



## Conscious Life presents

### Unraveling the Mysteries of DMT

Guest: Dr Chris Timmermann

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#### **[00:00:15] Alexander Beiner**

I'm here with Dr Chris Timmerman. Chris is one of the world's foremost DMT researchers, and he works at the Centre for Psychedelic Research at Imperial College London. There he leads the DMT research group studying the mechanisms of action of the potent psychedelics, N,N-DMT, and 5-meO-DMT. His work employs a multidisciplinary approach to the neuroscience, psychiatry, psychology, and ethics of psychedelics, and their relationship to consciousness and applications to mental health. Chris, welcome.

#### **Dr Christopher Timmermann**

Hi, Ali. It's great to be here. Thanks for the invite.

#### **Alexander Beiner**

It's good to have you. Chris, you are a psychedelic neuroscientist. You do a lot of research with DMT, which I really want to get into. I want to start off by asking you, in your time in the field so far, what result of research has been most surprising to you, or been surprising/interesting? Like, Oh, wow, I didn't expect that.

#### **Dr Christopher Timmermann**

It's a good question. There have been so many developments. I think all the studies that I can think that have had a great impact, were the first advanced neuroimaging studies. The first study where they put people inside of the fMRI scanner and started their brain activity on their LSD, had a huge impact to inform the field, to help us understand better what's going on behind the hood when people are having these radical experiences.

## **[00:01:54] Dr Christopher Timmermann**

There was a specific finding in that first study with LSD, where they found, for example, that these visual experiences that people have appear to be linked with these visual systems in the brain, connecting with the rest of the brain. Then these ego dissolution experiences relating to a breaking down of a circuit related to the sense of self.

I think these initial findings certainly were landmark studies because they were the first where we were able to see what happened at the biological level when people were having these highly subjective, highly complex experiences. Then the field has definitely advanced a lot after that. But certainly, they pushed everything forward in a very, very big and transformative way.

## **Alexander Beiner**

As those studies were coming out, and you were thinking of maybe getting into the field, or maybe already on the way to getting into the field, what was it that you wanted to study in particular? What really drew you into psychedelic neuroscience, and psychedelic research?

## **Dr Christopher Timmermann**

My interest in psychedelic neuroscience, and psychedelic research, I think it's twofold. On the one hand, it has to do with my personal interest in the mind, in consciousness. I think I have a fairly introspective personality, and therefore I've always been interested in understanding what is this experience about, which is really at the basics of any other assessment that we have of the world.

No matter how you put the scientific development, it always comes first via an experiential factor. Everything that guides our lives, it first comes about in an experience, what we care about, what we don't care about. It's all about experience. So for me, understanding that the question of the mind has always been central, and in, and is where I think my interest in psychedelics really expanded because I found in psychedelics a way to investigate the mind by perturbing the neurochemical configurations of it.

That's what psychedelics do, they alter the chemical patterns of brain functioning, and they do it in a very specific way. The molecules act on specific receptors and specific networks, and so on. Therefore, my main interest is related to that, it's how is it that we construct the mind. And how is it that a drug can help us, or drugs can help us, understand how we construct the mind?

Then the other important influence comes from the fact that I am from Latin America, I am from Chile. In Latin America, the understanding of consciousness, the understanding of mind, and the understanding of realities are also colored by the interactions that Indigenous and mixed-race people have had with these substances for hundreds, if not thousands of years. That has shaped up, also the cultural landscape from my provenance, where I'm from, and therefore a major contributor for me to also tap into the workings of the mind.

So understanding not just the basic functions of what you might call memory, attention, learning, and so on, but also thinking about the things that are happening at the margins of ordinary experiences, because they shaped up the cultural landscape of my upbringing in Latin America.

**[00:05:39] Alexander Beiner**

We're talking about perturbing the mind. You're perhaps best known for your research on DMT, dimethyltryptamine. Anyone tuning into the conference can see talks by Rick Strassman and others who are also talking about that. We have a lot of really interesting DMT content now already.

I've been on one of your studies that you were running at Imperial College on DMT extended state. I know first hand quite how perturbed the mind can be from something like DMT. I'm really curious to hear what is... Well, this is a big question, what is going on exactly from your perspective when someone ingests DMT in terms of the way the brain is processing? Because it's such a radically different experience. What happens to the normal processing? How is it perturbed?

**Dr Christopher Timmermann**

The way that I'm framing what happens to the brain is, there are two central mechanisms at play here in these DMT experiences. One has to do with a deconstruction of the habitual worlds of experience that we have from day to day, moment to moment. The way that your visual system and your other sensory systems combine to generate this perceptual field that you're now inhabiting, what you might call your moment of experience right now, that gets radically deconstructed.

There are specific brain mechanisms that relate to that construction. A lot of the findings that we have, we interpret under the predictive brain hypothesis or theory, the idea that the brain is not a passive observer of reality, but rather actively constructs reality. This is happening in an automatic way, subconsciously, all the time from moment to moment. That's the models, your predictions of the world, this is what governs our experience. We're under this veil of predictions, really.

This is why some neuroscientists say that our experience is a form of controlled hallucination. That mechanism of constructing a world of experience gets perturbed. There are specific patterns and networks that we see that are related to that construction of the world that get disrupted.

Those networks are, for example, the default mode network, that is very much related, not only, but very much related to how we understand ourselves and our relationship with other people in the world. Also networks like the frontoparietal network, that relates to how we engage effectively in our worlds of experience.

And another is the salience network, for example, that relates to our bodily sense self, to our interoception, how we unconsciously construct the sense of self, and also much related to how our organism is aware that it's alive.

All those things get radically disrupted. These networks, these systems that have crystallized over time as we develop, their influence goes down. Therefore, all these resources that we usually use to construct this world of experience, get massively changed, and altered. In its place, in the DMT experience, where it emerges, this normal world of experience falls away, and instead, this immersive experience comes to be, where people feel that they are inhabiting alternate dimensions or realities, where they interact with apparently sentient beings or entities, and where they can have very important insights and very important emotional experiences.

### **[00:09:33] Dr Christopher Timmermann**

In essence, a new world of experience emerges, and that world of experience involves visual information, it involves spatial information. People feel that they're located in some other place. It involves a form of relationality with these entities and beings, and fundamentally also a new way to relate them to oneself.

All these aspects that relate to the way in which we usually construct this world become first deconstructed and reconstructed by these other mechanisms. Then the brain mechanisms that we see are related to that reconstruction, to this new world emerging, appear to be very much the ones that are in effect happening when we are dreaming, which is a very similar state of being.

When we are dreaming, we are disconnected from the immediate environment. We've deconstructed our everyday world of experience, and instead we have brought forth this other world of experience, that relates again to visual imagery, to the emotions we experience, and so on.

Those regions in the brain appear to be very much connected to the medial temporal lobes, the sides of the brain. I mean, this temporal lobe in the side of the brain, and inside them, there are these structures that are related to the way in which we encode memory, and we are able to also generate new patterns of meanings and information, or imagination if you will.

It's almost, if you want another analogy here, it's almost like all this information, all these life experiences, all these processes that we cultivate as we develop in life, we reutilize them to reconstruct these worlds of experiences under DMT. That's broadly our current level of understanding.

### **Alexander Beiner**

That's a really nice metaphor. I think it's a very useful one because that's subjectively in this a psychedelic experience, I think many people would report this sense of a re-evaluation of the past, and a recontextualizing of where we've been, who we are.

There's this other element I want to ask you about, which is the very specific visuals that people experience on... Particularly tryptamine psychedelic, so LSD, DMT, and psilocybin. They're very geometric. They're very specifically almost like hieroglyphs for many people, or Mayan characters. People report lots of different things.

I'm always very curious about why they arise so specifically because they're not something that... I'm sure people have had dreams that include that, but it's not something that people say every night when they wake up from a dream, Oh, there were these geometric patterns everywhere on the walls. As best as you understand now, what's going on with that?

### **Dr Christopher Timmermann**

This is a fascinating question. We've given over 100 administrations of DMT now, and in every single one of them, people report geometrical patterns or fractals. Not only that, if you go to my native country, to the museum, and you go to the artifacts of the Indigenous people thousands of

years ago, 4,000 years ago, you'll find the tablets where they snorted DMT. On top of that tablet, you'll find geometrical patterns in them.

### **[00:13:10] Dr Christopher Timmermann**

It's really absolutely fascinating phenomenon that appears to occur at a transcultural level, and in different times, and in different places. We speak a lot about psychedelics being like nonspecific amplifiers. This, for me, is the perfect argument. This thing, it's a specific thing, this is proper to the psychedelic experience, these geometries.

The best way to understand this, we haven't fully explained it, but our best explanation so far, the best model that we have relates to this understanding that our primary visual cortex is geometrically organized. So what does this mean? The idea here is that the visual system in the brain has a hierarchy of sorts. At the low levels of this hierarchy, we process the contours of shapes, the outside, the delimiters of the shapes that we see in the world. Lines, horizontal lines, vertical lines, and so on.

After that, we start to develop more complex forms of meaning. So out of, let's say, a spiraling spiral, a bit more advanced in the visual cortex, we start processing eyes, things that have a bit more meaning, and then faces, and then fully formed presences, and then context around them, like a city or a landscape, or whatever it is that's happening around that. So the semantic complexity of these objects that we observe in the world advances as we advance in this visual cortex.

But at the primary level, we have this geometrical, the processing of geometrical shapes. So if we follow this idea of deconstruction, that under these experiences, we are deconstructing the way that we build up our current, our habitual worlds of experience, what we are left is with the primary processing of visual information, which is geometries and fractals. Essentially, we take apart the complex semantic meaning structure of our visual system to arrive to its bare bones. Those are the geometries of practice.

### **Alexander Beiner**

That's very interesting. It also strikes me that we see these patterns in nature, these fractal patterns in plants, we see them in shells. There's something really interesting about that as a universal.

I want to go back to DMT, and I want to talk about DMT extended state and give people a sense of that. This is a study that I was a healthy participant in, and it was very profound for me on the personal level, but I think the research is very pioneering as well. Maybe you could talk a little bit about what is extended state DMT? And what have you discovered from doing that research?

### **Dr Christopher Timmermann**

When we were doing the first DMT studies, we knew this from research before but we saw it again, that indeed the experience was very short. If you inject someone with DMT the way that we were doing it, what you get is an experience of 10, 15 minutes. The intense beat of that experience is a couple of minutes, no more than that, it's really short. The peak of that DMT experience where

people report seeing entities and visiting these alien cities and all this amazing, incredible stuff is incredibly short.

**[00:17:06] Dr Christopher Timmermann**

But we are interested in understanding and exploring these spaces and understanding their mechanisms, understanding their biological underpinnings. We want to give these drugs and then measure brain activity when people are having this in test with us. But if the experience is very short, we can't really do that very well.

What we did is that we devised a way to extend that peak DMT experience. What we did is that when we were doing our first study, we collected a lot of blood samples, and we worked with collaborators in Sweden, and we developed a pharmacological model so that we can estimate the levels of DMT in the blood.

Therefore, we can try to guess how much DMT does a person need so that we can keep them at this peak level. That's precisely what we did, and what we tested on you on several occasions, along with other people.

We tried out different doses, and people, and you were one of them, came in different visits where we were trying out different levels of this peak administration. We were very happy to see that it worked. When you were in it, and other people were in it, they were reporting that they were keeping the peak of that DMT experience elevated for at least 30 minutes, which was our goal. To induce these immersive experiences where sometimes people see entities or beings so that they can navigate it as much as they could.

It was very intriguing, that's the most obvious one, that first it worked, the method, the second... Or the technology, whatever you want to call it, it worked. Then we also found that it was relatively safe, so the heart rate. DMT elevates heart rate quite strongly or pronounced, and it elevates also levels of anxiety at the peak.

What we found is that both of these things calmed down. In the beginning, they are elevated, but then although the experience keeps being intense and immersive, people find their way to it. They're able to start to navigate it a bit more. Therefore, the second conclusion is that it's relatively safe.

Then reading the reports of people, and I think this is the more fascinating avenue of potential future research, is that we found that people started to get a bit more out of that experience, of that extended experience, compared to what they were getting out of a short DMT experience.

For most people, when they have these intensive DMT experiences, they have it again for 10 minutes, and they peak just 2 minutes. Therefore, everything is way too fast for people to try to understand. The system is flooded with information on different levels. It can be visual, it can be also incredibly emotional and insightful, but it's so fast that people don't have time to process, or what we call in neuroscience, metacognitive abilities, thinking about thinking. We're not able to engage that other slow-level system. Just this fast level of sensory processing.

### **[00:20:28] Dr Christopher Timmermann**

So by enabling this extended administration, we find that people started to reflect on things that they were seeing. They started to make meaning out of things that they were seeing. For many people, the experience wasn't just about the strange stuff that appeared, but it was, how does this relate to my personal life? What part of myself feels foreign to me that I put like an entity? Or what feels alien? All this reflection started to emerge.

Currently, the idea that I'm thinking is that in these long experiences, it's almost like there's a bit of a battle between the compound inducing these forms of deconstruction of experience. You're shattered by this massive influx of information, but the the system also dynamically reconfigures itself, and has these moments of insight, and makes meaning, and engages in the slow processing of things, and can integrate them.

But also when this happens, intriguingly, the system learns so you're able to have an insight, and with that insight, you get bashed again with another influx of the experience that then favors another. So you're in a way, titrating or playing in between these extremes of cognitive flexibility or fluidity that is favored by the experience, and the consolidation of experience, and learning on the other side of things.

You're accelerating this dynamic process that many people think are at the basis of successful therapeutic interventions more broadly. If you pair that with the possibility that we also open up the possibility that you can now tailor a psychedelic experience to what a person needs with extended DMT infusion. Because you can essentially change the rate of administration if a person has OCD, if a person has depression, if a person likes faster things, if a person wants the more smooth thing, you can essentially tailor that to the needs of the patient. These are the intriguing avenues of this research, where we can take it, and what the technology that we have developed enables us to do.

### **Alexander Beiner**

That's fascinating, I haven't heard that described, that sense of disrupting the system and then the system coming together. I think subjectively, it does feel like that often in a psychedelic experience for me, particularly the DMT extended state. The surprising thing for me was just how personally meaningful it was, rather than just full of entities and alien cities, which it was both. But that was very profound. If people are interested in that, I have that as a narrative thread in my book, *The Bigger Picture*, which they can check out.

The profound change that we can go through now is obviously something associated with DMT. It feels important to distinguish that there are two different types of DMT, because I feel like so far in the conference, we haven't talked much about 5-meO-DMT, which is something else you're researching. The experience people have on 5-meO-DMT is quite different than N,N,DMT, but deeply meaningful. Maybe you could talk a little bit about the difference between the two.

### **Dr Christopher Timmermann**

As you say, everything that we've been speaking about is N,N,DMT. N,N,DMT, also for larger context, is this compound that is part of ayahuasca, that has had a surge of popularity in recent

years. It's very much linked to visions, and very much linked to content, to new stuff, to entities, and spirits of nature, and so on, depending on the context of where you sit.

### **[00:24:41] Dr Christopher Timmermann**

This other compound is 5-methoxy-DMT or 5-meO-DMT. This is naturally not found in plants. I mean, in some plants it is, but it's very little amount. It's really the more pronounced source of 5-meO-DMT where people get it from is toad, the Sonoran desert toad.

The venom of this toad, of this Bufo Alvarius frog is where the 5-meO-DMT more strongly resides. Intriguingly enough, there's no cultural context, or large historical cultural context associated to 5-meO-DMT. It's like a new drug. It's a fascinating laboratory, a cultural laboratory for a new psychedelic. Paradoxically, it induces the strongest possible experience that any other psychedelic can induce at a regular dose of intake. It's a very extreme and unusual cultural laboratory that's emerging with the unregulated use of 5-meO-DMT that has been happening in the past decade.

From a consciousness research point of view though, 5-meO-DMT is fascinating, and it's particularly fascinating because this mechanism that I was talking about, the deconstruction of experience with 5-meO-DMT, appears to be complete. There's a complete deconstruction of experience.

People have an overwhelming experience of ego dissolution, it shatters absolutely every content possible imaginable. And at the peak of that experience, not everybody, but many people report this experience of everything and nothing occurring at the same time.

So again, going back into ideas of consciousness and Buddhist traditions and contemplative practices, there has been a lot of talk of this idea that this via... That with a lot of rigorous practice with decades, and maybe not even then, you would come to a point of experience where you're just awareness experiencing its own awareness, so no other content. But you've just cleaned so strongly the space of possible experiences that all you have is the space of experience.

According to the preliminary reports, 5-meO-DMT induces this on a significant amount of people, and we're absolutely fascinated by this. We're starting this research now, the first lab experiment. We've done some of these experiments already in naturalistic settings where people do this in a therapeutic or recreational way.

We've done some analysis of that experience, but right now we're moving into the lab, and this is the quest, the understanding of the fundamentals of consciousness. However, I say this, but whenever you are getting into something new, you are always having these neat models of what these things are. I am sure as we progress and we delve into the nature of this experience, we'll find out that it's not as simple, and not as amazing as this Holy Grail picture that I'm painting.

### **Alexander Beiner**

It is fascinating though, to me it's especially interesting that, as Rick Straussman argues, that the N,N,DMT experience is closer to a prophetic experience that people used to have in the Bible, for example, the sense of, I'm me, the world is there, I'm talking to the divine as a burning bush, giving me instructions, I'm able to choose, I have agency.



**[00:28:30] Alexander Beiner**

Whereas 5-meO is almost like the opposite experientially. That's what people report, and it's been my experience, is just a non-dual isness. It's not the only thing that happens. I think I've also heard people reporting in a way needing to break through emotionally to accept that deconstruction. I've heard that quite a few times.

I'm very interested in how this molecule, obviously changes a molecule a bit, you have a big effect, but they're both DMT, and then they have this radically quite different effect in different visuals. It's endlessly interesting, I'm very excited about that research.

On that note, the last thing I wanted to ask you about is what research you're most excited about, what's coming up that you are investigating, or that someone else is investigating that you're thinking, Okay, this is the cutting-edge right now?

**Dr Christopher Timmermann**

I can think of two broad interests in this when it comes to this question. One is this idea of understanding mechanisms, and consciousness in the mind, and the other one is the therapeutics of psychedelics.

When it comes to the first one, I think that this work with 5-meO-DMT and then moving into understanding how this compares to these advanced meditation practitioners that can achieve these states on command like this. I'm hugely fascinated by this, and this is why I'm researching, and following up on this question. When it comes to that area, that's my primary interest.

When it comes to the clinical side of things, and the clinical research, I'm incredibly fascinated by the questions that have emerged right now around this dichotomy between what is causing these benefits in mental health induced by psychedelics? Is it the neurobiological mechanisms or the plasticity that they're inducing, the changes in the neurons and the dendrites, and so on?

Or is it that the experiences that they induce are healing, are transformative in on themselves? Or is it a mix of both of them? I think that this is a fascinating question that has emerged because, on the one hand, it emerges in a landscape, in a regulatory landscape, where to have these medicines approved, you approve of the drug, you don't approve of the treatment package.

But when it comes to psychedelics, for this to be at least safe, it has to be this treatment package, and it seems to be efficacious. Also, it needs a treatment package. You need to take care of people so that their context is in place so that they have specific experiences that have healing qualities. That has the underlying assumption that experience is important. And the classic approach to regulation is no, the biological thing is important, the neuroplasticity thing is the important thing.

**Dr Christopher Timmermann**

This is an age-old discussion about the duality between body and mind, how it's now taken to mental health, and how psychedelics are somehow bringing the discussion in a bit of a stronger way to mental health. I find that specific question particularly fascinating and very interesting. And there are some experiments being carried out right now where people are giving psilocybin treatment, but then they're also immediately given another drug so that they forget about that

psilocybin experience. To see if they have that same benefit that people who don't forget that experience have, in a way testing the experience hypothesis.

**[00:32:04] Alexander Beiner**

Just on that, what drug are they giving people to forget the experience?

**Dr Christopher Timmermann**

I don't quite remember.

**Alexander Beiner**

Not a psychedelic, some dissociative... Okay.

**Dr Christopher Timmermann**

Exactly, it's another compound. But these experiments are now being done. And there's other people doing the same thing, but putting people down completely and then giving them the psychedelic, then they wait to see if there's an effect. All this experimental laboratory stuff that's happening to test our assumptions about what constitutes health and treatment when it comes to mental health, I find absolutely fascinating. I can't wait to see what happens.

**Alexander Beiner**

That's very interesting. And just finally, in terms of your own research, what are you working on now? What's next in the pipeline for your explorations?

**Dr Christopher Timmermann**

I've mentioned a couple of things, but one of the things that I'm really interested is understanding... Because you can give these drugs to people to try to understand how the mind works, and how their mind works. But there's a big part of the psychedelic experience that revolves around know-how, and how well do you navigate that experience, and how well do you do trip? How well do you trip?

I find that that can possibly give us a better understanding of the mind. Because when people are just tripping on psychedelics, average people, you have a lot of variability. Things happen there that you're not aware, that you cannot control. But if you have experts, you may be able to capture those things and the moment in time where they're experiencing these interesting things.

For example, we're having a shaman coming over next week, and we're going to give him extended infusions of DMT. We're going to try to see if he can tell us with better precision where the entities are coming, and when he's seeing the entities, and we're going to measure brain activity related to that, or we might even ask him, can you bring up an entity now?

**[00:34:19] Dr Christopher Timmermann**

Then we can see the changes in brain activity and so on. Hopefully these things give us a better sense, a better reading of what's happening in this. At the same time, this is an anthropologically interesting question, asking the shaman, Well, did you see the same spirits that you see when you have ayahuasca experiences? Did you see different ones? These kinds of questions.

**Alexander Beiner**

That's incredibly interesting. I'm looking forward to seeing what that crossover looks like. It feels like a really interesting crossover between two different worldviews, which is the research I'm personally hoping to see more of.

Great. Chris, thank you so much, fascinating as always.

**Dr Christopher Timmermann**

Absolute pleasure, Ali. Thank you for the engaging conversation.