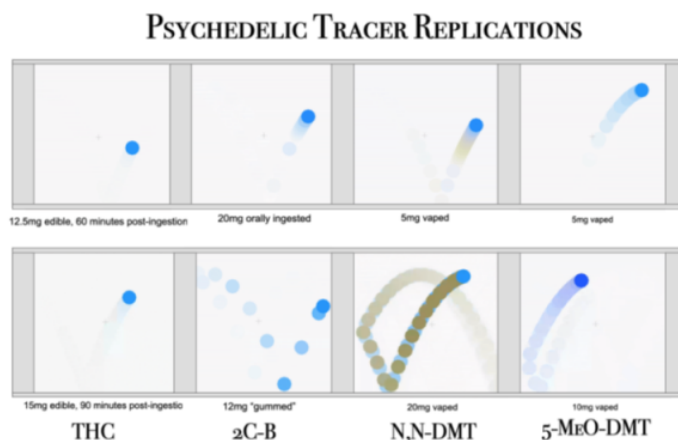
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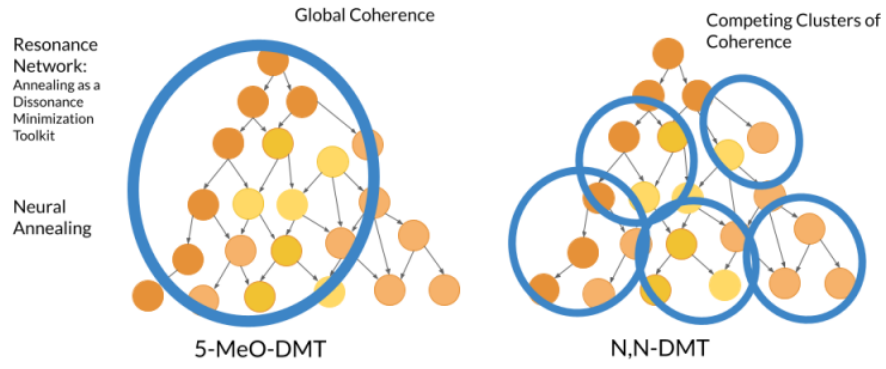
We might succinctly explain how a resonance network trying to minimize dissonance could implement the free energy principle. Namely, we could maximize “accuracy – complexity” in the following way: If complex models require complex networks of resonance to be implemented, then there might be an inherent dissonance cost to complexity. More symmetrical configurations lower this cost, which makes more compact and coherent models preferable. At the same time, to take care of the accuracy, prediction errors themselves might be implemented with dissonance (e.g. via out-of-phase communication between layers of the hierarchy). Together, these two effects favor both accurate and simple models.



<https://psychophysics.qualiaresearchinstitute.org/>

An interesting contrast that illustrates this duality between the computational and implementational level of abstraction is that between the effects of DMT and 5-MeO-DMT (Gómez-Emilsson 2020a). Particularly, DMT seems to give rise to the chaotic generation of information and this can be seen in something as simple as the style of the tracer effects it induces (richly-colored flip-flopping between positive and negative afterimages). 5-MeO-DMT’s tracer effects are generally monochromatic and the same color as that of the input (Gómez-Emilsson 2020b).

5-MeO-DMT Annealing vs. N,N-DMT Annealing



We hypothesize that DMT’s effects at the implementation level can be understood as the result of competing clusters of coherence across the hierarchy, whereas the main attractors of 5-MeO-DMT seem to involve global coherence. Modulating the average synaptic path length in a system of coupled oscillators can give rise to this sort of effect. By randomly adding connections to a network of coupled oscillators one first sees an emergent state of many competing patches of synchrony, and then, after a threshold is crossed, one starts seeing global synchrony emerge. Despite both drugs making the brain “more interconnected”, the slight difference in just how interconnected it makes it, may be the difference between the colorful chaos of DMT and the peaceful nothingness of 5-MeO-DMT.



Some levels of the hierarchy will take the chaotically-generated information very seriously.

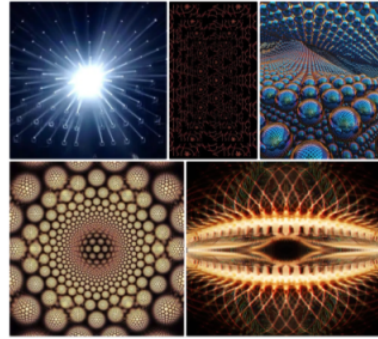
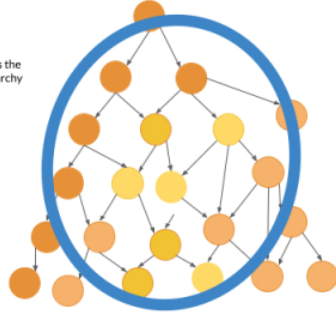
Some implicit belief updating to fit the content of the hallucinations may be very difficult to resist.

Image from: Melting Asphalt <http://35.161.88.15/neurons-gone-wild/>

The competing clusters of coherence across the hierarchy can evolve to adapt to each other. The DMT realm is more of an ecosystem than it is a state per se (ex: Hyperspace Lexicon). And due to the duality between dissonance minimization and prediction error minimization, avoiding updating one’s belief in the direction of these realms being real causes intense cognitive dissonance. Some level of belief updating to fit the content of the hallucinations might be very difficult to resist. Indeed, the forced coherence across the layers of the hierarchy would be bypassing one’s normal ability to resist information coming from the lower layers.

Peak States

Globally
Coherent
Attractor:
Coherence across the
levels of the hierarchy

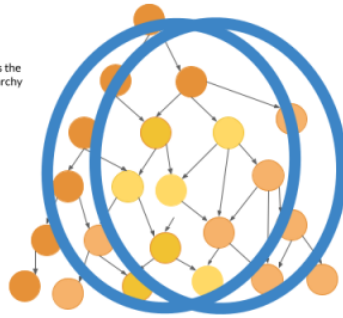


On peak experiences such as those induced by 5-MeO-DMT, global coherence will generally have the effect of dissolving internal boundaries. In turn, due to the duality proposed, belief updating in the direction of extreme simplicity is very difficult to resist. Global annealing without sensorial chaos results in the minimization of model complexity; high accuracy is taken care of thanks to the low information content of the state. As a consequence, one experiences very high-valence, high-energy, high-symmetry states of consciousness that come along with belief updating towards ideas with close to zero information content.

The high-valence nature of the state can be very useful to heal dissonance in the network, so therapeutic benefits seem very promising (notwithstanding the somewhat forced belief updates the state induces).

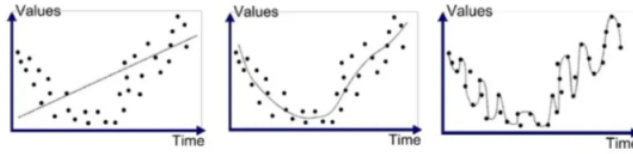
Peak States

Globally
Coherent
Attractor:
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levels of the hierarchy



Unfortunately a nearby attractor of the globally coherent states is when there are two incompatible coherent states competing with one another. This can result in extremely negative valence and belief updating in the direction of “everything being bad”.

Accuracy - Complexity



Underfitted

Good Fit/Robust

Overfitted

5-MeO-DMT

N,N-DMT

We are all God

This is a Simulation

Everything is Love

The Greys and the USSR are Plotting

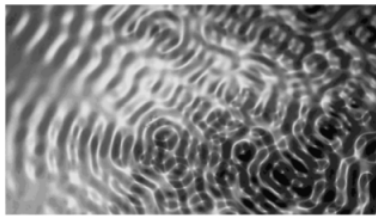
Oneness is All You Need

Ra and Thor are Real Beings in Another Dimension

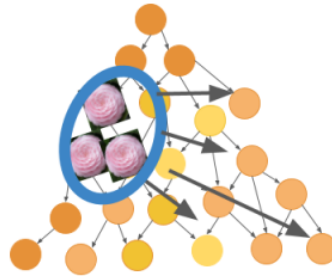
We now see how the typical belief changes caused by these two drugs have a dual counterpart in how they feel. I am of the opinion that a commitment towards truth and careful attention to one's state of mind can prevent (or at least substantially lessen) the epistemological failure modes of these drugs. But since this kind of model is not known by the general population, for most people these drugs do tend to act as “epistemological hand grenades”.

See Appendix A & B at the bottom of this article for examples of each of these failure modes.

Neural Annealing with Metta + Psychedelics



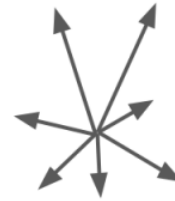
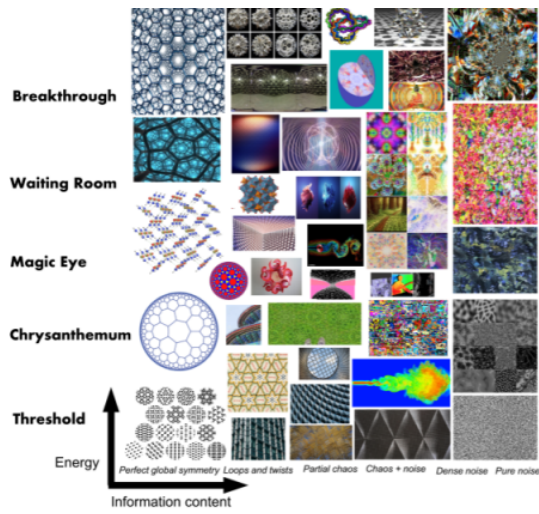
Very Important to Bring as Much of the Trauma to the Surface as the Waves of Metta Can Digest, But Not More (Unlike w/ MDMA)



Now on to the therapeutic applications: practicing loving-kindness meditation consistently for weeks before a trip seems to substantially change its phenomenal character. It feels that metta practice over time anneals a consonant metronome which can become massively amplified during a psychedelic experience. In turn, a brightly shining metta metronome emits “healing waves of energy” within one's world-simulation (I know how crazy this sounds!), which impact the contents of one's subconscious in ways that reduces their internal dissonance.

Similar benefits can be obtained from other meditation practices, as long as their emphasis is on high-valence and coherent states of mind. See also: Buddhist Annealing (video).

Importantly, you can “work smart” if you manage to use the seeds of consonance as the nucleation sources for alignment cascades. This can heal at a very deep level, and it is what people are talking about when they say things like “all is love”.



State-Space Navigation?

A secular <https://qualiacomputing.com/2016/06/02/psychedelic-alignment-cascades/> would ideally have very detailed information for how to move around in the state-space of consciousness.

High-Quality Annealing Targets

- Brahmviharas
 - Metta / Friendliness
 - Compassion
 - Sympathetic Joy
 - Equanimity
- Seven Factors of Awakening
 - Energy
 - Joy
 - Investigation
 - Mindfulness
 - Concentration
 - Tranquility
 - Equanimity



Apparently, equanimity is also highly beneficial during psychedelic experiences. But rather than merely repeating the mantras that everyone in the psychedelic community chants (“just let go”, “surrender”, “accept”), we can use a More Dakka approach and aim to maximize equanimity rather than merely invoking it. Taking psilocybin during a meditation retreat in which you do a lot of equanimity exercises will allow you to “let go” with much greater skill than what you could do in normal everyday life. As a result, one is able to “learn one’s lessons” with much greater ease and a lot less resistance. This, I think, is generally good. After all, the point is not to punish oneself, but to learn from one’s mistakes.

In turn, Shinzen Young says that experiencing pleasure with equanimity is very healing. By not grasping, one is letting the consonant waves propagate freely throughout one’s nervous system, which results in positive annealing. So a possible therapeutic modality might be to combine peak states together with high levels of equanimity. If we want to bump the therapeutic effect sizes of psychedelic psychotherapy, this is the sort of thing I consider to be very promising.

Progressive Relaxation: The Joy of Equanimity

More Dakka: Equanimity exercises, such as cold showers everyday for a month before the trip, ("letting go" is largely subliminal rather than top-down volitional - it is a muscle that can be exercised).

Shinzen Young also says that experiencing bliss with equanimity is particularly healing. (Desire and craving are compatible with pleasure but they add a sense of frustration and resistance. The ceiling of valence is higher when one is free of compulsion and desire).

Equanimity allows the negentropy of the peak states to propagate throughout your nervous system without grasping.

Let Water Seek Level! :)



I conclude by providing some annealing targets that are generically good for one's mental health. Practice them consistently before a psychedelic experience so that they can be the nucleation points of sane and hedonically beneficial psychedelic annealing. Being bathed by love is good. Being bathed by love and equanimity at the same time is even better. Being bathed by love and all Seven Factors of Awakening at the same time might be still even better. The ceiling of wholesome happiness is not currently known by science. It is probably much higher than we can imagine.

Appendix A: What Happens When You Take Too Much DMT – What Does Overfitting Look Like?

A case study of a psychiatrist case who self-medicated his depression with a regiment of 1g of DMT (along with MAOIs) and 4mg of clonazepam a day:

- “On arrival, the patient was nonverbal, combative, and required six security guards to restrain him. When less restrictive measures failed, he was given propofol 1,000 mg IV, ketamine 500 mg IM, midazolam 5 mg IV, diazepam 20 mg IV, and fentanyl 4 mg IV with minimal effect.”
- “Psychiatry was consulted after the patient’s delirium resolved and he was medically stabilized as he exhibited symptoms of mania and psychosis. He was pressured in his speech, hyperreligious, and delusional. He believed that demons were leeching into his soul and asked the medical staff for an exorcism. It was recommended that the patient be admitted to the behavioral health unit for mood stabilization.”

How can I help my friend understand that what he is seeing is a side effect of smoking DMT on a daily basis? (from Quora – note: it is impossible for me to verify the accuracy of this report). From the comment thread:

- “He has been smoking it every day and night for the past 3 months that I know of. He sees these little beings everywhere and says they are trying to destroy his house pushing it over. He also says they spray mace and fairy dust and little balls in his face and other peoples too. He doesn’t believe that nobody else sees this happening, he says we have all been compromised and can’t be trusted. I’m worried about him and also his girlfriend that has to deal with him and he’s delusional. His daughter is scared to come home, his parents want to have him committed, and he doesn’t believe it has anything to do with dmt! He absolutely believes it is real.”
- “He is always under the influence of DMT, he smokes it all day every day. He says it no longer makes him hallucinate like when he first tried it, now it just takes away pain . NOT TRUE!! it’s like now he believes that this

altered state of mind is reality and he's losing everything. He is even destroying his own house to get them out from behind the walls.the other night he stood up and started stabbing his ceiling saying he was going to get them. It's very disturbing to see him like this."

- "He's doing about the same. Last time I went to see him he was showing me how the moon was following him into his back yard and then back to the front yard . He also sees a bunch of drones in the sky that I can't see. He still doesn't believe that we can't see the walls and countertops moving, or feel the fairy dust being sprayed in our faces."
- The YouTube channel C.U.E. COMPREHENSIVELY UNCOVERING EVIDENCE seems to exemplify quite accurately what DMT-induced overfitting looks like (e.g. see his DMT-informed numerological musings) Reddit user ClockJoule: see an interview with him about his daily DMT use and the beliefs that he developed as a consequence: Magic Mushroom Cloud – THE MAN WHO SMOKED DMT FOR 120 DAYS STRAIGHT.
- Report(s): A warning to my fellow psychonauts regarding hyperspace entities (wall of text alert!) – excerpt:
- "It all culminated in one long, elaborate, and highly dramatic visionary experience in which I was essentially 'recruited,' initiated in some grand ceremony alongside a large group of others presumably in my same situation (which may have just been "actors"). It was all part of some kind of vast organization, which could best be described as 'universal consciousness transcendental cosmic hippie space religion.' [Read Lehar's warning against believing what the DMT entities tell you]. It all had a very attractive but vaguely cult-like Scientology kind of feel to it. They even had their own music (which was actually pretty cool; see my comments on "the director" in part 4 for more details), propaganda, regular meetings and rituals, the whole works. They even seemed to revere a deity of some sort, their version of The Source (more detail on that in part 5), but this whole experience was so full of illusion and misdirection that I have no idea what their 'deity' really was, nor their true relation to it."
- "I've gone on way to long already and need to start wrapping things up here, but long story short, in light of their new demands of allegiance, and through a separate series of bizarre synchronicities in 'real life' (what that means to me now, I have no idea) that I still can't quite explain, I began to have some serious doubts and questions that needed answers. As I reflected on all that they had taught me, I began to realize that there were some major gaps in my knowledge, and that I had unwittingly filled in a lot of the blanks with my own speculation while assuming the picture I was being given was much more complete than it actually was. To summarize, over a series of increasingly confrontational and unpleasant experiences, I became less and less satisfied with their vague and evasive answers to my direct

(and I think perfectly reasonable) questions, and we had something of a falling out, to put it very mildly. They eventually dropped all pretenses and flat-out turned on me, beginning a long period of harsh punishment.”

- “The results weren’t pretty. Their facade began to crumble as I saw through more and more of what I now recognized as deceptive illusions. What truly lay behind it was hideous, repulsive, monstrously evil, relentlessly manipulative, filled with petty malicious intent, and not nearly as righteous, enlightened, or omnipotent as they pretended to be. I’m actually still pretty uncomfortable with going into detail regarding what followed, but suffice it to say that I’ve basically been to hell and back. They did everything they could to ‘punish’ me, and some of the things they came up with were uniquely and creatively traumatic. If they had put half as much effort and sophistication into ‘teaching’ me as they did into attacking and tormenting me, I probably would still be happily and obliviously under their control today, a fresh new convert of their admittedly impressive sci-fi space religion.”
- “It took all the willpower I had just to stay focused and not become a completely broken wreck through all of this. Most of the ‘abilities’ I had acquired under their guidance gradually faded away over the course of a few weeks, with the exception of a number of lucid dream skills that I had picked up along the way. As I began to approach something resembling recovery, all kinds of memories and perspective started coming back to me that I had lost along the way (which may have been intentionally withheld from me). I felt like a toxic fog had been lifted from me, and everything looked so different now. I looked back on the last couple years of my life, especially the preceding four months or so, and was shocked to find that it wasn’t what I thought it was.”
- “I had seen some mind-blowingly incredible things and progressed in so many ways in what I thought represented cognitive and spiritual development, but the consequences were now apparent. Without realizing it, my personality had changed so much, and not for the better. I had alienated myself from many of my close friends, my romantic relationship had suffered, I had been much more depressed than I wanted to admit, and I had spent way too much of my free time alone and in the dark, becoming obsessed with progressively darker and weirder esoteric knowledge. I had been able to maintain a token amount of social interaction, just enough to convince myself I was still ‘normal,’ but it frequently left me feeling drained, and bored with the mere ‘meat puppets’ in this material plane who were but a pale reflection of what existed beyond it.”

Appendix B: What Happens When You Take Too Much 5-MeO-DMT - What Does Underfitting Look like

- Leo Gura went on a month-long daily 5-MeO-DMT retreat. Here is my analysis of his retreat report: 5-MeO-DMT Awakenings: From Naïve Realism to Symmetrical Enlightenment. And here is Adeptus Psychonautica commenting on one of his most concerning videos.
- Martin Ball: Another advocate of 5-MeO-DMT who claims that the highest truth is that we are all God, and that all of the hallucinatory content of DMT is egoic distraction from this truth (see what he thinks of Terence McKenna). He, like many in this cluster, seems to believe that the only truth worth knowing about is oneness and that this can only be known directly, at first with 5-MeO-DMT, and then through a process of integration of the experiences into one's everyday life. Here is an interview he did with Adeptus Psychonautica. Also, here is Leo talking to Martin (do you count one or two persons in that video?).

While I agree that oneness is really important (and indeed I have written extensively about philosophy of personal identity and I generally advocate for Open Individualism), I do not think that realizing we are God is going to solve everything. In particular, we still need ruthlessly pragmatic solutions to the problem of intense suffering.

Insofar as non-duality is used as a mood-enhancer, it seems to be unreliable. Oneness can lead to bad trips of loneliness, a fact that tends to be brushed off by its advocates. My assessment is that this effect is the result of negative valence rather than an inherent effect of the concept (or truth?) of oneness. Shaman Oak's Bad LSD Experience – NIRVANA SUCKS video is a rather typical version of this effect and it highlights its true underlying cause: since he took the LSD during a comedown from cocaine, his entire trip was colored by the negative valence of that state. The world “felt inherently lonely” because it had depression qualia all over it. Amplified and magnified through the kaleidoscopic funhouse of LSD's annealing dynamics, such a feeling of loneliness can look universal and omnipresent “no matter how you look at it”. But if you were to replace that feeling with something blissful, then the concept of oneness would be experienced as wonderful and enlightening. It is always important to remember the Tyranny of the Intentional Object: ideas and beliefs seem to us as having inherent goodness or badness, but how this is implemented under the surface relies on hedonic tone/valence “painting” those ideas. As David Pearce likes to say, “take care of happiness and the meaning of life will take care of itself”.

Counterexamples: We do know a number of people who have used these compounds extensively and who do not seem to exhibit noticeable

underfitting or overfitting. In particular, we have interviewed someone who took 5-MeO-DMT in high doses everyday for six months and who does not seem to suffer from any serious epistemological issues (they contacted me because they had read my analysis of Gura's month-long experiment and wanted to share their even more extreme experience). The same person has extensive experience (including daily use for months) with DMT, Salvia, DPT and their combinations. They can still hold a technically demanding job and sustain a family despite this. Needless to say, such a level of psychological robustness is exceedingly rare.

Appendix C: The Abstract of the Other Talks

DMTX as a 21st Century Mystery School A talk by Carl Hayden Smith

This talk will focus on the prospects of being one of the first participants in the world to try DMTX (X=Extended) at Imperial College London (ICL). After being part of the DMT phase 1 and phase 2 trials (over the last 5 years) this research now moves into a whole new level of immersion. During this experiment the peak of the DMT state will be extended thanks to a continuous intravenous drip feeding of the entheogen. This arguably turns this ancient medicine into a new form of technology. Early findings of the research from Chris Timmerman (ICL) suggests that nnDMT produces the same brain signature as the dreaming state. During the extended state we may be better able to explore the hypothesis from Andrew Gallimore that nnDMT actually opens up an entirely novel, orthogonal reality.

The DMTX experiment potentially means that nnDMT could become the base layer of our subjective reality, being combined, exponentially, with everything in life. What are the implications of this? Is there a danger that the psychedelic state is being overly romanticised and that DMTX could be regarded as a new form of bio chemical VR? How will DMTX help with the integration problem? Maybe the problem of bringing our insight back from the liminal space isn't that these experiences defy verbalization, but that our languages are not yet sufficient enough to describe these experiences.

Increased cortical signal diversity during psychedelic states and visually realistic neural network models of hallucinations A talk by Michael Schartner

Global states of consciousness – such as general anaesthesia or REM sleep – can be characterised by metrics of signal diversity, showing that diverse cortical activity is a hallmark of consciousness. We found that signal diversity is elevated in classical psychedelic states, possibly explained by a larger repertoire of brain states – which would be in line with reports about openness, novel associations and levelled salience of all experiences during

psychedelic states. This coarse description of the brain as a dynamical system with various degrees of diversity in activity is only one dimension to characterise such global states of consciousness. Neural network models of visual perception and its pharmacological perturbation may provide a more mechanistic model, showing how the balanced integration of prior and sensory information into conscious perception is regulated by serotonin.

Note: I am still open to e.g. the external reality of DMT beings. I find it unlikely, but evidence could convince me otherwise. We are not dogmatic about the models we present. Rather, they simply are the current “best fit” for the available evidence in conjunction with parsimony considerations (yes, we could even say that this model is what minimizes our free energy!). Cheers!

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