

Psychedelic Experiences and Knowledge Acquisition

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Abstract

This paper examines the potential for psychedelic experiences to facilitate knowledge acquisition by enhancing creative thought processes. Initially, the discussion is framed between entheogenic and psychotomimetic conceptions of psychedelic experiences, highlighting the historical and philosophical contention surrounding the reliability of insights gained during psychedelic experiences. But despite traditional skepticism outlined by the Argument from Alterity, which suggests that psychedelic experiences either provide redundant or unreliable knowledge, this paper challenges such conclusions and argues that psychedelic experiences can indeed help us acquire knowledge. Central to this argument is how psychedelic experiences alter our perception and cognition to boost creativity. This enhanced creativity drives the generation of new ideas, which in turn is fundamental to acquiring new knowledge. Thus, by enhancing creativity, psychedelic experiences can play a crucial role in the process of knowledge acquisition.

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Psychedelic experiences are temporary altered states of consciousness (ASCs) characterized by profound and unique transformations in perception, emotion, and cognition. ASCs have been discussed throughout the history of philosophy¹. Psychedelic experiences can occur in a variety of ways: sensory deprivation, extreme physical exertion, disciplined meditation, spiritual or aesthetic ecstasies, or even spontaneously (Leary, p. 1). Of course, the most common and reliable method of inducing a psychedelic experience is through the use of psychedelic drugs like dimethyltryptamine, psilocybin, lysergic acid diethylamide (LSD), and mescaline. However, these drugs merely serve as a facilitator for this brief but intense conscious experience (Letheby 2021, p. 1) and it is the psychedelic experience that is the focus of this essay.

There has been considerable debate in philosophy regarding whether psychedelic experiences can reliably help us acquire knowledge. With the advent of the psychedelic renaissance in clinical research, there is now more research on the effects of psychedelic experiences than ever before. This resurgence in interest can now allow us to have a more thorough exploration of the role the psychedelic experiences can play in knowledge acquisition.

The Argument from Alterity is a line of reasoning used by those who claim that psychedelic experiences can play no role in knowledge acquisition. It points out that either there is independent justification for knowledge acquired during a psychedelic experience, or there is

¹ For example, Plato has Socrates discuss dreams, another kind of ASC, in *The Theatetus*, Aristotle wrote a short treatise *On Dreams*, St. Augustine uses dreams in his argument against skepticism in *Against the Academicians*, and Descartes centers his skepticism on dreaming in his *Meditations*. In addition, Thomas de Quincey's opium experiences, detailed in *Confessions of an English Opium Eater*, informed his commentary on Kant's transcendental idealism; Humphry Davy credited his belief in transcendental idealism to his experiences on nitrous oxide in 1800; Schopenhauer promoted the use of various ASCs for intellectual pleasure and insight in *Essay on the Freedom of the Will*; Nietzsche started his philosophical career by writing about ASCs in *The Dionysian Worldview*; William James discusses a variety of ASCs in his book *The Varieties of Religious Experience*; Herbert Marcuse argues that psychedelic experiences can reset perceptions in *An Essay on Liberation*; and Jean-Paul Sartre took mescaline to put himself in a state to better understand consciousness and to gain inspiration, leading to his essay "Imagination: A Psychological Critique".

not. If there is independent justification, then the psychedelic experience is superfluous and plays no real part in the acquisition of knowledge. If there is no independent justification, then the information in question is not knowledge and cannot be trusted. Based on these two options, the Argument from Alterity concludes that the psychedelic experience plays no part in any coincidental knowledge acquisition that occurs during the experience.

This essay opposes the Argument from Alterity's conclusion and argues that psychedelic experiences can help us acquire knowledge. The essay centers on the changes to our perception and cognition that enhance creativity during psychedelic experiences. Creativity enhances the process of generating new ideas. Generating new ideas is essential to acquiring new knowledge. So, psychedelic experiences, through the enhancement of creativity, can play an extremely important role in helping us acquire knowledge.

I begin by delving into the historical and philosophical debates surrounding psychedelic experiences. The first section juxtaposes two fundamentally opposing views on psychedelics: theentheogenic perspective, which sees them as conduits to divine, transcendent insights, and the psychotomimetic stance, which dismisses them as sources of delusion. It argues that these traditional conceptions of psychedelic experiences are both inaccurate. The second section is a deep dive into the Argument from Alterity that dissects its flaws. It also introduces Chris Letheby's attempt to merge viewing psychedelic experiences as an aid for knowledge acquisition within a naturalistic worldview.

The third section explores how the philosophy of creativity offers crucial insights into how psychedelic experiences enhance creative thought processes. This section establishes that generating new ideas is essential to acquiring new knowledge and that creativity can significantly contribute to knowledge acquisition. The discussion of various kinds of creativity,

alongside the emphasis on skill and the role of the creative individual, provides a nuanced understanding of creativity as a multifaceted phenomenon, central to the argument that psychedelics can enhance knowledge acquisition through enhanced creativity.

Building on the theoretical foundations, the fourth section shows that psychedelic experiences can enhance creativity and delves into the empirical relationship between psychedelics and creativity. It examines how psychedelics amplify cognitive flexibility, divergent and convergent thinking, and associative and analogical thinking, facilitating a heightened state of creativity. The fifth section addresses the crucial roles of mindset and environment in determining the nature and quality of psychedelic experiences. It highlights how preparation, intention, and supportive surroundings can significantly influence the insights gained from these experiences.

1. Entheogens vs Psychotomimemes

The question of whether specifically psychedelic experiences can reliably help us acquire knowledge or understanding has been the subject of significant debate in philosophy and science for over a century. Typically, there are two main kinds of answers. The first answer is ‘yes’, psychedelic experiences are a means to induce ASCs that are deeply spiritual and sacred, during which our consciousness is amplified, expanded, or heightened in some way that allows us to transcend the constraints of normal sensory-perceptual experience and acquire genuine and direct insights. Therefore, making the psychedelic experience itself the grounds for justifying those insights. This is the entheogenic conception of the psychedelic experience. The term ‘entheogenic’ is derived from the Greek words *entheos* meaning full of the divine and *genesthai* meaning to come into being. Thus, under the entheogenic conception, psychedelic experiences

are experiences during which the divine is generated within and this divine generation enables the individual to acquire genuine knowledge.

The second answer is ‘no’, the psychedelic experience is an ASC during which our cognition is impaired in ways that make us overly credulous and inhibit critical thinking and is therefore simply providing us with compelling delusions. This is the psychotomimetic conception of the psychedelic experience. The term ‘psychotomimetic’ is a combination of the prefix *psycho*, which connotes mental or psychological aspects, and the Greek word *tomimia* meaning to mimic. Thus, under the psychotomimetic conception, psychedelic experiences share similarities with symptoms observed in psychiatric conditions, particularly psychosis. Therefore, during psychedelic experiences no real knowledge acquisition takes place.

These answers have essentially divided opinion on the epistemic value of psychedelic experiences based on whether one holds supernatural or natural metaphysical views. Philosophers focusing on psychedelic experiences who hold supernatural or transcendental metaphysical views tend to defend the psychedelic experience as a reliable means by which knowledge is acquired, while philosophers who subscribe to a more naturalistic metaphysical conception remain extremely skeptical of the proposition. Aldous Huxley and William James are examples of the psychedelic defenders, meaning they respond affirmatively to the question of whether psychedelic experiences can reliably help us acquire knowledge. Not only that, but they also seem to believe that psychedelic experiences can be a reliable source of all kinds of propositional knowledge.

In *The Doors of Perception* Huxley explores the potential for psychedelic substances to open the doors of perception and provide access to heightened states of consciousness. He believes that such altered states could offer genuine and direct insights into deeper eternal truths

about the nature of reality and human existence, essentially metaphysical knowledge. Huxley argues that the brain, in its normal waking state, acts as a reducing valve, selectively filtering and limiting the vast array of sensory stimuli to maintain practical functionality, and that psychedelics temporarily loosen or alter this filtration, allowing a broader and less constrained perception of reality. Huxley's ideas about psychedelic experiences align with the entheogenic conception by emphasizing the spiritual and transformative aspects of psychedelic experiences, as well as suggesting they provide metaphysical knowledge. The notion that psychedelics can temporarily alter perception, providing access to profound insights about transcendent realities, is central to both Huxley's perspective and the broader entheogenic understanding of these substances.

James, in his exploration of religious experiences and the varieties of mystical consciousness, similarly suggested that altered states, like those induced by psychedelic substances, directly reveal supernatural truths beyond the scope of ordinary perception. While James did not specifically discuss psychedelics, his philosophical and psychological exploration of mystical and religious experiences shares common ground with the entheogenic conception. His perspective highlights the transformative and spiritual dimensions of altered states of consciousness, emphasizing direct encounters with the sacred or transcendent as a means of gaining knowledge about the depth and diversity of human experience. Here we can see that both Huxley and James share a conviction in the transformative and enlightening potential of altered states, viewing them as providing access to an all-encompassing authoritative source of knowledge that is itself the epistemic justification for beliefs gained, basically God.

On the other hand, philosophers such as Jennifer Windt and G.T. Roche, represent the psychedelic skeptics, arguing against the theory that psychedelic experiences can help us acquire

knowledge. Both respond to and discuss Huxley's and James' opinions in depth, and they express doubts that *any* alteration to our conscious state can reliably help us acquire knowledge, not just the changes associated with the psychedelic experience, since they argue that ASCs cannot provide epistemic justification for the insights they cause.

Roche worries that psychedelic experiences cause us to hastily accept insights without rigorous scrutiny, undermining the credibility of any beliefs gained during such experiences. In his paper, "Seeing Snakes: On Delusion, Knowledge, and the Drug Experience" Roche rejects the view that psychedelic experiences can reliably help us acquire knowledge. He questions whether an "artificial change to the brain can reveal knowledge through the resulting experience" (Roche, p. 35). Roche accepts that some substances, like nicotine and caffeine, can stimulate the mind and enhance concentration; and he concedes that certain people can be imaginatively inspired by psychedelic experiences, but he still doubts that they can genuinely help us acquire knowledge (Roche, p. 35).

Roche provides two reasons for doubting that psychedelic experiences can aid with knowledge acquisition. First, Roche believes that rational thought is necessary for the acquisition of knowledge. He asks, "what knowledge is only accessible to the individual through chemically degrading one's capacity for rational thought?" (Roche, p. 39). Roche also points out that psychedelics disrupt mental processing. He believes that this disruption in mental processes makes it impossible for our minds to "sense representations by laws of experience" (Kant 1974, 29:170, p. 46, as cited in Roche, p. 36). In other words, when our cognitive processes are impaired, we cannot generate accurate representations of reality and therefore cannot think rationally. So, since psychedelic experiences occur in an altered state of consciousness during which our mental processing is impaired, we cannot properly make sense of what we experience

in these psychedelic states or think rationally about what we experience. Thus, psychedelic experiences cannot facilitate acquiring knowledge.

Roche is essentially arguing that we can only gain knowledge through our normal waking conscious state, as this is the only state in which he believes us capable of rational thought. He cites Bertrand Russell's problematizing of the similarities between psychedelic experiences and religious experiences, and Russell's conclusion that "each is in an abnormal physical condition, and therefore has abnormal perceptions" (Russell, p. 188, as cited in Roche, p. 36). In addition, Roche brings up the similarities between schizophrenia and psychedelic experiences. He argues that since we don't consider the altered state of consciousness caused by schizophrenia to be a state in which one gains knowledge, we shouldn't consider other altered states, similar to schizophrenia, to be ones that attain knowledge either (Roche, p. 36). Both of these examples question our capacity for rationality while in an altered state of consciousness.

Here we can see Roche promoting a prevalent misconception surrounding the psychedelic experience, one that is a basis for the psychotomimetic conception of psychedelic experiences: the notion that the profound alterations in consciousness during such experiences are nothing more than hallucinations, delusions, and a loss of reason. This oversimplified perspective dismisses the psychedelic experience as a chaotic and irrational series of events. It fails to recognize the intricacies of the psychedelic journey, particularly how the experience can be a purposeful and intentional journey through the influence of 'set' and 'setting', the user's mindset and the external environment during the psychedelic experience.

Roche's second reason for doubting that psychedelic experiences can reliably help us acquire knowledge is that he doesn't believe there is enough reliable evidence that shows that psychedelic experiences can or have helped acquire any knowledge. Roche insists that just like

how the claims of mathematicians and scientists require verifiable justification in order to be considered knowledge, the claims made by individuals undergoing a psychedelic experience require just as high a standard of justification before we can consider those experiences to reliably help us acquire knowledge.

Roche argues that “even if a psychedelic drug user were to make some drug-inspired claim about the world which was later verified by some other means, we would still not be able to say that [the psychedelic experience] had therefore provided knowledge” (Roche, p. 36). This is because a single instance of the psychedelic experience leading to knowledge gained is not strong enough evidence to conclude that the psychedelic experience can reliably provide knowledge. It could simply be a coincidence or a fluke. Roche insists that the psychedelic experience “would still need to be shown to be a reliable source of a number of such independently verifiable claims” (Roche, p. 36) before we are justified in believing that they genuinely can help us gain knowledge. So, Roche is saying that before he is willing to accept that the psychedelic experience itself can consistently aid with knowledge acquisition, he wants to see a track record of several unrelated psychedelic experiences leading to information that is independently verifiable as knowledge.

Roche also objects to the idea that psychedelic experiences can reliably help us acquire knowledge. He says that the implications of this theory would force us to doubt the knowledge we already have, because the reliability of the means by which knowledge of the external world is acquired during our normal waking state would have to be just as questionable as any other state of consciousness (Roche, p. 36). I see no issue with this implication, it seems like it would be healthy to really question if each belief acquired in a normal waking state is true or not, just as we would for any other state of consciousness. After all, being in our normal state of

consciousness does not guarantee the veracity of beliefs acquired during that state. If we must always seek justification for any beliefs acquired during psychedelic experiences, how does this make them any different than a belief acquired during our normal states of consciousness?

Similarly to Roche, Windt argues for the psychotomimetic position in her paper “Altered Consciousness in Philosophy”. Windt concedes that the insights generated during a psychedelic experience may be related to alterations in cognitive functioning or styles of reasoning during the experience. However, she complains that those who view the psychedelic experience as a source of knowledge, like Huxley and James, incorrectly believe their insights are epistemically justified due to the “noetic quality” of the experience and it is this aspect of the argument to which she explicitly objects (Windt, p. 246). ‘Noetic quality’ refers to the feeling that one has gained genuine and unmediated insight that one simply knows to be true. Windt argues that those who believe that psychedelic experiences can reliably help us acquire knowledge only believe this because of the influence of the noetic quality of the experience, since many use the psychedelic experience itself as the grounds for justifying their insights. Windt seems to see this as no different than someone saying, “My belief felt true in a dream; therefore, it must be true in real life.” Windt highlights the challenges of actually evaluating the veracity of beliefs that are accompanied by this sense of certainty, casting doubt on our ability to assess the reliability of knowledge gained in such states.

An objection must be made here to the skeptic’s conflation of all the different kinds of ASCs. Windt says, “there is a tension in the literature on altered consciousness between viewing ASC as higher states of consciousness or, conversely, as pathological conditions” (Windt, p. 245). I believe that from Windt’s perspective it *seems* like there is this tension because she is approaching ASCs as if they are homogenous. In his book *Alterations of Consciousness: An*

Empirical Analysis for Social Scientists, Dr. Imants Barušs analyzes consciousness from the neuroscientific, psychological, and phenomenological perspectives and defines an ASC as “a pattern of physiological, cognitive, and experiential events different from those of the ordinary waking state” (Barušs, p. 10). Based on this definition, ASCs make up a wide array of conscious states, ranging from commonly experienced dream/sleep states to meditative states, hypnosis to more radically altered states like out-of-body experiences (OBEs), psychedelic experiences, mystical experiences, near-death experiences (NDEs), and pathological states like schizophrenia (Barušs, p. 9; Cardeña, p. 7; Windt, p. 229). I think we can therefore conclude that ASCs are more different from each other than they are alike, so the epistemic status of each ASC must be considered independently from the rest². This paper is concerned solely with whether psychedelic experiences specifically can help us acquire knowledge.

Windt paraphrases Locke in her argument against psychedelic experiences as a reliable means by which knowledge is acquired, “the point is that the mere strength of one’s persuasions is not enough to justify revelation; without outward signs to convince one of the truth of one’s persuasions, or without their withstanding the test of reason,” (Locke, IV, XIX, 5, 6). In the quote Windt is paraphrasing, Locke is talking about immediate revelations. He says that a revelation is “natural reason enlarged by a new set of discoveries communicated by God immediately” (Locke, IV, XIX, 4). Here we can see Windt clearly taking issue with the supernatural aspect of the entheogenic argument. She doesn’t just object to using the noetic quality of the experience as justification, or as a reason not to need any epistemic justification; she’s objecting to the underlying supernatural argument that the *reason* there is a noetic quality to psychedelic

² For an in-depth discussion of the differences between ASCs see: *Alterations of Consciousness: An Empirical Analysis for Social Scientists* by Imants Barušs, *Altering Consciousness: Multidisciplinary Perspectives* by Etzel Cardeña, or *Altered States of Consciousness* by Charles Tart

experiences is because the insights generated during psychedelic experiences are revelations from God, the cosmic consciousness, or some other kind of supernatural being and that therefore any beliefs gained from the experience *are* knowledge.

Windt is absolutely correct that the strength of one's belief, based on the noetic quality of the psychedelic experience, is not epistemic justification for that belief. I also think she's right to identify this as a core problem in Huxley's and James' reasoning. But this is not a reason to reject psychedelic experiences, or any ASC for that matter, as a means by which knowledge is acquired. For example, the strength of one's belief can be the reason to search for some kind of justification that would convince us that we are justified in holding that our belief is true, if any such justification exists. If you've experienced that overwhelming feeling of having acquired a true belief, but know that you lack any epistemic justification for that belief, would that not be an extremely motivating reason to then find out if there is any justification? In that sense, psychedelic experiences would still be necessary for the generation of the insight in question. Only after a belief has been acquired can we concern ourselves with whether it is epistemically justified.

Windt also objects to the idea that psychedelic experiences can help us acquire supernatural knowledge. She says such claims lie beyond the scope of epistemology because they are unjustifiable (Windt, p. 246). This is an understandable objection, but I think in making it, Windt and the other skeptics also unconsciously reject the theory that psychedelic experiences can reliably help us acquire knowledge of the external world. Supernatural knowledge is technically knowledge that is external to oneself, but there is so much more knowledge we can acquire that is external to ourselves and is in no way supernatural. Just because psychedelic experiences cannot provide supernatural knowledge, doesn't mean that they also cannot provide

any other kind of knowledge of the external world, kinds for which we can identify epistemic justification. To write off the possibility of psychedelic experiences helping us acquire any knowledge of the external world is too broadly dismissive. Windt says she believes psychedelic experiences can be a source of personal insight, and she believes that insights acquired during ASCs may be related to alterations in cognition or styles of reasoning (Windt, p. 244-246), so why couldn't those same alterations to cognition help us acquire knowledge about the physical world around us?

Between the above players, the debate over whether psychedelic experiences can help us acquire knowledge remains unresolved. While advocates like Huxley and James emphasize their transformative potential, skeptics like Windt and Roche raise concerns about their reliability. However, both perspectives overlook the nuanced nature of psychedelic experiences and their potential to help us acquire knowledge. Moving forward, it is clear that new approaches are needed, ones that acknowledge both the limitations and potential of psychedelic experiences.

2. The Argument from Alterity

Recently, those approaches are starting to be provided. In a new attempt to convince some of the skeptics, Chris Letheby proposes a new conception of psychedelic experiences. He attempts to make the entheogenic conception compatible with naturalistic metaphysics in order to win over some of the skeptics. Letheby tries to do this by rejecting the supernatural positions of the entheogenic conception while maintaining its epistemic position; so, he argues that psychedelic experiences helping us acquire knowledge is perfectly compatible with a naturalistic worldview. In his book *Philosophy of Psychedelics* Letheby argues that the psychedelic experience is an ASC during which our consciousness, or aspects of consciousness, is altered in

some way that enables us to think in ways that are not available to us in our normal waking state and consider information that we would normally overlook. Thereby allowing us to acquire self-knowledge that can be later justified through other means. By suggesting that psychedelic experiences allow us to think in ways not accessible in normal waking states but maintaining that we must still seek epistemic justification for psychedelic experience inspired beliefs, Letheby attempts to bridge the gap between the supernatural and naturalistic views.

Letheby then attempts to imagine how the psychedelic skeptics might object to his proposal and respond to them in advance. He takes the doubt expressed by the skeptics when they question how any alteration to our normal waking consciousness can help us acquire knowledge, and their focus on epistemic justification, and reformulates them into a dilemma which he calls the Argument from Alterity (Letheby 2021, p. 165). Letheby's reconstruction begins by asserting that for any supposed item of knowledge that is acquired during a psychedelic experience, there is either independent justification for that belief or there isn't any (Letheby 2021, p. 165). Then the dilemma comes in. Letheby frames the skeptics' argument as suggesting that in the case that we have independent justification, then the psychedelic experience is essentially redundant. This is because in a strict sense of what it means to have acquired knowledge, we can't say that a belief is knowledge until we have epistemic justification for that belief. Since in this case, the justification is independent from the psychedelic experience, the psychedelic experience is not technically responsible for the knowledge acquisition.

On the other hand, if we don't have justification that is independent of the psychedelic experience, then there are two options: either we're using the fact that the idea/information occurred to us during a psychedelic experience as justification for believing it, such as an appeal

to the noetic quality of the experience; or we have no justification. If we have no justification then we are believing on faith, so that's not knowledge; and if we're justifying our belief based on an alteration of consciousness during the experience, then we lack an argument good enough to make our conclusion epistemically justified. There is no evidence that psychedelic experiences only engender true beliefs, so a psychedelic experience itself cannot be the justification for any beliefs to count as knowledge. Based on this dilemma, the skeptics' argument concludes that it is impossible for the psychedelic experience to help us acquire knowledge.

Letheby then responds to the Argument from Alterity. He points out that there is a long-recognized distinction between the contexts of discovery and justification. This dichotomy addresses the two fundamental phases in the process of acquiring knowledge: the discovery of a hypothesis or idea and the subsequent justification of that idea as true knowledge. In the context of the psychedelic experience as a source of knowledge, this dichotomy gains particular relevance. The context of discovery is solely concerned with the initial generation of ideas or insights. This separation implies that ideas and insights can be validly generated through methods that cannot also be used to provide justification. Thus, the psychedelic experience can be seen as a unique realm for the context of discovery, offering a space where unconventional connections and insights may arise.

Therefore, just because we may require independent justification, that doesn't mean that the psychedelic experience is redundant. Psychedelic experiences can confer genuine insights that the individual in question may never have otherwise had without them (Letheby 2021, p. 165). Thus, the psychedelic experience is necessary for the generation of the insight in question, only after the belief has been acquired can we concern ourselves with justification. So, we can acknowledge that the justification for our insights must come through sober evaluation, post

psychedelic state, without devaluing the role the psychedelic experience can play in acquiring knowledge.

When it comes to the question of whether Letheby successfully refutes the psychedelic skeptics, Letheby's response effectively addresses the concerns raised by skeptics related to epistemic justification. Although, his account fails to address how psychedelic experiences can be a reliable means by which we acquire knowledge of the external world. This is most likely because his main focus in his book is psychedelic experiences as a therapeutic tool, causing him to concentrate solely on how psychedelic experiences can help us acquire self-knowledge. However, in his paper "The Varieties of Psychedelic Epistemology", Letheby seems to reject the idea that psychedelic experiences can help us acquire knowledge of the external world. He suggests that claiming that psychedelic experiences can help acquire propositional knowledge of the external world is tantamount to claiming that psychedelic experiences can help one acquire extra-sensory perception like telepathy or precognition (Letheby 2019, p. 3). This is a false analogy. Just because knowledge gained through acquiring extra-sensory perception would be knowledge of the external world does not mean that it is equally implausible for psychedelic experiences to help us acquire knowledge of the external world as it would be for psychedelic experiences to help us acquire extra-sensory perception.

Letheby does consider that it is possible that psychedelic experiences can help enhance the context of discovery for knowledge of the external world, but he seems to consider this to be a trivial contribution, saying it amounts to saying that psychedelic experiences "simply help people come up with interesting new ideas" (Letheby 2019, p. 6). Here, Letheby seems to be agreeing with the conclusion of the Argument from Alterity, that if we can independently justify beliefs acquired during a psychedelic experience then the psychedelic experience was redundant

for knowledge acquisition. However, as previously mentioned, there is nothing to justify until some idea is discovered, which hardly seems like a trivial contribution.

Regardless, Letheby restricts himself to arguing that psychedelic experiences can help people acquire self-knowledge. But recall that Roche and Windt are responding to thinkers who do believe that psychedelic experiences can reliably help us acquire knowledge external to the self. Roche outright says he also objects to the claim that psychedelic experiences can be a reliable means by which we acquire knowledge of the external world, and Windt doesn't doubt that psychedelic experiences can induce personal insights that help one acquire self-knowledge, so I don't think Letheby is making a compelling argument for them.

Setting supernatural knowledge aside, it is safe to assume that when it comes to knowledge of the external world, Roche and Windt want a complete explanation. Meaning that they don't just want epistemic justification for beliefs acquired during psychedelic experiences; they want an in-depth explanation of the underlying causal mechanisms that link psychedelic experiences with knowledge acquisition. This means that in order to convince anyone that psychedelic experiences can help us gain knowledge of the external world, a deeper, more detailed account is required.

3. Philosophy of Creativity

Since neither the psychedelic skeptics nor Letheby have convincingly argued that psychedelic experiences cannot help us acquire knowledge of the external world, we can now begin to explore how exactly this may be possible. Creativity is the key to understanding how psychedelic experiences can help us acquire knowledge. Through altered perception and

cognition, psychedelic experiences foster creativity, which in turn fuels the generation of new ideas—a fundamental aspect of acquiring knowledge.

In his paper “Unifying Theories of Psychedelic Drug Effects,” Link Swanson reviews the studies that have so far charted the transformations in perception, emotion, and cognition characteristic of the psychedelic experience. One of the changes tracked during the psychedelic experience is an enhancement of creativity (Swanson, p. 5). It is through these alterations to our creativity, not just an increase in our cognitive capacity for creativity, but also a change in the way we experience creative ideas, that psychedelic experiences can help us acquire knowledge of the external world.

However, before discussing how psychedelic experiences enhance creativity, there are some questions that must first be addressed. What is creativity? How does it happen? How does creativity help us acquire knowledge? This understanding what creativity is and how it relates to knowledge acquisition will ensure clarity in our exploration of psychedelic experiences influence on creativity. It will pave the way for a more nuanced exploration of the psychedelic influence on creativity.

The standard definition of creativity holds that creativity is the capacity to produce new and valuable items³. But how exactly do we produce those new and valuable items? There are two traditional ways of conceiving of how creativity happens. Some consider creativity to be a fundamentally rational capacity, while others argue that it is essentially irrational. Philosophers that argue that creativity is irrational tend to do so on the grounds that creative ideas often just

³ This is considered the standard account of creativity in psychology. Most philosophers agree these are necessary conditions, however there is much debate over whether they are sufficient. Margaret Boden argues that creativity must also be surprising (Boden, p.1), Michael Beaney argues it also requires exemplariness (Beaney, p. 187), Berys Gaut asserts that creativity must also involve flair (Gaut 2009, p. 84), Carl Hausman says it needs intelligibility (Hausman, p, 4), Larry Briskman contends that creativity must also be transcendent (Briskman, p. 34), and Matthew Kieran and Berys Gaut also argue that creativity requires agency (Gaut and Kieran, 2018, p. 3).

“pop” into our minds, they appear to come to us spontaneously, independently of our will (Gaut 2012, p. 262). Those who argue that creativity is rational point out that creativity occurs via a process and therefore must begin with some end in mind (Gaut 2012, p. 260). I agree with the rationalist tradition. While the irrationalists do point out something true when they highlight the apparent spontaneity of some creative ideas, I believe the rationalist explanation of this occurrence, that creativity involves a variety of conscious and unconscious thought processes, settles that debate.

In an early attempt to capture the complete nature of the creative process, Graham Wallas proposed the classic⁴ four-stage model based on the first-person accounts of creative artists and scientists:

1. Preparation: This stage involves gathering information and becoming familiar with the problem or task at hand. It’s a period of conscious effort to understand and define the problem.
2. Incubation: During this phase, the mind works on the problem unconsciously. It’s a period where you may not be actively thinking about the problem, but your brain is processing it in the background. This stage often leads to unexpected insights.
3. Illumination: This is the “Eureka!” moment when a solution or idea suddenly comes to the forefront of consciousness. It’s a flash of insight or realization.
4. Evaluation: After having the illuminating idea, there’s a need to test and verify it, ensuring that it is a valid solution to the problem (Wallas, p. 40-60).

⁴ Wallas was influenced by Hermann von Helmholtz’s three stages: preparation, incubation, and illumination (Helmholtz, 1891) as well as Henri Poincare’s four stages: preparation, incubation, illumination, and verification (Poincare, 1908).

As Wallas stresses, these stages are not necessarily distinct steps that follow neatly one after the other (Wallas, p. 81). We can have a multitude of ideas all at once or over a longer period of time. We can incubate new ideas for one problem while we're enacting the ideas for another. Ideas can also be comparatively evaluated, or may end up combining and being re-evaluated, or perhaps completely discarded and then we must cycle again through the incubation and illumination stages before externalizing anything. There is a lot of interplay among these stages, highlighting the dynamic and continuous nature of the creative process.

In *The Creative Mind: Myths and Mechanisms* Margaret Boden critiques this historical model. Broadly, she considers the four phases of creativity to be a good starting point, but laments that the phases only describe one kind of creativity, and they don't truly explain how creativity happens or how some creative ideas are more creative than others (Boden, p. 35). Boden argues that there are in fact three types of creativity: combination, exploration, and transformation; and each have their own way of happening in correspondence with three different types of surprise they induce in the producer of the idea (Boden, p. 2).

Combination creativity involves making unfamiliar combinations with familiar ideas, like combining the top half of a person with the bottom half of a horse to create the mythical creature known as a centaur. The process by which these combinations are generated can be deliberate or unconscious. Either way, the novel combination requires a rich store of knowledge in the person's mind and there must be some intelligible, though previously unnoticed, conceptual pathway between the familiar ideas for the combination to be valuable. This type of creative idea is surprising because of the improbability of the combination (Boden, p.3). According to Boden, it is this combination creativity that the four-stage model most accurately describes. She doesn't propose any significant changes to the model, but she emphasizes that combination creativity

happens through the combining of ideas that are conceptually linked despite us not always being aware of that link during the creative process.

However, combination creativity is the most basic form of creativity. This is because combination creativity doesn't involve the fundamental novelty that is indicative of the most creative ideas (Boden, p. 41). When it comes to combination creativity, the novelty is sourced in the newness of the combination, but the components of the idea are not new. Boden believes that the irrationalist account of creativity persists because previous models of the creative process can only describe combination creativity, since they fail to explain how fundamentally novel ideas can come about. This lends credence to the belief that some ideas are so original that they cannot be explained.

Boden claims that creative ideas are fundamentally novel when we are surprised not because the idea is improbable, but because we had previously taken the idea to be impossible in some relevant sense (Boden, p. 42). To explain how some ideas can go from being apparently impossible to possible, Boden employs the theory of conceptual spaces. Conceptual spaces are structured styles and systems of thought. They include ways of writing; methods of sculpture, painting, and music; scientific theories, styles of fashion or choreography; basically, any disciplined way of thinking (Boden, p. 3).

Within any given conceptual space many ideas are possible, only some of which have actually been thought up. Exploratory creativity happens within a conceptual space when a new idea is generated that perhaps bends the rules but is nonetheless permitted by the rules of that space, like a gymnast coming up with a new legal vault move (Boden, p. 4). In this example, the gymnast is engaging in exploratory creativity because her new vault move is new and surprising in the sense that perhaps it was a move that previously was not thought to be achievable on the

vault; it is valuable to the advancement of the sport of gymnastics; but it is also legal, so it doesn't transgress the rules of the space. Exploratory creative ideas are more novel than combination creative ideas because they consist of ideas that do fit within a preexisting conceptual space, but they're ideas that surprise us because we had previously considered them to be impossible within that space, or because they were impossible within that space until we tweaked the rules. As such, Boden claims that exploratory creativity begins with the mapping of the rules of a given conceptual space, giving way to ideas that we would not have considered possible if we hadn't tested the limits of the conceptual space in question (Boden, p. 56).

Boden goes on to point out that some ideas are so radical that they don't bend the rules, they break them. This is transformational creativity. It happens when the limits of a conceptual space have been wholly explored and the space itself is found wanting. So, transformational creativity comes into play when a new idea completely transforms the conceptual space itself, like the development of non-Euclidean geometry from Euclidean geometry (Boden, p. 5).

Euclidean geometry was the dominant and only accepted framework for understanding space until challenges to the fundamental rules of the Euclidean conceptual space, like the parallel postulate, lead to the creation of alternative geometries, completely transforming the geometric conceptual space, and fostering a new perspective on what is possible in the field of geometry. This is the most fundamentally novel, and therefore the highest form of creativity.

Transformative creativity is fundamentally novel and surprising because it's an idea we had not taken to be possible before due to the fact that that idea *was* genuinely impossible within the old conceptual space, and it requires the creation of an entirely new space in order for it to switch from impossible to possible (Boden, p. 61).

Boden then presents her own model of the creative process for transformative creativity. Like exploratory creativity, it begins with the mapping of the rules of a conceptual space. Then, those rules are tested, the boundaries of the space are explored/pushed, and finally completely transformed. Boden also notes that for all three kinds of creativity, the creative process must include a stage where the resultant idea is evaluated.

In addition to Boden's commentary, Berys Gaut criticizes Wallas' account of the creative process on the grounds that it, and others like it, underemphasize the importance of skill. As Boden briefly notes in her treatment of combinatorial creativity, all types of creativity require a rich body of knowledge. Gaut takes this requirement a step further and asserts that "it is not sufficient to be creative that one produces something original and valuable ... it matters not just what is produced, but also how it is produced" (Gaut 2012, p. 267). Gaut recognizes that Wallas' account of the creative process does not prevent this process from involving skills and he argues that it implicitly requires them.

To prove his point, Gaut first asks us to consider the example of Charles Goodyear, the inventor of vulcanized rubber. Goodyear wanted to figure out how to produce a stronger rubber and invented vulcanization by systematically dropping into a liquid rubber solution all the substances on which he could lay his hands until he eventually discovered that sulfur works (Gaut 2009, p. 85). Gaut argues that while Goodyear undoubtedly produced something original and valuable, it was not produced via the creative process. Goodyear used a brute, mechanical search process and so it was therefore not creative.

Next, Gaut asks us to consider the example of a person kidnapped, covered in paint, and locked in a pitch-black room for several hours. That person thrashes around, trying to escape and in the process produces a stunningly beautiful and unique abstract painting. This painting is

original and valuable, but it was achieved accidentally and so it cannot be considered creative. Gaut states that these two examples prove that creativity requires the skillful production of something new and valuable. A skill generally involves a special and accomplished capacity in a domain that can be learnt and practiced (Gaut 2009, p. 95). Gaut argues that creativity meets this account of a skill, but that the kind of skills involved in creativity are non-routinized and non-accidental.

There are other models of the skillful creative process,⁵ how exactly they differ is not relevant for this paper. While there is little agreement on the number of phases of the creative process, I find that all at the very least delineate two different steps: first a novel and apparently valuable idea is thought up; and then that idea is assessed to determine whether it should be pursued,⁶ altered, or discarded. I will call these stages the ‘idea generation’ and the ‘idea evaluation’ stage. These stages, like the stages in other models of the creative process, are non-linear and inextricably entangled.

The distinction between idea generation and idea evaluation in the creative process bears a striking resemblance to the demarcation between the context of discovery and the context of justification in the scientific process. In creativity, idea generation involves producing novel and potentially valuable ideas, while idea evaluation requires critical analysis to assess ideas against set criteria. Similarly, in science, the context of discovery encompasses hypothesis formulation and initial observations, while the context of justification involves rigorous scrutiny and empirical testing to validate hypotheses. Both processes highlight the dual nature of knowledge

⁵ Like the *Geneplore* model which distinguishes just two stages: *generating* ideas and *exploring* ideas (Finke 1996; Smith, Ward, & Finke 1995) or Keith Sawyer’s eight stage model (Sawyer, p. 89).

⁶ This depiction is influenced by Julia Sanchez-Dorado’s characterization of the value condition as ‘pursuitworthiness’ (Sanchez-Dorado 2023).

acquisition: an initial exploratory phase followed by a critical evaluation stage to establish validity and significance.

For many thinkers, the ability to think creatively, and the capacity to produce combinational, exploratory, or transformative ideas in a skillful way, are not sufficient for one to be considered a creative person. Matthew Kieran points out that it is one thing to have creative potential, it is entirely another to actually be creative. He argues that to be counted as a creative person one must be “disposed to seek out and perform creative acts” (Kieran, p. 168). This means that the creative person is someone who has moved beyond mere creative thinking, skill or ability and has actually incorporated creativity into their character. So, they are now disposed to deploy their abilities, skills, and judgement in the production of new and valuable outputs, and they take an interest in seeking opportunities to do so (Kieran, p. 168).

Creative thinking, when nurtured and developed over time, can evolve into this creative disposition. This evolution can be sped up with the aid of the psychedelic experience. Through the enhancement of the mental processes underlying creativity, the psychedelic experience can help users become accustomed to creative thinking, thereby increasing their tendency to seek out and perform creative acts, fostering the development of a creative disposition. It is the creative disposition that is most epistemically beneficial to the individual, in contrast to one’s capacity to occasionally act creatively, to the point where it is considered a dispositional excellence and some even call it an epistemic virtue.

A significant part of the debate over whether creativity should be considered a full-blown epistemic virtue revolves around its questionable ability to reliably attain new and valuable knowledge (Kieran, p. 169). Within the creative process, countless ideas may be generated, positively evaluated, and fail when we attempt to implement them before we generate one that

succeeds. Due to this fact, it seems any epistemic benefits creativity could provide would be pretty trivial. However, as Linda Zagzebski recognizes, creativity often involves working at the edge of what we know or how things are currently conceptualized (Zagzebski, p. 176-182). More often than not, the whole point of being creative in the pursuit of knowledge, is that all other methods have already failed. Therefore, it is not surprising that creativity is not reliably truth conducive, since creativity operates at the boundaries of discovery it may get things wrong far more often than it gets things right.

So, how exactly does creativity help us acquire knowledge if it doesn't reliably lead to true beliefs⁷? Well, there are several cognitive benefits that creativity provides to the creative person, as well as several benefits of creativity that can aid with the specific aim of knowledge acquisition. However, before getting into the details of how creativity helps us acquire knowledge, it is important to look at a number of the cognitive and thought processes that are integral to the creative process.

Cognitive and thought processes are related concepts, but they refer to slightly different aspects of mental functioning. Cognitive processes are the mental activities that encompass a wide range of functions, including perception, attention, memory, language, problem-solving, decision-making, and more. These processes involve the acquisition, storage, manipulation, and retrieval of information in the mind. Thought processes specifically refer to the sequence of cognitive activities and mental operations that occur when an individual engages in thinking. Thought processes involve the generation, organization, and integration of ideas and concepts. The key underlying processes for creativity that have been identified are: cognitive flexibility, divergent thinking, convergent thinking, associative thinking, and analogical thinking.

⁷ You also might be wondering how psychedelic experiences can reliably help us acquire knowledge if creativity cannot. This will be explained when discussing the influence of set and setting on psychedelic experiences.

Cognitive flexibility allows us to dynamically integrate multiple sources of motivational, cognitive, and perceptual information relating to our goals and the progress of our creative endeavour (Nijstad et al, p. 42). Creativity often requires this cognitive flexibility since the creative process involves continuous switching between idea generation and idea evaluation. It is especially important when divergent, associative, or analogical thought processes are also being used. This is because it is important for creativity that we do not rely on habitual thinking and fixed strategies but have a broad attentional focus and switch flexibly between approaches to the task in order to generate more distant associations and unusual ideas (Nijstad et al, p. 43).

Cognitive flexibility is also extremely important for the overall adaptability of our approach to all creative processes, especially with regards to complex creative tasks. Creative endeavours often require adapting to new information, changing circumstances, or unexpected challenges. Cognitive flexibility enables individuals to adjust our thinking and approach when faced with obstacles, fostering resilience and adaptability in the creative process. For example, during complex creative design tasks, experienced designers have been found to continually move between different subgoals throughout their creative process, and the frequency of such within-task transitions leads to higher quality design outcomes (Wu et al, p. 2).

Divergent thinking is used in all kinds of creativity. It is characterized by the tendency to produce different ideas from other people, the ability to generate a considerable number of organized ideas, the ability to simultaneously consider a vast number of approaches to a problem, and the ability to think about the details of an idea and execute it (Costa, p. 4). This thought process is most important for exploratory and transformative creativity. The fundamental novelty that these kinds of creativity rely on is brought about with the aid of divergent thinking. However, this type of thinking is integral to the idea generation stage of any creative process.

Conversely, convergent thinking is also essential to the creative process, but it is essential to the idea evaluation stage. “While divergent thinking is prevalent at early stages in finding new ideas, convergent thinking is needed later for the analysis of these ideas to reach an end product” (Costa, p. 5). So, once we have come up with a seemingly viable idea, convergent thinking enables us to complete the creative process with the externalization of the most favourable idea. Convergent thinking is also very closely linked with intelligence, due to its role in enabling us to give correct answers (Kim, p. 246). As Gaut emphasized in his analysis of creativity, domain-specific intelligence/skill is necessary to be a creative person. So, we can see how convergent thinking can factor into the entirety of the creative process.

In addition, higher-order convergent thinking is crucial to maintaining the viability of the creative idea (Kim, p. 246). This can be seen within exploratory creativity when we want to retain the core elements of an existing conceptual space, but our creative idea requires the revision or adaptation of the space to suit new circumstances. Convergent thinking is then used to determine which rules need to be tweaked and how much they need to change to make our idea possible within a given conceptual space.

Associative thinking, the making of connections between seemingly unrelated concepts (Beatty, p. 672), is another thought process that gets enhanced during the psychedelic experience and plays an important role in creativity. Associative thinking is most commonly linked to combinational creativity, but it can be used for all kinds of creativity. Associative thinking is our capacity to make connections between seemingly unrelated concepts (Beatty, p. 672). Some concepts are relatively close together, so connecting them is not creative, like the association between ‘table’ and ‘chair’, but lots of concepts are extremely distant and the making of a connection between them is unusual and surprising. Creativity involves both free associations, in

which concepts are spontaneously connected, and goal-directed associations, in which concepts are strategically combined (Beaty, p. 672). People with a larger capacity for associative thinking have also been found to generate broader, more idiosyncratic sets of associations, and to possess a larger capacity to perceive connections between semantically or episodically distant concepts (Beaty, p. 674). So, associative thinking is part of what allows us to identify the intelligible conceptual pathway between familiar ideas for combinational creativity. The more capable we are of using associative thinking, the more capable we are of connecting extremely distant concepts, which results in a more creative kind of combination.

Associative thinking has also been found to play a significant role at the beginning of idea generation. This is because associative thinking serves as a cognitive mechanism within memory retrieval processes (Beaty, p. 680). This means that associative thinking enhances our ability to navigate within various conceptual spaces, aiding in the initial mapping of a conceptual space through the connecting of the various concepts that space contains, as well as navigating through a constellation of conceptual spaces, aiding our ability to identify connections between seemingly unrelated concepts and conceptual spaces (Beaty, p. 681).

Analogical thinking is a special kind of goal-directed associative thinking that relies upon an analogy. It encompasses our ability to detect basic similarities (e.g., rectangles and squares both have four sides), relational similarity (e.g., ‘blizzard’ is to ‘snowflake’ as ‘army’ is to ‘soldier’), and complex system mappings, in which the elements of one conceptual space are structurally aligned with the elements of another to permit complex inferences from a known source situation to a less familiar target situation (e.g., the mind is structured and operates like a computer).

Like general associative thinking, analogical thinking is not universally creative, some analogies are more creative than others, and some are not very creative at all. A key determinant of creativity in analogical thinking is the extent to which the concepts being mapped are relatively close or relatively distant with respect to their superficial semantic features (Green et al., p. 264-265). Despite the fact that not all analogical thinking is creative, it has still been found to be a core process by which combinational creative ideas that span semantic distance are formed (Green et al., p. 272). Analogical thinking has also been recognized as a heuristic tool at the idea generation stage, by revealing insightful connections and generating creative ideas in the sciences, as well as in arts and industry (Green et al., p. 265).

Now that we have a clear understanding of the cognitive processes and thought processes underlying creativity, we are in a position to have a better understanding of all the ways that creativity can help us acquire knowledge. Firstly, creativity often involves drawing from diverse fields of knowledge and combining them in novel ways, particularly with combinational creativity. With the aid of cognitive flexibility, the ability to easily switch to a different approach or consider a different perspective, this can promote a tendency to focus on the context of a situation (Nijstad et al, p. 43), and the relationships between seemingly disparate elements through the use of associative and analogical thinking (Green et al., p. 265). This more holistic approach can be beneficial in any pursuit of knowledge, where insights from various disciplines can be used to approach complex topics and enhance one's understanding.

Secondly, creativity involves the ability to “think outside the box” or outside of a specific conceptual space, to come up with novel ideas, and to connect seemingly unrelated concepts. In the pursuit of knowledge, creative individuals can use various thought processes to generate new, worthwhile ways of inquiring about or conceiving of the object of inquiry (Kieran, p. 170). A

creative thinker can also propose innovative explanations, which can then be subject to scrutiny, testing, and refinement to determine if they're rationally worthy of further investigation, as part of the knowledge acquisition process.

Thirdly, creativity can make us more open-minded. By regularly engaging in the creative process, we become more comfortable with, and adept at, cognitive flexibility. This encourages individuals to explore alternative perspectives and consider possibilities that may not be immediately obvious or that may challenge our existing beliefs (Nijstad et al, p. 42). This can lead to a more comprehensive understanding of complex issues and, in conjunction with convergent thinking, a more robust evaluation of evidence, resulting in a better consideration of alternative viewpoints (Costa, p. 5). Essentially, creativity encourages a less dogmatic approach and can help us avoid the maladaptive emotional and behavioural consequences of rigid thinking.

Fourthly, creativity can play a significant role in helping us overcome cognitive biases. Thanks to the nature of creativity, particularly exploratory and transformative creativity, creative people are more open to challenging their own assumptions and considering seemingly impossible ideas (Boden, p. 42), reducing the anchoring bias – people's tendency to rely too heavily on the first piece of information they receive on a topic. The cyclical nature of the creative process, and how it requires repeated adaptation and evaluation of ideas, can help decrease availability bias – the tendency to rely on information that comes readily to mind when evaluating situations or making decisions. Creativity also requires us to consider multiple perspectives with an open mind. By actively seeking a variety of viewpoints and solutions, creative thinking can help mitigate confirmation bias - where people tend to favor information that confirms their preexisting beliefs.

Fifthly, creativity makes us more willing to revise our beliefs when we discover we are wrong. The cyclical nature of the creative process, and the cognitive flexibility and repetitive revision and evaluation that it requires, forces us to get used to being wrong. Often a creative person will come up with some novel and valuable idea, attempt to implement that idea, and in the process realize that it is wildly more difficult to achieve than they had previously imagined, or even impossible. But the idea is so exciting to them that they simply cannot give it up. Then it is back to the drawing board to figure out how to make their idea work. This can be an unpleasant experience to repeatedly go through before finding any success, but it is one that makes us resilient and comfortable with getting things wrong because we have a deeper appreciation of what it takes to get them right.

So far, I've gone over the ways in which creativity itself can help us with knowledge acquisition. But creativity can also make us better epistemic agents. It is important to appreciate how creativity can not only passively help us acquire knowledge but can be indispensable in the situations where we are actively seeking to acquire knowledge or understanding about the world. This can be seen in the ways that creativity contributes to problem-solving and expanding our body of knowledge.

Why is this distinction in creativity important? Well, there are two different kinds of virtue epistemologists, and they have different standards for what counts as an epistemic virtue. Virtue reliabilists argue that an epistemic virtue is something that reliably contributes to the formation of true beliefs such as cognitive processes, perception, memory, reasoning, etc. Meanwhile, virtue responsibilists argue that an epistemic virtue is a trait possessed by the agent that makes the agent more responsible/moral in the process of their belief formation like open-mindedness, intellectual honesty, a willingness to seek out and consider evidence against one's

belief, etc. The above discussion of creativity outlined how creativity is important for knowledge acquisition from a virtue reliabilist perspective. The following will explain how creativity contributes to knowledge acquisition from a virtue responsibilist perspective.

The creative process is simply the best method for problem-solving. When people engage in creative problem-solving, thereby employing the previously discussed cognitive benefits of creativity, they are more likely to consider a broader range of factors, avoid oversimplification, and address cognitive biases that may hinder rational decision-making. So, creative problem-solving can lead to more comprehensive and unbiased solutions.

Creative problem-solving is adaptable to a wide range of challenges. It does not follow rigid, predetermined steps but instead skillfully tailors the problem-solving process to the specific issue at hand through the use of cognitive flexibility and convergent thinking. This adaptability enables us to address complex and unique problems efficiently, as opposed to mechanistic methods. It also involves copious amounts of divergent thinking, where individuals generate a wide range of potential solutions. This approach allows for the exploration of various possibilities in a relatively short time, while still constraining that exploration to only the viable solutions for a given problem.

So, we can see that people engaged in creative problem-solving are not generating their ideas randomly. They are employing their body of knowledge in conjunction with their creative thought processes to generate a limited range of genuinely viable solutions, rather than spitting out a large variety of tenuous possible solutions. This is done through convergent thinking, which allows us to anchor our idea generation in a few nonnegotiable presumptions and then synthesize new information in the context of these basic accepted facts (Kim, p. 247). In

contrast, routinized methods often involve repetitive trial-and-error, which can be time-consuming and yield suboptimal results.

Finally, Zagzebski argues that creativity is a necessary condition for advancing knowledge (Zagzebski, p. 182). This is the most epistemically beneficial aspect of creativity in my opinion. Since creativity often involves working at the edge of what we know or how things are currently conceptualized, it can be an indispensable tool for expanding our body of knowledge. Creativity is a way of synthesizing seemingly disparate or unconnected areas of knowledge to aid in the growth of our overall body of knowledge. So, when we are stuck, when we cannot make sense of the data or phenomena in front of us, creativity is what guides us. Through the use of various thought processes, creativity can help us navigate new, unmapped conceptual spaces and help us operate at the boundaries of familiar conceptual spaces to discover radical, paradigm shifting truths. These truths then serve as the catalyst for the emergence of new conceptual spaces through transformative creativity. This is how creative people are often at the forefront of expanding the boundaries of knowledge. They may introduce new concepts, invent new methodologies, or develop entirely new fields of study, contributing to the growth of human understanding.

All these benefits that creativity provides are epistemic benefits because they help us acquire knowledge and make us more discerning and competent epistemic agents. A holistic and innovative approach to inquiry, open mindedness, reduced cognitive biases, and a comfort with being wrong are consequences of creativity that improve the quality of our belief formation. Creativity makes us better at bearing in mind the various aspects of complex topics and situations, evaluating evidence, considering opposing opinions, problem solving, and revising our beliefs when it becomes necessary to do so.

4. Psychedelic Experience and Creativity

Now that we know what creativity is and how it contributes to knowledge acquisition, we can begin to look into how psychedelic experiences enhance creativity. Understanding the nature of creativity involves recognizing its dynamic interplay between idea generation and evaluation, as well as considering frameworks like Boden's categories and Gaut's emphasis on skill. Creativity not only involves the generation of novel ideas but also the discernment of their value and relevance. This is the beginning to understanding how psychedelic experiences can help us acquire knowledge of the external world. Creativity, heightened by the psychedelic experience, can become a gateway to acquiring knowledge beyond the confines of traditional thinking. Our psychedelically altered cognitive processes and perceptions not only spark creative insights but also pave the way for a deeper understanding and integration of new information.

Psychedelic experiences come with an increase in pattern recognition and pareidolia – the tendency to impose a meaningful interpretation on ambiguous stimuli, like seeing a face in the clouds (Letheby 2021, p. 41). Some people even experience stimulus-independent imagery. The most common of these consists of complex, flowing geometric patterns, but more elaborate and personal imagery can also occur with one's eyes closed, such as visionary sequences presenting parables or metaphors for specific situations in one's life or general human experiences (Letheby 2021, p. 42-43). Pattern recognition serves as a foundational ability that enables analogical thinking. When individuals recognize patterns in one context, they may use this knowledge to draw analogies and identify similar patterns in a different context.

One example of how psychedelic experiences can improve creativity through pattern recognition can be seen with the chemist Kary Mullis. He is perhaps best known for his

invention of the polymerase chain reaction (PCR) technique, a Nobel prize winning method used to amplify DNA. Mullis famously credited his psychedelic experiences with aiding his thought processes and problem-solving abilities. In his autobiography, Mullis reported experiencing heightened pattern recognition and creative insights during his psychedelic experiences (Mullis, p. 145). These experiences allowed him to perceive connections and analogies that might not have been apparent in a sober state. By recognizing patterns and drawing analogies from his psychedelic experiences, Mullis was able to conceptualize and refine the PCR technique, revolutionizing the field of molecular biology.

Psychedelic experiences, by amplifying pattern recognition abilities, provide individuals with a heightened sensitivity to detect patterns in various stimuli, including visual, auditory, and conceptual. This increased pattern recognition serves as a catalyst for analogical thinking, enabling individuals to draw connections between patterns observed in one context and apply them to different domains. As individuals recognize patterns in psychedelic experiences, they may draw analogies between these patterns and concepts from diverse fields of knowledge, leading to innovative insights and creative solutions to problems.

The ability to perceive patterns and connections where others may see chaos or randomness allows individuals to explore new conceptual spaces. For example, in the context of psychedelic experiences, individuals may encounter intricate geometric patterns or visionary sequences that present parables or metaphors. These experiences can expand their conceptual repertoire, providing them with novel perspectives and ideas that can be applied to various creative endeavours. By unearthing hidden insights and exploring new conceptual spaces, individuals can foster creativity and innovation in their thinking. One real life example is John Busby, a former Navy Captain. He reported using LSD just once and was then able to solve a

difficult problem with pattern recognition that he was facing while developing intelligence equipment for a Navy research project. He says, “With LSD, the normal limiting mechanisms of the brain are released, and entirely new patterns of perception emerge” (Farrell, p. 1).

This increase in pattern recognition can also enhance associative thinking. As individuals encounter diverse stimuli during psychedelic experiences, they may engage in free associations, spontaneously connecting different ideas and concepts. This enhanced associative thinking allows for the exploration of unconventional connections and the generation of novel ideas. Individuals may perceive connections between patterns observed during psychedelic experiences and concepts from different domains, leading to creative insights and solutions.

In addition to pattern recognition, unusual sensory perceptions, particularly visual perceptions, are the most well-known effect of the psychedelic experience (Letheby 2021, p. 40). These sensory perceptions do not normally constitute hallucinations, because the person undergoing a psychedelic experience can usually still distinguish between real and psychedelic phenomena. Individuals often experience an amplification of their sense-perceptions: colours appear brighter and more vivid; sound is more intense; lines, edges, and depths appear clearer and sharper; attention to visual and auditory detail is enhanced (Swanson, p. 3). This heightened sensory perception creates a fertile ground for creativity, as individuals are immersed in a world of heightened sensory richness they can engage with their environment in new and profound ways.

Heightened sensory perceptions during psychedelic experiences can broaden individuals’ attentional focus and increase their sensitivity to subtle details in their environment. This heightened awareness can promote cognitive flexibility by encouraging individuals to dynamically integrate sensory information with their cognitive processes. As a result, individuals

may be more adept at switching between different approaches to problem-solving and generating novel ideas. For instance, in an interview with Louise Reitman, Kevin Herbert, a computer programmer and software designer for Cisco Systems, claims that psychedelic experiences are especially helpful with development of new computer technologies because a psychedelic experience “changes one’s visions of the kinds of technology that one can build. It encourages a departure from things being rigid and imposing” (Reitman, p. 19). Herbert also says psychedelic experiences have affected the development of his ideas, helped him solve complex technical problems and have given him insights into how to create technology. He credits the open, distributed nature of the modern Internet to the influence of psychedelic experiences on many of his peers that aided in its development. Herbert explains that before the modern internet was developed, many networks were designed in a top-down manner. Meaning networks were hierarchical with a central node of authority. Herbert credits psychedelic experiences with enabling him and his colleagues to be more flexible and consider what other structures, besides a strict hierarchy, could support the interconnected network that they imagined. This is clear when we consider that computer programming is one of those fields that requires broad attentional focus and the ability to switch flexibly between approaches, important features of cognitive flexibility. Therefore, Herbert’s testimony suggests that psychedelic experiences are helpful in the development of computer technologies because of the heightened awareness and increased cognitive flexibility during the experience.

Enhanced sensory perceptions can also stimulate divergent thinking by providing individuals with a wealth of sensory inputs to draw upon for idea generation. The vividness of colors, intensity of sounds, and clarity of visual details may inspire a wide range of creative associations and perspectives. Additionally, the amplification of sensory experiences may lead

individuals to explore unconventional solutions to problems. Since the enhanced sensory experiences are coupled with an increased sensitivity to their environment, individuals undergoing a psychedelic experience are more likely to notice the small or obscure patterns and natural phenomena in their environment that can inspire divergent thinking. Conversely, the heightened attention to sensory detail may also facilitate convergent thinking by enabling individuals to critically evaluate and refine their ideas based on sensory feedback.

This heightened perception can also make time appear to slow down as individuals become more absorbed in the details of their sensory experience; and cause a subjective experience of time dilation, where moments seem to stretch out or compress. For example, Carlo Rovelli, a theoretical physicist, reports that his psychedelic experiences inspired him to explore the concept of time and led to his work in loop theory. He claims his experience of time stopping was so extraordinarily strong that it touched him intellectually. Rovelli says, “And I thought: ‘Well, it’s a chemical that is changing things in my brain. But how do I know that the usual perception is right, and this is wrong? If these two ways of perceiving are so different, what does it mean that one is the correct one?’” (Higgins, para. 7). This insight led not only to his work in loop quantum gravity, in which spacetime itself is understood to be granular; but also to his theory that time disappears at the most fundamental level, which would force the conclusion that time is merely a function of human perception.

Also, the increased sensory richness experienced during psychedelic states can facilitate associative thinking by providing individuals with a multitude of sensory stimuli to connect with their existing knowledge and experiences. This may lead to the formation of novel associations between seemingly unrelated concepts, thereby fostering creative insights. For example, Ralph Abraham, a mathematician and dynamical systems theorist, credits a 1969 psychedelic

experience with inspiring him to search for links between mathematics and his visionary experience. He says this led to his contribution of a new class of mathematical models called cellular dynamata, which work especially well for modeling the brain, mind, visionary experience, etc. Abraham programmed his cellular dynamata model of the visual cortex into a supercomputer and he compared the results that appeared on screen to one of his psychedelic experiences (Abraham, p. 7-8). Not only was Abraham's experience his inspiration, but the creation of a new class of mathematical models, cellular dynamata, is a direct manifestation of associative thinking. Abraham's psychedelic experience provided him with a plethora of sensory stimuli, which he then connected with his existing knowledge and expertise in mathematics and dynamical systems theory. Through this associative process, he formed novel connections between the mathematical patterns he observed in his psychedelic experience and his understanding of mathematical models. This led him to designing models that were inspired by his visionary experience and devised to simulate complex systems like the brain and mind. It shows how such experiences can increase our ability to link seemingly unrelated concepts or experiences.

On top of the perceptual changes, individuals also experience changes in cognition. When under the influence, individuals often experience changes from their typical straightforward thinking. For example, one may experience their thoughts as jumping between concepts in a more free-flowing fashion (Carhart-Harris et al., p. 17). Carhart-Harris et al. also found increases in cognitive flexibility, the ability to easily switch to a different approach or consider a different perspective in their research on "The paradoxical psychological effects of LSD" (Carhart-Harris et al., p. 20).

This increase in cognitive flexibility is accompanied by a hyper-associative, imagistic cognitive state that operates with a relative lack of logical constraints and which involves making connections between relatively unrelated words and images (Girn et al., p.4). Therefore, psychedelic experiences have also been found to enhance associative thinking, through an increase in the spread of semantic activation, the process by which the activation of one concept or word in the mind spreads to and influences the activation of related concepts or words within the semantic network (Family et al., p. 1325). An expansion of semantic activation may allow for the exploration of more diverse and loosely connected ideas, fostering creative thinking. The psychedelic experience can also affect semantic processing, the cognitive process that involves the comprehension, interpretation, and understanding of the meaning of words, sentences, or other linguistic symbols, leading to an increased availability of free associations (Spitzer et al., 1996).

In “A Dose of Creativity: An Integrative Review of the Effects of Psychedelics on Creativity” Miguel Costa finds that “divergent thinking increased during the acute stage of the [psychedelic] drug intake and convergent thinking increased in the long-term” (Costa, p. 1). When it comes to divergent thinking, this means that individuals under the influence of psychedelics are more likely to generate a diverse range of ideas in response to a given stimulus or problem. With the heightened cognitive flexibility and free-flowing thought patterns also induced by psychedelic experiences, individuals can explore unconventional solutions and think outside the box. This increased generation of novel ideas fosters creativity by encouraging exploration and experimentation, ultimately leading to innovative solutions and creative insights. When it comes to convergent thinking, this means that individuals who have undergone psychedelic experiences may become better at evaluating and selecting the most appropriate

solutions to creative problems. The ability to sift through a multitude of ideas and identify the most promising ones enhances creativity by ensuring that creative efforts are focused and directed towards the most fruitful avenues of exploration.

Psychedelic experiences enhance creativity through various mechanisms, including heightened sensory perceptions, increased pattern recognition, and changes in cognition such as enhanced cognitive flexibility and associative thinking. These alterations facilitate divergent thinking, leading to the generation of a diverse range of ideas, and convergent thinking, aiding in the evaluation and selection of the most promising solutions. Overall, psychedelic experiences offer a unique pathway to creativity by altering perceptions, cognition, and opening up new possibilities for knowledge acquisition and creative insight.

5. Set and Setting

Recall that in the first section, Roche and Windt have one main reason in common for being so dubious toward the proposition that psychedelic experiences can help us acquire knowledge. Their reason for being so skeptical is the noetic quality of the experience. The noetic quality refers to the feeling that one has gained genuine and unmediated insight that one simply knows to be true. Roche and Windt fear that this side-effect of psychedelic experiences causes us to accept insights as truth hastily and uncritically. This undermines the credibility of any beliefs gained during such experiences. Attached to this is the idea that the alterations in consciousness during such experiences are nothing more than hallucinations, delusions, and a loss of reason. Skeptics like Roche and Windt argue that the altered states of consciousness induced by psychedelics may lead individuals to perceive and interpret reality in ways that are not grounded in objective truth. They suggest that what individuals experience as profound insights or truths

during these altered states may actually be hallucinations or delusions, products of the altered brain functioning rather than genuine knowledge.

Set and setting provide an important counterpoint to Roche and Windt's argument by emphasizing the importance of context and mindset in shaping the outcome of psychedelic experiences. This is because meticulous preparation and contextualization are key aspects of set and setting. Through these, users can retain a degree of control and rationality within the experience. This control can allow the user to maintain awareness of the effects of the noetic quality during their psychedelic experience. This in turn enables a more critical engagement with the supposed insights gained because awareness of the noetic quality allows users to counteract the effects of its influence. Set and setting will show how proper preparation enables users to circumvent the risks presented by the noetic quality of the experience.

The concept 'set' refers to the user's mindset before and during a psychedelic experience. While the concept 'setting' refers to the user's external environment. Both set and setting play crucial roles in shaping the overall character of the psychedelic experience. They constitute integral elements in understanding and contextualizing the psychedelic experience. These terms, coined by Timothy Leary, emphasize the significant influence of the user's mindset and the external environment in shaping the nature and outcome of the experience.

The user's psychological state, expectations, intentions, and emotional well-being collectively form the "set", influencing the subjective quality of the psychedelic journey. Simultaneously, the "setting" encompasses the physical surroundings, atmosphere, and social context where the experience unfolds (Leary, p. 1). The interplay between set and setting can either enhance or diminish the quality of the psychedelic experience. When it comes to set, preparation for the experience, a positive mindset, and open-mindedness often contribute to more

profound and positive outcomes. Conversely, a negative mindset or a lack of preparation may lead to difficult or distressing experiences, aka a “bad trip” (Borkel et al., p. 173).

The role of intention is a subsection of ‘set’ and also an important part of proper preparation. It underscores the guidable nature of psychedelic experiences. Intentions here act as cognitive blueprints, steering the trajectory of the psychedelic journey and influencing the themes, insights, and emotions that may emerge. When people approach a psychedelic experience with the specific intention of bettering themselves in some way, whether it be to gain insights into personal issues, explore spiritual dimensions, or learn something about the world, the mind becomes primed to focus on these particular aspects. In the study by Haijen et al, “Predicting Responses to Psychedelics: A Prospective Study”, more profound psychedelic experiences and more positive changes to well-being were detected in users that had clear intentions (Haijen et al, p. 8). So, it seems that psychedelic experiences can be influenced by the intentional direction set by the individual.

With regards to setting, more natural or natural based environments produced more positive results for the user’s wellbeing. Increased wellbeing was also recorded when friends, family or partners were present (Borkel et al., p. 173). By incorporating natural environments into the setting, individuals are more likely to experience feelings of tranquility, awe, and connection with the surrounding environment. These feelings can promote a state of mindfulness and receptivity, allowing individuals to approach insights with greater discernment and critical reflection. Moreover, the presence of supportive friends, family, or partners can provide additional perspectives and feedback, encouraging individuals to engage in thoughtful evaluation of their experiences and insights.

Being aware of set and setting is integral for proper preparation for a psychedelic experience. Proper preparation for a psychedelic experience involves educating oneself about what the experience tends to entail, understanding potential risks, and setting intentions for the experience. This process can include engaging in mindfulness practices, reflecting on personal goals, and creating a supportive environment. It also requires informing oneself on the nature of the experience itself. What do other people report experiencing? What are the possible risks? Getting all the background information is part of preparing for a psychedelic “trip”. Just like how learning about the country one plans to visit is part of the proper preparation for an actual trip. This doesn’t mean that everyone will prepare as they should, but those that do will be ready to mitigate the risks of psychedelic experiences, like being convinced by the noetic quality of the experience.

Roche and Windt are concerned that the sense that we have gained some kind of insight that feels undeniably true will be too powerful a feeling to resist, thereby impairing our ability to critically evaluate our psychedelic insights. However, proper preparation for a psychedelic experience does involve making oneself aware of the risks of psychedelic experiences, like the risk of being unjustifiably convinced due to the noetic quality of the experience. By being aware of this risk before partaking in a psychedelic experience, the user will be able to mitigate the risks of the noetic quality by remaining cognizant of the fact that the noetic quality is a known side-effect of the experience. This awareness will allow the user to recognize when the noetic quality of the experience is affecting them, making them less susceptible to uncritically accepting their insights during the experience as truth. The influence of proper preparation on psychedelic experiences further emphasizes that the psychedelic experience is not merely a passive, uncontrollable state leading to delusions and irrational beliefs. When individuals approach

psychedelic experiences with specific goals or objectives in mind, they can guide the trajectory of the journey and influence the themes, insights, and emotions that emerge. This intentional direction suggests that the psychedelic state is responsive to the user's focus and can facilitate targeted exploration of personal identity and other areas of interest, including knowledge of the external world.

Roche and Windt raise doubts about the validity of insights gained during the psychedelic state due to its noetic quality. They fear that the fact that during psychedelic experiences people feel they've directly gained these absolutely true insights will mean that they won't bother investigating whether there is any justification for their new beliefs or not. However, the fact that proper preparation has such an outsized influence on the experience, coupled with the fact that the majority of the individuals undergoing psychedelic experiences are aware that their consciousness has been altered, shows that the psychedelic experience is not merely a passive, uncontrollable state leading to delusions and irrational beliefs. Instead, through meticulous preparation and contextualization, users can retain a degree of control and rationality within the experience, enabling a more discerning engagement with the insights gained. This active engagement, supported by a conducive set and setting, allows for a critical examination of the experience and its insights, enabling a more grounded and justified integration of knowledge.

The intricate interplay between set and setting underscores the multifaceted nature of the psychedelic experience and its potential for knowledge acquisition. By understanding and harnessing the dynamics of set and setting, individuals can optimize conditions for meaningful exploration and acquisition of knowledge during psychedelic journeys. Through thoughtful preparation, cultivation of positive mindsets, and the creation of supportive environments, individuals can navigate the complexities of the psychedelic altered state of consciousness with

greater intentionality and receptivity. Ultimately, the variability of set and setting underscores the complex nature of psychedelic experiences, highlighting the importance of holistic approaches that honour the unique needs, goals, and intentions of each individual.

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