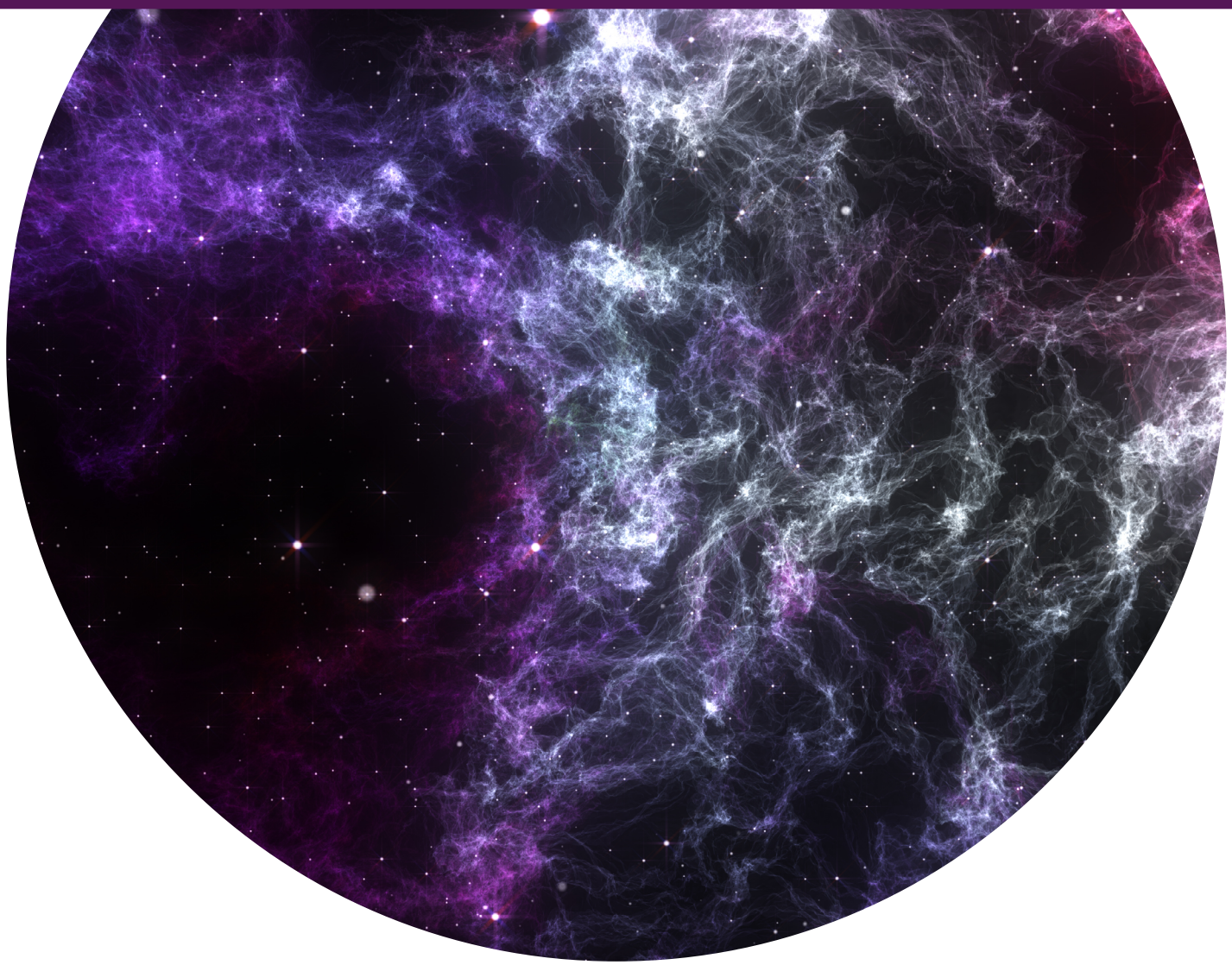

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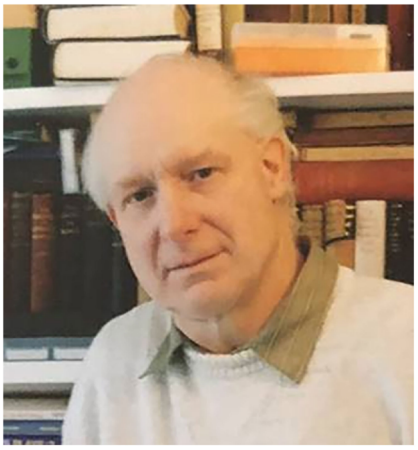
Table of Contents

In Memoriam: Alan Gauld (1932-2024)[1]

Tom Ruffles

Society for Psychical Research



Courtesy of the Society for Psychical Research

Alan Ogilvie Gauld, distinguished British psychologist, historian, and psychical researcher, was born on June 17, 1932, in Portland, Dorset, UK, and died at the age of 92 on December 22, 2024. Both prolific and erudite, he has left an indelible mark on psychical research, his scholarship blending psychological, philosophical, and historical insights. His influence on psychical research has been significant.

After school in London, followed by compulsory National Service, Alan read history and psychology at Emmanuel College, Cambridge. He spent a year at Harvard as a postgraduate before returning to Cambridge as a Research Fellow, where he completed a Ph. D. in 1962. He went on to teach psychology at the University of Nottingham, where he spent the rest of his career.

Interested in the paranormal from childhood, Alan joined the Cambridge University Society for Psychical Research. There he met Tony Cornell, who became a lifelong friend and frequent collaborator, and did his first investigations (some of the joint efforts undertaken with Cornell are described in Cornell's *Investigating the Paranormal*).

1 Address correspondence to: Tom Ruffles, Ph. D., Society for Psychical Research, **tom.ruffles@googlemail.com**

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Having joined the Society for Psychical Research (SPR) in 1954, he was elected to its Council in 1962, was president from 1989 to 1992, and thereafter a vice-president. He edited its *Journal* and *Proceedings* from 1965 to 1970 and served on several committees.

I met Alan when I joined the SPR's Council in 1989 and was impressed not only by his careful weighing of issues but also his approachability and readiness to share his knowledge. When handling requests for information sent to the SPR by members of the public, I occasionally asked for his advice. He was always ready to draw on his expertise and the resources of his impressive library and many researchers will similarly attest to his assistance.

It is Alan's publications, though, that are his enduring legacy, offering meticulous evaluations of psychical phenomena and their historical context. In addition to his depth of knowledge, he was an elegant stylist, making all his writings highly readable. He was skeptical in the best sense of the word, acknowledging complexity and ambiguity but leaving the reader well able to consider the implications of the subject at hand, even if firm conclusions were not forthcoming.

Almost 60 years on, *The Founders of Psychical Research* (1968) remains a cornerstone of the field, an investigation of the intellectual atmosphere in which the SPR was formed in 1882 and its early, extremely productive, outputs. It humanizes the lives and work of the SPR's pioneers, particularly Henry Sidgwick, Edmund Gurney, and Frederic Myers, offering a nuanced view of their endeavors. The treatment of Myers in particular highlights the complex interplay of personal and professional motives that drove these figures.

With Cornell he co-authored *Poltergeists* (1979), a detailed enquiry based on extensive research and firsthand investigations. In a groundbreaking enterprise, Alan applied cluster analysis to a collection of 500 cases. The authors found that while many poltergeist cases can be attributed to natural factors, a number resist conventional explanation. White Crow Books recently reissued the book, making it accessible to a new generation.

Part of a series celebrating the SPR's centenary, Alan's 1982 *Mediumship and Survival: A Century of Investigations* synthesizes research into mediumship (mostly mental) from the SPR's foundation. It weighs survivalist interpretations against alternatives, including what is now referred to as living-agent psi, contending that it is the tension between the remarkable nature of the evidence and the difficulty of offering conventional explanations that makes psychical research compelling. Exposure to

mediumship was not confined to the library, as he sat with several mediums, and his practical experience informed his academic studies.

A History of Hypnotism (1992) is a monumental 700-page work tracing the intellectual development of mesmerism and hypnotism, examining key individuals and schools from 18th-century origins to decline and incorporation into modern psychological theories. Widely praised for its depth and clarity, it cemented Gauld's reputation as a painstaking historian. A later chapter on memory in *Irreducible Mind*: *Toward a Psychology for the 21st Century* (2007), a volume building on the pioneering thought of F. W. H. Myers, explores a non-reductive model of mind.

Alan's final book, published in 2022, is *The Heyday of Mental Mediumship, 1880s-1930s*: *Investigators, Mediums and Communicators*, dealing with a key period in psychical research. It serves as a summation of Alan's thinking, covering the mediums, their phenomena, and the scrutiny to which they were subjected, employing a critical yet sympathetic perspective. The theoretical approaches to the phenomena he outlines are as relevant today as they were in the 1880s. Etzel Cardeña's *JAEX* review rightly calls the book a "masterwork… demolishing on the way ignorant, nonsensical, and dogmatic critiques." (Cardeña, 2023, p. 204)

In addition to his books, Alan contributed a wide range of papers to the SPR's *Journal* and *Proceedings*. These showcase a broad engagement with psychical research, covering such diverse topics as drop-in communicators, super-ESP (as it was then called), G. W. Lambert's geophysical theory of poltergeists (the film of the experiment is very entertaining), phantom armies, hauntings, historical studies, and much else, as well as numerous book reviews.

He was a critic of the controversial 1999 *Scole Report*, published as an issue of the SPR's *Proceedings*, to which he added a 20-page commentary. This investigation documented a series of séances held mainly in Scole, Norfolk, which claimed to produce genuine physical phenomena. Although the verdict of the three principal investigators was positive, Alan exposed flaws in certain experimental controls and considered there was indirect evidence of fraud, though he did not level direct accusations at individuals.

Alan was awarded the SPR's Myers Memorial Medal in 1998, a rarely-bestowed recognition of those who make significant contributions to the field. His papers, containing unpublished cases and correspondence, are housed at Cambridge University Library. There is a bibliography of his significant publications in Melvyn Willin's article on him in the SPR's *Psi Encyclopedia.*

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Past-life Memories and Foreign Languages: An Exploration of Xenoglossy in Cases of the Reincarnation Type[1]

Philip J. Cozzolino Marieta Pehlivanova Jim B. Tucker

University of Virginia School of Medicine

Abstract: *Objective.* Decades of research into children who appear to recall a past life have highlighted additional extraordinary features of this phenomenon. We explored a large past-life memory database to understand cases coded as exhibiting xenoglossy—the remarkable claim of individuals speaking a foreign language that they should not be able to speak naturally. *Methods.* We compared 40 cases that exhibited xenoglossy to 872 that did not, between 1959 and 2020. In a series of binary logistic regressions, we tested variables linked to a novel emotion-trauma hypothesis for the presence of xenoglossy, along with other variables that would suggest an ordinary explanation. *Results*. Xenoglossy was not associated with variables related to an ordinary explanation. The emotion-trauma hypothesis was supported, in that xenoglossy was associated with: (1) participants' emotionality, (2) desires to return to their purported previous family, (3) claiming to have died as a result of intentional/violent means, and (4) having a stronger case, which is more suggestive of cases having an anomalous explanation. *Conclusion*. Akin to other remarkable features documented over the years of past-life memory research (i.e., birthmarks linked to a previous personality's fatal wound, phobias, philias), xenoglossy is another core feature of a previous personality that seems capable of transferring to a new life. The evidence from the database suggests that the phenomenon of speaking, unnaturally, in a foreign tongue is linked to—and strengthened by—the presence of emotion, distress, and violence/trauma in the expression of children's past-life memories.

1 Address correspondence to: Philip J. Cozzolino, Ph. D., Division of Perceptual Studies, Department of Psychiatry and Neurobehavioral Sciences, University of Virginia School of Medicine, P. O. Box 800152, Charlottesville, VA 22908, United States, **rxq6qz@uvahealth.org**

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Highlights

- We focused on 40 cases documented in a large database of past-life memory investigations that included claims of xenoglossy.
- Cases coded as exhibiting xenoglossy were not associated with a non-anomalous explanation (i.e., early verbal ability, parental education levels).
- Xenoglossy was significantly associated with factors related to high emotion, distress, and trauma.

The history of rigorously investigating the claims of children who express what appear to be memories of a past life often contains intriguing stories that can defy explanation (Stevenson & Pasricha, 1980). Typically, children between the ages of 2 and 7 spontaneously express memories that appear to be from a life before their current existence (Haraldsson, 1991; Stevenson, 1974, 2001; Tucker, 2008, 2021b). More than 60 years ago, Ian Stevenson initiated the process of forensically investigating these so-called "cases of the reincarnation type" (CORT; Stevenson, 1960a, 1960b), and his protocol was subsequently enhanced (Stevenson, 1977) and remains in use today. Once a potential CORT case has been identified, a trained researcher examines the evidence by systematically interviewing the child and all available sources who can provide first-hand information to support—or refute—the child's claims. Many of these cases eventually lead to an identification of a "previous personality," which in turn extends the investigation to include family and community members associated with the deceased individual, looking again for evidence to support or refute the past-life memory claims.

Although one could say that claims of past-life memories are remarkable on their own, decades of this research have shown that there are often layers of the extraordinary within these cases. For example, among the many documented cases in the CORT database (used with permission from the University of Virginia Division of Perceptual Studies), there are 631 cases (28%) in which a so-called "announcing dream" and/or a "departing dream" has been claimed by a member of the child's family or by the previous personality's family, respectively. A mother may tell investigators that, prior to the birth (or even conception) of their child, they had a dream in which the previous personality announced that they would be coming to the mother

(or asked permission to do so). Departing dreams occur when a member of the previous personality's family claims that they were told by their deceased relative in a dream that their relative would be reborn to another mother.

Another example of the extraordinary features associated with CORT cases is documentation of a biological connection between the previous personality and the child expressing past-life memories. The most common manifestations of this connection are seen in documented birthmarks and/or birth defects in the child that correspond to similar marks known to have existed on the body of the previous personality. These claims have been investigated in the context of so-called "experimental birthmarks" in which the body of a dying or recently deceased person is purposely marked by family members in the belief that their loved one will be more easily identified in their new body, based on the presence of a matching birthmark (Tucker & Keil, 2013). An even more extraordinary example of this biological connection between the previous personality and the current child is the correspondence between birthmarks and/or defects on the child and traumatic fatal wounds suffered by the previous personality, which are confirmed by postmortem reports whenever possible after that person has been identified (Stevenson, 1997). One such case involves a child known as "NK" who was born in India in 1982. A full account of NK's case (and 11 others) can be found in Pasricha et al. (2005). Briefly, this case details a child born with a linear area of abnormal skin on the left-front area of his head. The child insisted that he was from a different village and that his name was Babu (not his given name). The child claimed he had been killed by robbers who hit him in the head with an axe. Eventually, investigators were able to identify a Babu from the village claimed by the child, who had been murdered in 1978. The investigation confirmed that Babu had been killed by robbers with an axe, just as the child (and his birthmark) suggested, a fact supported by Babu's postmortem report. These sorts of birthmarks and birth defects related to the previous personality, especially when verified, are considered strong evidence by the researchers of an anomalous explanation for the phenomenon (Tucker, 2000).

Similar to the connection between the previous personality and the child as manifested in birth marks and defects are specific preferences and/or phobias in the child that seem linked to the previous personality. In the CORT database, 20% of the cases involve phobias present in the child that were verified as linked to the previous personality's mode of death and/or a documented trauma that person experienced prior to their death. There is, for example, the case of Sri Lankan child "SP" who presented as severely phobic around water, especially at bath time, only later to express memories of having previously died as a result of drowning (Tucker, 2021a). Conversely, there are cases of children who show an unusual desire for certain items (e.g., food

and music) that link to the previous personality's known preferences, and even documented addictions. In fact, 3% of cases in the database (75 children) were noted as having cravings for alcohol and/or tobacco, substances confirmed as prevalent in the life of the previous personality.

As with many of the features associated with a CORT case, it is possible that all these extraordinary elements layered into the past-life memory claims can be explained as non-anomalous in nature. Perhaps announcing dreams are the manifestations of hopes and dreams of an expecting parent, later expressed in a manner that tells a better story. Maybe a child hears early in her life about the birthmark on her head looking like she had been hit with a sharp tool, only later to convert those comments into a more compelling narrative. These attempts to understand the extraordinary with ordinary explanations become potentially less satisfying when they are considered alongside all the other elements that contribute to a strong CORT case with evidence that makes an ordinary explanation less likely. The most important of these, of course, are the memories themselves that are often verified and often so specific that they lead investigators directly to an identified person who seems to match the previous personality described by the child. We take these extraordinary facets of past-life memory cases as important elements of the CORT phenomenon and worthy of further exploration.

One of the most fascinating elements that has occasionally emerged over the years is the phenomenon known as *xenoglossy* (Richet, 1906). Derived from ancient Greek, the word translates simply to "foreign tongue (or language)," and is used to describe anomalous claims of a person speaking (or understanding) a foreign language that they have not learned (or been exposed to) previously and should not be able to speak naturally. A search of the documented investigations in the CORT database found 41 cases coded as exhibiting features of xenoglossy. Stevenson (1974b) distinguished between two types of xenoglossy: recitative and responsive. Recitative xenoglossy is said to manifest as an automatic, rote sort of experience, such that the person is using words or phrases from the foreign language, but not in an interactive, conversational manner. Responsive xenoglossy is said to occur when individuals can communicate intelligibly in the foreign language, in an interactive manner in response to the same foreign language being presented to them. There is also a view that a subtler form of this phenomenon exists, termed "passive xenoglossy," which can manifest as regional dialects, for example, or as when a child seems to learn their native language significantly faster than would be expected for their age (Haraldsson & Matlock, 2017). Xenoglossy differs from *glossolalia* (commonly referred to as "*speaking in tongues*") in that claims of the former involve the expression of a natural human language that the person should not know, whereas the latter involves claims of ut-

terances and speech-like sounds that do not correspond to an ordinary language in human society (Stevenson, 1974b).

Xenoglossy Cases

The evidence in the original investigation files supporting the cases coded as involving xenoglossy ranges from the remarkable to the mundane. On the dramatic end, we have a rare, but well-documented case of a participant from West Central India named Uttara Huddar (for details see Stevenson & Pasricha, 1979, 1980). This case contained several unusual features, the most notable one being xenoglossy of the responsive type that, according to Stevenson and Pasricha (1980), was best thought of as "possession syndrome." That is, in this unique case Huddar began to have apparent memories of a previous life in her thirties (significantly older than the majority of CORT cases) and her memories only occurred during periods of a dramatic personality change, such that the previous personality seemed to take over her body and communicated in Bengali, a language that Huddar purportedly did not know. Although Stevenson (1984) noted that this case was distinct from typical cases of the reincarnation type, he concluded that it was best thought of as a case of reincarnation with unusual features. This was due in part to Huddar's childhood phobia of snakes, which might be linked to the previous personality's death.

Another example of cases that provide fascinating claims of xenoglossy comes from an investigation in 1977, focused on two Burmese twin girls named Khin San Yin and Khin San Tin. In this case, Stevenson's notes document the claims made by the parents of the twins as well as other members of the family's village. According to these reports (Stevenson, 1997), the twins had specific memories of having been brothers (not twins) from Japan who fought during World War II in Burma. According to the twins, they had been in the same military company on the same battlefield when—at a time when the British Air Force was actively bombing in that area—they faced a barrage of bombs from enemy planes. The twins claimed that as they took shelter from the bombing, they recalled being killed at the same time when their own hand grenades exploded. According to the family and villagers, the Burmese twins would speak to each other in Japanese when they were very young, which was a language no one knew or understood in their home and neighborhood. The twins eventually stopped speaking Japanese, but even when they were speaking Burmese later in life (which they reportedly struggled to learn), they were described as having a "foreign accent" compared to other people from the region.

Most cases classified as exhibiting xenoglossy are not nearly as remarkable as the Huddar or Khin San Yin and Khin San Tin ones. Much more common in the files are children speaking a few words randomly, for a short period of time, that many in the child's family did not even know was a foreign language until later confirmed by another family member or a neighbor. For example, there is a case of an American child whose previous personality was linked to Japan. This child apparently said the Japanese word for "ouch" when he fell and later confounded his parents (who did not speak Japanese) by correcting their pronunciation of the Japanese dish sukiyaki (often pronounced "soo-kee-ah-kee" by Americans), with the proper Japanese pronunciation of "sky-ah-kee." There is also a case from Canada in which the memories suggested that the previous personality could be the child's grandmother, who spoke Gitxsan, an endangered Tsimshianic language of northwestern British Columbia so rare that there are apparently fewer than 700 people who even understand it, let alone can speak it fluently (Dunlop et al., 2018). According to the child's mother (who did not speak the language), the participant spoke a few words of Gitxsan as a toddler, and only later confirmed that the words were from that language.

As far as extraordinary experiences (or claims of such experiences) go, xenoglossy is among the most debated. Linguistic researchers (see Thomason & Poser, 2020) have questioned the details and evidence provided by Stevenson (Stevenson, 1974b, 1984). Others have suggested the phenomenon is better explained as *cryptomnesia*, which is when an individual misinterprets a forgotten memory (or forgets that they had been exposed to the foreign language) as a new experience or idea (Draaisma, 2015). Stevenson did suggest that cryptomnesia could explain some of the cases he investigated (Stevenson, 1974b). Others have asserted that claims of xenoglossy can be explained as manifesting from dissociative states and not from paranormal causes (Pickford, 1943). Although cryptomnesia and dissociative states are worthy of consideration as explanations for apparent xenoglossy among adults, they are less likely to explain the phenomenon in very young children who have no diagnosis of dissociation.

It is important to note that determining whether xenoglossy is occurring can be difficult, especially given that other individuals interacting with the person apparently speaking the foreign language often do not know the language themselves. There is also evidence (Stevenson, 1974b) that in at least one investigation Norwegian children believed to be speaking Finnish were actually communicating in a language they developed themselves, without sharing its basic rules with others. Thus, many cases of apparent xenoglossy are only determined to be potentially legitimate retrospectively, after others with knowledge of the language get involved.

Dual-Pathways to Past-Life Memories

Six decades of lessons from researchers investigating CORT cases led us to develop a dual-pathway model to understand how some children may come to express apparent past-life memories. One pathway, the "enhanced memory" pathway, identifies those children who seem to recall many details and moments from their purported past life, often without a great deal of emotionality and without a known link to trauma in the past or current life. One classic example of a CORT case reflective of this pathway is the well-documented American case of Ryan Hammons (Tucker, 2021a). His case included dozens of mostly accurate statements he made as a child about the life of Marty Martyn, a movie extra from the 1930s who later became an agent in Hollywood. In support of this enhanced memory pathway, prior research has documented that many American CORT children show significantly higher intelligence and verbal skills than peer children (Tucker & Nidiffer, 2014), both of which have been linked to working memory and autobiographical memory abilities in young children (Aubry et al., 2021; Bauer & Larkina, 2019; Schneider & Niklas, 2017). Earlier research comparing Sri Lankan children with past-life memories to matched controls similarly showed higher intelligence and memory among these children, supporting a hypothesized CORT pathway as a result of enhanced memory (Haraldsson, 1997).

The second, "emotional-trauma" pathway, identifies children who are more likely to recall traumatic, unnatural deaths in their previous life. They are also more likely to exhibit emotional distress during recall and even signs of trauma persisting from that past life into their current one. A classic example of a CORT case indicative of this pathway is the case of American James Leininger (Tucker, 2008). Unlike Ryan Hammons, James showed many traumatic behaviors (including nightmares and traumatic play) linked to an ostensible past life that ended violently. In further contrast to Ryan, James expressed significantly fewer memories in total (although those he did express were specific and verified), and his memories appeared more emotional and distressing in nature. The Leininger case is part of the 65% of children in the database who report past lives that ended unnaturally and often violently. Supporting the emotional-trauma pathway, prior research with Lebanese children found that some CORT children showed symptoms consistent with post-traumatic stress disorder, such as heightened fear responses, anger, and anxiety, compared to control children (Haraldsson, 2003).

Hypothesized Pathway to Xenoglossy

Given our focus on the anomalous claims of xenoglossy in some CORT cases, which suggests a transfer of sorts of a core trait of the previous personality to the current existence, we predicted that this phenomenon might best be explained via the emotional-trauma pathway. We view a previous language potentially being transferred to a new life as similar to the apparent transfer of birthmarks and/or defects on CORT children that match the traumatic fatal wounds suffered by the previous personality (Stevenson, 1997). The same can be said for the evidence of intense phobias and emotions linked to the previous personality's death, seemingly being transferred to the new life (Tucker, 2021a).

In this study, we conducted the first formal investigation of trauma as one possible pathway to past-life memories using a large curated collection of cases, advancing from important previous explorations of trauma-related processes that relied on a small number of individual case studies (Haraldsson, 2003). Analyzing data from all the CORT cases featuring xenoglossy in the database requires a cautious approach when it comes to *a priori* hypotheses. Although we were able to discover why the original cases were coded as featuring xenoglossy (described in more detail below), the historic nature of the database precludes us from verifying for ourselves that the cases involved clear, unassailable manifestations of xenoglossy. Working with this extraordinary database, carefully curated over the decades (Stevenson, 1977; Tucker, 2008), requires a thoughtful approach when extracting inferences from the data. That said, we did set out to test a straightforward hypothesis with the xenoglossy-coded cases.

The null hypothesis would predict that the xenoglossy cases are distributed within the database randomly, with no coherent or systematic relationships with other key variables, relative to cases explicitly coded as not involving xenoglossy. Conversely, an alternative hypothesis—which could suggest a possible explanation for the emergence of xenoglossy—would predict that the xenoglossy-coded cases are uniquely, coherently, and systematically related to CORT variables that map onto our hypothesized emotion-trauma pathway, when compared to the non-xenoglossy cases.

Method

The CORT Database

The CORT database contains 2,254 documented cases of individuals, mostly children, who seem to recall past-life memories. Researchers investigate and document the claims according to a strict protocol developed by Stevenson (1974b, 1984). Once it is determined that an emerging case warrants further scrutiny, a trained investigator meets with the source of the memories, his or her parents, close relatives, and sometimes even family friends and neighbors, all of whom are probed for first-hand information regarding the case. Ultimately, the investigators evaluate and confirm evidence linked to the claims to determine a possible explanation for the case, whether it is an anomalous or a normal explanation, such as children's fantasies, fraud, or socio-psychological needs of families with a belief in reincarnation (Moraes et al., 2022; Tucker, 2000). These qualitative interviews are then standardized according to a registration form that includes a checklist of salient CORT features. All people interviewed provide informed consent and child participants provide assent, and this study was approved by the University of Virginia's Institutional Review Board for Social and Behavioral Sciences (protocol # 2601).

Once the evidence is gathered, trained research assistants rely on an 83-page standardized coding manual that provides guidance and explanations for each of the 208 possible variables in the database. The trained coders use the manual to convert the information gathered in the registration form and derived from the investigator's notes into values for the SPSS 29 CORT database. Researchers have used this aggregate database previously to explore relevant features across multiple cases to understand processes underlying the past-life memory phenomenon (Pehlivanova et al., 2018; Sharma & Tucker, 2004; Stevenson & Haraldsson, 2003; Tucker, 2000).

Sample and Key Variables

Xenoglossy. For the current study, we focused on cases that were clearly coded in the database as having—or not having—claims of xenoglossy. This variable has three possible codes, based on the investigative process described above: "yes," "no," or "unknown." Based on these codes, we selected only those cases that were determined to have confidently asked and answered the question regarding xenoglossy as a claimed feature of the case. From the full database of 2,254 cases, 41 cases had a

xenoglossy claim, 872 a clear "no xenoglossy" determination, and 1,341 an unknown/undetermined xenoglossy code.

Given the extraordinary nature of xenoglossy claims, we manually reviewed all the original documents and investigator notes in the case files with permission from the Division of Perceptual Studies archive to confirm that the 41 cases did contain documentation to support the xenoglossy claims. This review of the original investigation files revealed that one of the 41 cases coded as containing claims of xenoglossy was incorrectly coded. Thus, we removed that case from the current study, resulting in a final sample of 912 cases: 872 known to have no xenoglossy claims and 40 cases with a xenoglossy feature. The dates of the first substantial investigation for these 912 cases ranged from 1959 to 2020.

We tested two potential confounds that could explain why the "xenoglossy question" was asked in some cases but not others. One potential confound could be the distance between the participant's country of residence and the previous personality's residence, as that might have biased the investigators to seek a clear answer only in cases with a greater distance between the two. An independent-samples *t*-test revealed no significant difference in kilometers between our selected cases (n = 501; M = 269.73, SD = 1,181.92) and the unselected cases (n = 660; M = 338.79, SD = 1,357.04), for those with valid distance values, $t(1{,}159) = -0.91$, $p > .05$, one-tailed. Thus, there was not a tendency for investigators to only ask the xenoglossy question if they had discovered a large distance between the participant's residence and the previous personality's residence. The second potential confound was the time of the initial investigation, as xenoglossy cases were a particular focus of Stevenson's (e.g., Stevenson, 1976; Stevenson & Pasricha, 1980). An independent-samples *t*-test revealed no significant difference in months since the first official investigation between our selected cases (n = 911; M = 528.17, SD = 150.82) and the unselected cases (n = 1,341; M = 524.12, SD = 185.76), for those with valid values, $t(2250) = 0.55$, $p > .05$, one-tailed.

Further validating the xenoglossy-coding in the CORT database (and based on the expectation of xenoglossy cases involving a previous personality who lived in a foreign country), we found a significant difference in the distance (in kilometers) between the participant's residence and the previous personality's residence, such that xenoglossy cases (M = 1285.15, SD = 1934.78) were significantly farther away than were non-xenoglossy cases (M = 234.06, SD = 1133.38), $t(16.38) = 2.23$, $p = .02$, Welch-corrected, one-tailed. The gender breakdown of the cases was 351 (38.5%) girls and 561 boys (61.5%); the median age of when the children first spoke about their past-life memories was 33 months. It is important to note that we do not have valid scores for

each participant on all the variables included in our analyses, so the actual number of xenoglossy and non-xenoglossy cases will be highlighted in each step of the results section.

Key variables. To test our hypothesis of whether xenoglossy cases were distributed randomly or systematically in the CORT database, we focused on variables that could either point to an ordinary explanation or that are features of compelling CORT cases that are more suggestive of an anomalous explanation (i.e., driven by the emotion-trauma pathway). Given the purportedly exceptional verbal abilities of the xenoglossy participants, we included the documented age at which they first spoke in coherent phrases in their native language as one of the "ordinary explanation" variables. We had 526 valid scores on this variable in our sample, with a median age of 23 months. Another potential ordinary explanation is the level of education of the participants' parents, as it is known that parent educational attainment (often used as a proxy for socioeconomic status) is a significant predictor of academic success and advanced verbal competence in children (Bradley & Corwyn, 2002; Davis-Kean et al., 2021). The education level question for each parent was coded as: (1) *No school/ illiterate*, (2) *Some elementary school*, (3) *Completed elementary school*, (4) *Some high school*, (5) *Completed high school*, (6) *Some college*, (7) *Completed college*, (8) *Graduate degree*. Because the literature suggests that Likert or ordinal variables with five or more categories can be used analytically as continuous variables (Johnson & Creech, 1983; Norman, 2010; Sullivan & Artino, 2013), we calculated a Pearson's correlation for the scores of mothers and fathers of each case, which was significant, $r(835) = .71$, $p < .001$. Thus, we calculated a "family education level" variable by averaging the education level of both parents (if only one parent score was available, we took that one). We had 272 valid scores on this new variable, revealing an average educational level for parents right around "some high school" ($M = 3.93$, $SD = 2.23$).

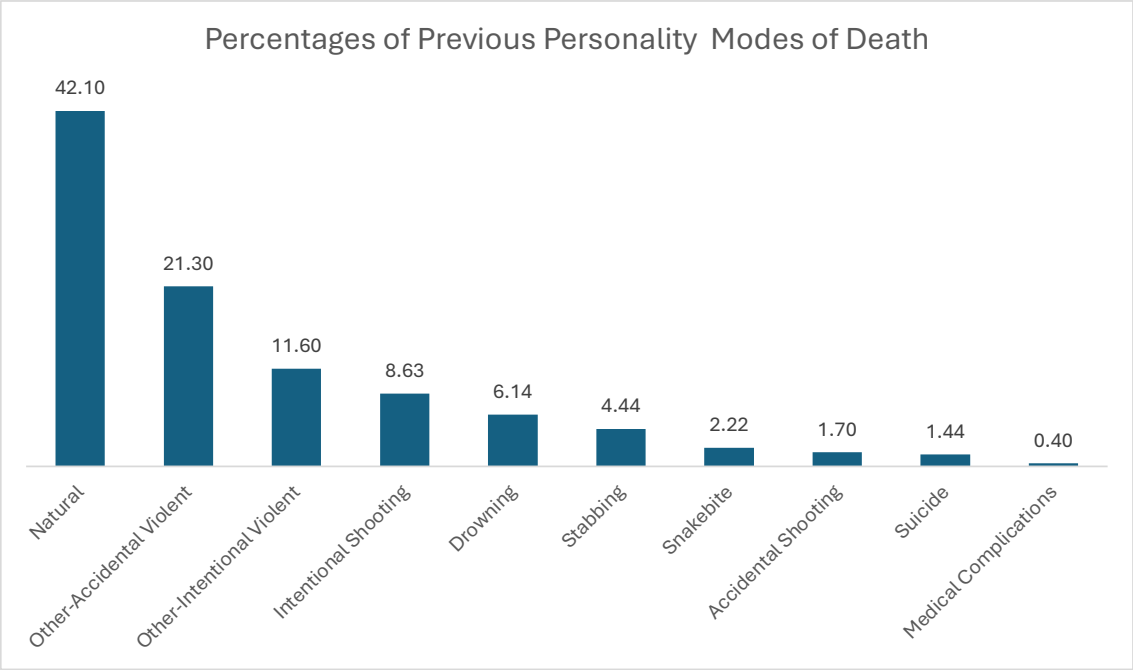
Turning to variables that are supportive of the emotion-trauma pathway to CORT, we included a variable assessing whether the child evidenced emotion during recall of their past-life memories. This variable is coded on a four-point scale with response codes of: (1) *No*, (2) *Yes, slight*, (3) *Yes, moderate*, and (4) *Yes, extreme*. We had 427 valid scores on this variable ($M = 1.86$, $SD = 1.13$).

The database also includes the mode of death for each previous personality, often based on the claims made by the participant during the investigation and sometimes confirmed by investigators. Notably, 65% of the cases documented in the database describe unnatural, and even intentionally violent/traumatic deaths (including suicide) of the previous personality. Figure 1 depicts the frequency of this variable

across 10 possible modes of death, based on 765 cases with a known code. To test our emotion-trauma hypothesis, we collapsed across multiple modes to create a binary variable that distinguished between violent/intentional deaths (i.e., murder or suicide; n = 200) and all other forms of death (n = 565).

Figure 1

Percentages of Known Modes of Death for Volunteers' Claimed Previous Personality



The next key variable coded the participants' strong desire to return to the previous personality's family, often an emotionally-laden feature that can be distressing for the participant and their current family. This assessment ranged from: (1) the child's previous personality was from the same family, 2) *strong reluctance* (to return), (3) *moderate reluctance*, (4) *neutral*, (5) *moderate desire*, and (6) a *strong desire* expressed by the child to return to the previous personality's family, with 649 cases with valid scores (M = 3.57, SD = 2.00).

The final variable we included in the analysis was the strength-of-case score (SOCS). based on four broad categories that provide evidence that cases may have an anomalous explanation (Tucker, 2000). These categories—each of which consists of numerous variables from the database—were derived after decades of collecting evidence via CORT investigations and were validated by Tucker (2000). The first two are directly linked to our emotion-trauma pathway hypothesis. The first is the extent to which the participant has birthmarks and/or birth defects that correspond to wounds on the previous personality, often formed in the process of that person's death (e.g.,

bullet holes, lost limbs/digits). The second category is focused on behaviors of the child that link to known behaviors of the previous personality. This could be a CORT child demonstrating phobias linked to the manner of the previous person's death (e.g., a child afraid of the bathtub when the previous personality was found to have died by drowning), and/or a child showing a clear preference for a food or a drink that was preferred by the previous personality, to name a couple of examples. The third SOCS category awards points for statements made by the CORT participant if those statements are verified in the context of the previous personality's life, and it subtracts points if the statements made are later found to be incorrect. Finally, the fourth category awards more points to the case if the distance between the participant and the previous personality is greater, in terms of physical distance, cultural distance, and if the families of the participant and the previous personality did not know each other. The less associated (or close) the participant and previous personality are the more points, as it would be more difficult for the child to have learned about the previous personality via normal means. Because we know that the xenoglossy-coded cases are significantly more distant from the previous personality's place of residence, we recalculated the SOCS after removing this distance category. Among our selected sample, this adjusted variable ranged from -3 (very weak cases) to 40 (very strong cases), with a mean of 7.03 and a *SD* of 7.39.

Of the total 912 cases, 28% came from Burma (Myanmar), 22% from Turkey, 20% from the United States, 7% from Nigeria, 6 % from Sri Lanka, 4% from Canada, 3% from India, 3% from Thailand, 1% from the United Kingdom, 1% from Brazil, 1% from Lebanon, with the remaining 4% coming from 20 other countries. Finally, our selected sample of cases involved past-life memories expressed by 351 girls (38.5%) and 561 boys.

Statistical Analyses

Our analytic approach was to explore the database for relations and patterns among (and between) our variables of interest. We used SPSS version 29 to conduct the analyses, which consisted of six binary logistic regressions, coding xenoglossy cases as 1 and non-xenoglossy cases as 0. To reduce the chance of Type I error, we set a Bonferroni correction for our six statistical tests, such that our corrected *p* value to determine significance was .05/6 = .008. We also conducted one final multivariate binary logistic regression, adding all significant individual variables to the model to see which CORT-related features (i.e., emotion, intentional vs unintentional death, desire to return to the previous family, strength of case) significantly related to xenoglossy, controlling for the other variables. As stated earlier, our goal was to determine if the

40 xenoglossy-coded cases systematically and coherently related to other relevant variables in the CORT database, or if they were randomly distributed through the cases, suggesting no potential explanation for the appearance of alleged xenoglossy. To assess the authors' *a priori* beliefs in the main hypothesis of this study, we used the journal's suggested 5-point response scale such that 5 = *strong belief* in the success of the study, 4 = *moderate belief*, 3 = *neutral*, 2 = *moderate non-belief*, and 1 = *strong non-belief* in the success of the study. Our reported belief scores were: author PJC = 4; author MP = 4; author JBT = 3.

Results

Ordinary Explanation Variables

We regressed our binary xenoglossy variable onto the age in months that the participant first spoke in coherent phrases. There was no significant relation between the age of first speaking coherent phrases and cases being coded as involving xenoglossy, *OR* = 1.01, CI: [.97, 1.04]; see Table 1 for all univariate analyses). On the variable assessing the parental education level for each case, there was no significant relation between education and cases being coded as involving xenoglossy, *OR* = .94, CI: [.75, 1.18].

Table 1

Univariate Logistic Regressions Predicting Xenoglossy

Predictor	*N*	Category	*OR*	Wald$_1$	*p*	95% CI for *OR*
Age at 1st speaking in coherent phrases	526	--	1.01	.10	.75	[.97, 1.04]
Average parental education	272	--	.94	.30	.59	[.75, 1.18]
Degree of emotion during recall	427	--	1.71	10.07	.002*	[1.23, 2.39]
Mode of death	765	Intentionally violent/ Other (reference)	2.80	8.26	.004*	[1.39, 5.66]

Desire to return to PP family	648	--		1.41	8.77	.003*	[1.12, 1.77]
Strength of case	912	--		1.05	8.22	.004*	[1.02, 1.09]

Note. *OR* = odds ratio; $Wald_1$ = Wald statistic with 1 degree of freedom; CI = confidence

* Significant after Bonferroni correction.

Emotion-Trauma Variables

The four-point variable assessing whether the participant experienced emotion during recall of their purported past-life memories had a significant relation with xenoglossy. The more participants experienced emotions during recall of their past-life memories, the more likely they were to exhibit xenoglossy, *OR* = 1.71, CI: [1.23, 2.39]. The next analysis regressed xenoglossy onto the previous personality mode of death that distinguished between violent/intentional deaths (i.e., murder or suicide) and all other forms of death; participants who recalled a violent/intentional death in their purported previous life were significantly more likely to exhibit xenoglossy, *OR* = 2.80, CI: [1.34, 5.66]. The next key variable analysis showed that the more participants desired to leave their current family for their previous one, the more likely they were to exhibit xenoglossy, *OR* = 1.41, CI: [1.12, 1.77]. The final variable was the strength of case scale, adjusted to exclude the geographic distance between the participant and the previous personality. Stronger cases were significantly more likely to exhibit xenoglossy, *OR* = 1.05, CI: [1.02, 1.09].

In our final analysis, we regressed the xenoglossy-coded variable onto all four of the individual variables significantly associated with xenoglossy. That multivariate analysis (Table 2) revealed that only emotions expressed during recall, *OR* = 1.76, CI: [1.20, 2.59], and mode of death, *OR* = 2.75, CI: [1.06, 7.06], were significantly associated with xenoglossy, controlling for the other variables in the model.

Table 2

Multivariate Logistic Regression Predicting Xenoglossy (N = 301; 21 Xenoglossy)

Predictor	Category	*OR*	$Wald_1$	*p*	95% CI for *OR*
Expression of emotion during recall	--	1.76	8.36	.004	[1.20, 2.59]
Mode of death	Intentionally violent	2.75	4.45	.035	[1.07, 7.06]
	Other (reference)				
Desire to return to PP family	--	1.21	1.43	.23	[.88, 1.66]
Strength of case	--	.99	.14	.71	[.93, 1.05]

Note. *OR* = odds ratio; $Wald_1$ = Wald statistic with 1 degree of freedom; CI = confidence interval.

Discussion

We tested the hypothesis that 40 cases in a large CORT database coded as having features indicative of xenoglossy would either be distributed in the database randomly or would be systematically related to variables linked to an emotion-trauma pathway to CORT. The findings indicate that two ordinary explanations for the reports of xenoglossy—verbal ability and parental education level—were not related to the apparent occurrence of the phenomenon. That is, despite allegedly exhibiting the remarkable linguistic ability of using a language (to varying degrees) they could not have known, the xenoglossy-coded participants did not speak coherently in their *native tongue* any earlier than non-xenoglossy ones. Similarly, the xenoglossy-coded participants were not raised in a home with a higher-level of education compared to the non-xenoglossy ones.

The findings, however, did indicate an apparent coherent relation between the xenoglossy-coded cases and a set of important variables associated with emotion and trauma. Specifically, we found that xenoglossy-coded participants (compared to non-xenoglossy ones) were: (a) significantly more likely to evidence more emotion during the recall of their apparent past-life memories; (b) significantly more likely to express desires to leave their current family so they could return to their purported previous family; (c) significantly more likely to be linked to a previous personality who died as a result of intentional/violent means (i.e., murder, suicide); and (d) signifi-

cantly more likely to have stronger cases, which—according to Tucker (2000)—is more suggestive of cases having an anomalous explanation.

Making sense of CORT xenoglossy. We set out with this investigation to determine if there was a coherent and systematic story that could help make sense of the 40 cases of xenoglossy in the CORT database. We approached this goal cautiously, given that the retrospective nature of the database precludes us from validating the actual existence of xenoglossy, beyond finding documentation of the claims in the original investigation notes. This caution led to a straightforward assumption: if these xenoglossy cases were simply the result of noise, fraud, and/or exaggeration (to name only a few non-systematic causes) we would expect to find that they were distributed in the database randomly, without any coherent evidence tying them together. The alternative to this, of course, would be to find that the presence of these cases could be explained more systematically. To that end, we explored ordinary explanations that related to the verbal and educational qualities of the participants and we explored some explanations associated with a hypothesized emotion-trauma pathway.

Our findings suggest that the 40 xenoglossy-coded cases in the database are not distributed randomly. Moreover, their presence in the database is likely not the result of parents mischaracterizing the vocal skills of highly verbal children raised in educationally rich households. Instead, these cases seem to be tied coherently to some key CORT-related variables suggestive of something more anomalous than ordinary. Specifically, our findings point to the presence of xenoglossy claims in the database as reflective of highly emotional, distressing, traumatic, and anomalous cases of the reincarnation type.

Cautious inferences. One interesting area of research in which to contextualize our findings is the study of bilinguals and related evidence suggesting that a person's first and second language are often differentially activated and/or associated with emotional experiences. Although there is a good deal of nuance in this research, evidence does suggest that in the context of vocabulary, there is greater emotional resonance in a person's native/first language compared to those languages learned later in life (Javier, 1989). For example, there is evidence that bilinguals are more likely to "code switch" (flip between their known languages) during emotional episodes, with a stronger effect of switching from their second language to their first, "native," language when experiencing negative emotions (Williams et al., 2019). There is also evidence that bilinguals using their first language when highly emotional most often occurs when their first language is dominant and they are less proficient in their secondary language, which would be true for many of the CORT children who are still

learning their language (e.g., Dewaele, 2010). It is intriguing to speculate, within a "re-incarnation hypothesis" framework, that the aspect of consciousness transferring into a new existence might return through the emotion-trauma pathway. If that is the case, this process could carry fundamental elements of consciousness with it that manifest in human culture, such as connections to one's family and language.

To be clear, we are not making a direct assertion that the expressions of apparent xenoglossy documented in the 40 CORT cases represent the participants' "first" or native language relative to their "second," current language. However, we assert that the unique and potentially anomalous nature of the CORT phenomenon does allow for some degree of speculation. Specifically, it is interesting that our emotion-trauma pathway predicts CORT participants using a previous personality's language, which also maps onto a well-documented effect from research exploring the connection between multiple languages and the experience of emotionality.

Limitations and future directions. An important limitation of this study is our inability to verify—independent of the original investigator case notes—that xenoglossy actually occurred. A further limitation is the archival nature of the CORT database we used, which prevented us from making specific *a priori* hypotheses about the variables we investigated and the processes that we discovered. Our findings are correlational, and we have sought only to describe them in the context of our basic hypothesis test. We also acknowledge that the large disparity in group sample sizes is unusual for traditional quantitative research. Although in most cases it would be fair to question analyses that compare 40 people in one group to hundreds in another group, we would assert that the extraordinary nature of the xenoglossy-coded cases tempers those concerns. As appropriate as it might be to point to the low number of people in that group (from an ordinary research perspective), it is just as appropriate for us to comment on how remarkable it is that there are 40 documented cases suggestive of xenoglossy.

Moving forward with emerging CORT cases that include claims of xenoglossy, it will be important for researchers to document and record the phenomenon in real time to verify the claims linguistically, whenever possible. Additionally, the findings from this paper should guide future investigations of new cases so that researchers can explore—with more depth—processes related to emotionality, trauma, and strength of case. It will be central to seek evidence supporting—or refuting—claims of this anomalous experience, while also working to understand the extraordinary processes of how such experiences manifest.

Conclusion. For more than 60 years, researchers have investigated and documented remarkable cases of mostly young children seemingly recalling memories of a past life. Embedded within many of these cases, investigators have also reported additional extraordinary evidence, suggesting—for example—the possibility that biological features from one life may transfer to a new one (Stevenson, 1997), and that the presence of phobias and/or philias may also be directly linked to the experience of a previous existence (e.g., Tucker, 2021a). The research presented here adds to the literature built by past scholars, in the context of xenoglossy. Although we are unable to provide definitive evidence of these archived cases manifesting the actual phenomenon of speaking in a foreign tongue, we can say that those cases are linked to—and strengthened by—the presence of emotion, distress, and violence/trauma in the expression of these memories. We believe these findings may lead to a deeper understanding of the many layers of the extraordinary that are inherent in the remarkable phenomenon of children's past-life memories.

Authors' Note: The authors have no conflicts of interest to disclose. PC designed the study, analyzed the data, and wrote the first version of the manuscript. MP helped with statistical analyses and was actively involved in revising the manuscript. JT provided overall guidance and helped revise the manuscript.

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Souvenirs de Vies Antérieures et Langues Etrangères : Une Exploration de la Xénoglossie dans les Cas de Réincarnation

Philip J. Cozzolino Marieta Pehlivanova Jim B. Tucker

Résumé : *Objectif*. Des décennies de recherche sur des enfants semblant se souvenir d'une vie antérieure ont mis en évidence de nouvelles caractéristiques extraordinaires de ce phénomène. Nous avons exploré une large base de données sur les souvenirs de vies antérieures afin de comprendre les cas codés comme présentant de la xénoglossie : l'affirmation remarquable d'individus parlant une langue étrangère qu'ils ne devraient pas connaître naturellement. *Méthodes*. Nous avons comparé 40 cas de xénoglossie à 872 cas sans xénoglossie, entre 1959 et 2020. Par une série de régressions logistiques binaires, nous avons testé des variables liées à une nouvelle hypothèse émotion-trauma expliquant la présence de xénoglossie, ainsi que d'autres variables suggérant une explication ordinaire. *Résultats*. La xénoglossie n'était pas associée à des variables d'explication ordinaire. L'hypothèse émotion-trauma a été confirmée : la xénoglossie était liée (1) à l'émotivité des participants, (2) à leur désir de retourner vers leur présumée famille antérieure, (3) au fait d'affirmer être mort de façon intentionnelle/violente, et (4) à la solidité du cas, suggérant davantage une explication anomale. *Conclusion*. Comme d'autres caractéristiques remarquables documentées dans la recherche sur les souvenirs de vies antérieures (par ex. taches de naissance liées à une blessure mortelle d'une personnalité antérieure, phobies, philies), la xénoglossie apparaît comme une autre caractéristique essentielle d'une personnalité précédente, susceptible de se transférer dans une nouvelle vie. Les données suggèrent que le fait de parler, de manière non naturelle, une langue étrangère est lié à (et renforcé par) la présence d'émotions, de détresse et de violence/trauma dans l'expression des souvenirs de vies antérieures chez l'enfant.

French translation by Antoine Bioy, Ph. D.

Erinnerungen an frühere Leben und fremde Sprachen: Eine Xenoglossie-Untersuchung bei Fällen vom Typus Reinkarnation

Philip J. Cozzolino Marieta Pehlivanova Jim B. Tucker

Zusammenfassung: *Gegenstand.* Jahrzehntelange Forschungen zu Kindern, die sich offenbar an ein früheres Leben erinnern, haben weitere außergewöhnliche Merkmale dieses Phänomens aufgezeigt. Wir haben eine große Datenbank mit Erinnerungen an frühere Leben untersucht, um Fälle zu verstehen, die als Xenoglossie kodiert wurden – die bemerkenswerte Behauptung von Personen, eine Fremdsprache zu sprechen, die zu sprechen sie eigentlich nicht in der Lage sein sollten. *Methoden*. Wir verglichen im Zeitraum 1959 bis 2020 40 Fälle, die Xenoglossie aufwiesen, mit 872 Fällen, bei denen dies nicht der Fall war. Mittels einer Reihe von binären logistischen Regressionen testeten wir Variablen, die mit einer neuartigen Emotions-Trauma-Hypothese für das Auftreten von Xenoglossie in Verbindung stehen, zusammen mit anderen Variablen, die eine konventionelle Erklärung nahelegen würden. *Ergebnisse*. Xenoglossie war nicht mit Variablen verbunden, die mit einer konventionelle Erklärung in Zusammenhang stehen. Die Emotions-Trauma-Hypothese wurde insofern bestätigt, als Xenoglossie mit folgenden Faktoren in Verbindung stand: (1) Emotionalität der Teilnehmer, (2) Wunsch, zu ihrer angeblichen früheren Familie zurückzukehren, (3) Behauptung, durch vorsätzliche/gewaltsame Mittel ums Leben gekommen zu sein, und (4) Vorliegen eines stärkeren Falls, was eher auf Fälle mit einer anomalen Erklärung hindeutet. *Schlussfolgerung.* Ähnlich wie andere bemerkenswerte Merkmale, die im Laufe der Jahre der Forschung zu Erinnerungen an frühere Leben dokumentiert wurden (z. B. Muttermale, die mit einer tödlichen Wunde einer früheren Persönlichkeit in Verbindung stehen, Phobien, Philien), ist Xenoglossie ein weiteres Kernmerkmal einer früheren Persönlichkeit, das offenbar in ein neues Leben übertragen werden kann. Die Daten aus der Datenbank deuten darauf hin, dass das Phänomen, auf unnatürliche Weise in einer Fremdsprache zu sprechen, mit dem Vorhandensein von Emotionen, Stress und Gewalt/Trauma im Ausdruck der Erinnerungen von Kindern an frühere Leben zusammenhängt und durch diese verstärkt wird.

German translation by Eberhard Bauer, Ph. D.

Memórias de Vidas Passadas e Línguas Estrangeiras: Uma Exploração da Xenoglossia em Casos Sugestivos de Reencarnação

Filipe J. Cozzolino Marieta Pehlivanova Jim B. Tucker

Resumo: *Objetivo*. Décadas de pesquisas sobre crianças que parecem recordar de uma vida passada têm apresentado características adicionais extraordinárias desse fenômeno. Exploramos um grande banco de dados de memórias de vidas passadas para entender casos codificados como exibindo xenoglossia - a

notável alegação de indivíduos que falam uma língua estrangeira que não deveriam ser capazes de falar naturalmente. *Métodos*. Comparamos 40 casos que exibiram xenoglossia com 872 que não exibiram, entre 1959 e 2020. Em uma série de regressões logísticas binárias, testamos variáveis ligadas a uma nova hipótese de traumas emocionais para a presença de xenoglossia, juntamente com outras variáveis que sugeririam uma explicação convencional. *Resultados*. A xenoglossia não pode ser associada a variáveis relacionadas a uma explicação convencional. A hipótese de trauma emocional foi sustentada, na medida em que a xenoglossia foi associada a: (1) emocionalidade dos participantes, (2) desejos de retornar à sua suposta família anterior, (3) alegar ter morrido como resultado de meios intencionais/violentos e (4) ter um caso mais forte, o que é mais sugestivo de casos com uma explicação anômala. *Conclusão*. Semelhante a outras características notáveis documentadas ao longo dos anos de pesquisa de memória de vidas passadas (por exemplo, marcas de nascença ligadas à ferida fatal de uma personalidade anterior, fobias, filias), a xenoglossia é outra característica central de uma personalidade anterior que parece capaz de ser transferida para uma nova vida. As evidências do banco de dados sugerem que o fenômeno de falar, de forma não natural, em uma língua estrangeira está ligado a - e fortalecido pela - presença de emoção, angústia e violência/trauma na expressão das memórias de vidas passadas das crianças.

Portuguese translation by Antônio Lima, Ph. D.

Memorias de Vidas Pasadas y Lenguas Extranjeras: Un Estudio de Xenoglosia en Casos de Tipo Reencarnación

Philip J. Cozzolino Marieta Pehlivanova Jim B. Tucker

Resumen: *Objetivo.* Décadas de investigación con niños que aparentemente recuerdan una vida pasada han puesto de relieve otras características extraordinarias de este fenómeno. Analizamos una base extensa de datos sobre memorias de vidas pasadas para entender mejor los casos codificados como de xenoglosia -la extraordinaria afirmación de algunos individuos de poder hablar un idioma extranjero que no deberían poder hablar. *Métodos.* Comparamos 40 casos que presentaron con xenoglosia con 872 que no, entre 1959 y 2020. En una serie de regresiones logísticas binarias, evaluamos variables vinculadas a una hipótesis nueva de emoción-trauma para explicar la presencia de xenoglosia, junto con otras variables que sugerirían una explicación ordinaria. *Resultados.* La xenoglosia no se relacionó con variables asociadas a una explicación ordinaria. La hipótesis emoción-trauma fue apoyada en el sentido de que la xenoglosia se asoció con: (1) la emotividad de los participantes, (2) los deseos de volver a su presunta familia anterior, (3) la creencia de haber muerto como resultado de acciones intencionales/violentas, y (4) tener un caso más fuerte, lo que sugiere que los casos tienen una explicación anómala. *Conclusiones*. Al igual que otros rasgos notables documentados a lo largo de los años de investigación sobre memorias de vidas pasadas (es decir, marcas de nacimiento vinculadas a la herida mortal de una personalidad anterior, fobias, filias),

la xenoglosia es otro rasgo central de una personalidad anterior que parece poder transferirse a una vida nueva. La evidencia de la base de datos sugiere que el fenómeno de hablar, de forma no natural, en una lengua extranjera está vinculado a -y reforzado por- la presencia de emoción, angustia, y violencia/trauma en la expresión de las memorias de niños de vidas pasadas.

Spanish translation by Etzel Cardeña, Ph. D.

Investigating the Brain Processes Underlying an Unusual Visual Experience: A Case Study[1]

Cedric Cannard,[a] Cassandra Vieten,[b] Garret Yount,[a] Mateo Vega,[a] Fadi Kayale,[a, c] Arnaud Delorme[a, b, d]

a) Institute of Noetic Sciences, b) University of California San Diego, c) University of Toronto, d) Université Paul Sabatier

Abstract: *Background*. This case study investigated the neural correlates of an unusual visual experience in which an individual constantly perceives highly detailed holographic images overlaid on his visual field and can modulate them to an extent. We named this experience *Upsight*. Our aim was to assess how the phenomenon may relate or differ from visual mental imagery (VMI such as hyperphantasia), imagination, or visual hallucinations (e.g., Charles Bonnet Syndrome). *Method*: EEG (64-channels) data were collected while the participant alternated between 30-second trials of *Upsight* and visual mental imagery (VMI) conditions (200 trials each). We conducted power spectral density (scalp and source levels) as well as source functional connectivity (FC) analyses, as well as robust statistics to test the null hypothesis of an absence of a difference (nonparametric statistics and spatiotemporal cluster corrections). *Results*: Scalp results revealed that, relative to VMI, the *Upsight* experience was characterized by strong alpha and delta power decreases (widespread with a peak in posterior regions), and gamma power increase (29-45 Hz) in the right frontal and left posterior regions, supporting increased engagement of cognitive and visual processes. Similarly, after source localization, we observed a strong decrease in both spectral power and FC in the alpha frequency band, in brain areas involved in visual processing, spatial orientation, and sensory integration, reflecting increased cortical activation of these areas and brain networks. *Conclusions*: *Upsight* involves heightened engagement and processing in visual and cognitive networks relative to VMI. We discuss the phenomenology and results in relation to VMI, imagination, and visual hallucinations.

1 Address correspondence to: Garret Yount, Ph., D., Institute of Noetic Sciences, 7250 Redwood Blvd., Suite 208, Novato, CA, USA, gyount@noetic.org

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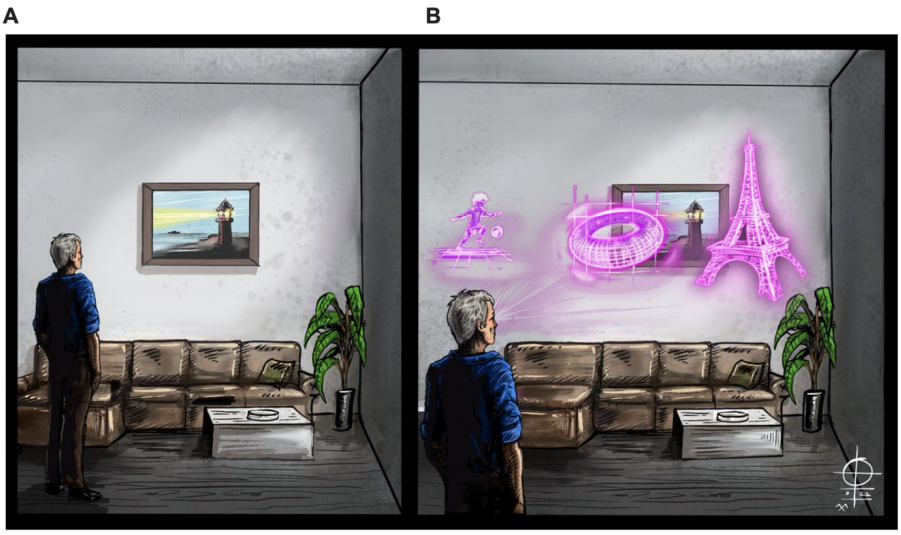
Highlights

- This case study explored *Upsight*, a unique visual phenomenon with continuous and vivid holographic images overlaid on the visual field.
- EEG analyses showed reduced alpha power and increased high-frequency activity during *Upsight* compared to visual mental imagery (VMI), indicating heightened engagement and visual processing.
- Source localization suggested increased activation and functional connectivity in brain areas related to visual processing and spatial orientation during *Upsight*.
- *Upsight* resembles normal vision more than VMI, imagination, and visual hallucinations.

Human visual experiences do not solely rely on external light stimuli but extend to mental experiences where the mind constructs (or reconstructs) visual representations without direct external stimuli, such as visual mental imagery (VMI), imagination, or visual hallucinations (Palmer, 1999). Visual experiences are a cornerstone of human perception, offering a rich tapestry of sensations that shape our understanding of the world. This case study explores the unique perceptual phenomenon of *Upsight*, a visual experience reported by an individual following a mental health crisis at the end of 10 years of substance abuse and mental health challenges. Its phenomenology includes a continuous stream of vivid images that scroll holographically over his visual field, overlapping and persisting without the need to allocate attention to them (see Fig. 1). The holographic images are typically monochromatic with a single-color tint, most of the time purple. The individual reports occasional veridicality of the images and interprets the experience as being potentially the perception of another reality (e.g., non-physical or multiverse). Although the images do not directly correlate with concurrent thoughts, the individual can volitionally modify them upon closer attention, altering their form and content.

Figure 1

Artistic Illustration of the Upsight Phenomenon. A) Normal Vision. B) Upsight.



This case study aims to better understand this experience from a neuroscientific point of view using noninvasive electroencephalography (EEG). EEG offers several advantages over functional magnetic resonance imaging (fMRI) or positron emission tomography (PET) for investigating this type of phenomenon, including high temporal resolution, noninvasiveness, cost-effectiveness, portability, and comfort. Modern EEG source localization techniques enable estimation of the brain regions and networks involved, addressing the low spatial resolution problem.

We first review the most common human visual experiences (visual mental imagery, imagination, visual hallucinations) and their neural correlates. Then, we try to identify how *Upsight* experienced by a specific individual may relate to or differ from them based on the EEG activity at the scalp and source levels. We hypothesize that *Upsight* may involve similar processes to visual mental imagery (VMI).

Visual Perception

The visual cortex constructs images by processing electrical signals from the photoreceptors in the retina when they detect photons (light) from the environment. These signals travel via the optic nerve to the lateral geniculate nucleus (thalamus) and the primary visual cortex (V1), where basic features like edges and orientations are detected. The information is then transmitted to the secondary visual cortex (V2) to integrate more complex patterns (e.g., contours), followed by visual areas V3, V4,

and V5 for processing form, color, and motion, respectively. Higher-level visual areas, such as the inferior temporal cortex and posterior parietal cortex, refine the information for object recognition, visual memory, and spatial awareness, culminating in a coherent visual perception (Bear et al., 2020).

At the scalp level, event-related potential (ERP) studies have identified several key components including P1 (the positive deflection occurring ~100 ms after stimulus onset over occipital and parietal regions; Luck, 2005) and N1 (a negative deflection peaking ~150-200 ms associated with selective attention prominent over the posterior scalp; Vogel & Luck, 2000). Later components, such as the P300 (peak ~300 ms), are linked to higher-order cognitive processes including stimulus evaluation and decision-making (Polich, 2007).

EEG functional connectivity studies have revealed that visual perception involves dynamic interactions between occipital, parietal, and frontal regions. These interactions are particularly evident in the beta (13-30 Hz) and gamma (30-100 Hz) frequency bands, associated with higher-order cognitive functions and sensory processing, respectively (Varela et al., 2001). fMRI studies further corroborate these findings by demonstrating that visual perception is supported by a distributed network that includes V1, lateral occipital cortex, and regions of the dorsal and ventral streams. These areas show increased connectivity during tasks requiring visual attention and object recognition (Friston, 2011).

Visual Mental Imagery (VMI)

VMI is the ability to mentally generate and manipulate visual images in the absence of external visual stimuli, typically based on memory and past visual experiences. VMI exhibits large interindividual differences, ranging from aphantasia, where individuals cannot voluntarily visualize mental images (Hart & Hay, 2022), to hyperphantasia, characterized by an enhanced ability to create vivid and very detailed mental images (Zeman et al., 2016, 2020). Participants with aphantasia report an elevated rate of difficulty with face recognition and autobiographical memory, not linked to deficits in intelligence or creativity. It does not seem to be because of a lack of metacognitive awareness of VMI and is different from visual agnosia (inability to recognize and identify objects or faces despite having normal vision). On the other hand, people with hyperphantasia report an elevated rate of synesthesia.

Early visual areas (e.g., V1, V2) were previously thought to play a key role in VMI, similar to visual perception but without inputs (Kosslyn et al., 2001; Pearson et al., 2015).

However, recent studies showed that VMI mainly relies on the left-lateralized temporal network with the "fusiform imagery node" at its core (i.e., the left fusiform gyrus, a high level visual area; Spagna et al., 2021), with additional involvement of the posterior cingulate cortex (PCC) and the frontoparietal network (attentional and executive control network). Patients with brain damage in the occipital cortex retain vivid VMI. In contrast, damage extending into the temporal lobe, particularly in the left hemisphere, results in VMI impairments. Hence, VMI does not significantly engage early visual cortices but relies on higher-order associative areas, particularly in the left temporal lobe.

VMI has been extensively studied using electroencephalography (EEG). At the scalp level, changes in alpha band (8-13 Hz) activity, particularly alpha desynchronization over occipital and parietal regions, have been associated with visual imagery tasks (Kosslyn et al., 1995). This decrease in alpha power reflects increased cortical activation in areas involved in visual processing. Increased beta band (13-30 Hz) activity in visual areas has also been linked to VMI, indicating active engagement of these regions (Jensen et al., 2010). ERPs such as the N170 and P300 components have been observed to be modulated by visual imagery tasks (Morgan et al., 2008).

Source localization studies have revealed activation of the occipital and parietal cortex, regions known for their roles in visual processing and spatial attention during VMI (Kosslyn et al., 2001). Furthermore, the frontal cortex, particularly the prefrontal and dorsolateral prefrontal areas, has been implicated in the control and manipulation of mental images (Kosslyn et al., 2001). Activation in the temporal cortex has also been reported, particularly in tasks involving complex object or scene imagery (Ganis et al., 2004). These findings suggest that visual mental imagery engages a network of brain regions similar to those involved in visual perception, highlighting the intricate neural mechanisms underlying this cognitive process.

Visual Imagination

Visual imagination diverges from VMI by generating novel, often fantastical or abstract images that may not be rooted in past experiences, leading to unique visual constructs beyond ordinary objects. While engaging similar neural processes and regions as VMI, visual imagination also recruits networks associated with creativity and abstract thinking, such as the Default Mode Network (DMN) and executive control network, involving additional regions such as the medial prefrontal cortex and the anterior cingulate cortex (ACC; Beaty et al., 2016; Ishai et al., 2002). These networks are crucial for generating new content and integrating diverse ideas. Increased functional connectivity (FC) between the prefrontal cortex and other brain areas is associated with

the integration and creation of new visual constructs. Research has shown increased FC between the DMN and executive control network, during creative idea production (Beaty et al., 2015). These findings highlight the complex interplay of neural networks in supporting the creative and generative aspects of visual imagination. This cooperation highlights how brain networks interact to support complex cognitive processes, especially goal-directed, self-generated thought.

Visual Hallucinations

Unlike VMI and imagination, which are under conscious control and internally driven, visual hallucinations are involuntary and often perceived as real and can arise involuntarily in the context of psychiatric disorders and neurological conditions, or voluntarily when induced through substance use. The phenomenology of visual hallucinations can range from simple flashes or geometric shapes to intricate and vivid scenes or figures. Neuroimaging studies suggest that they often involve hyperactivity in visual processing areas as well as disruptions in the connectivity between these regions and other parts of the brain (Collerton et al., 2005; Shine et al., 2015).

Key areas implicated in visual hallucinations include the visual cortex, thalamus, temporal lobe, and limbic system. Aberrant activity in the primary and secondary visual cortices can lead to the generation of hallucinatory images. The thalamus, which relays sensory information, may also play a role by improperly filtering visual signals. The temporal lobe (particularly the inferior temporal cortex), is involved in object recognition and can contribute to hallucinations when its activity is disrupted. The limbic system, including the amygdala and hippocampus, can influence the emotional content and vividness of hallucinations through its connections with the visual processing areas (Shine et al., 2015). Enhanced FC between these regions can further exacerbate hallucinatory experiences, whereas disrupted FC between the temporal lobe and other sensory processing areas can lead to the misinterpretation of visual information (Collerton et al., 2005). Alterations in neurochemical balances, such as in dopamine and serotonin, have also been implicated in the generation of visual hallucinations. Unlike the constructive nature of imagination and imagery, hallucinations are typically disruptive and often lack the individual's control or creative input (Collerton et al., 2005; Shine et al., 2015).

Charles Bonnet Syndrome (CBS) is characterized by highly detailed and complex visual hallucinations in individuals with significant vision loss, such as from age-related macular degeneration, glaucoma, or cataracts. These hallucinations can include intricate patterns, people, animals, or vivid scenes. Unlike other types of hallucinations,

individuals with CBS typically retain insight and understand that these visual experiences are not real, distinguishing them from psychiatric conditions where insight may be impaired. The brain compensates for the lack of visual input by generating these images, leading to the vivid and detailed nature of the hallucinations (Menon et al., 2003; Teunisse et al., 1996).

How Does *Upsight* Relate to and Differ from These Visual Experiences?

VMI involves the mental visualization of objects, scenes, or events that are not currently being perceived. Like VMI, *Upsight* allows the individual to volitionally modify the images, suggesting a degree of conscious control over the experience. However, unlike typical VMI, which is internally driven and often correlates with concurrent thoughts (Kosslyn et al., 2001), the images in *Upsight* persist regardless of focused attention and do not directly correlate with the individual's current thoughts. This continuous and overlapping nature of the images in *Upsight* distinguishes it from the more transient and thought-linked visual imagery.

Upsight shares some characteristics with visual imagination in that the individual can alter the form and content of the images upon closer attention, indicating an element of creativity and generativity (Beaty et al., 2015). However, unlike imagination, which is typically an active and intentional process, *Upsight* appears to be a passive and continuous stream of images that occurs involuntarily, only becoming modifiable when the individual focuses on them. This involuntary aspect sets *Upsight* apart from the more deliberate and controlled nature of visual imagination.

Like hallucinations, the images in *Upsight* have a sense of reality and occasional veridicality, meaning they can sometimes be perceived as real. Visual hallucinations can also be continuous and holographic, superimposing onto the visual field, as seen in conditions like Charles Bonnet Syndrome (CBS), where individuals with visual impairments experience vivid and detailed hallucinations (Teunisse et al., 1996). However, a key difference is that the individual with *Upsight* retains the ability to modify the images voluntarily, a level of control typically absent in visual hallucinations. Furthermore, CBS is generally associated with significant vision loss and corresponding brain changes in the visual system (Teunisse et al., 1996), whereas *Upsight* does not necessarily imply such extensive visual impairment. In sum, although *Upsight* shares certain features with visual imagery, imagination, and hallucinations, it also presents unique characteristics that distinguish it from them.

Study Aims

This study aimed to better understand the visual experience of *Upsight* by comparing it to visual mental imagery (VMI). The study involved presenting images that the participant then either visualized via VMI or via *Upsight* for 30 s following the presentation (with eyes closed in both cases). EEG, combined with source localization techniques, was used to assess which brain regions and networks differed the two conditions. This comparison helped determine whether *Upsight* shares more characteristics with VMI (e.g., hyperphantasia) or if it aligns more closely with imagination or visual hallucinations.

Hypotheses

1. Given the ability to volitionally modify the images, we hypothesized that the neural activity during *Upsight* would share significant overlap with visual mental imagery, involving particularly the left temporal region involved in VMI.
2. Unlike traditional hallucinations, we hypothesized that *Upsight* would show unique neural connectivity patterns, possibly involving enhanced connectivity in networks related to attention and sensory integration, reflecting its continuous and modifiable nature.

Method

Participant

The participant was a 59-year-old Caucasian male who reported developing the new experience after a severe mental health crisis. At that time, he met the criteria for substance dependence as well as substance-induced psychotic disorders, which involved the use of cocaine and methamphetamines with paranoia, hallucinations, delusions, and characteristics of mania such as grandiosity and compulsive shopping/spending. His mental health crisis ended in 2012. His last use of cocaine was in December of 2012, also the first time he saw these *Upsight* images. The images have been consistently vivid and detailed from the beginning. He reports no use of alcohol or other mind-altering substances since 2012 and has good current psychosocial functioning. He does report mild symptoms of post-traumatic stress from his previous substance use episodes, such as proneness to sensory overload and higher sensitivity

and vigilance. The participant is not currently on any medication or supplement and is not distressed by his new ability to see images, which do not interfere with his daily life or normal perception. Two fMRIs (in 2012 and 2015) showed no brain damage or abnormalities, ruling out CBS which typically involves lesions in visual regions. Neurologists speculate that drugs may have rewired his brain or opened a new neural pathway, but there were no definitive clinical answers. The term *Upsight* was coined by his wife, as he typically looks up when focusing on the images. He has been in contact with a few others who have reported a similar experience. The participant approached the research team with an interest in better understanding this phenomenon. All study activities were approved and overseen by the Institutional Review Board at the Institute of Noetic Sciences (IORG#0003743). The participant provided written informed consent to participate in this study and volunteered his time.

Design

Randomly selected images were presented to the participant while seated in a chair in front of a computer screen in a dimly lit room. Four experimental sessions were completed over two days (two per day with a 15-minute break), enabling the collection of data from a total of 200 trials per condition across all runs and sessions (50 per condition for each run, for a total of 400 trials). Visual stimuli from the International Affective Picture System (IAPS; Lang et al., 2008) were controlled by a program written for the study using the MATLAB Psychophysics Toolbox (Brainard, 1997). The IAPS dataset was used because it provides a large set of standardized, high-quality color photographs suitable for controlled experimental design. However, since the primary aim of this study was not to investigate emotional processing, all images were prescreened to exclude those with high emotional valence or arousal—specifically erotic, aversive, or gruesome content. Each trial included the presentation of the same image twice, once for each condition. At the beginning of each trial, the audio prompt "Look at the image" instructed the participant to look at the image for 10 s. Then, the screen went blank and he was instructed to close his eyes for 30 s, and an audio recorded prompted him to either (a) visualize mentally the presented image (VMI), or (b) modulate the *Upsight* images such that the key element of the image was manifest for him to focus on. The audio prompts were, "Now recall the image" and "Now do *Upsight*," respectively. At the end of the 30-s eyes-closed period, the audio prompt "Look at the image" instructed him to open his eyes and look at the same image a 2nd time for 10 s to perform the other condition on the same stimulus. The order of the two conditions was alternated randomly to control for potential habituation or other undesired order

effects. The entire image presentation epoch lasted for 1 minute and 20 seconds (see Fig. 2). Immediately following the completion of each epoch, the next epoch began with a unique image (selected randomly from a pool of 200 images). The participant completed a practice session before starting the actual experiment to ensure that he was familiar with the task and stimuli. These practice images were not used in the subsequent task and practice trial data were not used in the analyses.

Figure 2

Study Design

Image	Recall Image*	Repeat Image	Upsight of Image*
10 seconds; eyes open	30 seconds; eyes closed	10 seconds; eyes open	30 seconds; eyes closed

EEG Data Collection

A 64-channel EEG was recorded at 1024 Hz with an ActiveTwo Biosemi system (Biosemi, Amsterdam, Netherlands). Electrodes were placed according to the 10-20 nomenclature (standard 64-channel EasyCap). SignaGel electroconductive gel was applied to each electrode and electrode impedance was kept below manufacturer guidelines (±20 kOhms). Event markers were sent to the EEG amplifier digital input channel using the Biosemi USB interface and saved along with the EEG data, synchronized with millisecond accuracy. One set of markers represented the onset of the image with its image identifier number and another set of triggers marked the condition. Event latencies, markers, and image identifiers were also saved in a separate text file as a backup.

EEG Data Processing

Electroencephalography (EEG) data were preprocessed in EEGLAB (Delorme & Makeig, 2004) with downsampling, bandpass filtering (0.5–45.5 Hz), reference electrode standardization technique (REST) re-referencing, abnormal channel removal with interpolation, and trial outlier rejection based on root mean square (RMS) amplitude and signal-to-noise ratio (SNR). Blind source separation used preconditioned independent component analysis for real data (PICARD; Ablin et al., 2018), and artifacts were removed via the independent component label (ICLabel) classifier (Pion-Tona-

chini et al., 2019). Source analysis, addressing volume conduction for more precise localization, was performed with the region-of-interest connectivity (ROIconnect) plugin (Pellegrini et al., 2023) using linearly constrained minimum variance (LCMV) beamforming and the Colin24 atlas (68 regions). Power spectral density (PSD) was computed via the Welch method, and functional connectivity (FC) was estimated using the multivariate interaction measure (MIM) on source-reconstructed data at the peak frequency of scalp and source power effects. See Supplementary Data for full details.

Single-Trials Statistics (Within-Participant)

A mass-univariate, non-parametric approach was used for statistical analysis (Maris & Oostenveld, 2007), using a 1,000-iteration bootstrap to estimate the null hypothesis (H0, the absence of a difference between the two conditions). Pairwise comparisons between the two conditions were performed using Yuen *t* tests (20% trimmed means) to better control for naturally skewed distributions and outliers (Yuen, 1974). The mass-univariate approach for EEG data involves performing statistical tests on each electrode or time point separately to determine the significance. This statistical approach is robust in handling complex datasets and can provide comprehensive insights into neural dynamics (Maris & Oostenveld, 2007), but this approach leads to a large number of comparisons (64 electrodes, 89 frequency bins) and, therefore, a higher chance for false positives (family-wise or type 1 errors). To address this problem, statistical outputs were corrected using spatiotemporal cluster correction, per guidelines (Mensen & Khatami, 2013; Pernet et al., 2015) at the 99.9% confidence level (i.e., $p < .001$).

The same algorithm was used for nonparametric statistics for the spectral power analysis at the brain area level. However, to perform spatiotemporal cluster correction on the source data, we had to obtain a neighbor matrix of the brain areas, which contain many voxels in 3D space. We took the Cartesian center of each brain area and then used the same algorithm as for scalp EEG electrodes to estimate the brain area neighbors. In brief, the 3D center coordinates are projected onto a 2D plane via polar projection. Delaunay triangulation is then performed on these 2D projected points, and the neighbor matrix is constructed by identifying area pairs that share edges in the Delaunay triangulation. Neighbors that were too far away (3 standard deviations from the mean) were removed.

For spectral power analyses (scalp and source), the main plot displays the

mass-univariate differences after correction across all electrodes or brain areas (y-axis) and frequencies (x-axis). Details about the significant clusters are reported in the text. The frequency with the highest *t* value was further examined using a scalp topography (for scalp data) and a cortex surface projection (for source data) to inform on the distribution and location of the effects. For the scalp topography, significant EEG channels are displayed as black dots. Similarly, the EEG channel or brain area with the highest *t* value was further examined using the PSD distribution for each condition. The main curves correspond to the 20% trimmed means (across trials) and the shaded areas show the 95% quantile intervals computed with a 1,000-iterations Bayesian bootstrap (better suited for skewed distributions and providing more intuitive interpretations than Frequentists confidence intervals or high-density intervals; Etz et al., 2024), for good practice. Black horizontal bars on the x-axis (if any) indicate significant differences after spatiotemporal cluster correction.

For functional connectivity (FC), we only took the values for frequency of interest (i.e. 11 Hz where the main effect was observed in spectral power analysis) and used the EEGLAB *statcondfieldtrip* function to perform bootstrap statistics ($p < .001$; 1,000 iterations; spatiotemporal cluster correction for type 1 error). For visualization we provide the masked connectivity matrix (showing only the significant effect after correction for multiple comparisons), and the same surface cortex projection as for the source spectral power analysis.

Results

Scalp Analysis - Spectral Power

Analyses of the EEG data at the scalp level indicate significant widespread differences ($p < .001$ after spatiotemporal cluster correction for type 1 error) between the *Upsight* and the visual mental imagery (VMI) conditions (Fig. 3A). Six main significant clusters were observed:

Cluster 1: 1.5-2.5 Hz, with peak effect at channel O2 at 1.5 Hz ($t = -6.8$; $df = 110$)

Cluster 2: 4-26 Hz, with peak effect at channel PO8 at 11 Hz ($t = -19.5$; $df = 110$).

Cluster 3: 28.5-32.5 Hz, with peak effect at channel F8 at 31 Hz ($t = 8$; $df = 110$)

Cluster 4: 39.5-41 Hz, with peak effect at channel F8 at 40 Hz ($t = 7.2$; $df = 110$)

Cluster 5: 42.5-45 Hz, with peak effect at channel F8 at 45 Hz (t = 7.6; df = 110)

Cluster 6: 39-45 Hz, with peak effect at channel O1 at 40 Hz (t = 6.5; df = 110)

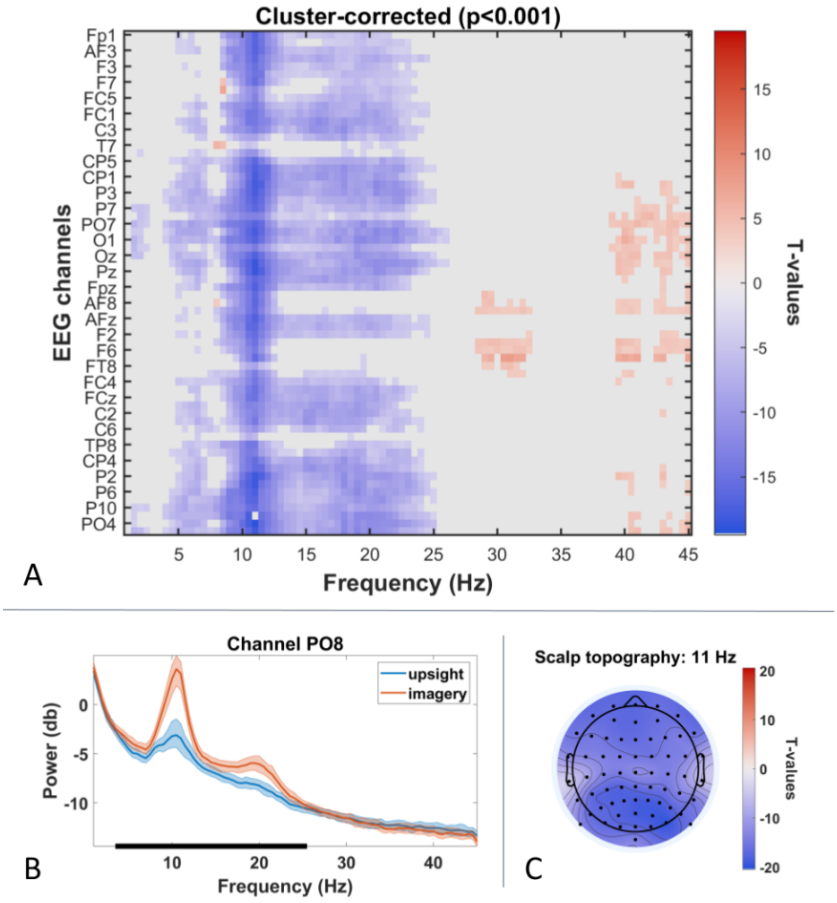
Note that the clusters are computed in 3-D scalp space x space x frequencies, so it is not possible to represent them on the 2-D channels x frequency representation of Fig. 3A. Additionally, a smaller positive cluster was observed around 8–9 Hz at frontal electrodes, though its effect size was modest compared to the primary clusters and is not further discussed.

In sum, we observed large spectral power decreases in low frequencies (1-26 Hz) and increases in higher frequencies (28-32 Hz and 39-45 Hz), during *Upsight* relative to VMI. The largest effect was observed at 11 Hz widespread in the posterior electrode sites but was widespread across all electrode sites, displaying significantly less alpha power during the *Upsight* condition relative to the VMI condition (Fig. 3B and 3C). The power spectral density (PSD) distribution at EEG channel PO8 is visible in Fig. 3B, depicted by the 20% trimmed mean of each condition and the 95% quantile intervals (shaded areas). And the scalp topography in Fig. 3C displays the distribution of the corrected effects at 11 Hz on the scalp surface.

Source Analysis - Spectral Power

At the brain area level (after source localization and source reconstruction), we also observed a strong significant difference in the alpha band (p < .001 after spatiotemporal cluster correction for multiple comparisons) between *Upsight* and the control conditions (i.e., image recall). One main cluster was observed from 1 to 27.5 Hz, with a peak effect in the parietal lobule right at 11 Hz (t = -18; df = 110; Fig. 1A). The power spectral density distribution at the superior parietal lobule right is visible in Fig. 4B, depicted by the 20% trimmed mean of each condition and the 95% quantile intervals (shaded areas). Additionally, the cluster difference at 11 Hz is also projected onto a cortex surface for better visualization of the corrected effect (Fig. 4C), showing that the decrease is mainly located in the occipital, parietal, and temporal regions. Note that the decrease is slightly superior in the right hemisphere for the temporoparietal areas. A second, smaller cluster was observed from 33-45 Hz, with a peak decrease in the isthmus cingulate left at 36 Hz (t = -7.1; df = 110). More details on which brain areas showed the strongest differences and corresponding interpretations can be found in the discussion.

Figure 3

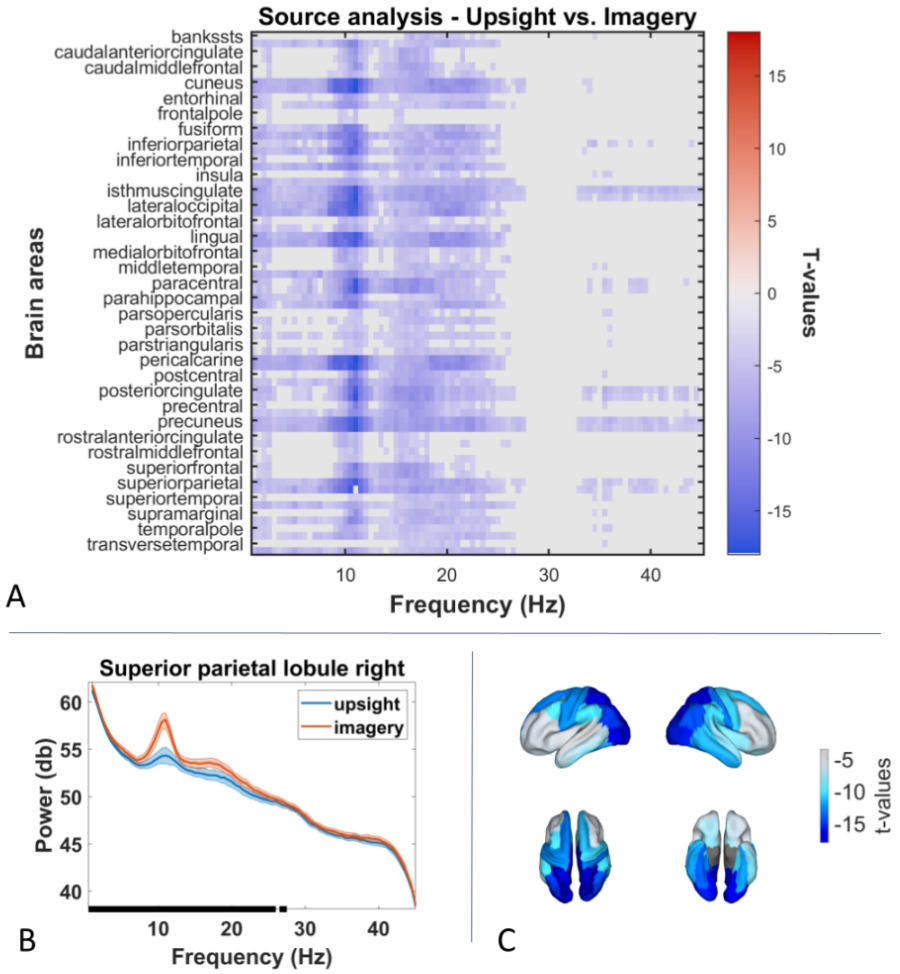


Note: **A**.Mass-univariate analysis at the scalp level (electrodes) showing widespread decrease in spectral power in frequencies 5-25 Hz (blue) during ***Upsight*** relative to visual mental imagery (VMI). **B.** Power spectrum of each condition at the electrode with the strongest difference (i.e., PO8), with a black horizontal bar indicating the statistically significant difference (Peak at 11 Hz; t = -19.5). The lines represent the 20% trimmed mean across trials, and shaded areas the 95% quantile intervals. **C.** Scalp topography at the frequency with the strongest difference (i.e., 11 Hz).

2025, Vol. 5, No. 2, pp. 136-167

Journal of Anomalous Experience and Cognition (JAEX)

Figure 4



Note: **A.** Mass-univariate analysis at the source level (brain areas averaged across both hemispheres) showing widespread decrease in spectral power in frequencies 1-27 and 33-45 Hz (in blue) during *Upsight* relative to visual mental imagery (VMI). **B.** Power spectrum of each condition at the brain area with the strongest difference (i.e., superior parietal lobule right), with a black horizontal bar indicating the frequencies with statistically significant differences (Peak at 11 Hz; t = -18). The lines represent the 20% trimmed mean across trials, and shaded areas the 95% quantile intervals. **C.** Cortex surface projection at the frequency with the strongest difference (i.e., 11 Hz).

Source Analysis - Functional Connectivity

The functional connectivity (FC) analysis (p < .001 and spatiotemporal cluster correction for type 1 error) revealed significant pairs of brain regions with decreased alpha power (11 Hz) during the *Upsight* condition relative to visual mental imagery (VMI). Area pairs that showed the strongest differences are the left inferior and superior parietal lobe (t = -11.19), posterior cingulate (left) with the cuneus left (t = -10.79)

and right (t = -10.53), postcentral gyrus (left) with the cuneus (left) (t = -10.45) and pericalcarine (left) (t = -10.31), and pericalcarine cortex (left) with the paracentral lobule (left; t = -10.28). Additional significant pairs include the posterior cingulate (right) with the cuneus (right) (t = -10.26), superior parietal lobe (left) with posterior cingulate (left; t = -10.14), supramarginal gyrus (left) with superior parietal lobe (left) (t = -10.05) and cuneus (left) (t = -9.87), and posterior cingulate (left) with the pericalcarine cortex (left) (t = -10.45). Note that there is no directionality to this measure.

Key pairs include the posterior cingulate (right) with the cuneus (right; *t = -10.26*), the posterior cingulate (left) with the inferior parietal lobe (left; *t = -9.81*), and the precuneus (left) with the caudal anterior cingulate (left; *t = -9.85*) (Leech & Sharp, 2014). These connections indicate a robust network supporting the integration of visual-spatial memory and self-referential thought. Additionally, the superior parietal lobe (left) connecting with the posterior cingulate (left; *t = -10.14*) suggests coordinated processing of spatial and memory-related information.

These findings support our initial hypotheses. First, the overlap in neural activity between *Upsight* and VMI—particularly the modulation of alpha power and engagement of visual and cognitive networks—supports Hypothesis 1, suggesting that *Upsight* shares neural mechanisms with VMI. Second, the distinct spatial patterns of alpha power reduction and functional connectivity, especially the involvement of sensory integration and attention-related regions, support Hypothesis 2 by highlighting that *Upsight* is neurophysiologically distinct from traditional or CBS-type hallucinations.

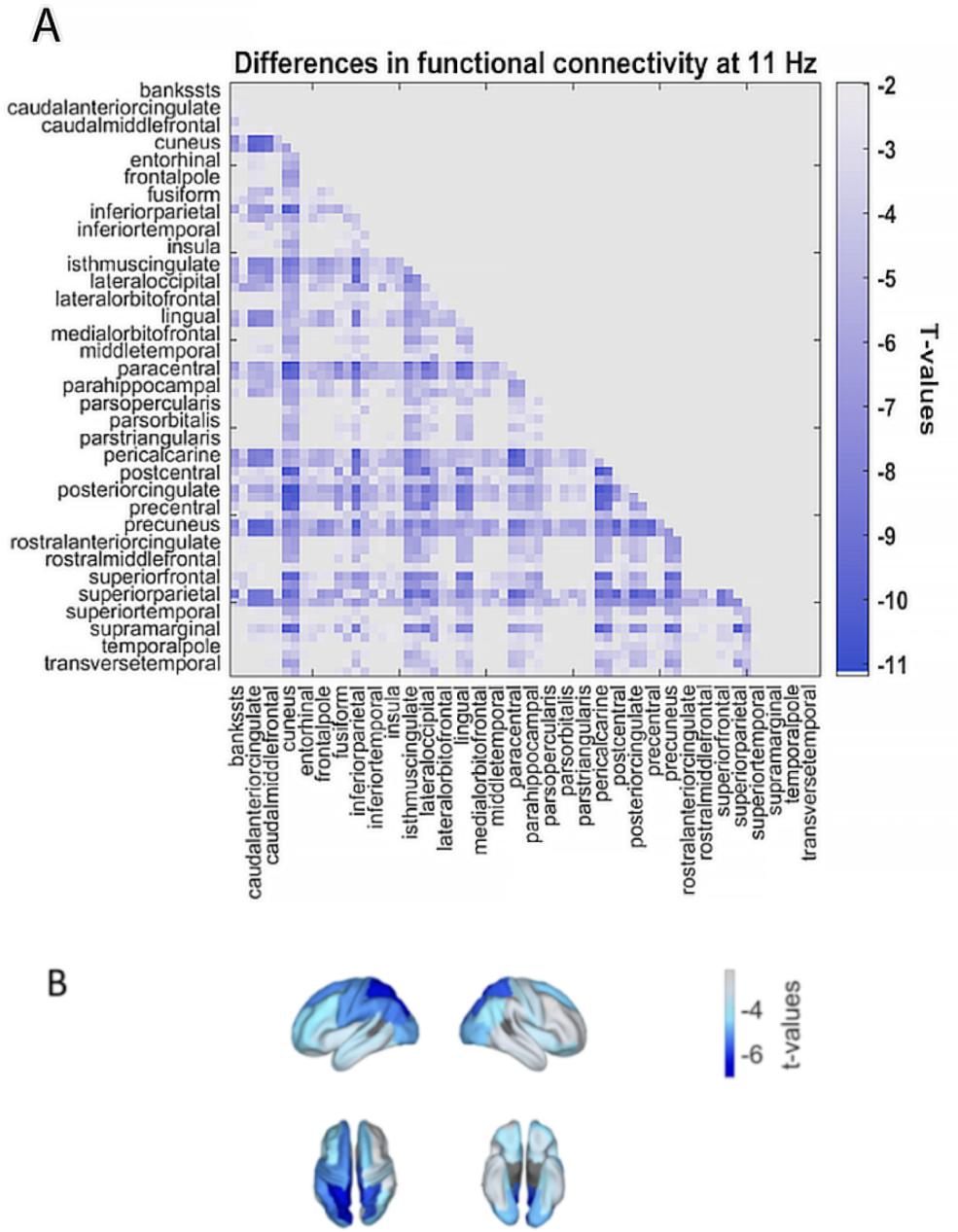
Discussion

This study examined the neural mechanisms underlying the visual phenomenon known as "Upsight," in which an individual perceives continuous, detailed holographic images overlaid on his visual field. Results showed that Upsight is associated with a significant decrease in alpha and delta power across the scalp, particularly in posterior regions, and an increase in gamma power (29-45 Hz) in right frontal and left posterior areas. These findings suggest heightened cortical activation, particularly in cognitive and visual processing networks. Source-level analysis further revealed decreased alpha power and functional connectivity in brain areas responsible for visual perception, spatial orientation, and sensory integration, indicating increased activity and engagement of these regions.

2025, Vol. 5, No. 2, pp. 136-167

Journal of Anomalous Experience and Cognition (JAEX)

Figure 5



Note: **A**. Functional connectivity matrix of the differences ***Upsight*** vs visual mental imagery (VMI), at 11 Hz (peak of the effect at the scalp and source levels). Each brain area is represented by two rows/columns, where the first corresponds to the left cortex and the second to the right cortex. **B.** Cortex surface projection of the same results to ease interpretation.

Scalp Power

We noted a strongly significant reduction in alpha power (8-13 Hz) during *Upsight* compared to the control condition. This decrease was widespread across all scalp electrodes at 11 Hz, indicating a global decrease in the alpha frequencies and, to a smaller extent, in the beta frequencies (15-25 Hz). Functionally, alpha oscillations play a key role in attentional control and gating of perceptual awareness (Hanslmayr et al., 2011; Mazaheri et al., 2014). They are typically noticeable in posterior visual areas when the eyes are closed (so-called alpha synchronization or resting state alpha) or in idle states with reduced cognitive effort (e.g., relaxed wakeful state). Alpha oscillations are typically associated with inhibiting local cortical regions (Jensen & Mazaheri, 2010; Klimesch et al., 2007; Mathewson et al., 2011). Thus, the strong, widespread decrease in alpha power during the *Upsight* condition relative to VMI suggests a large reduction in cortical inhibition and, therefore greater cortical activation during *Upsight,* with the strongest manifestation in the posterior scalp regions.

Additionally, the scalp analysis revealed increased activity during *Upsight* relative to VMI in the higher-frequency range, the 28.5-32.5 Hz range, particularly in the frontal regions, and the 39-45 Hz range, with significant effects in both the frontal and occipital regions (see scalp topographies in Supplementary data). The increased high-frequency activity in the frontal regions highlights the participant's heightened engagement in executive and cognitive control processes during *Upsight* (Engel & Fries, 2010; Fries, 2009). Meanwhile, the increased activity in the occipital regions suggests enhanced visual processing and integration of the continuous *Upsight* visual inputs.

Finally, we observed a significant decrease in the delta band during *Upsight* relative to VMI in the posterior regions. Although increased delta power (1-3 Hz) is often associated with deep sleep or ocular artifacts (in frontal regions), it is also linked to "cortical deafferentation," or the inhibition of sensory inputs that interfere with internal concentration during cognitive tasks (Harmony, 2013).

Source Power

The brain areas with the strongest decrease in alpha power were: 1) the superior parietal lobule (right) involved in spatial orientation and attention, suggesting heightened engagement in spatial processing and sensory integration during *Upsight* compared to VMI (Wolpert et al., 1998). 2) The pericalcarine cortex (left and right), part of the

primary visual cortex (V1) responsible for initial visual processing, implying increased visual processing activity due to the vivid and continuous nature of the holographic images (Wandell et al., 2007). 3) The cuneus (left and right), associated with basic visual processing, attention, and memory, indicating enhanced visual processing and attention during *Upsight* (Vanni et al., 2001). 4) The isthmus cingulate (left), which integrates visual-spatial memory and emotional regulation, reflecting enhanced emotional and cognitive integration during *Upsight*, potentially contributing to the sense of reality and importance of the images (Leech & Sharp, 2014). 5) The fusiform gyrus (left and right), crucial for object recognition and face processing, indicates heightened activity in processing detailed visual content (Kanwisher et al., 1997). 6) The inferior parietal lobule (left), which plays a role in spatial attention and perception, suggests increased demand for attention and integration of spatial information (Husain & Nachev, 2007). 7) The supramarginal gyrus (left), involved in spatial awareness and perception, suggests enhanced engagement in processing spatial aspects of the visual field (Silani et al., 2013). 8) The middle temporal gyrus (left and right), associated with processing visual motion and object recognition, indicates heightened activity in interpreting dynamic and complex visual images (Allison et al., 1999).

Note that we observed that the significant high-frequency power increase in the occipital and frontal regions seen in sensor-level data disappears, likely due to a poor signal-to-noise ratio. Since source analysis may amplify some noise, less significant results in the channel space tend to vanish.

Source Functional Connectivity

The functional connectivity (FC) analysis revealed significant decreases in alpha-band (11 Hz) connectivity during the *Upsight* condition compared to visual mental imagery (VMI), primarily involving the cuneus, pericalcarine cortex, posterior cingulate cortex, superior and inferior parietal lobules, and supramarginal gyrus. These reductions in connectivity were widespread across regions associated with visual processing, spatial orientation, and sensory integration (e.g., cuneus, pericalcarine cortex), as well as areas implicated in attention and memory (e.g., posterior cingulate, parietal lobes).

These findings suggest a reorganization of functional interactions within the visual and attentional networks during *Upsight*. Specifically, the observed connectivity decreases among posterior cortical regions may reflect a shift toward more localized or differentiated processing, in contrast to the integrative network coordination typically seen during VMI. The visual processing network—comprising early visual cortices

(e.g., pericalcarine, cuneus), parietal regions, and the posterior cingulate—is known to support the integration of perceptual and mnemonic information during internally generated visual tasks (Leech & Sharp, 2014; Vanni et al., 2001; Wandell et al., 2007).

Importantly, these connectivity changes parallel the strong decreases in alpha power observed in the same regions, suggesting a unified mechanism of reduced inhibition and heightened local activation. This concurrent reduction in both alpha power and inter-regional alpha-band synchronization indicates that *Upsight* engages a more autonomous and possibly more sensory-driven mode of visual processing than VMI, relying less on the coordinated top-down modulation characteristic of imagery and more on sustained bottom-up or intrinsic sensory activity.

Overall, scalp results revealed that *Upsight* is characterized by decreased alpha and delta power, and increased gamma power, indicating a broad increased cortical activation. Analyses at the source level showed enhanced activity and connectivity between brain regions involved in visual processing, spatial orientation, and sensory integration, suggesting well-coordinated networks supporting the vivid and continuous visual experiences of *Upsight*.

Imagination, which engages creative and generative processes involving the medial prefrontal cortex and other higher-order cognitive areas, differs from *Upsight* as it is typically an active and intentional process. In contrast, *Upsight* appears to be more passive and continuous, lacking the deliberate and creative input seen in imagination.

Similar to visual hallucinations in conditions like schizophrenia or Charles Bonnet Syndrome (CBS), we observed increased activity and FC in visual processing areas, compared to VMI. However, unlike the often fragmented and less detailed hallucinations seen in schizophrenia, *Upsight* involves continuous and highly detailed visual experiences. This pattern bears some resemblance to CBS, but the participant does not have the typical visual impairments in visual regions and resulting hyperactivity of visual areas that lead to the visual hallucinations. Also, CBS typically involves uncontrollable visual hallucinations, whereas *Upsight* appears to involve more structured and continuous visual experiences that can be modulated to some extent, indicating an organized involvement of executive and attention networks. On the other hand, complex visual hallucinations reflect dysfunction within and between these networks, leading to inappropriate interpretation of ambiguous percepts (Shine et al., 2015). These distinctions highlight the unique neural mechanisms underpinning *Upsight*, setting it apart from other visual experiences such as VMI, imagination, and hallucinations.

The participant reported experiencing *Upsight* during the VMI task and needing to block it out to focus, consistent with our findings of increased delta and alpha power, indicating greater inhibitory effort. In contrast, *Upsight* itself showed higher engagement with visual holographic inputs, reflected by elevated power in higher frequencies and reduced delta and alpha power. These observations suggest that the participant's increased alpha activity during VMI may signify active inhibition of holographic images, supporting the alpha inhibition hypothesis, while decreased inhibition during *Upsight* aligns with heightened visual processing and engagement.

In sum, the present results provide empirical support for our hypotheses. The engagement of regions associated with VMI, including the fusiform gyrus and left-lateralized visual areas, aligns with Hypothesis 1, indicating that *Upsight* shares core features of internally generated imagery. However, the continuous, externally overlaid, and modifiable nature of *Upsight*, alongside distinct patterns of functional connectivity and reduced alpha synchrony in posterior regions, points to a broader cortical network engagement consistent with Hypothesis 2. This pattern is not characteristic of spontaneous hallucinations, thus distinguishing *Upsight* as a unique phenomenon.

To gain deeper insights into the phenomenon, a comprehensive psychological or psychiatric assessment would be beneficial to better characterize the context in which it occurs. Although such an assessment was beyond t this paper, incorporating it in the future could provide a more holistic understanding of the underlying factors and enhance the robustness of the findings.

We acknowledge the possibility of unconscious demand characteristics, given the participant's awareness of the conditions being tested. However, the alternating conditions design, with randomization sometimes resulting in two *Upsight* or two recall trials in a row, helps control for order or related expectation effects. Future studies could try to develop masking techniques to further minimize this potential effect.

In our study, we implemented 2 sessions on separate days and conducted 2 runs per day, with each run consisting of 50 trials per condition (2 conditions). We combined the EEG data from the different sessions, which can introduce several limitations, such as session-specific variability and adaptation effects (Luck, 2014). Additionally, EEG signals being inherently non-stationary, computing spectral power for each trial independently of the session can potentially introduce potential biases. However, considering the robust statistics employed and the strength of the effect observed, we consider these limitations as negligible. Furthermore, combining data from different sessions can also increase data robustness and control for temporal confounds such

as time-of-day effects and fatigue. Future studies could implement a general linear model (GLM) analysis to mitigate these potential biases by incorporating sessions as a covariate (Monti, 2011).

We acknowledge that source reconstruction should always be interpreted cautiously. However, the methods employed in this study have been thoroughly validated by leaders in the field of EEG modeling and source reconstruction, ensuring high reliability and accuracy. Moreover, our results show strong coherence with the scalp-level findings, reinforcing the validity of our interpretations.

To further investigate the nature of the *Upsight* experience, it would be beneficial to compare it directly with visual perception. Future experiments could take the 10-s periods where the participant looked at the stimuli to create a 3rd condition of visual perception and compare that with the *Upsight* and VMI conditions. We did not wish to do this because these periods are eyes open and contain more ocular artifacts, but this approach could help determine whether *Upsight* more closely resembles visual perception regarding neural activation patterns, relative to VMI. Similarly, adding an imagination task could provide a more comprehensive understanding of how *Upsight* differs from the underlying neural processes. By including a task specifically designed to engage the imagination, we could further delineate the neural mechanisms unique to *Upsight*, VMI, and imagination, providing a clearer distinction between these states. However, designing such a task appropriately to approximate the *Upsight* and VMI conditions for comparison is challenging.

*Conclusion***.** In summary, our findings indicate that Upsight leads to a significant reduction in alpha and delta power across all brain regions, especially in posterior areas, alongside an increase in gamma power in right frontal and left posterior areas. Although this study advances our understanding of *Upsight*, future research should address these limitations and explore the proposed directions to provide a more comprehensive understanding of this unique visual experience. Notably, the homogeneity between source and scalp results suggests accurate solving of the inverse problem, reinforcing the validity of our findings. If more individuals report experiencing *Upsight* or similar phenomena, a group study could be conducted to provide more robust insights into this phenomenon.

Declaration: The authors declare no conflict of interest.

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Supplement

EEG Processing – Detailed Methods

EEG data were imported into EEGLAB software 2023.0 (Delorme & Makeig, 2004) running in MATLAB R2023b and downsampled to 256 Hz. Auxiliary unused channels were removed, and scalp electrode locations were loaded using the boundary element model (BEM) spherical coordinates. Low-frequency drifts and high-frequency noise were removed using a bandpass non-causal zero-phase FIR filter (-6 dB at cut-off frequencies 0.5-45.5 Hz; filter order = 846; transition bandwidth = 1 Hz). To increase spatial resolution, data were re-referenced to infinity using the reference electrode standardization technique (REST) using the default head model (Yao, 2001; Yao et al., 2005). Abnormal channels were automatically rejected by the *clean_rawdata* plugin (default parameters) and interpolated using spherical splines (Perrin et al., 1989). On average, 0.5 (*SD* = 0.6) channels were removed across the four files (2 sessions over two separate days and two runs per day). Data were segmented from -0.5 s to +29 s around the markers indicating the beginning of each condition. Root mean square (RMS) amplitude of raw signals and a signal-to-noise ratio (SNR) metric were calculated for each trial, and outliers (i.e., trials with large amplitude or high-frequency artifacts) were detected automatically and removed using MATLAB's *isoutlier* function (*'mean'* algorithm). On average, 6.8 (*SD* = 1.3) trials were removed across the four files. In summary, after cleaning, run 1 contained 48 VMI trials and 43 *Upsight* trials; run 2 contained 46 VMI trials and 47 *Upsight* trials; run 3 contained 46 VMI and 47 *Upsight* trials; Run 4 contained 46 VMI and 49 *Upsight* trials; Session 1 (run 1 and 2 combined) contained 94 VMI and 90 *Upsight* trials and Session 2 (run 3 and 4 combined) contained 92 VMI and 96 *Upsight* trials. In total there were 370 trials analyzed, 185 VMI and 185 *Upsight*.

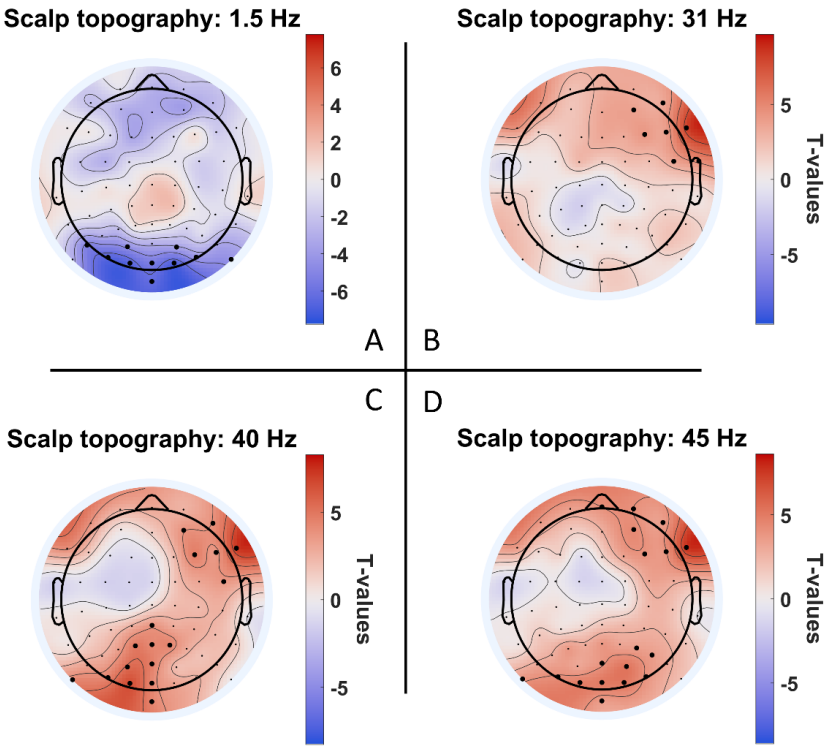
Blind source separation was performed using the preconditioned independent component analysis for real data (PICARD) plugin v1.0. (maximum iterations = 500; Ablin et al., 2018) with PCA-dimension reduction to account for effective data rank (Kim et al., 2023). Artifactual components were automatically classified and extracted from the EEG signals using the ICLabel plugin v1.4 (90% confidence for ocular, 95% confidence for muscular, and 99% confidence for cardiac and noise components; Pion-Tonachini et al., 2019). On average, 2.5 (*SD* = 0.6) non-brain components were rejected across the four files. Finally, the four files were merged into one for statistical analysis.

For source localization and reconstruction, EEG data were downsampled to 100 Hz and segmented into 2-s epochs (requirements for the *ROIconnect* plugin). Then, the EEGLAB *ROIconnect* plugin (Pellegrini et al., 2023) was used to compute the lead field matrix (modeling the relation between the source locations and orientations of potential sources in the brain and the actual measurements made with the EEG electrodes), convert it to the Montreal Neurological Institute (MNI) coordinate system, and perform source localization and reconstruction using linearly constrained minimum variance (LCMV) beamforming. The Colin24 atlas was used to provide a parcellation scheme that assigns anatomical brain regions to the estimated neural sources (68 brain regions; see Pellegrini et al., 2023, for more details on these methods).

Source data were converted to 30-s continuous epochs (trial data) to compute the PSD on each voxel since they had to be segmented into 2-s epochs for the source reconstruction. For both the scalp and source data, PSD was computed using the Welch method on each 30-s trial using 2-s hamming windows with 50% overlap and normalized to decibels (dB).

Undirected phase-to-phase functional connectivity (FC) was computed using the multivariate interaction measure (MIM) on the source-reconstructed signals using the ROIconnect EEGLAB plugin, at the peak frequency of the effect observed in scalp and source power analyses to reduce computational cost (see Pellegrini et al., 2023, for more details on these methods).

Figure S1



Note: Scalp topographies of the 4 other significant clusters observed in the scalp analysis (Fig. 3), depicting the cluster differences between *Upsight* minus visual mental imagery (VMI). **A)** Scalp distribution of the cluster's peak difference at 1.5 Hz. **B)** Scalp distribution of the cluster's peak difference at 31 Hz. **C)** Scalp distribution of the cluster's peak difference at 40 Hz. **D)** Scalp distribution of the cluster's peak difference at 45 Hz.

Étude des Processus Cérébraux Sous-Jacents à une Expérience Visuelle Inhabituelle : Une Etude de Cas

Cedric Cannard Cassandra Vieten Garret Yount Mateo Vega
Fadi Kayale Arnaud Delorme

Résumé: *Contexte*. Cette étude de cas a examiné les corrélats neuronaux d'une expérience visuelle inhabituelle dans laquelle un individu perçoit en permanence des images holographiques très détaillées superposées à son champ visuel et qu'il peut partiellement moduler. Nous avons nommé cette expérience « Upsight ». Notre objectif était d'évaluer en quoi ce phénomène se rapproche ou diffère de l'imagerie mentale visuelle (IMV, comme l'hyperphantasie), de l'imagination ou des hallucinations visuelles (ex. syndrome de Charles Bonnet). *Méthode*. Des données EEG (64 canaux) ont été collectées pendant que le participant alternait entre des essais de 30 secondes en condition Upsight et en condition d'IMV (200 essais chacun). Nous avons réalisé des analyses de densité spectrale de puissance (au niveau du cuir chevelu et des

niveaux de source) ainsi que des analyses de connectivité fonctionnelle (CF) des sources, et avons utilisé des statistiques robustes pour tester l'hypothèse nulle d'une absence de différence (statistiques non paramétriques et corrections de clusters spatio-temporels). *Résultats*. Les résultats au niveau du cuir chevelu ont révélé que, par rapport à la VMI, l'expérience Upsight était caractérisée par une forte diminution des puissances alpha et delta (répandue avec un pic dans les régions postérieures) et une augmentation de la puissance gamma (29-45 Hz) dans les régions frontales droites et postérieures gauches, ce qui confirme une implication accrue des processus cognitifs et visuels. De même, après la localisation de la source, nous avons observé une forte diminution de la puissance spectrale et de la CF dans la bande de fréquence alpha, dans les zones du cerveau impliquées dans le traitement visuel, l'orientation spatiale et l'intégration sensorielle, reflétant une activation corticale accrue de ces zones et des réseaux cérébraux. *Conclusions* : Upsight implique un engagement et un traitement accrus dans les réseaux visuels et cognitifs par rapport à l'IMV. Nous discutons de la phénoménologie et des résultats en relation avec l'IMV, l'imagination et les hallucinations visuelles.

French translation by Antoine Bioy, Ph. D.

Zur Untersuchung von Gehirnprozessen, die einer ungewöhnlichen visuellen Erfahrung zugrundeliegen: Eine Fallstudie

Cedric Cannard Cassandra Vieten Garret Yount Mateo Vega
Fadi Kayale Arnaud Delorme

Zusammenfassung: *Hintergrund.* Diese Fallstudie untersuchte die neuronalen Korrelate einer ungewöhnlichen visuellen Erfahrung, bei der eine Person ständig hochdetaillierte holografische Bilder wahrnimmt, die sich über ihr Gesichtsfeld legen und die sie bis zu einem gewissen Grad modulieren kann. Wir haben diese Erfahrung „Upsight" genannt. Unser Ziel war es, zu beurteilen, inwiefern dieses Phänomen mit visuellen mentalen Bildern (VMI wie Hyperphantasie), Vorstellungskraft oder visuellen Halluzinationen (z. B. Charles-Bonnet-Syndrom) zusammenhängt oder sich davon unterscheidet. *Methode*: EEG-Daten (64 Kanäle) wurden gesammelt, während der Teilnehmer abwechselnd 30-sekündige Versuche mit Upsight und visuellen mentalen Bildern (VMI) durchführte (jeweils 200 Versuche). Wir führten Analysen der spektralen Leistungsdichte (Kopfhaut- und Quellenpegel) sowie der funktionellen Konnektivität (FC) der Quellen durch und verwendeten robuste Statistiken, um die Nullhypothese der Abwesenheit eines Unterschieds zu testen (nichtparametrische Statistiken und räumlich-zeitliche Clusterkorrekturen).

Ergebnisse: Die Ergebnisse der Kopfhautmessungen zeigten, dass im Vergleich zu VMI die Upsight-Erfahrung durch einen starken Rückgang der Alpha- und Delta-Leistung (weit verbreitet mit einem Höhepunkt in den hinteren Regionen) und einen Anstieg der Gamma-Leistung (29–45 Hz) in den rechten frontalen und linken hinteren Regionen gekennzeichnet war, was eine verstärkte Beteiligung kognitiver und visueller Prozesse

unterstützt. In ähnlicher Weise beobachteten wir nach der Quellenlokalisierung einen starken Rückgang sowohl der spektralen Aktivität als auch der FC im Alpha-Frequenzband in den Gehirnbereichen, die an der visuellen Verarbeitung, der räumlichen Orientierung und der sensorischen Integration beteiligt sind, was eine erhöhte kortikale Aktivierung dieser Bereiche und Gehirnnetzwerke widerspiegelt. *Schlussfolgerung*: Upsight beinhaltet im Vergleich zu VMI eine erhöhte Aktivität und Verarbeitung in visuellen und kognitiven Netzwerken. Wir diskutieren die Phänomenologie und die Ergebnisse in Bezug auf VMI, Vorstellungskraft und visuelle Halluzinationen.

German translation by Eberhard Bauer, Ph. D.

Investigando os Processos Cerebrais Subjacentes a uma Experiência Visual Incomum: Um Estudo de Caso

Cedric Cannard Cassandra Vieten Garret Yount Mateo Vega
Fadi Kayale Arnaud Delorme

Resumo: *Contexto*. Este estudo de caso investigou os correlatos neurais de uma experiência visual incomum na qual um indivíduo percebe constantemente imagens holográficas altamente detalhadas sobrepostas em seu campo visual e pode modulá-las até certo ponto. Chamamos essa experiência de Upsight. Nosso objetivo foi avaliar como o fenômeno pode se relacionar ou diferir de imagens mentais visuais (VMI, como hiperfantasia), imaginação ou alucinações visuais (por exemplo, Síndrome de Charles Bonnet). *Método*: Os dados do EEG (64 canais) foram coletados enquanto o participante alternava entre tentativas de 30 segundos em condições de Upsight e imagens mentais visuais (VMI) (200 tentativas cada). Realizamos análises de densidade espectral de potência (nos níveis de escalpo e fonte), bem como análises de conectividade funcional da fonte (FC), e estatísticas robustas para testar a hipótese nula de ausência de diferença (estatísticas não paramétricas e correções de agrupamento espaço-temporal). *Resultados*: Os resultados do escalpo revelaram que, em relação ao VMI, a experiência do Upsight foi caracterizada por fortes diminuições de potência alfa e delta (generalizadas com pico nas regiões posteriores) e aumento da potência gama (29-45 Hz) nas regiões frontal direita e posterior esquerda, apoiando o aumento do envolvimento dos processos cognitivos e visuais. Da mesma forma, após a localização da fonte, observamos uma forte diminuição na potência espectral e FC na banda de frequência alfa, em áreas cerebrais envolvidas no processamento visual, orientação espacial e integração sensorial, refletindo o aumento da ativação cortical dessas áreas e redes cerebrais. *Conclusões*: Upsight envolve maior envolvimento e processamento em redesvisuais e cognitivas em relação ao VMI. Discutimos a fenomenologia e os resultados em relação ao VMI, imaginação e alucinações visuais.

Portuguese translation by Antônio Lima, Ph. D.

Un Estudio Sobre los Procesos Cerebrales Subyacentes a una Experiencia Visual Inusual: Un Estudio de Caso

Cedric Cannard Cassandra Vieten Garret Yount Mateo Vega
Fadi Kayale Arnaud Delorme

Resumen: *Antecedentes*. Este estudio de caso investigó los correlatos neurales de una experiencia visual inusual en la que un individuo percibe constantemente imágenes holográficas muy detalladas superpuestas en su campo visual y puede modularlas parcialmente. Denominamos a esta experiencia *Upsight*. Nuestro objetivo fue evaluar cómo el fenómeno es semejante o difiere de las imágenes mentales visuales (IMV, como la hiperfantasia), la imaginación, y las alucinaciones visuales (por ejemplo, el síndrome de Charles Bonnet). *Método*: Obtuvimos datos de EEG (64 canales) mientras el participante alternaba entre muestras de 30 segundos de Upsight e imágenes mentales visuales (VMI) (200 muestras de cada una). Analizamos la densidad de poder espectral (a niveles de cuero cabelludo y fuente) y de conectividad funcional (CF) de la fuente, utilizando estadísticas robustas para evaluar la hipótesis nula de no diferencia (estadísticas no paramétricas y correcciones de conglomerados espaciotemporales). *Resultados*: Los resultados a nivel de cuero cabelludo revelaron que, en contraste con IMV, Upsight se caracterizó por fuertes disminuciones de poder alfa y delta (generalizada con un pico en las regiones posteriores), y un aumento del poder gamma (29-45 Hz) en las regiones frontal derecha y posterior izquierda, lo que apoya una mayor involucración de procesos cognitivos y visuales. Así mismo, tras la localización de la fuente, observamos una fuerte disminución tanto en el poder espectral como en la CF en frecuencia alfa, en áreas cerebrales implicadas en procesamiento visual, orientación espacial, e integración sensorial, lo que refleja una mayor activación cortical de estas áreas y redes cerebrales. *Conclusiones*: El Upsight implica una mayor involucración y procesamiento de las redes visuales y cognitivas en comparación con el IMV. Discutimos la fenomenología y los resultados en relación con el IMV, la imaginación, y las alucinaciones visuales.

Spanish translation by Etzel Cardeña, Ph. D.

Return to the Real, Part I: Tracing a Modernist Set and Setting in Psychoactive Drug Experiences[1]

Jos ten Berge

Vrije Universiteit

Abstract: Triggered by Aldous Huxley's 1954 description of mescaline as "cleansing the doors of perception" and Ido Hartogsohn's consideration of the cultural set and setting regarding drug use, this article attempts to demonstrate and delineate a particular discourse about drug effects that was prevalent in 20th-century Western culture until at least the 1960s. As shown by the analysis of several drug accounts, the main thrust of this discourse was that (psychedelic) drugs (re)reveal a fundamental "reality" that has become hidden by processes of enculturation. This view is then shown to closely correspond to definitions of (primitivist) Modernism. It is argued that this correspondence demonstrates that drug experiences are more strongly informed by culture than the usual interpretation of set and setting allows. It also implies that other "cultural set and settings" can be identified within Western culture, like that of Romanticism. The second article, "Return to the Real, Part II" discusses some of the repercussions of these observations for drug studies in general and the notion of set and setting in particular.

Keywords: Psychoactive drugs, set and setting, contextualism, culture, modernism, primitivism.

Highlights

- In drug experiments, the individual set and setting is determined by the cultural set and setting to a much greater extent than commonly presumed.

1 Adress correspondence to: Jos ten Berge, Ph. D., Vrije Universiteit Amsterdam, Faculty of Humanities, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands, **j.p.ten.berge@vu.nl**

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- One such cultural set and setting, prevalent in Western society from at least the 1910s to the 1960s, may be termed "Modernist" and typically argued that truth or reality have become veiled by processes of enculturation.

- Drug accounts originating in Modernist culture typically claim that (psychedelic) drugs (re)reveal this lost truth or reality, thus confirming a pre-existent worldview.

- A cultural set and setting such as the Modernist worldview profoundly affects a person's response to experiences as malleable as those provoked by (psychedelic) drugs.

As "what Adam had seen on the morning of his creation - the miracle, moment by moment, of naked existence," is how novelist Aldous Huxley described his experience with mescaline in his 1954 essay *The Doors of Perception* (Huxley, 1954, p. 11). "This is how one ought to see, how things really are," he mused, positing that his perception had become unfiltered by learned systems of interpretation that had mistakenly come to be regarded as true. He concluded that with mescaline, the human being "recovers some of the perceptual innocence of childhood, when the sensum was not immediately and automatically subordinated to the concept" (ibid., pp. 26, 18). Adopting a phrase by Romantic poet William Blake, he claimed that this drug "cleanses the doors of perception" (ibid., p. 3), clearly implying a most beneficial experience.

Nine years later, Huxley articulated the same message in behaviorist terms, arguing that man "must learn to decondition himself" from "culture-conditioned habits of feeling, thought and action" (Huxley, 1963/1980, p. 253). Huxley - a representative and proponent of "culture" if ever there was one - clearly did not view culture in entirely positive terms. Language, for example, benefits people inasmuch as it gives access to the accumulated records of other people's experience, but also bedevils our sense of reality, because it makes us apt to take words for actual things and reduced awareness for the only awareness (Huxley, 1954, p. 15). Based on this premise, he presented mescaline as a means of revealing a world *not* of fantasy, delusion, or temporary insanity, as many contemporaries insisted, but as actually *more* real than the flimsy illusions that education imparts on people.

Huxley's view of what "psychedelic" or mind-revealing drugs like mescaline and LSD "do" set the tone for years to come, but his line of thinking was not all that new. In fact, his vision dovetails nicely with an already existing worldview that will be described below and is of interest not only to art or cultural historians like myself, but also to drug researchers, especially those interested in the role of *set and setting*. It has been am-

ply demonstrated that these two factors are of major importance in determining the nature of a drug experience and can be used to control or steer such experiences to a great extent (Hartogsohn, 2017; Marlatt & Rohsenow, 1980). Zooming out to the cultural dimension, however, necessitates reconsidering this somewhat over-simplified view.

Following Ido Hartogsohn's overview, "set" refers to everything related to a person's mindset, including personality, preparation, expectation, and intention, as well as mood, fears, and wishes. "Setting" refers to everything to do with the environment in which a drug is taken, including the physical and social/emotional, and, as Hartogsohn notes, also "the cultural environment: the ideas and beliefs which are prevalent in the society regarding drug effects and the world in general" (Hartogsohn, 2017, pp. 2-3). As far as I could determine, the mention of "culture" in this context, in other than a gratuitous way, is exceptional. As a rule, set and setting are interpreted in quite concrete, topical, and instrumental terms, as a means of optimizing chances on a harmless, pleasant, and/or beneficial drug experience. Although there is nothing wrong with these goals, this approach betrays a too limited sense of the scope and importance of set and setting, which goes far beyond its immediate utilitarian value.

Referring to studies as old as those of sociologist Howard Becker (1953) and anthropologist Anthony Wallace (1959), Hartogsohn rightly reminds us that "individual set and setting is always nestled within a greater collective set and setting, which is shaped by the society and culture in which a person lives and develops" (Hartogsohn, 2017, p. 10). He speaks of *collective set and setting*, "conceived as the composite sum of factors such as values, beliefs, media coverage, drug laws, social trends, and cultural discourse elements which determine what types of individual set and setting conditions are probable to emerge in a given society and what types are improbable, unachievable, perhaps even unthinkable" (idem). In Hartogsohn's view, "collective set and setting" therefore includes both individual and "cultural" dimensions (Hartogsohn, 2020, p. 208). However, because "collective" usually denotes a group of people and groups of people are seen in turn as constituting or belonging to a culture, I prefer to see the *cultural* set and setting as encompassing both individuals and groups, including subcultures.

Recognition of the importance of culture in these matters, however, seems largely limited to lip service, if at all. Following the arguments made by philosopher Steven Katz regarding mystical experience, I would counter that culture is key "before, during, and after" in matters of psychoactive drugs too (Katz, 1978, p. 27). A Hindu mystic does not have an experience of some universal *x*, which he then describes in the language of Hinduism familiar to him; rather, he has a Hindu experience, "pre-formed" by his

prior beliefs (ibid., p. 26). Such "pre-experiential conditioning" is a "formative" or even "self-fulfilling" element that pre-shapes experience *and* feeds back into post-experiential interpretation and beliefs (ibid. pp. 35, 59). Like *all* experience, Katz concluded, mystical experience is "culturally and ideologically grounded" (ibid., p. 66).

Though much debated, these insights do not seem to have penetrated deeply into drug studies. Perhaps, as Hartogsohn suggests, it is the persistent desire (or demand) that drugs have clearly defined effects on all people in all circumstances, which is so fundamental to (psycho)pharmacology, that explains the aversion against accepting all consequences of the concept of set and setting (Hartogsohn 2020, pp. 171-172, 203, 279, referring to DeGrandpre, 2006). Or else it may have to do with that equally strong and modern tendency to believe in a universal, perennial, or common-core mystical experience, "uncontaminated" by culture (see Janz, 1995, or Wulff, 2014, on this debate). Grace Jantzen has shown that the notion of a religious core experience is a "construct" that originated with the Romantic theologian Friedrich Schleiermacher in 1799 and was subsequently adopted by more modern thinkers such as William James (and Aldous Huxley), who then treated it as an empirical thesis with ecumenical ramifications (Jantzen, 1990, p. 69, referring to Schleiermacher, 1799/1958, and James, 1902/1985; also cf. Jantzen, 1995, p. 278f).

I tend to believe that history shows the validity of the contextualist position (or that of a "moderate constructivism," as Stoeber, 1992, p. 113, called it), acknowledging the unavoidable impact of culture on set and setting as well as later interpretation. Below I will try to demonstrate the existence of a particular idea about what drugs "do" that seems to have been quite prevalent in modern Western culture and closely correlates with a more encompassing worldview (or paradigm, or discourse) commonly called Modernist. In part II of this article, I will elaborate some implications of this observation and propose a feedback model of set and setting that explicitly includes the cultural dimension.

Metaphors

First, it must be said that the view I mean to identify builds on a millennia-old dichotomy in the appreciation of altered states of consciousness as either deceptive or revealing. As Homer already stated in the *Odyssey* (XIX, 562-569), dreams come to humans either through gates of horn, and then reveal truth, or through gates of ivory, in which case they deceive us with lies and illusion. Wallace (1959) showed the same dichotomy in a cross-cultural comparison, but the balance can also shift within cultures. In the West, for example, the Enlightenment became known for rejecting

anything but the rational, but around 1800 Romanticism seriously reappraised what it called "the dream," referring to all forms of "ex-stasis" (Béguin, 1939/1991). And within any such period, prevailing views can of course be contested by sub- or countercultural alternatives.

Another point is that, contrary to the usual instrumentalization of set and setting, the distinction between negative and positive drug experiences need not be relevant, as an example shows. When existentialist philosopher Jean-Paul Sartre took mescaline in 1935, he suffered various horrific hallucinations (Haynes-Curtis, 1995). One of these, as described in his 1938 novel *Nausea*, involved a streetcar seat that refused to remain a seat, "with its red plush, thousands of little red paws in the air, all stiff, little dead paws. This huge belly turns upwards, bleeding, puffed up - … is not a seat. It could just as well be a dead donkey, swollen by the water and floating along, belly up on a great grey river" (Sartre, 1938, p. 160).[2] Unable to push things "back into place," Sartre's protagonist feels that "Things have broken loose from their names. They are there, grotesque, stubborn, gigantic, and it seems absurd to call them seats or say anything about them at all: I am in the midst of Things, which cannot be named. Alone, wordless, defenseless, they surround me…" (idem). He feels like suffocating, but then: "revelation… suddenly, all at once, the veil was torn away, I understood, I *saw*… existence suddenly unveiled itself… the diversity of things, their individuality, was only appearance, a veneer. This veneer had melted, leaving only soft, monstrous masses, in disorder - naked, with a terrifying, obscene nakedness" (ibid., pp. 161-163).

Sartre's existential disgust sounds like the negative mirror-image of Huxley's heavenly bliss, but what matters here is not whether they had good or bad trips. The point is that they *both* talked about their experiences in terms of veils being torn away, revealing the "true" (or "Brute," as Sartre called it) nature of things that they felt was hidden behind surface appearances. Both, that is, used a particular metaphor that seems key to a particular view of what drugs "do". Such metaphors do not only reflect existing paradigms (Gentner & Grudin, 1985), but also "frame" experiences and ideas in particular ways (Demjén & Semino, 2016, p. 33). I will now add several other examples of drug accounts that make use of similar formulae, hoping that the reader will accept such proof by enumeration.

2 This and all subsequent translations of non-English texts are by the author of this article unless otherwise indicated.

Beyond Dada

During the first World War, drugs were assigned a role in both the destructive and constructive parts of the Dadaist program. In 1915, just before starting up the notorious Cabaret Voltaire in Zurich, Switzerland, Dada front person Hugo Ball (most probably thinking of morphine) stated that "Such poisons must break down the sterility of modern life… in preparation for attrition, humility, and self-rejuvenation" (Ball, 1927, p. 48). Dada's intended rejuvenation of art, culture, and society was to be modelled on intoxication, youth, and a salutary form of madness: "The childlikeness I mean… springs from the belief in a primal memory, an unrecognizably repressed and buried world liberated in art by uninhibited enthusiasm, in the madhouse, however, by illness" (ibid., p. 111).

Such references to insanity were not uncommon at the time and were meant quite seriously. In his 1922 *Artistry of the Mentally Ill*, art historian and psychiatrist Hans Prinzhorn linked the creative expression of psychiatric patients to that of children, uneducated adults, and so-called "primitive" peoples to back up his belief in the fundamental originality and authenticity of (the creative products of) all these groups (Prinzhorn, 1922, p. 312f). When he subsequently took mescaline, he saw this conviction confirmed: "Only in this medium of an inexorable cleansing process, carried out in the spirit of Friedrich Nietzsche, could the pathos be mustered in which the breath of the primal creative drive was recognized in the artistic stammering of the incurably insane and delightfully enjoyed for its authenticity" (Prinzhorn, 1927, p. 279). And so, not unlike Huxley, though more given to pathos, mescaline made him "radically reject all pseudo-cultural superstructure" by re-orienting him towards the *Urzeugung*, or "primordial base of life" (ibid., p. 280).

From 1917 to 1948, physician and expressionist poet Gottfried Benn repeatedly advocated the use of (any type of) drugs to destroy the ego. Such a provoked *Ich-Zer-fall* (Benn, 1917/1960, p. 52), he argued, would restore contact with a "primitive," "primal," and "pre-morbid" (i.e., pre-civilized) state (1943/1959b, pp. 332, 334, 336), which he also designated "placentuous" (1927/1961, p. 14) and "prehistoric" (1948/1958, p. 404). Only by way of such a "regression" (1927/1961, p. 14), based on a "feverish desire to relapse" (1930/1959a, p. 78), could one's original, "pure," and "lyrical I" (1927/1961, p. 11) be liberated from the artificial ego that had been built up around it since birth, according to Benn.

And in 1947, surrealist writer and theater creator Antonin Artaud made a similar case for both opiates and peyote. He started out by arguing that opiates offer reality in "its true weight, without loss or exaggeration, beyond the dead weight of all the imbecilic dress-ups and imbecilic spiritual embodiments that literature, poetry, spirit,

philosophy, reason, rites, intelligence, morality and science have added to it century after century" (Artaud, 1947/1970, pp. 134-135). Thus, by bracketing out culture, opiates induce a hyper-lucid understanding of the "real" that Artaud, like many others at the time, also ascribed to children and some non-western peoples. When turning to his experience with peyote among the Tarahumara of Northern Mexico, Artaud claimed more or less the same thing for this drug, that it "returns us to life as if purged... By taking peyote I did not want to enter a new world, but to leave a false world... I turned to peyote to cleanse myself" (ibid., p. 135). The similarities in both wording and conceptualization are remarkable.

Acid Dreams

Turning from Europe to the US and from the first half of the 20th century to the psychedelic counterculture of the 1960s, the words change but the central thrust remains the same. In 1960, having taken LSD, philosopher Alan Watts rephrased the Homeric dichotomy when wondering whether what he was seeing was "drugged" or not: "In other words, was the effect of the LSD in my nervous system the *addition* [my emphasis] to my senses of some chemical screen which distorted all that I saw to preternatural loveliness? Or was its effect rather to *remove* [my emphasis] certain habitual and normal inhibitions of the mind and senses, enabling us to see things as they would appear to us if we were not so chronically repressed?" (Watts, 1960/1973, pp. 144-145). The main difference from earlier days seems to be that the language has been replaced, or supplemented, by new terminologies.

Beat poet Allen Ginsberg spoke of LSD in clearly behaviorist terms as inhibiting conditioned reflexes, a "useful bath in non-conditioning," and an "anti-brainwashing pill" that leaves the user "staring there with an open brain" (Ginsberg, 1971/1974, pp. 118-119). Psychologist Timothy Leary learned from his first psychedelic experience (with psilocybin) that "we have been programmed all these years, that everything we accept as reality is just social fabrication" (Leary, 1983, p. 33). Psychedelic drugs, he argued, make people "see for the first time," without the filters of education (Leary, 1966/1970a, pp. 104-105). After "unplugging the ego" and suspending all "imprints" (i.e., biochemical conditioning), the "uncensored cortex" perceives directly and catches sight of the unlimited freedom outside Plato's cave (Leary, 1962/1966, p. 111; Leary 1965, pp. 440, 443).

And writer Ken Kesey, Leary's West Coast counterpart, saw similar beliefs confirmed when LSD appeared to break the Hells Angels' conditioned reflex to cause may-

hem and made them see (if only temporarily) that love is indeed all that matters (Thompson, 1966/1983, p. 300; Wolfe, 1968/1969, p. 149f). "The true meaning of psychedelics," Kesey deduced, "is to know all of the conditioned responses of men and then to prank them. This is the surest way to get them to ask questions, and until they ask questions they're going to remain conditioned robots" (in Wolfe, 1968, p. 31).

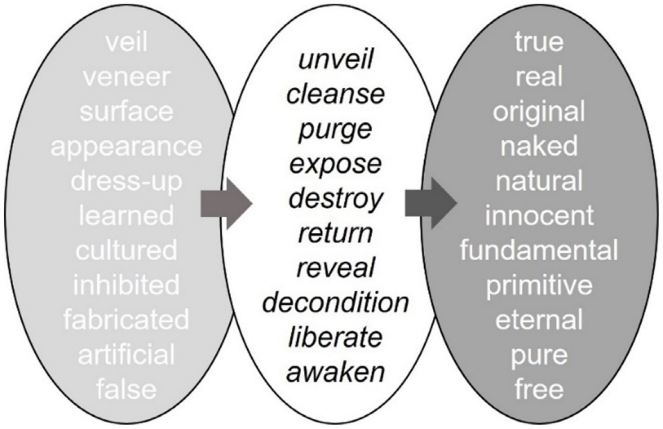
Historians of psychedelia pinpointed other manifestations of the same idea. Jay Stevens noted that "the hippies used LSD as a deconditioning agent" (Stevens, 1987, p. 300) and that its nickname "acid" may have derived from the drug's chemical name (lysergic-*acid*-diethylamide), but surely also became popular because of the implication that it would burn off, like an acid (or wash away, like a "mind detergent"), the patina of years of social programming and cultural conditioning (ibid., p. xiv). The term "brainwashing," coined in 1950, could not be used because it already denoted more or less the opposite (Marks, 1979/1991, p. 133). Martin Lee and Bruce Shlain observed that the counterculture's argot was saturated with talk of "ego death," "Death of the Mind," "Grateful Dead," and other references to the need to die to oneself, or one's enculturated self, in order to be reborn (Lee & Shlain, 1985/1992, pp. 183, 207). Hartogsohn noted that this "death-rebirth" motif (though already used in the 1910s) came to function as "the signifier of the genuine, bona fide psychedelic experience," especially since Leary, Metzner, and Alpert insisted on its importance in their 1964 manual *The Psychedelic Experience* (Hartogsohn, 2020, pp. 127-128).

Real and Unreal

In sum, it is fair to say that the above quotes attest to the currency of a recognizable discourse in which drugs are not simply described as triggering a change in consciousness but are valued as a process of revelation. Figure 1 illustrates this narrative using a three-part semantic field. The field on the left contains a selection of terms used to describe (retrospectively) the nature of the pre-drug state, picked from the examples quoted above. They all demonstrate, albeit to varying degrees, a negative attitude vis-à-vis the human condition, expressed in terms that suggest being kept away from the truth and/or reality.

Figure 1

Map of Terms Used by Western Authors and Artists ca. 1915-1970 to Describe (Psychedelic) Drug Experiences



The field on the right contains terms that were used, also retrospectively, to describe the state after taking the drug, - either the drug state itself or the post-drug state following it, the sources are not always clear on this point. Some of these terms may not come across as positive (like "primitive," which nowadays is only seen as derogatory), but in their original contexts they all implied a desirable improvement over the previous state described on the left. The field in the middle contains some of the verbs used to describe the transition process, some referring negatively to the pre-drug state (such as "expose," "purge," and "destroy"), others positively to the post-drug state (like "unveil," "reveal," and "awaken").

This diagram of course does not describe what happens when taking a (psychedelic) drug, but merely how (some) members of a particular culture interpreted their drug experiences. It clearly reflects a worldview and value system in which many of the terms are dialectically dependent on their opposites, since there is no "real" without an "unreal." It should also be noted that it freezes a discourse that in reality is always fluid and not so easily delineated. Words come and go and, obviously, a term like "deconditioning" is historically dependent on the spread of behaviorist theory. Nonetheless, I hope that it demonstrates that all the above quotes can be subsumed under one and the same "master-narrative," which, as I will now try to show, closely correlates to Modernism, or at least to a particular strand within it.

Modernism

It is not easy to define a concept like "Modernism." Apart from a self-conscious break with tradition, there is little consensus on its exact nature (Eysteinsson, 1990, p. 52), but at least some definitions closely match the worldview expressed in Figure 1. In 1970, for example, literary critic Paul de Man wrote that "Modernity exists in the form of a desire to wipe out whatever came earlier, in the hope of reaching at last a point that could be called a true present, a point of origin that marks a new departure" (de Man, 1970, pp. 388-389). Modernism reveals itself, de Man continued, by its "obsession with a *tabula rasa*, with new beginnings," and "The human figures that epitomize modernity are defined by experiences such as childhood or convalescence, a freshness of perception that results from a slate wiped clear, from the absence of a past that has not yet had time to tarnish the immediacy of perception" (ibid., pp. 392, 396). Philosopher Alain Badiou described Modernist aesthetics in terms of a "passion for the real" and a concomitant obsession with "unmasking" and "purging" all disguises and semblances for the sake of "purification" and finding "the authentic" (Badiou, 1999/2007, pp. 48, 53, 56).

These perspectives on what is real and what is not, and on what past, present, and future have to offer in this regard, closely approximate the narrative of Figure 1, and Huxley's in particular. One might even presume that de Man would have derived his definition of modernity from a psychedelic experience, or from Huxley's description thereof, had he not spoken of a "desire." Then again, the fact that he spoke of a "desire" makes his definition all the more significant in that it suggests that the drug experience actually *delivered* on an already current cultural malaise, diagnosis, and perspective. As with Katz's Hindu mystical experience, it was pre-programmed and reflected an already existing ontology. The cultural set and setting, in other words, appears to have been conditional for its fulfillment.

Notably, the above definitions of Modernism refer less to a shiny future to be won than to a shiny past to be regained, indicating a primitivist world view. As defined by Arthur Lovejoy and George Boas, primitivism starts from a "discontent of the civilized with civilization" and proclaims "a simpler and less sophisticated life" to be more desirable (Lovejoy & Boas, 1935, p. 7). Although primitivism thus seems to oppose "progress," it can and often does turn into a program of reform. The difference is that "The primitivist's way to improve society is not to continue a development already in process or to add to gains which mankind has already won, but to undo the work of history, to scrape off from human life the accretions which have grown upon it" (ibid., p. 17; also see Etherington & Spinner 2024, p. 133). This, too, fits Figure 1. In fact, one

might mistake historian Hayden White's description of the primitivist view of progress for a portrayal of the 1960s counterculture: "[I]n primitivist thought, reform is envisaged rather as a throwing off of a burden that has become too ponderous… [It] simply invites men to be themselves, to give vent to their original, natural, but subsequently repressed desires, to throw off the restraints of civilization and thereby enter into a kingdom that is *naturally* theirs…, is still latently present… and is there for the taking" (White, 1972/1985, p. 171).

Thus defined, Modernism and primitivism clearly show much overlap. One difference may be that Modernism usually refers to a mode of thought that originated in the West and can be delineated in time, while primitivism can be said to be of all times and places. It is only since the 1980s that studies of primitivism restricted their scope to Western dealings with non-Western cultures during (colonial) modernity (Birtwistle, 2000; Etherington & Spinner, 2024; Rhodes, 2008). For our purposes the concept is used in its earlier and broader sense as a cultural critique positing some idealized "Other" (in time or space) as being more natural and capable of regenerating one's own oversophisticated or decadent culture (White, 1976/1985). This is not to deny, of course, that the primitivists' representation of such "Others" was usually quite uninformed and obviously distorted by their own interests (Leighten, 1990).

As to the delineation of Modernism, opinions differ on exactly when it started and ended, but the sources used for Figure 1, all of which date from about 1915 to 1970, seem at least to touch on its core (cf. Boas, 1953; Ferguson, 1991, on the problems of period labels). Depending on one's perspective then, one could speak of a Modernist variety of primitivism or of a primitivist strain within Modernism. As the more specific of the two, "Modernist" may suffice, though not without reiterating that such isms are not homogenous monoliths describing entire cultures. The view expressed in Figure 1 originated with an intellectual and creative vanguard minority that opposed a much more dominant, mainstream, and "progressivist" variety of Modernism that viewed drugs as a remnant of primitive times and/or a gateway to reality loss. It should also be noted that this vanguard consisted primarily of highly cultured white males, reflecting this group's dominance in 20th-century thought (cf. Jay, 2023, pp. 54-55).

Paradise Lost

Minority viewpoint or not, Figure 1 also has roots in earlier ideas and discourses, some of which deserve mention here so as not to oversimplify things and prepare for a more comprehensive view of set and setting. One goes back to Pliny the Elder's "*in vino veritas*," implying that intoxication may cause people to unwittingly reveal truths

(*Historiae naturalis*, XIV, 28). This idea resurfaced when the CIA tested whether LSD could extract information from Soviet spies (Marks, 1979/1991), and, on the other side of another fence, when the radical Weathermen tried to "unmask" possible FBI infiltrators with LSD (Lee & Shlain, 1985/1992, p. 232). In one experiment with artists taking psilocybin, many participants declared feeling "liberated" and recognizing their "true nature" in their drug work (Volmat & Robert, 1961, p. 21). During a similar experiment with LSD, many artists tried to show themselves immune to the drug's effects, fearing that changes in their work would put their artistic integrity in doubt. As the researcher explained, "General opinion has it that... LSD reveals what really comes from within... and exposes what is only constructed and epigonal" (Hartmann, 1974, pp. 29-30). Despite the differences in set and setting (see ten Berge, 1999, for a discussion), *both* groups apparently believed that they were taking some sort of truth drug.

Truth is also central to Plato's immensely influential allegory of the cave (*Republic*, 514a-520a), in which it is argued that the everyday world is only a shadow of a "real reality" of pure Ideas, that the "light" of the latter can be known by humans, but that the enlightened are likely to be declared insane by those who stay behind. This view has much in common with that of Figure 1, and it should come as no surprise that Leary referred directly to Plato's cave to explain what he meant by the "expansion" of consciousness (Leary, 1965, p. 433), nor that some deduced that Plato must have been knowledgeable about hallucinogens (Gordon Wasson, 1961, p. 155).

The Bible provides an equally relevant account of the Fall, which is even easier to read as drug-related. When Adam and Eve ate of the forbidden "fruit from the tree of knowledge of good and evil," they lost their innocence and were expelled from the Garden of Eden (*Genesis* 2: 16-17; 3: 4-5). Although some again inferred that this fruit, usually depicted as an apple, must have been some real psychedelic drug (Allegro, 1970/1973, p. 105), the phrase "forbidden fruit" lives on as a metaphor for all illegal and frowned-upon drugs. Mixing the literal with the allegorical, ethnobotanist Terence McKenna has argued for a drug-inspired "archaic revival," explicitly following the Biblical (and typically primitivist) format of Paradise, Paradise Lost, and Paradise Regained (McKenna, 1992, p. xvi). Indeed, every wish to return to paradise logically implies some "fall from grace," called lapsarianism by theologians. "Must we then eat again from the tree of knowledge to return to the state of innocence?" Romantic playwright Heinrich von Kleist had one of his protagonists ask, to which he was to be answered: "Most certainly, that is the last chapter of the world's history" (Kleist, 1810/1883, p. 380). The tricky question, however, was whether undoing the fall would also imply a return to ignorance, and whether that was desirable.

As literary historian Meyer Abrams has pointed out, it was Romanticism that around 1800 ingenuously solved this problem by exchanging the figure of a simple return for that of the spiral, allowing for a "return at a higher level." This type of return ensures progress all the same, and even gives meaning to all post-lapsarian suffering, because it does not erase but incorporate all the knowledge and experience gained in between (Abrams, 1971, pp. 183-185, 255). Interestingly, the 1960s counterculture demonstrated both the idea of a simple return, say to the land, or some "holy innocence," and that of a redemptive reunion of innocence *and* experience, naïveté *and* insight, or a "return at a higher level" as it was indeed called by Leary et al. (1964, p. 85).

Recapping Evolution

Another important contribution of Romanticism was its already mentioned reappraisal of "the dream" and the idealization of groups that somehow seemed close to it. In response to the Parisian "hashish club" of the 1840s, for example, painter Eugène Delacroix contrasted ordinary consciousness with the boundless imagination of children, intoxication by opium and hashish, and the artist's daily inspiration (ten Berge, 1995). Though probably inexperienced with such drugs, Delacroix capitalized on a typically Romantic complex of comparisons that often also included the "madman" and the "primitive." Today, lumping together such highly diverse groups as all somehow similar in their difference from rational western adults feels both deluded and offensive, even if it was only meant to criticize the nobility or bourgeoisie. In much 19th and 20th century Western thought, however, it was a truism that gained semi-scientific traction through a highly influential variant of evolution theory and, later, through psychoanalysis.

Recapitulation theory held that the development of an individual from conception to adulthood constitutes an accelerated "recapitulation" of its species' entire evolution from primitive to complex. Declared a "biogenetic law" by biologist Ernst Haeckel (1866, vol. 2, p. 300), this theory was incompatible with Darwinism and refuted by Mendelian genetics, but nevertheless proved very persistent (Bowler, 1988; Gould, 1977, p. 115f; Hopwood, 2015). Part of its appeal lay in the reassuring idea that nothing ever is lost beyond retrieval, another in that it allowed for the equation of prehistoric people, indigenous people, children, the mentally ill, and various other groups as all having underdeveloped, still dream-like "mental lives." This transfer of a biological theory to psychology was explicitly endorsed by psychoanalysts like Sigmund Freud (1913; but compare Gould, 1987) and Carl Jung (1912/1991, p. 23f). It enabled them to see psychiatric disorders in terms of a "regression" down the evolutionary ladder.

Drug experiences fitted this scheme perfectly. In 1927, for example, physicians Frits Fränkel and Ernst Joël argued that with hashish "a dismantling takes place under the eyes of the observer, an exposure, revealing layers of the soul that are directly reminiscent of, and in part even identical with, what we are told about the mental life of primitive peoples" as well as that of children and the insane (Fränkel & Joël, 1927, p. 101). The description of the process ("dismantle," "expose," "reveal") still corresponds well with Figure 1, but the appreciation of the resulting state again varies along the Homeric dichotomy. Of course, describing drug states as regressive and comparable to the mindsets of the insane (as in "model psychosis") did little to recommend drug use. But those with primitivist leanings reversed the values again and spoke enthusiastically about regaining a childlike innocence or journeying down the evolutionary path.

In 1930, for example, author and artist Jean Cocteau argued that artists resort to opium to compensate for the loss of their childhood imagination (Cocteau, 1930, p. 120), while his colleague René Daumal defended drug use against the surrealists' official disapproval as "the systematic confrontation… with the mentality called primitive" (Daumal, 1930/1972, p. 155). Leary described his first psychedelic experience in a truly Haeckelian vein as "slipping down the recapitulation tube" to "snake-time, fish-time" and beyond (Leary, 1983, p. 32), positing that psychedelics can even reconnect people to "that original thunderbolt in the Precambrian mud" with which life itself began (Leary, 1963/1964, p. 336). Psychiatrist Richard Hartmann stated that LSD allows users to regress "to an ontogenetically earlier level," as if "in a time machine" (Hartmann, 1974, pp. 16, 35, 49), and that it may "wind back" millennia of evolution in an "anthropological regression" to a primitive state like that of a Neanderthal (Hartmann, 1992, pp. 33, 37). Next to the progressivist idea of *continuing* evolution on a mental or spiritual plane, the primitivist notion of *regressing* with drugs apparently proved quite attractive as well.

Romanticism

While recognizing the input and interaction of various ideas from various sources, it is also clear that Romanticism provided Modernism with many of its key ingredients. But they would not bear different names if there were no differences, and these include the question of what drugs are thought to "do." At the risk of oversimplifying things, it could be said that Modernism, as argued above, aimed to remove acquired or imposed layers of artificiality, while Romanticism was more inclined to "bathe" normality in an extraordinary light. Within a three-part diagram like that of Figure 1, it would start out with a discontent with "dreary normality" and *strive* to transform it into

something more exciting, mysterious, and poetic, and therefore "better," - which is not the same as "more real."

As Abrams expounded in his celebrated *The Mirror and the Lamp*, the Romantics pictured the (creative) mind not as an inert reflector or mirror of the world (as their predecessors had done), but as a projector or lamp that actively radiates its own light onto the world (Abrams, 1953, pp. 58-59). The Romantic Imagination, with a capital I, had to "modify" vision, in the words of Coleridge, to "strip the veil of familiarity" in Shelley's, and to "add the charm of novelty to the familiar," in Hazlitt's (in ibid., pp. 379, 384, 396). By adding creative vision to ordinary perception, they aimed to re-enchant, poeticize, and "romanticize the world," to turn drab reality into a magical mysterious fairy-tale. The point was "to make the familiar strange and the strange familiar," as poet Novalis put it, because "The world must be as I wish it to be" (in Béguin, 1939/1991, pp. 269-270).

Thus described, it seems that the typical Romantic would be quite content with a screen that "distorts everything into loveliness," as Watts put it. For the typical Modernist, on the other hand, such an attitude would amount to putting on rose-colored spectacles, *adding* filters rather than *removing* them, deceiving oneself with yet another layer of escapist *Ersatz* (cf. Taylor, 1989, p. 458). Outlined like this, however, the distinction is too black-and-white, meant only to emphasize the importance of prior epistemologies. As Abrams noted, Romanticism was also often conceptualized as a project to gain "freshness of sensation," a "refreshed way of looking" at the world, modelled after the child, still untainted by culture, or the convalescent, also often cited in this context (Abrams, 1971, pp. 377-379; also cf. Bode, 2011, arguing that this issue of "imposition" versus discovery is characteristic of modernity, though negotiated in various ways by various Romantic and Modernist poets). Still, Modernism can be said to differ from Romanticism in that it at least radicalized such aspirations. It lashed out against tradition in ways uncommon to Romanticism and turned a more or less commonplace and rhetorical resort to the child's innocence of vision into an epistemological argument of existential importance (ibid., pp. 430-431).

The Innocent Eye

The breaking point can be located in Realism and its follow-up Impressionism. Devoted to truth and sincerity, as opposed to creating illusions or moving special effects, these early Modernist art movements pivoted around the notion of the "innocent eye." The idea was that artists, when aiming for a "truthful" art, should *forget* all they had learned from art classes, tradition, and culture in general. Art critic John Ruskin

coined the phrase in 1857 and defined it as "a sort of childish perception of these flat stains of colour, merely as such, without consciousness of what they signify - as a blind man would see them if suddenly gifted with sight" (Ruskin, 1857, p. 6). Impressionist painter Claude Monet famously argued that one should paint not what one thinks one sees, or thinks one ought to see, but what one "really" sees, wishing that "he had been born blind and then had suddenly gained his sight so that he could have begun to paint in this way without knowing what the objects were that he saw before him" (as quoted by Perry, 1927, p. 120).

Again, the thrust of the argument was to leave artificiality behind to retrieve the real, unmediated by the stifling overlays of civilization. In 1934, art critic Roger Fry elaborated that "the conceptual habits, necessary to life, make it very difficult, even for artists, to discover what things look like to an unbiassed eye" (Fry, 1934, pp. 134-135). Surely it is no coincidence that psychologist Havelock Ellis, when describing his experience with peyote in 1898, referred to artists in general and Monet in particular to explain how he now perceived his room (Ellis, 1898, p. 134). And Huxley, in discussing mescaline, not only refers to Ellis, but also appears to paraphrase both him and Fry repeatedly (Huxley, 1954, pp. 5, 15, 18, 25), and even reminisces about a conversation he once had with Fry about precisely this aspect of Monet (Huxley, 1956, p. 44). Next to Blake and Bergson, therefore, his notion of a cleansed perception may be rooted in art history as well.

Building on Abrams' metaphors, Modernism can be said to seek neither mirror nor lamp, but a lens to cut through the fog and zoom in on an unchanging truth behind fleeting appearances. For some, (psychedelic) drugs seemed to provide just that. While Huxley spoke of removing filters of enculturation, many later proponents of psychedelics drew analogies to optical devices such as the microscope and telescope. Leary even based a drug typology on such analogies, declaring narcotics equivalent to blindfolds, alcohol to dark glasses, marijuana to "the corrective lens which *re*turns [my emphasis] vision to sharp, clear focus," hashish and moderate doses of mescaline and psilocybin to "microscopes of internal biology," and LSD to the "electron microscope of psychology" (Leary, 1966/1970b, pp. 281-285; also see Day & Schmetkamp, 2022, on such analogies, including Huxley's "filter").

Coda

There are two concluding points I wish to make. The first is that Modernist writers, thinkers, and artists, as a rule, did *not* take drugs to induce new, strange, or exotic experiences, like (some of) their Romantic predecessors, but to inhibit inhibitions. In

simpler terms, they did not expect drugs to *give* them something (useful), but to make them *lose* something (rotten) in order to reveal, or *re*-reveal, something real and true that they felt was lost in the process of civilization. As Leary stated most succinctly, "Men seek chemical liberation to regain what they have lost in the socialization process" (Leary, 1965, p. 440). As a typical Modernist, he blamed nurture for alienating mankind from nature, reality, and truth. Such "modern man in search of a soul," as Jung (1933) called him, aimed not for pleasure or excitement, but for truth and nothing but the truth. (As I hope to elaborate in the future, Postmodernism can be said to have re-adopted the more pluralist, relativist, and ironic stance of Romanticism, also with respect to drugs.)

My second point is that this is not a matter of mere cultural trappings that drug studies can dismiss or exclude as interference. A "cultural set and setting" such as the Modernist worldview that I have tried to describe, however schematically, is so deeply ingrained that, as a kind of baseline or default position, it cannot but profoundly affect a person's response to almost anything in life, and especially to experiences as intense and malleable as those provoked by (psychedelic) drugs. Attributing *all* of a drug's effects to non-drug factors, as the most radical version of the set and setting concept would have it (cf. Hartogsohn, 2020, p. 121, on Leary), would be absurd, but Katz's idea that pre-experiential conditioning "shapes" all experience undeniably applies to drug experiences as well. Yet this is only one facet of a still larger mechanism that I will try to outline in part II of this article.

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Retour au Réel, Partie I : Retracer un Set et Setting Moderniste dans les Expériences avec Drogues Psychoactives

Jos ten Berge

Résumé: Déclenché par la description de la mescaline par Aldous Huxley en 1954 comme « nettoyant les portes de la perception » et par les réflexions d'Ido Hartogsohn sur le set and setting (cadre et état d'esprit) culturel de l'usage des drogues, cet article vise à démontrer et à délimiter un discours particulier sur les effets des drogues qui ont prévalu dans la culture occidentale du XX^{e} siècle jusqu'aux années 1960. L'analyse de plusieurs récits de consommation de drogues montre que la thèse centrale de ce discours était que les drogues (psychédéliques) révèlent (ou révèlent à nouveau) une « réalité » fondamentale, voilée par les processus d'enculturation. Cette vision correspond de manière étroite aux définitions du modernisme (primitiviste). L'article soutient que cette correspondance démontre que les expériences avec drogues sont davantage influencées par la culture que ne le suggère l'interprétation habituelle du set and setting. Cela implique aussi que d'autres set and settings culturels peuvent être identifiés dans la culture occidentale,

comme celui du romantisme. Le second article, Retour au réel, Partie II, discute des répercussions de ces observations sur les études sur les drogues et sur la notion de set and setting.

French translaiton by Antoine Bioy, Ph. D.

Rückkehr zum Realen, Teil I: Auf den Spuren eines modernistischen Sets und Settings bei psychoaktiven Drogenexperimenten

Jos ten Berge

Zusammenfassung: Ausgehend von Aldous Huxleys Beschreibung von Meskalin als „Reinigung der Pforten der Wahrnehmung" aus dem Jahr 1954 und Ido Hartogsohns Überlegungen zum kulturellen Umfeld und Rahmenbedingungen des Drogenkonsums versucht dieser Artikel, einen bestimmten Diskurs über die Wirkungen von Drogen aufzuzeigen und zu beschreiben, der in der westlichen Kultur des 20. Jahrhunderts mindestens bis in die 1960er Jahre vorherrschte. Wie die Analyse mehrerer Drogenberichte zeigt, bestand der Hauptgedanke dieses Diskurses darin, dass (psychedelische) Drogen eine fundamentale „Realität" (wieder) offenbaren, die durch Prozesse der Enkulturation verborgen wurde. Diese Sichtweise entspricht dann eng den Definitionen des (primitivistischen) Modernismus. Es wird argumentiert, dass diese Übereinstimmung zeige, dass Drogenerfahrungen stärker von der Kultur geprägt seien, als es die übliche Interpretation von Set und Setting zulässt. Dies impliziert auch, dass andere „kulturelle Sets und Settings" innerhalb der westlichen Kultur identifiziert werden können, wie beispielsweise die der Romantik. Der zweite Artikel „Rückkehr zum Realen, Teil II" diskutiert einige der Auswirkungen dieser Beobachtungen auf die Drogenforschung im Allgemeinen und den Begriff von Set und Setting im Besonderen.

German: translation by Eberhard Bauer, Ph. D.

Retorno ao Real, Parte I: Rastreando o Set e Setting Modernista em Experiências com Drogas Psicoativas

Jos ten Berge

Resumo: Estimulado pela descrição de Aldous Huxley em 1954 da mescalina como "desobstruindo as portas da percepção" e pela consideração de Ido Hartoggohn sobre "o set e setting culturais" em relação ao uso de drogas, este artigo tenta demonstrar e delinear um discurso particular sobre os efeitos das drogas que prevaleceu na cultura ocidental do século 20 até pelo menos a década de 1960. Como demonstrado pela análise de diversos relatos sobre drogas, o principal impulso desse discurso foi que as drogas (psicodélicas) (re)revelam uma "realidade" fundamental que se tornou oculta pelos processos de inculturação. Essa visão é então demonstrada como correspondendo muito proximamente às definições do

Modernismo (primitivista). Argumenta-se que essa correspondência demonstra que as experiências com drogas são mais fortemente informadas pela cultura do que a interpretação usual de set e setting permite. Também implica que outros "sets e settings culturais" podem ser identificados dentro da cultura ocidental, como o do Romantismo. O segundo artigo, "Retorno ao Real, Parte II", discute algumas das repercussões dessas observações para os estudos sobre drogas em geral e para a noção de set e setting em particular.

Portuguese: translation by Antônio Lima, Ph. D.

Retorno a lo Real, Parte I: Trazando una Actitud (Set) y un Entorno (Setting) Modernistas en Experiencias con Drogas Psicoactivas

Jos ten Berge

Resumen: Desencadenado por la descripción que Aldous Huxley hizo en 1954 de la mescalina como "limpiadora de las puertas de la percepción" y por las ideas de Ido Hartogsohn de la actitud y el entorno culturales en relación con el consumo de drogas, este artículo intenta demostrar y delinear un discurso sobre los efectos de las drogas prevalente en la cultura occidental del siglo XX hasta al menos la década de 1960. Como muestra el análisis de varios recuentos sobre drogas, el enfoque principal de este discurso era que las drogas (psicodélicas) (re)revelan una "realidad" fundamental que había sido ocultada por los procesos de enculturación. Se muestra entonces que este punto de vista corresponde cercanamente a las definiciones del Modernismo (primitivista). Se argumenta que esta correspondencia demuestra que las experiencias con las drogas están más fuertemente influenciadas por la cultura que la interpretación habitual de la actitud y entorno. También implica que pueden identificarse otros "actitudes y entornos culturales" dentro de la cultura occidental, como el Romanticismo. El segundo artículo, *Return to the Real: Part II*, analiza algunas de las repercusiones de estas observaciones en los estudios sobre drogas en general y en la noción de actitud y entorno en particular.

Spanish translation by Etzel Cardeña, Ph. D.

Return to the Real, Part II: Cultural Feedback Loops in Psychoactive Drug Experiences[1]

Jos ten Berge

Vrije Universiteit

Abstract. Having identified a typically Modernist view of what (psychedelic) drugs "do" in "Return to the Real, Part I," this follow-up article discusses some of the implications of this observation for drug studies in general and for the notion of set and setting in particular. A fourfold diagram is proposed in which the cultural set and setting, the individual set and setting, the drug experience, and its articulation back into culture, are seen as interconnected elements of a feedback loop. Different processes within this loop are described and illustrated with historical examples. Since the main effect of (psychedelic) drugs is to amplify, it follows that their use tends to reinforce prior beliefs. And since feedback loops are by definition cyclical and repetitive, their effect on a sociocultural level would have to be conservative too. On this level, transformative effects are rather due to impactful articulations of drug experiences in receptive environments. Finally, this paper suggests that drug studies require a minimal knowledge of cultural history.

Keywords: psychoactive drugs, culture, set and setting, feedback loop, cultural history.

Highlights

- The importance of the cultural set and setting to drug experience necessitates extending the concept of set and setting beyond its immediate and instrumental use.

1 Adress correspondence to: Jos ten Berge, Ph. D., Vrije Universiteit Amsterdam, Faculty of Humanities, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands, **j.p.ten.berge@vu.nl**

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- Together, the cultural set and setting, individual set and setting, actual drug experience, and its articulation back into culture constitute a fourfold feedback loop.
- Because of their amplifying effects, (psychedelic) drug experiences tend to reinforce prior (personal and/or cultural) beliefs and world views.
- Being cyclical and repetitive, feedback loops tend to be conservative by nature, at least at the sociocultural level.
- Transformative effects on this level are rare and usually result from high-impact publications that land in fertile cultural soil.

As argued in part I of this article (ten Berge, 2025), Modernism can be seen as a particular "cultural set and setting" that strongly influenced or even "shaped" drug experiences in ways that can be distinguished from other cultural set and settings. Accepting this thesis has implications for the concept of set and setting. It necessitates an explicit inclusion of "culture," defined as the prevalent ideas and beliefs of a society, or part thereof, about the nature of reality (Hartogsohn, 2017, pp. 2-3). The idea of and search for "naïve," that is, cultureless users is overly romantic. Drug historian Mike Jay noted numerous reports of people who accidentally ingested psilocybin-containing mushrooms without having a "cultural or religious tradition for their use." Such people interpreted the resulting "dizziness, gastric disturbance, [and] odd and intrusive thoughts" as the result of accidentally having eaten poisonous fungi (Jay, 2023, pp. 289-290). This does not, however, make them "naïve," nor their experience "pure" or untouched by culture. It simply means that their culture taught them to beware of poisonous mushrooms and that they responded accordingly.

It follows that antecedent cultural variables, or biases, are not so much an unwanted interference as an important key to studying psychoactive drugs. This inevitable conclusion has been confirmed both cross-culturally, by anthropologists Anthony Wallace (1959) and Marlene Dobkin de Rios (1984), and historically, within one culture. Although Dobkin de Rios argued that visionary content in Western society is "particularly idiosyncratic and nonpatterned" (ibid., p. 218), part I of this article has shown that Western thinking about drugs also includes very particular patterns. But I am not the first historian to underscore the importance of culture in these matters.

Chameleon Drugs

In 1979, Lester Grinspoon and James Bakalar belittled the importance of pharmacology in favor of that of culture by denying the existence of "any such thing as

a psychedelic way of life: a metaphysics, ethics, and social philosophy that emerge irresistibly from the drug experience. Psychedelic drug users can be bellicose like the Yanomamös or peaceable like the Mazatecs; pagans like the Huichols, Christian like the peyote eaters, or vaguely Buddhist like the Beat Generation… When middle-aged, middle-class [Western] people took LSD in the 1950s and early 1960s…, it did not turn them into hippies; often, it even reinforced previous religious and moral convictions" (Grinspoon & Bakalar, 1979, p. 184). Such variety in response is not exclusive to psychedelics: MacAndrew & Edgerton (1969) painted a similarly diverse picture for alcohol.

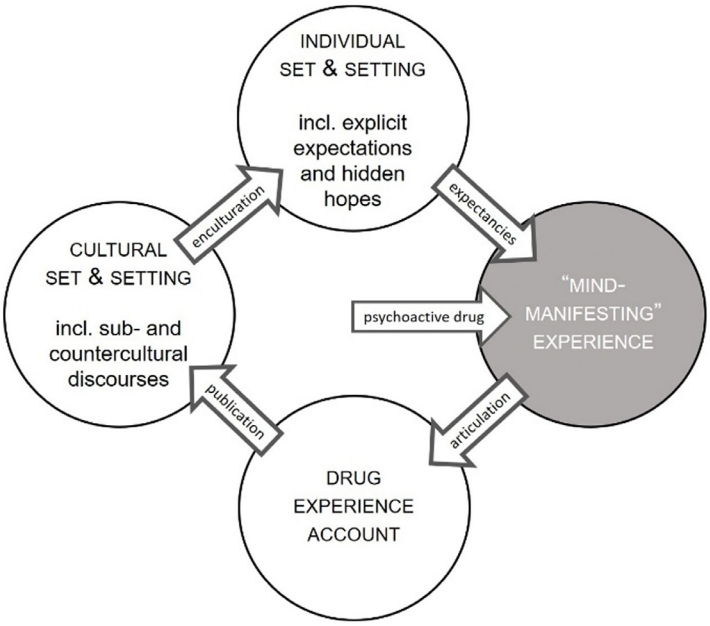
In 1985, Martin Lee and Bruce Shlain concluded that "The love-and-peace vibrations thought to be intrinsic to the psychedelic high were largely an amplified reflection of the unique spirit that animated the mid-1960s, just as the CIA's obsession with LSD-induced anxiety and terror mirrored the Cold War paranoia of the espionage establishment" (Lee & Shlain, 1985/1992, p. 200). They thereupon defined LSD as a "nonspecific amplifier of psychic and social processes," catalyzing whatever forces are already active or latent in a given social milieu (idem). By 2020, Ido Hartogsohn started out from the idea that LSD is a "psychopharmacological chameleon" that changes "its psychoactive pigmentation in relation to the cultural set and setting into which it is introduced" (Hartogsohn, 2020, p. 7). Three years earlier, he had wittily noted that the designation of such drugs as "psyche-delic" (mind-manifesting), proves doubly apt, as they reflect "not only the mind states of their users, but the mind states of entire societies and cultures" (Hartogsohn, 2017, p. 10).

Feedback Loop

If culture cannot be excluded from the equation, then it should be included with more than a gratuitous mention. Descriptions and graphic depictions of the notion of set and setting often present the drug, the (individual) set, and the (physical, social) setting as the only determinants. With Figure A, I want to emphatically add the cultural dimension (on the left), as well as the articulation of drug experiences into culture (at bottom), for reasons to be explained below. On the downside, I had to conflate "set" and "setting" as factors difficult to distinguish when moving beyond the topical: "Culture" can be ranked both under "set," as something internalized during enculturation, and under "setting," as dependent on one's sociocultural environment. Lacking a suitable alternative, I will often treat "set and setting" as one concept denoted by two words.

Figure A

Proposal for a Four-fold Conceptualization of the Feedback Loop Involved in Psychedelic Use



To start on the right side, (psychedelic) drug experiences, like all intense experiences, can generate an urge to express or "articulate" them, as I prefer to call it in order to mediate between "report," which is too suggestive of objectivity, and "frame," which might connote intentional manipulation. Such articulation includes everything from on-the-spot notes to highly crafted accounts intended for public consumption. None of these should be considered completely reliable "recordings." They can all be subject to all sorts of distortions such as omission, censoring, normalizing, embellishing, elaborating, interpretation, extrapolation, revision, moralizing, and more. This is not the place to disentangle all such "post-production" processes, but it is clear, first, that unusual experiences are inherently susceptible to rationalization and narrative fabrication in order to have them "make sense" (Rosen, 2013, p. 5), second, that this is most often and easily accomplished by connecting to pre-existing and familiar discourses, and third, that all such attempts at translation or transmission result in cultural products.

When such accounts are being "published," in the widest possible sense of being shared with others, they enter the broader domain of culture, on the left in Figure A. Mere verbal reporting to peers may prove ephemeral, but some accounts impacted the sociocultural realm to such an extent that they have become milestones in cultur-

al history. The relation is clearly reciprocal, with culture (or subculture) providing the frame to accommodate drug accounts, and drug accounts feeding back into culture. And it is to culture that all individuals are "enculturated," internalizing its ideas, beliefs, paradigms, and discourses (LeVine, 1973, 2001, as cited in Hartogsohn, 2020, p. 189). This is the collective or "cultural" set and setting that, next and inevitably, feeds into the individual set and setting at the top of Figure A, which has long been recognized to be crucial in determining the nature of drug experiences. What it all adds up to, as Hartogsohn (2020, p. 209) noted, is a feedback loop.

Opium's Iconography

The previous description of this feedback loop is still schematic, but each phase and process can be illustrated by well-documented cases and analyses, also from times long past. Thomas de Quincey, for starters, already pointed out in his 1821 *Confessions of an English Opium-Eater* that "If a man 'whose talk is of oxen', should become an opium-eater, the probability is, that (if he is not too dull to dream at all) - he will dream about oxen" (de Quincey 1821/1971, p. 33). A true precursor of the concept of "set," de Quincey insisted on extensive "preliminary confessions" about his background, life history, and deepest inner drives and fears as key to understanding his later opium dreams and nightmares.

Next, de Quincey's *Confessions*, being the first published articulation of drug experience of its kind, both attracted *and* primed novices. Many later opium users admitted that reading his book had started them off in the expectation of dreams and nightmares as intriguing and sophisticated as his (Hayter, 1968, pp. 40, 105-108). Whether they also received them is hard to say. Some might have, because of the power of suggestion, others might not, being too dull, but after studying the works of several 19th-century opium-using authors, whose talk was certainly not "of oxen," literary historian Alethea Hayter could not but confirm that opium only "works on what is already there in a man's mind and memory" (ibid., p. 331). In 1927, John Livington Lowes provided the still most impressive demonstration of this fact by tracing almost every single word of Coleridge's (opium-related) poem *Kubla Khan* to sources that the poet had previously read or heard about.

What is in "a man's mind and memory" is never exclusively personal, and when opium-using authors articulated their experiences, they invariably connected to pre-existing discourses. From the images already available around them, they selected those "which could be made to bear the special emotions of the opium reverie," Hayter concluded (Hayter, 1968, pp. 84-85). She also observed that, in due time, this

selection process resulted in a recognizable pattern, or "landscape of its own," identifying an iconography of deserted cities, buried temples, drowned palaces, and petrified landscapes as typical for opium addicts (ibid., pp. 82-83, 336-337). Meyer Abrams certainly had been wrong when positing (in his admittedly somewhat immature undergraduate thesis) that opium provides "access to a new world as different from this as Mars" (Abrams, 1934/1971, p. 4). In fact, it is culture before and after, supplying not only much of the input, but also the repertoire of imagery to choose from post factum.

Similarly, the orientalist connotations of hashish in mid-19th century France derived not from *tetrahydrocannabinol,* but from people's awareness of its origins coloring, first, their expectations (Mickel, 1969, p. 58f), thereby their experiences, then their articulation of them, and thus subsequent users' expectations in yet another feedback loop showing only minor changes and variations in detail over time. When, after the turn of the century, smoking opium became popular, it was with a set and setting that emphatically evoked *and* reinforced Asian aesthetics, spirituality, and wisdom (de Liedekerke, 1984, p. 171; ten Berge, 2004). The style of the "psychedelic" rock posters of the 1960s derived not from LSD, but from selecting, out of many possibilities, the formulas of Art Nouveau and adapting them in such a way that they could, to paraphrase Hayter, bear the weight of the special emotions of tripping. Again, it was culture on both the input and the output sides, with the drug itself having at most a modulating influence.

Pygmalion

Within the proposed feedback loop, relating the individual set back to culture may be the hardest gap to bridge for researchers. It involves distinguishing the personal from the cultural, which is no easy task. The case of Hans Prinzhorn, already mentioned in part I (ten Berge, 2025), illustrates some of the possibilities. Prinzhorn's belief in the higher authenticity of the artistry of the insane clearly stemmed from expressionist circles to which he was eager to belong and whose aesthetics he wanted to anchor in science and expand upon. After writing his book, the "model psychosis" triggered by mescaline seems to have confirmed and reinforced his already established conviction that insanity approximates the primordial. As one Prinzhorn-expert explained it, the wish fathered *and* intensified the thought, with mescaline functioning as a catalyst of self-suggestion (Röske, 1995, p. 194).

Equally interesting, Prinzhorn's own protocol notes (in Beringer, 1927, pp. 129-144) present a rather disjointed variety of impressions without making any claim to particular insights or the artistry of the insane. His published account of it, however, writ-

ten many years later, presents a compelling drama of revelation (Röske, 1995, p. 189). Possibly he needed some time to decide on what his drug experience meant or how to make it "fit." On the other hand, claims of revelation and inspiration are rarely exclusively descriptive. "Through the idea of inspiration the communication gains in authority, and the person who communicates it is relieved of the burden of responsibility," as one psychoanalyst of the arts remarked (Kris, 1952/1964, p. 294, also cf. Jantzen, 1995, p. 168f). Revelations turn theories and opinions into "felt" truths. In retrospect, it seems impossible to say whether mescaline did indeed confirm Prinzhorn in his earlier beliefs, or whether he only framed or reframed it this way later on to make it serve this purpose. In the terms of Figure A, he appears to have intentionally widened one gap, between his experience and his account of it, in order to bridge another one, between himself and the circles that he wanted to impress. The point being that such possibilities become apparent only when taking into account *all* the phases involved in the loop, rather than just one.

Sartre's case, also described in part I, seems different. In him, mescaline catalyzed a deep-seated fear of "the failure of the power of words to control reality" (Haynes-Curtis, 1995, p. 91), but it seems farfetched to relate this fear to a larger, cultural anxiety about language losing its function (though not impossible, given the contemporary fascination with the absurd). In Huxley's case, most of the insights that he credited to mescaline in 1954 were clearly anticipated by his long-standing fascination with mysticism. His sizeable anthology on *The Perennial Philosophy* of 1945 was already focused on demonstrating unity behind the variety of religious experience, and the only really "new" idea in his post-drug worldview was that drugs could open up these realms, which he had always denied before (Jay, 2023, p. 293). But Huxley's search for a common core in mystical experience was far from new. In fact, he was a relative latecomer in a tradition that soared from the 1890s well into the 20th century, playing a major role in the arrival of abstract art, for example (Tuchman, 1986).

Psychedelic drugs indeed present "a fascinating case of the Pygmalion effect," as it was called by Hartogsohn (2020, p. 203). They can make ideas "come alive" and "come true" in ways that feel overwhelmingly "real." But the ideas were there already. They spring from direct suggestion (by a guide, or shaman for example), from topical expectations (provided by an experiment leader, or, before that, by one's peers), or from much deeper down a person's biography and world view that inevitably developed in constant interaction with culture. The line may not be easy to draw, but each individual "set" undeniably *also* stems in large part from the cultural "setting" in which the person grew up and/or chose to belong.

Boosting Change

But both de Quincey and Huxley clearly set something in motion, while Prinzhorn and Sartre did not, or not to a much noticeable extent. The different impacts of their accounts can be attributed to many factors ranging from language, medium, and circulation to perceived credibility and fertile landing grounds. Prinzhorn published his account in a not widely read German magazine, Sartre effectively hid the drug connection in a novel. De Quincey and Huxley on the other hand can be said to have started a new loop, or at least to have redirected an existing one. The point, however, is that they managed to do so *not* primarily because they had unique and inspiring drug experiences, but because they sent an inspiring account of it into a receptive culture where it began to reverberate.

The process is illustrated most dramatically by ethnomycologist Robert Gordon Wasson's trailblazing article "Seeking the Magic Mushroom" in the May 1957 issue of *Life* magazine. In it he introduced the idea of a prehistoric mushroom cult at the base of the world's religions that had somehow been preserved among indigenous Mexicans. This was not what the shaman who gave him the mushroom had told him or believed herself (Jay, 2023, p. 290), but what he wanted to believe it to be and what many readers were willing to accept. The existing cultural set and setting took a hit, and a new feedback loop splintered from it. Quite suddenly, an age-old and culturally deeply ingrained fear for poisonous fungi gave way to a run for magic mushrooms, at least among those susceptible to the message, and started reproducing itself. As Jay noted, this sudden switch in expectation, experience, and interpretation strongly confirms Becker's theory that drug experiences must be both "taught" and "learned" (ibid, p. 289, referring to Becker, 1953).

An even stronger catalyst was Huxley's 1954 essay *The Doors of Perception*. Its impact was to reorient the expectations of countless readers away from model psychosis towards psychedelic or mystical experience. As drug historian Steven Novak observed, "Once Huxley and [his friend and philosopher Gerald] Heard had popularized their psychedelic interpretation, self-selected volunteers arrived primed to have a *Doors of Perception* experience" (Novak, 1993, pp. 109-110). The psychiatrists, therapists, and researchers to whom they arrived were often also inspired by Huxley (ibid., p. 94), which further stimulated the psychedelic set and setting because, as one of them noted, "under LSD the fondest theories of the therapist are confirmed by his patient" (Cohen, 1964, pp. 182-183). The next stimulus came from Leary and his associates who insisted not only on the indispensability of their own LSD "manual," but also on first

reading Huxley, Watts, and Gordon Wasson for the right set to ensure transcendental success (Leary et al., 1964, p. 105 and passim).

A final telling example was catalyzed in a more diffused way, in the late 1960s, by horror stories in the press. "The public's concern about the young and disapproval of drugs made it eager to hear about drug dangers, so the media featured evidence of such dangers, which fueled the public's alarm anxiety and further stimulated its interest in such stories," sociologists Roy Baumeister and Kathleen Placidi observed (1983, p. 39). Not unlike the earlier loop that revolved around model psychosis, scare stories about murder, suicide, genetic damage, and psychosis worked their way into the expectations of (new) users, increasing the number of bad trips, further increasing anxiety and creating even more bad trips. This, in turn, caused users in the early 1970s to avoid risk and take smaller doses to ensure a "good time," gradually changing the "set" emphasis from existential self-discovery to pragmatic hedonism. And because LSD is not very well suited to this later purpose, it eventually fell out of favor (ibid., pp. 45-47, 53; also cf. Bunce, 1979). This particular loop apparently led to its own demise.

Focusing on the 1960s, Hartogsohn called LSD a strange chameleon indeed, "because its modulation fed back into its environment in a feedback loop, meaning that society also changed its colors in response to it" (Hartogsohn, 2020, p. 209). The 1970s demonstrated the same process in a very different manner. And in still other times, without talented influencers to plant the seeds *and* a ready-made (sub- or counter-) culture to serve as fertile soil, not much happened on sociocultural levels at all. Which goes to say that, without culture on both the sending and receiving ends, the medium remains deafeningly silent. It is only natural that revolutionary changes attract most attention, but the amazing stories of new or redirected loops should not be allowed to obscure the more basic general pattern.

Amplifiers

Feedback loops are by definition cyclic and repetitive. The loop shown in Figure A thus seems to function as an echo chamber for bias confirmation, with the drug in the role of amplifier. Indeed, an inventory of the main verbs by which drug historians have characterized the effect of psychedelic drugs shows remarkable agreement. Such drugs "reinforce" (Grinspoon & Bakalar, 1979, p. 184), "catalyze" and "amplify" (Lee & Shlain, 1985/1992, p. 200), "reflect" (Hartogsohn, 2017, p. 10), "magnify and amplify" (Hartogsohn, 2020, p. 10), and "confirm" (Jay, 2023, p. 82). As early as 1860, poet Charles Baudelaire spoke of hashish as "a magnifying mirror" (Baudelaire, 1860/1961,

p. 109), and I have also come across “intensify,” “enhance,” “exaggerate,” “accelerate,” “crystallize,” “radicalize,” and similar verbs indicating more or less the same process.

In 2020, Hartogsohn spoke of non-specific “amplification” as “the psychedelic core fundamental,” composed by suggestibility and intensity. All of these words are inherently related, he argues, “because it is through amplification and magnification that things are manifested or revealed (as in the often-repeated simile of psychedelic drugs as microscopes of telescopes); and it is through suggestibility that they are magnified or amplified” (Hartogsohn, 2020, pp. 209-201; also see part I of this article on the analogies with optical devices). What psychedelic drugs have in common, he concluded, is “their ability to induce experiences that people interpret as highly meaningful,” and this, he thought, could explain their effectiveness in therapy, conveying spirituality, and boosting creativity (ibid., pp. 210-211). This last remark may very well be true, but also distracts from the larger picture that I am trying to bring into focus.

Perhaps a proverbial elephant in the room, this larger picture does not look very transformative. In fact, with amplification or reinforcement as the main mechanism, the whole process appears quite conservative and at odds with the often-heard idea that psychedelics can summon new insights, sudden conversion, and radical transformation. Such insights, conversions, and transformations, however, may not be as new, sudden, or radical as they are claimed to be. Many of them could be “pre-programmed,” with the drug acting (only) as a disinhibiting catalyst, amplifying them to an extent that cannot be ignored. Admittedly, this can be difficult to prove if previous sentiments went unarticulated or even remained subliminal, but over and against the pitfalls of wishful thinking and circular reasoning, there are many relatively clear cases (Prinzhorn, Sartre, Huxley) that confirm that drugs deliver not only on direct suggestion, but also on long-standing private hopes, beliefs, convictions, and fears.

As philosopher Steven Katz noted with respect to (non-drug) mysticism, beliefs first shape the experience and then, as a rule, the experience reaffirms and strengthens those beliefs (Katz, 1978, pp. 35, 59). He spoke of “a dialectic that oscillates between the innovative and traditional,” but that ultimately “maintains,” “reinforces, even exaggerates” canonical authority by (only) “stretching” the truth (Katz, 1983, pp. 3-4, 30; also see Janz, 1995, pp. 85, 91). Also, heresy, by definition, does not transcend tradition but *responds* to it. None of this makes the claimed feelings of insights, conversions, or transformations any less “real,” but it does return them to their contexts and make them less surprising in hindsight. At the same time, it seems to reduce the prospects for both therapy and brainwashing.

Truths

Figure A is supposed to represent a mechanism that functions regardless of content. In fact, the radical "interpretative flexibility" typical of psychedelic drugs (Hartogsohn, 2020, p. 204) allows for the confirmation of any point of view, whether progressive or conservative, dogmatic or heretic, romantic or modernist. It would indeed be much more surprising, and much more difficult to explain, when drug use turned such dispositions into their opposite. Thus, they can support therapy, spiritualism, and creativity, but also anchor, entrench, and radicalize every conceivable other agenda, as Hartogsohn also acknowledged (ibid., pp. 251-254; see also Marks, 1979/1991; Pace & Devenot, 2021; Piper, 2015; Toy, 1980). Toy, 1980; Earlier, anthropologist Dobkin de Rios already somewhat reluctantly admitted that "hallucinogens appear to have been used by regional religious and political leaders for control of political, psychological, and social arenas," to "ensure conformity," and even to foster an ethos of combat and violence (Dobkin de Rios, 1984, pp. 16, 213).

Psychedelic drugs can confirm just about any belief, but the "truths" thus revealed do not stand ipso facto. In fact, using psychedelic experiences as (experiential) evidence for a theory or opinion appears to have been psychedelia's greatest fallacy (as Katz, 1978, argued in connection with mystical experience). The verb "confirm" does indeed need a disclaimer in this respect. Psychedelic drugs "confirm" in a strongly emotional, or "noetic" way, as William James (1902/1985, p. 380) called it, but not in any other, more ordinary sense of the word. Huxley came to believe that psychedelic experience confirmed the reality of reincarnation and extrasensory perception (Novak, 1997, p. 100), but no matter how strongly felt, affective appeals to strong feelings of truth are not the kind of evidence that convinces scientists.

Another telling example is provided by LSD-researcher Stanislav Grof, who noted many reports on "ancestral memories, elements of the collective unconscious, and evolutionary experiences accompanied by phylogenetic flashbacks"; also, he insisted, from "unsophisticated subjects who know nothing about Ernst Haeckel's biogenetic law" or Jungian theory (Grof, 1976, pp. 107, 161; see part I of this article on Haeckel). From this, he (hesitantly) deduced such theories to be true after all (ibid., pp. 167, 172, 212, 241), but this conclusion seems unwarranted. Haeckel's law, for one, was refuted by genetics, which works by variation and selection, not accumulation, making any retrieval or "recapitulation" of phylogenetic evolution a logical impossibility. Rather than shelving Darwin and Mendel, it is more reasonable to return to Grof's earlier position and assume that such experiences do reflect theories that trickled down the popular imagination in some diluted (and sometimes untraceable) form, and then were pos-

sibly amplified and elaborated again by the mind on drugs. Such experiences prove *not* the theory, but the theory's dissemination into culture.

As LSD-therapist Sidney Cohen noted already in the mid-1960s, "The LSD state is, in essence, one of greatly heightened suggestibility" (Cohen, 1965, p. 85). When judgmental attitudes are relaxed, the observing and doubting ego is suspended, and everything takes on a "realer than real" significance, an overwhelming faith in the truth and reality of experience can turn any conjecture into certainty (ibid., pp. 190, 215; also Carhart-Harris et al., 2015). And so, inevitably, reports of meaningful insight can be met with stories of pathetic absurdity, such as that of the aspiring mystic on hashish who, in 1896, approached poet William Butler Yeats "with a piece of paper on which he had drawn a circle with a dot in it, and pointing at it with his finger he cried out, 'God, God!'" (Yeats, 1961, p. 282). Or the art gallery owner who was offered a drawing with nothing but a wobbly triangle on it. When met with reserve, the artist became angry, arguing that it represented the sum total of all his previous work, that he had frantically searched for it, and that "it" had revealed itself to him when on LSD (Hartmann, 1974, p. 222).

Loop Recognition

Regardless of the quality of some results, the mechanisms as such cannot be dismissed. Much has been gained already from recognizing the role of set and setting. In retrospect, however, Leary's assertion that set and setting account for "ninety-nine percent (Leary, 1962/1966, p. 115) or even "all" (Leary & Alpert, 1962, p. xii) of the specific response to psilocybin was overly optimistic about the malleability of these drugs. It served to drive home his point about the importance of a guide, topical suggestions, and environmental cues, but turned too much of a blind eye to still other non-drug factors that prove much more viscous, such as a person's background and worldview, and the cultural set and setting that both users and researchers inevitably bring along. Cross-cultural comparison had already pointed in this direction, but perhaps Western Modernism's insistence on its own truths blinded many researchers to the particularity of their own worldview.

In their 1966 *Varieties of Psychedelic Experience*, for example, psychologists Robert Masters and Jean Houston professed to offer nothing but phenomenology, yet also stated unequivocally that LSD can provide "a novel ability to separate the false from the true, the authentic from the inauthentic, and the essential from the mountainous accumulations of superfluities" (Masters & Houston, 1966, p. 185). Today, such a statement seems typical of the Modernist desire for a "return to the real," a desire that they

probably shared with and/or conveyed to those they prepared for, guided through, and subsequently interviewed about LSD in yet another perfect loop. Similarly, Grof noted that, in a certain phase of the LSD experience, "a simple and uncomplicated way of life in close contact with nature appears to be the most desirable mode of existence" (Grof, 1976, p. 139), as if echoing a definition of primitivism. As Katz vehemently insisted, "There are NO pure (i.e. unmediated) experiences" (Katz, 1978, p. 26). And if there were, they would still have to be mediated to become be accessible to others. It makes one wonder how many researchers were - or indeed still are - inspired by Modernist, primitivist, Huxleyan, ecumenical, Platonist, lapsarian, or even Haeckelian dispositions. Or would be able to recognize such dispositions in others as well as themselves.

The identification in part I of what I have called the Modernist disposition, worldview, or paradigm hopefully leads to a stronger awareness of both the role of culture in drug experiences (Figure 1, in ten Berge, 2025) and the feedback and looping mechanisms involved (Figure A). With respect to their "mind-manifesting" qualities, drug experiences show the human mind to be both an individual *and* an enculturated entity. And following up on Leary, Alpert, and Metzner's distinction between immediate and long-range set (1964, p. 103), drug experiences can be said to manifest (and magnify) both the user's personal set, ranging from topical expectations to more profound and possibly nonconscious expectancies, *and* the collective set or culture that helped shape such expectations and expectancies. Yet this may still be too binary. A whole range of levels of mediation needs to be defined and articulated.

The import of culture, furthermore, extends beyond both set and experience into the phase of articulation, when drug experiences are cast into forms that must fit existing discourses to be intelligible. Here they can be made to serve many purposes, from pleasing one's therapist to flouting authority, and from entrenching prior beliefs to boosting new ones with the aura of revelation. Sometimes it seems that the "mind-manifesting" or revelatory moment does indeed occur only in the post-drug phase, in trying to *make* the experience "mean" something. Either way, it is these articulations only that feed back into culture and other people's expectations, provided they have sufficient impact and a fertile soil to fall on.

Together, all four phases constitute a loop that can be said to have a life of its own. A loop can be born, grow, accelerate, peak, meet obstacles, slow down, take a turn, split up, converge, or die, or go underground to re-surface at some other time. It can have a stable and uneventful, even invisible, life because of widespread consensus or within the care and protection of a subcultural niche. It can coexist, compete, and blend with other loops in various social domains such as politics, spirituality, cre-

ativity, and technology (as summarized by Hartogsohn, 2020, pp. 216-222), as well as with older loops from the past, such as the Romantic drug discourse that may have been dethroned by the Modernist one, but never completely disappeared.

Cultural Conditioning

For a long time, considerations such as the above have received little attention within the field of drug studies. The reasons for this may be obvious but are no excuse. Pharmacology's preference for "pure" effects, without the "contaminating effects of cultural suggestion" (Wallace, 1959, p. 67), for example, appears to be a mirage in this field. Excluding culture, or "nurture," as "noise" presents a near-impossibility. This can be regretted, but not ignored, and when embraced, could yield greater understanding. The amazingly high levels of preconditioning, suggestibility, volunteer bias, and feedback would render experimental data quite worthless in "normal" science (Novak, 1993, pp. 109-110), but when studying psychoactive drugs these factors can or should constitute the primary object of study. It is certainly worth investigating whether drug-induced heightened suggestibility (Carhart-Harris et al., 2015) plus drug-induced meaning-enhancement (Hartogsohn, 2018) equals an active super-placebo, as has been suggested with both hope and concern (Dupuis & Veissière, 2022). And whether this picture of an essentially empty amplifier is indeed the whole picture.

Another obstacle may be that the concept of "set and setting" starts to blur by the inclusion of culture, not only because culture fits both terms, but also because the individual self can hardly be delineated from the enculturated self. Thus, this most promising instrument gets blunted while trying to sharpen it and needs further refining or redefinition. Third, factoring in something as diffuse and unmeasurable as "culture" can cause complications beyond the control of any researcher, but then again, ignoring it can also cause serious distortion. Finally, one might object that it promotes a relativist view of knowledge, but this is decidedly untrue insofar as it offers a more inclusive view of various truth-claiming discourses.

The gain in adopting a mechanism-diagram like Figure A is that it does not invalidate a content-diagram like Figure 1 (in ten Berge, 2025) but incorporates and historicizes it as one particular "cultural set and setting" among many. And as Lovejoy noted long ago, "the utility of a belief and its validity are independent variables; and erroneous hypotheses are often avenues to truth" (Lovejoy, 1936/1974, p. 333). The theory of the innocent eye may have been a myth, because *seeing* does not come before and cannot be disentangled from *interpreting* (Gombrich, 1960/1991, pp. 246-278; Steer, 1989; Lou, 2018), but as a colleague of mine said of the Impressionist artists'

belief in it: "*forgetting* represented a fantastic wish, the very extravagance, the impossibility of which, serves to underline the strength of the goal of renewal… The dream of innocence was both a rhetorical strategy, an index of serious commitment, and a principle of considerable motivating power" (Isaacson, 1994, p. 435). Myth or not, its impact on art history was immense, not only in getting Impressionism accepted, but also in the more important sense of returning to art a sense of purpose and opening doors for subsequent developments.

Much the same can be said about psychedelia. If, in retrospect, some, or most, of its assumptions proved erroneous and some, or most, of its goals unattainable, this does not alter its historical impact or the perspectives that it opened. Its recognition of the importance of set and setting, for one, represents a major contribution to our understanding of the workings of psychoactive drugs. Half a century later we can also recognize how deeply rooted psychedelia was in a particular worldview and how limited its sense of set and setting still was. Although cross-cultural differences are usually acknowledged, albeit somewhat gratuitously, the cultural components of set and setting within Western culture itself seem to have gone largely unnoticed by those participating in it. It is easy enough to inquire after concrete expectations such as a "*Doors of Perception* experience" to trace expectations, but more general and profound sentiments like a primitivist aversion to artificiality or a Modernist longing for purity are less easily recognized. And so, if the 1960s believed that LSD "allowed you an objective look at your own conditioning" (Stevens, 1987, p. 246), then cultural history can maybe help us navigate our collective conditionings.

Declaration: The author declares is no conflict of interest.

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Retour au Réel, Partie II : Boucles de Rétroaction Culturelle dans les Expériences avec Drogues Psychoactives

Jos ten Berge

Résumé: Ayant identifié une vision typiquement moderniste de ce que « font » les drogues (psychédéliques) dans Retour au réel, Partie I, cet article de suivi discute certaines implications de cette observation pour les études sur les drogues et pour la notion de set and setting. Un schéma en quatre volets est proposé : set and setting culturel, set and setting individuel, l'expérience de la drogue et son articulation avec la culture sont considérés comme des éléments interconnectés d'une boucle de rétroaction. Différents processus dans cette boucle sont décrits et illustrés par des exemples historiques. Puisque l'effet principal des drogues

(psychédéliques) est d'amplifier, leur usage tend à renforcer les croyances préexistantes. Les boucles de rétroaction étant par définition cycliques et répétitives, leur effet au niveau socioculturel doit être également conservateur. Les transformations surviennent surtout lorsque des expériences de drogues sont articulées de manière marquante dans des environnements réceptifs. Enfin, il est suggéré que les études sur les drogues nécessitent une connaissance minimale de l'histoire culturelle.

French translation by Antoine Bioy, Ph. D.

Rückkehr zum Realen, Teil II: Kulturelle Feedbackschleifen bei psychoaktiven Drogenerfahrungen

Jos ten Berge

Zusammenfassung. Nachdem in „Rückkehr zum Realen, Teil I" eine typisch modernistische Sichtweise dessen identifiziert wurde, was (psychedelische) Drogen „bewirken", werden in diesem Folgeartikel einige der Implikationen dieser Beobachtung für die Drogenforschung im Allgemeinen und für den Begriff von Set und Setting im Besonderen diskutiert. Es wird ein viergliedriges Diagramm vorgeschlagen, in dem das kulturelle Set und Setting, das individuelle Set und Setting, die Drogenerfahrung und ihre Rückkopplung in die Kultur als miteinander verbundene Elemente einer Rückkopplungsschleife betrachtet werden. Verschiedene Prozesse innerhalb dieser Schleife werden beschrieben und anhand historischer Beispiele veranschaulicht. Da die Hauptwirkung von (psychedelischen) Drogen in einer Verstärkung besteht, folgt daraus, dass ihr Konsum dazu neigt, bereits bestehende Überzeugungen zu verstärken. Und da Rückkopplungsschleifen per Definition zyklisch und repetitiv sind, müsste ihre Wirkung auf soziokultureller Ebene ebenfalls konservativ sein. Auf dieser Ebene sind transformative Effekte eher auf wirkungsvolle Beschreibungen von Drogenerfahrungen in empfänglichen Umgebungen zurückzuführen. Abschließend kommt dieser Artikel zum Schluss, dass Drogenstudien ein Mindestmaß an Kenntnissen der Kulturgeschichte erfordern.

German translation by Eberhard Bauer, Ph. D.

Retorno ao Real, Parte II: Feedback-Loop Cultural em Experiências com Drogas Psicoativas

Jos ten Berge

Resumo:. Tendo identificado em "Return to the Real, Part I" uma visão tipicamente modernista do que as drogas (psicodélicas) "fazem", este artigo complementar discute algumas das implicações dessa observação para os estudos sobre drogas em geral e para a noção de set e setting em particular. Propõe-se um diagrama quádruplo no qual o set e setting culturais, o set e setting individuais, a experiência da droga

e sua articulação de volta à cultura são vistos como elementos interconectados em feedback-loop. Diferentes processos dentro desse loop são descritos e ilustrados com exemplos históricos. Como o principal efeito das drogas (psicodélicas) é amplificar, segue-se que seu uso tende a reforçar crenças anteriores. Uma vez que feedback-loops são, por definição, cíclicos e repetitivos, seu efeito em um nível sociocultural também teria que ser conservador. Nesse nível, os efeitos transformadores seriam devidos a articulações impactantes de experiências com drogas em ambientes receptivos. Finalmente, este artigo sugere que os estudos sobre drogas requerem um conhecimento mínimo de história cultural.

Portuguese translation by Antônio Lima, Ph. D.

Retorno a lo Real, Parte II: Circuitos Culturales Retroactivos en las Experiencias con Drogas Psicoactivas

Jos ten Berge

Resumen. Tras identificar una visión típicamente modernista de lo que "hacen" las drogas (psicodélicas) en *Retorno a lo Real: Parte I*, este artículo analiza algunas de las implicaciones de esta observación para el estudio de las drogas en general y la noción de actitud y entorno en particular. Se propone un diagrama cuádruple en el que la actitud y el entorno culturales, la actitud y el entorno individuales, la experiencia de la droga, y su articulación con la cultura son elementos interconectados en un circuito de retroalimentación. Se describen diferentes procesos dentro de este lazo ilustrados con ejemplos históricos. Ya que el principal efecto de las drogas (psicodélicas) es amplificar, se deduce que su consumo tiende a reforzar las creencias previas. Y ya que los circuitos de retroalimentación son por definición cíclicos y repetitivos, su efecto a nivel sociocultural también tendría que ser conservador. A este nivel, los efectos transformadores se deben más bien a las articulaciones impactantes de las experiencias con drogas en entornos receptivos. Por último, este trabajo sugiere que los estudios sobre drogas requieren un conocimiento mínimo de la historia cultural.

Spanish translation by Etzel Cardeña, Ph. D.

Psychedelics as Non-Specific Amplifiers: Cultural Feedback Loops and Implications for Psychedelc Science. A commentary on *Return to the Real* by Ten Berge[1]

Anastasia Ruban
Cardinal Stefan Wyszyński University

Michiel van Elk
Leiden University

Abstract: *Return to the Real* describes how culturally prevalent narratives shape psychedelic experience. Building on Ten Berge's two-part analysis, our commentary argues that psychedelic effects are best understood within cultural feedback loops linking cultural set and setting, individual expectations, experience, and its articulation back into culture. On this view, psychedelics operate primarily as non-specific amplifiers and catalysts that magnify pre-existing beliefs, rather than revealing unmediated insights. We situate this thesis in relation to contemporary neuroscientific models of the psychedelic experience (CSTC, REBUS), humanistic and anthropological accounts, and evidence on socio-political belief change and clinical outcomes. We show how the apparent "disruptive" effects of psychedelics can often be reinterpreted as context-dependent intensifications. We then identify methodological and ideological obstacles to studying culture in psychedelic science and propose a mixed-methods program, including reflexivity, discourse analytics, neurophenomenology, and naturalistic cohort comparisons, to operationalize cultural variables. Recognizing culture's constitutive role has ethical and epistemic consequences including caution with respect to metaphysical claims and attention to how psychedelics induce change in clinical settings. By bridging the humanities and cognitive neuroscience we can build a cumulative, culture-sensitive science of psychedelics.

Keywords: psychedelics; set and setting; discourse analysis; neurophenomenology

1 Address correspondence to Michiel van Elk, **m.van.elk@fsw.leidenuniv.nl**

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Highlights

- Psychedelics operate as non-specific amplifiers magnifying latent beliefs instead of unveiling unmediated truths.
- Cultural feedback loops (set, setting, experience, and testimony) co-produce outcomes and reinforce narratives.
- This perspective fits with neural theories such as CSTC/REBUS that argue for context-dependent intensification of psychedelic experiences.
- We propose mixed methods—reflexivity, discourse, neurophenomenology, naturalistic cohorts—to model culture in research.

In *Return to the Real,* Jos ten Berge provides a compelling historical perspective on how culturally prevalent ideas and narratives shape the psychedelic experience. A central premise of the Modernist Set & Setting in psychoactive drug experiences is that psychedelic experiences are in essence mind-revealing and present us with a deeper reality and unleash the veils of our clouded perception. Ten Berge argues that this perspective originates from a perennialist view on mystical experiences, according to which the diversity of mystical experiences reported across different religions, times, and cultures can be traced back to a common core, an unmediated experience that is ineffable and noetic. Ten Berge moves on to illustrate that psychedelic-induced mystical experiences in turn have ripple-effects on culture and society, as they provide an embodied experience of culturally transmitted beliefs and thereby function as reinforcers of these beliefs. This in turn, instantiates *cultural feedback loops* whereby the individual and cultural set and setting and the psychedelic experience are mutually related and reinforcing.

Next to calling attention to the importance of research on the cultural and historical context in which psychedelic experiences take place, ten Berge's account also critically questions the potential of psychedelic substances to veridically induce new insights, beliefs, or ideas. The view that ten Berge advocates is that psychedelics seem to act as non-specific amplifiers and catalysts that tend to amplify and magnify both conscious and unconscious latent processes. This is consistent with ideas previously articulated about psychedelics' effects in the domain of socio-political worldviews (Pace & Devenot, 2023; Sanchez Petrement, 2023), in psychedelic-assisted psychotherapy (Langlitz et al., 202; Noorani, Bedi & Muthukumaraswamy, 2023), and in historical analyses of set and setting that emphasize the role of context in shaping the nature of psychedelic effects (Hartogsohn, 2017).

Ten Berge's viewpoint critically challenges the currently widely prevalent belief that psychedelic experiences function as "disruptive technologies" that can induce change at personal, societal, and cultural levels. This idea has been at the basis of the current psychedelic revival, where we witness an increased interest in investigating the potential of psychedelic substances for the treatment of depression, end-of-life anxiety, and addiction (e.g., van Elk & Yaden, 2022). Central to the so-called psychedelic-peak therapy approach, which can also be traced back to early research in the 1950s and 60s (Oram, 2018), is the idea that psychedelic-induced mystical experiences are key in triggering a process of psychological change and insight. Indeed, several clinical studies provide preliminary evidence for the clinical efficacy of psychedelic therapy (see however van Elk & Fried, 2023) and meta-analyses show that the intensity of psychedelic-induced mystical experiences is predictive of treatment outcomes (Kangaslampi, 2023). This seems to suggest that psychedelic-induced mystical experiences *can* induce change e.g., in mental illness. Also, outside of a therapeutic context, contemporary studies seem to suggest that psychedelics induce radical changes in one's beliefs, values, and personality. For instance, some studies have suggested that a single psychedelic experience can result in decreases in neuroticism in depressed patients (Erritzoe et al., 2018), increased pro-environmental behavior (Forstmann et al., 2017) and altered metaphysical beliefs away from materialist and reductionist perspectives (Timmermann et al., 2021).

How can these apparently contradictory findings be reconciled with the perspective that psychedelics merely act as non-specific catalysts in cultural feedback loops? And what are the implications of the historical perspective outlined by ten Berge for contemporary research on psychedelics? In this commentary we would like to address these questions by discussing: (1) the alignment between ten Berge's viewpoint and contemporary psychedelic research, (2) the relation between ten Berge's perspective and other conceptual frameworks in psychedelic research, (3) challenges in conducting research on the notion of socio-cultural feedback loops, and (4) solutions in terms of tools and methods that can be applied to take the role of cultural and individual set and setting into account. We focus primarily on the implications of ten Berge's work for psychology, psychopharmacology, and neuroscience, since academic and mainstream discourse on the acute and long-term effects of psychedelics are largely shaped by evidence from these fields.

Consonance Between *Return to the Real* and Contemporary Research

First, we would like to draw a parallel between Ten Berge's account and contemporary psychedelic neuroscience. Interestingly, the notion that psychedelic experienc-

es primarily act by releasing the filter of our perception or by "inhibiting the inhibition" – as ten Berge puts it – is central to theories of the neural mechanisms underlying psychedelics. According to the so-called cortico-striatal-thalamic-cortical (CSTC) model (Vollenweider & Preller, 2020), psychedelics primarily act by inhibiting the filtering function of the thalamus - a deep structure in the brain – thereby resulting in an increased flow of bottom-up signaling of interoceptive (i.e., related to the body) and exteroceptive (i.e., related to the environment) information. This mechanism has been proposed to account for the enhanced sensory experiences that people report after having taken a classical psychedelic, such as enhanced tactile sensitivity or more saturated color perception. According to another prevalent neurobiological model (ReBus; Carhart-Harris & Friston, 2019) psychedelics increase bottom-signaling by inhibiting high-level priors in prefrontal regions that normally constrain our perception and cognition. The net result is an increased sensitivity to bottom-up prediction error signaling, which in turn can amplify the effects of the current set and setting. Both the CSTC and the REBUS model thus converge with the idea that psychedelics function as non-specific amplifiers. We note that at the same time according to these models, it can be argued that if psychedelics relax beliefs or "filters" then we can see things "as they are," that is without cultural constraints. Therefore, instead of a non-specific amplifier view, the REBUS and CSTC models can also be considered in line with the idea that psychedelics facilitate a more veridical perception of the world. Key to this discussion is how a prediction is defined and whether and how predictions are culturally embedded (see also Safron et al., 2024).

Interestingly, ten Berge's view also resonated with an idea put forward by Noorani, Bedi, and Muthukumaraswamy (2023), who introduced a similar concept of *dark loops* and *psychedelic chemiosocialities*. Dark loops are the feedback cycles in which research participants' experiences shape the expectations of future participants. These loops are embedded in chemiosocialities – communities that form around shared chemically-induced experiences. Such dynamics are particularly salient in randomized controlled trials (RCTs), where participants often come into studies with preconceived narratives shaped by media, peer groups, and personal research. The authors argue that these expectations can significantly affect study outcomes. Dark loops resemble the dynamics proposed by ten Berge (Part II, Figure A), as both highlight the interdependence between participants' accounts of psychedelic experiences (e.g., personal testimonies, published results) and cultural factors (e.g., chemicosocial communities of psychedelic users or patients).

Evidence from other research fields is also consonant with the ideas proposed in *Return to the Real*. In his book *Psychedelic Experience* (2023), the philosopher Aidan Lyon makes a compelling case, based on a review of the available empirical ev-

idence, that experiences induced through the ingestion of psychedelic substances are *mind-revealing*, by making unconscious mental content available. Interestingly, he argues that other methods, including meditation or yoga, can yield similar effects and hence that the term psychedelic experience, applies more broadly to any mind revealing experience. As another example, the anthropologist David Dupuis conducted research in the Takiwasi Retreat about the use of ayahuasca for the treatment of drug addiction (Dupuis, 2022). Using ethnographic data collected over 18 months of fieldwork, he describes the process of what he dubs the socializ*ation of hallucinations*. This process involves the shaping of expectations, through carefully crafted rituals, symbolic elements, and sensory stimuli. Discussion groups after the ayahuasca experience help train attention and the categorization of perception (e.g., in terms of evil vs. benevolent spirits), which in turn have downstream effects on subsequent experiences. However, some participants were in doubt about the nature of "demons," showing that they could deliberately decide to accept or reject these beliefs. As Dupuis notes (2022, p. 11): "Unlike factual (or intuitive) beliefs, which are more intuitive because they are attached to perceptual anchors that tend to make them unquestionable, the content of representational beliefs is not entirely grasped by those who hold them. Insofar as they are transmitted by authorities, they are nevertheless assumed to be true and preserved by means of "quotation marks." Over time, Dupuis argues that psychedelic experiences act as "powerful vectors for cultural transmission": the psychedelic visions frequently align with established cultural and religious narratives and reinforce Catholic and shamanic beliefs. This research provides a good illustration of how feedback loops between set and setting and the psychedelic experience operate in practice.

We also note the filter-metaphor that features centrally in *Return to the Real*, dating back to the perennialist philosophy of Aldous Huxley, has also been at the basis of other contemporary models of mystical experiences, such as Kelly's ROSTA (Resonant Opening to Subliminal and Transpersonal Assets) model (see for instance: Sawyer, 2022; who places this model in the context of psychedelic research). Shortly, this view entails that psychedelic-induced mystical experiences release the filter function of our perceptual and cognitive faculties, thereby not only facilitating a more veridical perception of the material world, but also providing us access to "ultimate reality" during a mystical experience. Irrespective of whether one agrees with the ontological claims associated with this perspective, both views align in their claim that psychedelics open the "reducing valve."

As a final example of alignment, we follow up on ten Berge's (2025, p. 197) remark that "Within the proposed feedback loop, relating the individual set back to culture

may be the hardest gap to bridge for researchers. It involves distinguishing the personal from the cultural, which is no easy task." In fact, such a distinction features centrally in a model that also incorporates the idea of cultural feedback loops in shaping religious experiences. The interactive religious experience model (IREM; van Leeuwen & van Elk, 2019) argues that culturally prevalent religious beliefs have downstream effects on the agency-detection experiences that believers seek out and report. These religious experiences are key in transforming *culturally prevalent religious beliefs* (e.g., "Jesus died for our sins") into *personal religious beliefs* (e.g., "Jesus died for my sins"). Personal beliefs in turn feed back into cultural beliefs, as personal stories about supernatural encounters are readily incorporated in the religious canon. Although this model distinguishes between personal and cultural levels - a distinction that as we will see later is problematized in contemporary humanist approaches to psychedelics - it acknowledges the complex and dynamic interplay between both levels, whereby personal experiences feedback into cultural narratives and vice versa. IREM cites a lot of relevant empirical studies, from the field of the cognitive science of religion, anthropology, and evolutionary psychology, which provide evidence for the role of feedback loops between personal and cultural beliefs and experiences. Although IREM does not include psychedelic experiences, it could be expanded by showing how the concepts introduced in *Return to the Real* can be operationalized to become more tractable (more on this in Section 3).

Dissonance Between *Return to the Real* and Contemporary Perspectives

At the same time, some findings appear to conflict with the idea that psychedelics work as amplifiers of existing ideas and rather suggest that they are disruptive technologies inducing societal and personal change. How can this be reconciled with the findings outlined above? We argue that a closer look at the available evidence questions the idea that psychedelics induce change in personality or beliefs, but that the evidence *is* compatible with the idea that existing traits and beliefs are amplified instead.

Take for instance the example of psychedelic-induced changes in metaphysical beliefs (Timmermann et al., 2021). In this study, participants indicated their agreement with a couple of metaphysical statements pertaining to the nature of reality, including belief in materialism, dualism, idealism, and panpsychism at different time-points: at baseline and 4-weeks and 6-weeks following a psychedelic experience. The abstract of the paper reads "Results revealed significant shifts away from 'physicalist' or 'materialist' views, and towards panpsychism and fatalism, post use." This suggests

a radical change in people's metaphysical beliefs. A closer look puts the data in a different perspective: the psychedelic experience seems to shift existing beliefs in a more extreme direction (albeit in a limited matter, i.e., the effect sizes of the observed shifts in beliefs are small) but does not change the valence or directionality of existing beliefs. In other words: it does not seem to be the case that across-the-board extreme materialists, after a psychedelic experience suddenly, become panpsychists. The data suggest that people who already endorse panpsychist views in the first place, become somewhat more extreme in their panpsychist beliefs - also depending on the cultural context in which participants find themselves. Of course there may be exceptions to this rule: some individuals may show radical psychedelic-induced worldview changes. In these cases, revisions of one's worldview could be explained by a latent or unconscious predisposition to specific worldviews. For instance, a person may have left a supernatural worldview during adolescence for an atheistic framework, but supernatural beliefs may resurface depending on the set and setting in a psychedelic experience.

Other observations align with the idea that psychedelics result in the strengthening of existing beliefs, rather than in a revision of one's belief system. For instance, as an alternative to the REBUS model, Saffron and colleagues have proposed the SEBUS model, according to which psychedelic substances, especially at lower dosages, can result in a strengthening rather than a loosening of prior beliefs (Safron et al., 2024). Also, contrary to the idea that psychedelics increase openness and thereby will foster a more open, tolerant and inclusive society, a scrutiny of the evidence indicates that psychedelics merely act as "politically pluripotent" non-specific amplifiers, that can result in more extreme conservatism and authoritarian worldviews in some settings and users (Pace & Devenot, 2021). Regarding the effects of psychedelics on personality change, a lot of the research is cross-sectional and does not allow causal inferences and hence caution is warranted when interpreting these results. Especially because the few experimental studies that have been conducted are inconclusive regarding the effects of psychedelics on personality change – at best, the effects appear context-dependent (Weiss et al., 2023). Whereas some findings can be reconciled with a non-specific amplifier view, we would like to point out that research on psychedelics in other disciplines starts from fundamentally different assumptions about the effects of psychedelics and the relation with the broader cultural setting (Kiverstein et al., personal communication). According to what we dub the *analytical view* - a framework that is dominant in research on neuropharmacology and experimental studies - psychedelics exert unique effects that occur irrespective of the socio-historical context in which they are used.

For instance, elementary and complex forms of visual imagery in response to psilocybin or ayahuasca tend to be characterized by substance-unique patterns that

in turn can be explained based on the structural and functional organization of the visual cortex (e.g., Aqil & Roseman, 2023). Similarly, there are predictable and dose-dependent effects of classical psychedelics on space- and time-perception that generalize across different settings. Research within this analytical tradition seems to clash with the Modern approach characterized by Ten Berge, by conducting experimental research to establish the unique effects that psychedelic substances exert, and the causal-mechanistic pathways involved. Further, Graziosi et al. (2023) suggest that at least some subjective effects of psychedelics, such as encounters with entities/gods or feelings of sacredness, occur across diverse settings and populations. At least some of the effects of psychedelics may thus be independent of the context in which they are administered - and hence these effects could act as independent causal vectors of cultural change.

Challenges for Contemporary Research to Assess Culture, set, and Setting

The relevance of *set and setting* for the individual and societal consequences of psychedelic experiences is widely acknowledged by scholars in the humanities and social sciences (Devenot, 2023; Hartogsohn, 2017; Langlitz et al., 2021; Noorani et al., 2023). However, cultural context is still rarely considered in the design or interpretation of psychological, neuropsychological, or psychopharmacological research on psychedelics. Ten Berge identifies several key reasons for this. First, there is a prevailing desire to define the effects of psychedelics as stable across contexts, especially in research on neuropharmacology and psychiatry, where researchers try to isolate the effects of a single substance from the set and the setting in which it is administered. Second, some psychedelic researchers, influenced by the legacy of 1960s scholarship, continue to uphold the idea of psychedelics as unlocking a universal, perennial mystical experience. Third, practical obstacles – such as the complexity of integrating cultural variables into empirical studies – further hinder efforts to account for cultural factors.

Beyond these factors, additional ideological and practical barriers contribute to the marginalization of cultural factors in psychedelic research. Ideologically, both researchers and participants bring their own cultural backgrounds into the research process, often unconsciously incorporating implicit biases. Because culture is so deeply internalized within individuals that it tends to be invisible to those immersed in it (Bourdieu, 1977; Hall, 1973), these biases can be difficult to identify or articulate. Furthermore, most prominent psychedelic researchers come from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Henrich & Heine, 2010), which

increases the likelihood that culturally specific assumptions go unexamined. For example, the dominant framing of psychedelics as psychiatric treatments reflects a particular worldview – one that defines psychological distress as an individual health issue with neurochemical or psychological roots, requiring medical intervention. Gearin and Devenot (2021) argue that this individualistic framing stands in tension with alternative approaches that address the socio-economic and relational dimensions of mental health.

Cultural biases are also evident in the selection of research questions, theoretical frameworks, and measurement tools. Commonly studied psychedelic effects, such as ego dissolution (i.e., the subjective experience of reduced or lost awareness of the bodily and the narrative self; Nour et al., 2016), mystical experience, and enhanced emotionality or insight, are frequently proposed as mechanisms underlying the therapeutic benefits of psychedelics (Kangaslampi, 2023, Kałużna et al., 2022). However, other significant aspects of the psychedelic experience, such as travel across time and space, taking on the perspective of non-human entities (e.g., animals, spirits, or other people), or the sensation of being (re)born, are largely neglected in quantitative research (Gearin & Devenot, 2021; Graziosi et al., 2023). Why are some experiences studied more often than others? The research instruments we develop and the questions we ask are not culturally neutral; they rest on culturally embedded assumptions about what psychedelics do, which aspects of experience are most relevant, and what qualifies as valid evidence. In this sense, the dominant methodology in psychedelic science reflects only one of several possible ways of producing knowledge, namely a mostly Western compartmentalized view.

This relates to another issue in the field: empirical psychedelic science often fails to engage with humanistic perspectives that could help contextualize and expand its cultural scope. Thus, while humanities scholars engage with and contextualize findings of empirical (e.g., psychological, clinical, or neuroscientific) psychedelic studies within a cultural framework (e.g., Gearin & Devenot, 2021; Langlitz et al., 2021), psychological or neuroscience researchers rarely do this themselves. As a consequence, socio-cultural context is overlooked while planning and conducting research, interpreting data and the communication of results to broader audiences. The integration of cultural context into psychedelic research remains thus a significant challenge, partly because the necessary interdisciplinary methodologies are still underdeveloped and unfamiliar within the field.

Ideological barriers reinforce the practical way in which research is being conducted. Most contemporary research in psychedelics is rooted in the metaphysics

of individualism, what Karen Barad critiques as an atomistic metaphysics that treats the world as composed of independent entities with inherent, preexisting properties; instead, she argues that relata do not preexist their intra-actions—properties and boundaries are enacted within specific phenomena (Barad, 2007). Within this framework, there is a tendency to define the effects of psychedelics as stable and replicable across all (or at least medical) contexts. This perspective reflects the assumptions of the dominant scientific paradigm and has led to significant advances in (psycho)pharmacology. Moreover, it aligns with regulatory requirements that demand standardized evidence to justify any change in the legal status of psychedelics (for critique of individualized approach in psychedelic science and its entanglement with regulatory practices; see Hauskeller, 2022). At the same time, an individualistic ontology stands in tension with culture-sensitive and relational perspectives, which understand people not as isolated units but as interdependent with their cultural environments. These two perspectives – one emphasizing individuality, generalizability, and standardization, the other emphasizing relationality and context – are difficult to reconcile as they rest on fundamentally different assumptions.

Individualistic and quantitative frameworks are more readily applicable than relational, community-based, or qualitative approaches, as the tools for standardization and universalization are more readily available. Given these ideological and practical challenges, the question arises: how might psychedelic research evolve to better incorporate the complexity of the cultural context?

Solutions: Incorporating Cultural Feedback Loops in Psychedelic Research

To advance a culture-sensitive approach, we can begin by identifying the feedback loops through which culture shapes – and is shaped by – psychedelic experiences and their interpretations. But how can researchers begin to map these loops in practice? Quantitative methods, such as the use of scales or standardized test batteries, while allowing for standardization, often rely on predefined categories that may inadvertently constrain our understanding of emerging phenomena. Qualitative methodologies – such as ethnographic studies, in-depth interviews, and (neuro)phenomenological approaches – may offer richer insights into how cultural frameworks influence both acute experiences and long-term outcomes. For example, Timmerman et al. (2023) described how a neurophenomenological approach can be used to study non-ordinary states of consciousness and deepen understanding of neuroscientific data by using subjective experiences (for further discussion on how this can apply to the study of anomalous experiences more broadly, see e.g., Cardeña & Pekala, 2014).

Further, analysis by Graziosi et al. (2023) show how qualitative methods can complement quantitative findings, offering a broader understanding of acute psychedelic effects within and beyond WEIRD contexts. Accordingly, in the following sections we propose mixed-methods strategies, including both quantitative and qualitative methods, to better account for the role of culture in psychedelic's acute and long-term effects.

Reflexivity in Psychedelic Research

Reflexivity can be a starting point for culture-sensitive psychedelic research: the practice of reflecting on how our own assumptions, positions, and cultural backgrounds shape the way we design studies, interpret data, and communicate findings. By engaging in reflexivity, researchers can begin to bring to light the implicit biases that guide their scientific inquiry. Jamieson, Govaart, and Pownall (2023) have proposed concrete ways to implement reflexivity in quantitative studies and offer examples of how reflexivity can be practiced in research. In the context of psychedelic research, this might involve asking questions such as: Where do I gain my knowledge about psychedelics? What beliefs do I hold about their appropriate use or regulation? How do I evaluate the legitimacy of various belief systems within the field? Why did I choose to study this component of the psychedelic experience? These questions might be addressed formally in a separate section in the paper, for example, in positionality statements (see: Oswald, 2024 and Savolainen et al., 2023 for controversies around positionality statements; Karhulahti, 2024 and Zembylas, 2025 for guidance on implementation of positionality statements). If one does not wish to disclose one's positionality formally, informal engagement in reflexivity, such as thinking reflexively during the research process or keeping a journal, can help reduce or acknowledge biases.

Reflexivity becomes especially relevant when collecting and interpreting empirical findings. As noted earlier, certain facets of the psychedelic experience, such as mystical experiences, have been associated with positive treatment outcomes in psychedelic-assisted psychotherapy. A similar pattern has emerged with ego dissolution: its intensity is likewise correlated with reductions in depression and other symptoms (Kałużna et al., 2022). This result might be framed in terms of evidence of a therapeutic mechanism, rendering ego dissolution a desirable effect of psychedelics (see Gearin & Devenot, 2021 for the analysis of public discourse around ego dissolution). Yet such interpretations are not culturally neutral. Historically, ego dissolving practices, such as meditation, have been appropriated for problematic purposes – such as by Nazi ideologues interested in suppressing individual morality for military ends (Gier, 2014; Victoria, 2022). Likewise, Carl Jung cautioned against reckless engagement with uncon-

scious material through psychedelics or spiritual practices. He believed ego continuity was necessary, as it serves as a mediator between the unconscious and conscious, essential for successful integration of unconscious experiences (Sopanen, 2022). In this context, a weakened ego alone might not lead to healing or insight, but rather to fragmentation, confusion, or psychological distress. These cases underscore the importance of viewing seemingly "objective" findings through a culturally aware and critical lens. Reflexivity thus invites researchers to question taken-for-granted assumptions about what constitutes a "beneficial" psychedelic effect. It encourages inquiry such as: Why do I believe ego dissolution is positive? How do my cultural values align with that belief? Acknowledging that concepts like "ego dissolution" hold different meanings across philosophical, spiritual, and clinical traditions helps prevent the uncritical endorsement of effects that may be valorized in some contexts but pathologized in others.

Reflexivity can help us gain an initial understanding of how the culture operates within us and define which modalities of it could be studied in psychedelic research. Therefore, besides acknowledging our own biases, tracking how our knowledge and beliefs influence the way we select research questions and collect, analyze and interpret the data, can also serve as a generative tool for identifying which dimensions of culture might be worth studying in psychedelic research.

Systematic Discourse Analysis

Moving from the individual researcher's perspective to broader cultural narratives, discourse analysis offers another valuable tool. Dominant discourses are shaped by individuals and institutions in positions of power such as media, religion, and scientific sites. They influence both public and academic understandings of psychedelics by providing narratives through which one can make sense of psychedelic experiences. One of the dominant discourses in scientific psychedelic space is medicalization and individualization (Gearin & Devenot, 2021). This narrative "sinks" into the language of researchers, patients and users, rendering them more likely to understand the experience in individualistic terms: that one's suffering arises from individual reasons (i.e. brain functioning) and should be treated through individual means (substances that will "fix" the brain). Discourse analysis might examine how psychedelics are framed by researchers, therapists, media outlets, politicians, influencers, and research participants themselves.

For example, ten Berge's analysis of key terms used in the psychedelic literature (see Part I, Figure 1), offers a model for identifying core cultural themes. He demonstrates how key concepts function as cultural anchors. Further, Gearin and Devenot (2021) and Devenot (2023) provide valuable examples of critical analysis of psychedelic-related discourses. They analyze how the background of the socio-economic

system might influence meaning-making of individual psychedelic experiences. Further, Holm et al. (2023) examine dominant discourses on how psychedelic users share their knowledge and construct the meaning of psychedelic experience via online forum.

Tools like BERTopic can support the automated and systematic extraction of themes and language patterns from large datasets, including interviews, scientific articles, and social media content (examples of BERT implementation for analysis of online content: Xu et al., 2022; and discourse analysis: Gupta, 2023). Importantly, while social media offers a valuable source of information for psychedelic research, it also raises significant ethical concerns, particularly regarding informed consent when using individuals' publicly available content for research purposes (Fiesler & Proferes, 2018). To address this issue ethical guidelines for research on social media have been developed and outlined for example in Townsend and Wallace (2016).

Identified dominant discourses can then be traced to the subjective reports of psychedelic users, revealing how broader narratives inform personal expectations and post-experience interpretations (see Noorani, Bedi & Muthukumaraswamy, 2023 for a discussion on tracking expectations in participants of clinical studies on psychedelics). A significant limitation of this strategy is that it can only account for information that participants are consciously aware of and able to articulate. As ten Berge notes, psychedelic experiences may be shaped by unconscious cultural content – elements that cannot easily be verbalized or reported by participants. This limitation can be addressed by employing novel methods of research and analysis. For example, analysis of speech patterns (for the use of speech analysis in psychedelic research, see Kuc et al., 2025) or the use of arts-based methods (for an overview, see an special issue on the topic, Chamberlain et al., 2018; also Margolin, Pearson, & Jones, 2024) can provide additional information, including unconscious or unarticulated content. In the next chapter, we will focus in detail on another possible solution to this issue: research involving a broader range of psychedelic users, which could help trace unarticulated expectations and their effects.

Research on Naturalistic Users

Although controlled trials are invaluable for establishing nomothetic causality and efficacy, they only capture a narrow slice of the vast and diverse landscape of psychedelic use and psychedelic effects. Studying naturalistic users – those who use psychedelics in non-laboratory settings – offers an essential complement. These individuals often use psychedelics in contexts such as ceremonies, festivals, or at home

for personal exploration. One's choice to use psychedelics in a clinical study, at the ceremony or at festivals is to some extent defined by the cultural background one comes from. This choice of set and setting further affects how one experiences and interprets psychedelics effects. Since individuals engage with psychedelics for varied reasons across diverse contexts, clustering users into subpopulations based on the context can provide deeper insight into the role of set and setting.

Statistical methods like factor analysis, latent profile analysis, or k-means clustering (Gao et al., 2023) can be used to group users into subpopulations. Still, there are important methodological questions to consider: Which criteria should define these subgroups? How do we account for individuals who use psychedelics in multiple settings for different purposes? Moreover, even within the same environment or group, people may have vastly different experiences. Focusing on smaller and more homogenous groups (e.g., different retreats or clinical study sites) would allow researchers to explore differences in subpopulations in a more nuanced way.

Closing Remarks and Implications for the Field

Ten Berge's paper fits in a broader trend to call attention to the importance of incorporating cultural context and interdisciplinary collaboration within psychedelic science. Here, we placed this idea in the current landscape of psychological, psychopharmacological, and neuroscientific research on psychedelics, and proposed several strategies and methods for implementing culturally sensitive approaches. Yet we also raised the question of whether a more fundamental epistemological reorientation might be needed in how psychedelic research is approached – one that is based on relational ontologies instead (an elaboration of this idea in the context of psychedelic science is outlined in Sadowska, 2023). We argued that currently the field remains largely shaped by individualistic frameworks and that this selective focus can hinder the development and application of culturally and context-sensitive methodologies. If researchers, through their studies and public communication, promote a narrative of psychedelics as individual-level treatments for individual-level pathologies, they may unintentionally reinforce individualistic ideologies – both in study participants and in the broader culture. In this way, psychedelic research becomes part of a feedback loop: the culture shapes the research, the research shapes the expectations, and the expectations shape future experiences and interpretations. Thus, the imperative to incorporate culture into psychedelic research is not merely a matter of improving the quality of evidence. It is also an ethical and epistemological concern. The way researchers engage with psychedelics has real-world consequences, not only for in-

dividual participants, but also for the communities and societies in which those individuals are embedded.

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Les psychédéliques comme amplificateurs non spécifiques : boucles de rétroaction culturelle et implications pour la science psychédélique. Commentaire sur Retour au réel de Ten Berge

Anastasia Ruban **Michiel van Elk**

Résumé: Retour au réel décrit comment les récits culturels dominants façonnent l'expérience psychédélique. En s'appuyant sur l'analyse en deux parties de Ten Berge, ce commentaire soutient que les effets psychédéliques doivent être compris comme inscrits dans des boucles de rétroaction culturelle liant le set and setting culturel, les attentes individuelles, l'expérience et son articulation dans la culture. Dans cette perspective, les psychédéliques fonctionnent principalement comme des amplificateurs non spécifiques et des catalyseurs qui intensifient des croyances préexistantes, plutôt que de révéler des vérités immédiates. Nous situons cette thèse par rapport aux modèles neuroscientifiques contemporains (CSTC, REBUS), aux approches humanistes et anthropologiques, ainsi qu'aux données sur les changements de croyances socio-politiques et les résultats cliniques. Nous montrons que les effets « disruptifs » apparents des psychédéliques peuvent souvent être réinterprétés comme des intensifications dépendantes du contexte. Nous identifions aussi des obstacles méthodologiques et idéologiques à l'étude de la culture en science psychédélique et proposons un programme mixte incluant réflexivité, analyse du discours, neurophénoménologie et comparaisons de cohortes naturalistes. La reconnaissance du rôle constitutif de la culture a des conséquences éthiques et épistémiques, notamment la prudence à l'égard des affirmations métaphysiques et l'attention à la manière dont les psychédéliques induisent des changements dans les contextes cliniques. En jetant un pont entre les sciences humaines et les neurosciences cognitives, nous pouvons construire une science cumulative et sensible à la culture des psychédéliques.

French translation by Antoine Bioy, Ph. D.

Psychedelika als nicht-spezifische Verstärker: Kulturelle Feedbackschleifen und Implikationen für die psychedelische Wissenschaft. Ein Kommentar zu *Rückkehr zum Real*en von Ten Berge

Anastasia Ruban Michiel van Elk

Zusammenfassung: „Rückkehr zum Realen" beschreibt, wie kulturell vorherrschende Narrative psychedelische Erfahrungen prägen. Aufbauend auf Ten Berges zweiteiliger Analyse argumentiert unser Kommentar, dass psychedelische Effekte am besten innerhalb kultureller Rückkopplungsschleifen verstanden werden können, die kulturelle Rahmenbedingungen, individuelle Erwartungen, Erfahrungen und deren Rückkopplung in die Kultur miteinander verbinden. Aus dieser Sicht wirken Psychedelika in erster Linie als unspezifische Verstärker und Katalysatoren, die bereits bestehende Überzeugungen verstärken, anstatt unvermittelte Einsichten zu offenbaren. Wir stellen diese These in Beziehung zu zeitgenössischen neurowissenschaftlichen Modellen der psychedelischen Erfahrung (CSTC, REBUS), humanistischen und anthropologischen Darstellungen sowie Belegen für soziopolitische Glaubensveränderungen und klinische Ergebnisse. Wir zeigen, wie die scheinbar „störenden" Effekte von Psychedelika oft als kontextabhängige Intensivierungen neu interpretiert werden können. Anschließend identifizieren wir methodologische und ideologische Hindernisse für die Untersuchung von Kultur in der psychedelischen Wissenschaft und schlagen ein Programm mit gemischten Methoden vor, das Reflexivität, Diskursanalyse, Neurophänomenologie und naturalistische Kohortenvergleiche umfasst, um kulturelle Variablen zu operationalisieren. Die Anerkennung der konstitutiven Rolle der Kultur hat ethische und epistemische Konsequenzen, darunter Vorsicht gegenüber metaphysischen Behauptungen und Aufmerksamkeit dafür, wie Psychedelika Veränderungen in klinischen Settings bewirken. Durch den Brückenschlag zwischen Geisteswissenschaften und kognitiver Neurowissenschaft können wir eine kumulative, kultursensible Wissenschaft der Psychedelika aufbauen.

German translation by Eberhard Bauer, Ph. D.

Psicodélicos como Amplificadores Não-Específicos: Feedback-Loop Cultural e Implicações para a Ciência Psicodélica. Um Comentário sobre *Return to the Real* de Ten Berge

Anastasia Ruban Michiel van Elk

Resumo: Return to the Real descreve como as narrativas culturalmente prevalentes moldam a experiência psicodélica. Com base na análise de duas partes de Ten Berge, nosso comentário argumenta que os efeitos psicodélicos são melhor compreendidos dentro dos ciclos de feedback-loop culturais que ligam o set e setting cultural, as expectativas individuais, a experiência, e sua articulação de volta à cultura. Nessa visão, os psicodélicos operam essencialmente como amplificadores e catalisadores não específicos que acentuam crenças pré-existentes, em vez de revelar insights não mediados. Situamos esta tese em relação

aos modelos neurocientíficos contemporâneos da experiência psicodélica (CSTC, REBUS), perspectivas humanísticas e antropológicas e evidências sobre mudança de crença sociopolítica e resultados clínicos. Mostramos como os aparentes efeitos "perturbadores" dos psicodélicos podem ser reinterpretados como intensificações dependentes do contexto. Em seguida, identificamos obstáculos metodológicos e ideológicos para estudar a cultura na ciência psicodélica e propomos um programa de métodos mistos, incluindo reflexividade, análise do discurso, neurofenomenologia e comparações de coortes naturalistas, para operacionalizar variáveis culturais. Reconhecer o papel constitutivo da cultura tem consequências éticas e epistêmicas, incluindo cautela com relação a alegações metafísicas e atenção a como os psicodélicos induzem mudanças em ambientes clínicos. Ao unir as humanidades e a neurociência cognitiva, podemos construir uma ciência cumulativa e culturalmente sensível sobre psicodélicos.

Portuguese translation by Antônio Lima, Ph. D.

Los Psicodélicos Como Amplificadores no Específicos: Circuitos Culturales Retroactivos e Implicaciones para la Ciencia Psicodélica. Un comentario sobre *Retorno a lo Real* de Ten Berge

Anastasia Ruban **Michiel van Elk**

Resumen: *Retorno a lo Real* describe cómo las narrativas culturales prevalecientes dan forma a la experiencia psicodélica. Partiendo del análisis en dos partes de Ten Berge, nuestro comentario arguye que los efectos psicodélicos se explican mejor en base a circuitos culturales retroactivos que vinculan a la actitud y el entorno cultural, las expectativas individuales, la experiencia, y su rearticulación en la cultura. Desde esta perspectiva, los psicodélicos funcionan principalmente como amplificadores y catalizadores no específicos que fortalecen las creencias preexistentes, en lugar de revelar percepciones no mediadas. Situamos esta tesis en relación a los modelos neurocientíficos contemporáneos de la experiencia psicodélica (CSTC, REBUS), los reportes humanistas y antropológicos, y la evidencia sobre el cambio de creencias sociopolíticas y los resultados clínicos. Mostramos cómo los aparentes efectos "perturbadores" de los psicodélicos pueden reinterpretarse a menudo como intensificaciones dependientes del contexto. A continuación, identificamos obstáculos metodológicos e ideológicos en el estudio de la cultura en la ciencia psicodélica y proponemos un programa de métodos mixtos, incluyendo reflexividad, análisis del discurso, neurofenomenología, y comparaciones entre grupos naturalistas, para operacionalizar las variables culturales. Reconocer el papel constitutivo de la cultura tiene consecuencias éticas y epistémicas, como el tener cautela con respecto a aseveraciones metafísicas y ser conscientes de cómo los psicodélicos pueden inducir cambios en contextos clínicos. La integración de las humanidades y las neurociencias cognitivas puede construir una ciencia cumulativa de los psicodélicos sensible a la cultura.

Spanish translation by Etzel Cardeña, Ph. D.

Response to *Psychedelics as Non-Specific Amplifiers*[1]

Jos ten Berge

Vrije Universiteit

Historians usually consider it their job to first describe and try to understand history, and then perhaps draw some lessons from it for the present. This is what I tried to do in my two *Return to the Real* articles, though not without hesitations about treading so far from home, being more comfortable discussing paintings. But it is the fields of psychology, psychopharmacology, and neuroscience that largely shape discourse about psychedelics, as Anastasia Ruban and Michiel van Elk acknowledge, being representatives of those fields themselves. Reading their comments, I am happy to learn that observations from the outside are not just accepted but welcomed with an immediate attempt to integrate them into the bigger picture of current research.

What struck me most, as an historian, is how future-oriented Ruban and van Elk are. Fellow humanities scholars might have criticized me for my selection of facts, my sketches of Prinzhorn's, Sartre's or Huxley's thought, or my specific reading of hard-to-define concepts like Modernism or "culture," but Ruban and van Elk keep their eyes on the ball and assess where my views fit in, which theories they seem to confirm and deny, and how to proceed. I am very grateful to be taken so seriously and happy to support their proposal for mixed-method strategies to better account for the role of culture in the acute and long-term effects of psychedelic drugs. Beyond that, however, I also like to champion the Humanities as more than just an ingredient to be added to the recipe. I think they are also in themselves a recipe for enjoyable as well as nutritious food.

Unfortunately, I do need to make two minor corrections to Ruban and van Elk's comments, one of a historical nature, the other more semantic. In their very first par-

1 Adress correspondence to: Jos ten Berge, Ph. D., Vrije Universiteit Amsterdam, Faculty of Humanities, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands, **j.p.ten.berge@vu.nl**

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agraph, they write that I claim that the idea that drugs unveil hidden truths stems from a perennialist view on mystical experiences, but this is not correct. I think it fits into a millennia-old cultural dichotomy, for which I cite Homer, in interpreting altered states of consciousness as either revealing or deceptive. This may relate to mystical experience too, but it need not: it also applies to dreams, "trance," and being drunk, for example. The perennialist view on mystical experience is much younger (1799, it seems) and would be a special case of a special case of this dichotomy. Huxley was such a special case.

My second comment relates to Ruban and van Elk's characterization of my approach as "modern" and "humanistic". Though this is done in passing, possibly by way of shorthand, I fear that such labels might take on a life of their own. My approach is that of Cultural History, with a fair dose from the History of Ideas. Methodologically, my attempt at discourse analysis is closer to what came to be called "postmodern" practices of deconstruction. "Modern" or, better, "Modernist", is the label proposed for the specific discourse that is the subject of Part I of my article, for lack of a better word. In a future article, I will include a figure mapping a variety of such discourses along a timeline. "Humanistic", to conclude, must have been meant to describe the humanities approach, but actually means something else, at least as valuable.

Declaration: The author declares no conflict of interest.

The Abstraction Matching Fallacy: A Procrustean Problem in the Science of Anomalous Experiences[1]

Jonathan Dinsmore

University of Arkansas

Abstract: The currently expanding science of anomalous experiences is unique, in the sense that it necessarily sits at the treacherous borderlands between the often-opposed ontologies of religion/spirituality and secular physicalism. As might be expected in such an inherently charged position, the scientific study of the hallucinatory neurobiological underpinnings of these experiences has resulted in the emergence of certain biased practices, of which the Abstraction Matching Fallacy is a prominent example. This methodological fallacy involves, on the basis of resemblance, using known hallucinatory phenomena as explanations for what are widely considered to be spiritual experiences, despite the alleged resemblance depending entirely on an abstraction of both phenomena, to whatever extent is necessary to obscure the incongruent details and render them apparently resemblant. This entails a subtle form of cherry-picking that manipulates or filters the consideration of data in the interests of theoretical/philosophical commitments, thus making it arguably antiscientific, inasmuch as the primary goal of science is the adaptation of theory to reality, via data collected and analyzed as rigorously and objectively as possible. Examples and further discussion of this fallacy are provided, along with a call for researchers to cease this scientifically problematic practice.

Keywords: anomalous experiences, methodological problems, ideological bias, explanatory models, materialism, physicalism, phenomenology

1 Address correspondence to: Jonathan Dinsmore, M. S., University of Arkansas, **jdinsmor@uark.edu**

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Highlights

- The Abstraction Matching Fallacy (AMF) refers to the misapplication of hallucinatory explanations to spiritual experiences based on high-level abstractions of both.
- This fallacy entails ignoring critical phenomenological differences and selectively emphasizing abstract similarities.
- The AMF is especially prevalent in attempts to explain NDEs, likely because they resist naturalistic explanation without such abstraction.
- The AMF is an iteration of a broader Procrustean pattern of forcing anomalous experiences into ill-fitting models through cherry-picking convenient details.
- These errors likely reflect ideological pressures within the physicalist orthodoxy that detract from objective scientific inquiry.

Research in the field of anomalous experiences has expanded greatly over the past two to three decades, particularly since the lifting of prohibitions on psychedelic research around the turn of the 21st century (Cardeña et al., 2017). As with the expansion of any scientific frontier, such proliferation of research is necessarily accompanied by a proliferation of theories and explanatory approaches. However, unlike most other areas of research in psychology and neuroscience, this subfield pertains to a category of experiences that are arguably at the foundation of nearly every religious or spiritual (R/S) belief system, if we take the sacred texts at their word as records of such accounts. Further, they often inherently contradict the default physicalist worldview typically regarded as a given in the scientific community, and for the most part in the larger secular subculture, by virtue of their phenomenological content and qualities; for instance, consciousness seeming to exist outside of the body temporarily. This contradiction is generally apparent to both the experiencers themselves, including many from a secular background, as well as to many non-experiencers who take them seriously as actual *glimpses* of a world beyond the one that is consistently available to the senses, including the R/S majority of the world's population.

Because of this unique position, it is arguably problematic for researchers to approach this category of experiences as if they were merely examining another relatively mundane aspect of psychological life, such as dreams or perceptual illusions. It should be apparent to anyone involved in this field that this class of experiences exists at the treacherous ontological borderlands between the secular subculture and the larger R/S culture, and their competing worldviews. It should be uncontroversial

to acknowledge that those who are invested in maintaining the physicalist paradigm have ample motivation to establish the non-veridical or hallucinatory nature of any anomalous experiences which are seen as a challenge to it. Although the distinction between hallucination and pathology is more complex than it is often assumed to be, with the former existing along a dimension that extends beyond the latter (Bentall, 2014), it is nevertheless true that the question of hallucination vs. veridical perception is central to the ontological implications or claims made on the basis of anomalous experiences, which to some extent includes not just contemporary forms of spirituality but nearly all religions.

This also means that, from a philosophical and methodological standpoint, this field is at perhaps a greater risk than any other for implicit bias, and the methodological mistakes that often result from such biases (Michalski, 2022). This article aims to be an exposition of one such error, which is here dubbed the *Abstraction Matching Fallacy* (AMF). This is presented in the hope that naming and explicating this fallacy may result in the reduction of its problematic use among researchers, as with bringing attention to *p*-hacking or the file drawer problem.

The nature of the AMF is relatively simple and easily explained, yet it is common in the field of scientific anomalous experience research. It may be described as the use of pathological or hallucinatory phenomena as explanatory models for anomalous/spiritual experiences *based on* phenomenological resemblance, despite the former *only* bearing a resemblance to the latter when compared at a level of abstraction that renders them *apparently* alike, making such claims of resemblance fallacious. In other words, it is the attempt to explain spiritual experiences (Yaden & Newberg, 2022) in terms of allegedly phenomenologically similar hallucinatory phenomena that do not in fact resemble those spiritual experiences, except when compared at whatever level of abstraction renders them apparently resemblant. Incidentally, this also involves a subtle element of cherry-picking (Andrade, 2021), by selectively ignoring whatever details make the difference apparent.

Theoretical Context

In a sense, the AMF could be considered a special case of what has been discussed by Maraun and Gabriel (2013) as illegitimate concept equating. By their account, this type of error is particularly liable to occur in psychology due to both the disregard of the differentiation between construct and latent variable referent, and the resultant "devastating extinction of definitional work as a precursory step in empirical investigations" (p. 35). The argument for the role of selective attention in the abstrac-

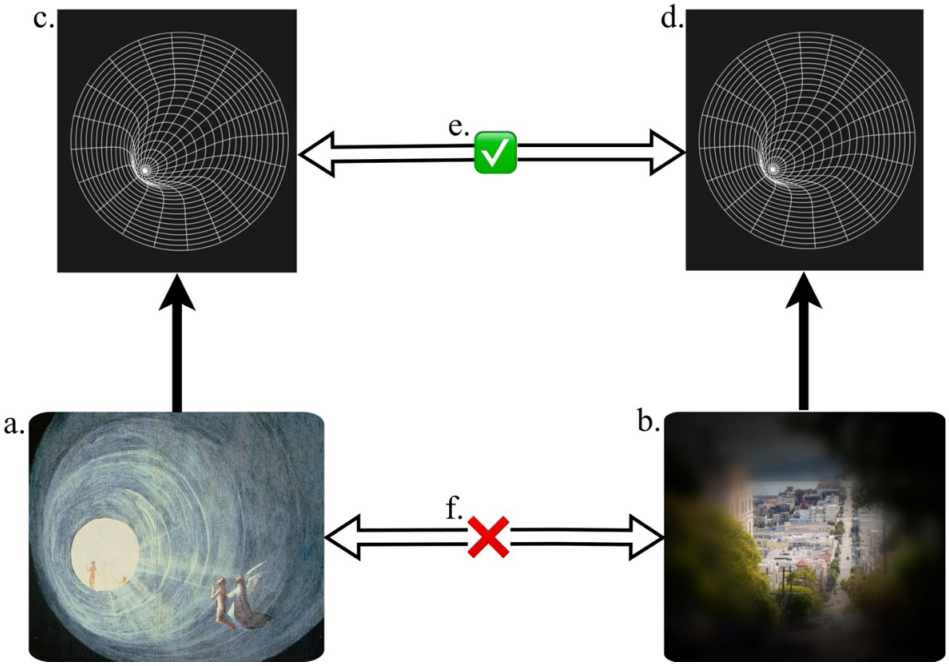
tion implicit in operationalization has also been made by Portides (2018). Combining these concepts, the AMF could be understood as a tendency to engage the selective attention implicit in the abstraction of operationalization to focus on those aspects of an anomalous phenomenon that match another phenomenon more widely accepted as hallucinatory, resulting in illegitimate concept equating, which seems to support a hallucinatory explanation for the anomalous phenomenon. An element of motivated reasoning (Kunda, 1990) behind this process is also highly probable, because of the perceived threat posed by the anomalous phenomenon to the existing framework of physicalism, which in many cases cannot adequately explain it in its more robust, pre-abstraction form.

The broader preference for and acceptance of incomplete explanations despite their frequently obvious implausibility extends beyond the case of the AMF and likely motivates it, and therefore also deserves a title. This broader tendency may be aptly characterized as the *Procrustean Razor Bias*, being the preferential acceptance of reductive naturalistic explanations of phenomena that contradict physicalism, ostensibly in the name of parsimony, whose explanatory adequacy is only plausible if a substantial portion of the associated facts or details to be explained are selectively ignored. This phenomenon, discussed in greater detail by Cardeña (2022), is also related to Popper's concept of promissory materialism (Popper & Eccles, 1977), and so requires only brief mention here as a broader pattern of which the AMF is one iteration, and to point out its Procrustean nature.

Just as the mythical Procrustes's guests were made to fit his bed via amputation or stretching, this perhaps willful blindness to any ill-fitting details makes the amputated phenomenon *seem to* fit the procrustean bed of the explanatory model. However, it does so only by doing conceptual violence to the phenomenon at hand, that is, to the observed phenomenological data. Notably, this involves a selective attention on observations that align with the preferred explanation, coupled with a disregard for those that do not. This is therefore a broader tendency toward *manipulation of observation and analysis in the interest of theoretical commitments* that is antithetical to the scientific ideal of adjusting theory to fit observed reality, thus making it arguably *antiscientific*. Put another way, it is an effort to metaphorically fit circular pegs into square holes via the "parsimony" of the table saw.

Figure 1

Conceptual Illustration of the Abstraction Matching Fallacy



Note. A simple illustration of the AMF exemplified by the NDE tunnel example. Two phenomena, the NDE tunnel (a.) and anoxic tunnel vision (b.), that are an obvious mismatch at a sufficient level of phenomenological detail, as made obvious by these depictions, based on an abstraction of each (c. and d.), are erroneously alleged to resemble one another (e.), while the incongruent phenomenological details are selectively ignored, but if given their proper consideration, render their claimed resemblance fallacious (f.).

Examples of the AMF

As exemplified by such attempts as that of Mobbs and Watt (2011) and their bias and shortcomings pointed out by NDE researchers (Greyson et al., 2012), the NDE phenomenon is particularly prone to applications of the AMF. One of the clearest and best-known examples is the use of anoxic tunnel vision by Blackmore and Troscianko (1989) as an attempted explanation for the sense of passing through a tunnel in near-death experiences (NDEs) (see Figure 1). In this case, *when details are given* in the accounts, NDErs describe aspects of the tunnel experience such as having walls that may have distinct qualities, such as appearing misty, and sometimes other souls seemingly likewise in transit up and down it; accompanying presences, such as deceased relatives or guiding beings of light; an entrance to another idyllic realm; and many other elements that make it abundantly clear that these experiences do not resemble the phenomenology of tunnel vision to any meaningful degree (Charland-Verville et al., 2014). These critical details easily reveal the erroneous nature of the comparison and others

like it. Far from irrelevant subjective details, these phenomenological incongruencies may aptly be referred to as *phenomenological facts*, and should require accounting for, if such an explanation is to be put forward. This is particularly the case for any claim being made *on the basis of resemblance*.

Yet, for some time this tunnel vision explanation was seriously considered valid, and still is at times referred to by those attempting to dismiss these experiences as hallucinations. To Blackmore's credit, she eventually acknowledged the fact of this non-resemblance (Blackmore, 1999). What is interesting here, beyond the problematic move itself, is the readiness with which such an ill-matching phenomenon was accepted as an explanatory model by the scientific community, and the relative lack of scrutiny it received upon its proposal (e.g., Choi, 2011), outside the niche group of NDE researchers who exhibit less physicalist conviction. Even to an educated layperson not specializing in this field who reads the detailed first-hand accounts of both phenomena, the lack of resemblance is abundantly obvious. So, why is it then that the community of scientists, who are generally regarded as among the most careful scrutinizers of evidence, so readily embraced such an explanation?

Although Blackmore's tunnel vision explanation is particularly implausible, more contemporary alleged phenomenological resemblances prompting explanatory considerations require more careful scrutiny. Because NDEs are subject to this approach particularly often, likely due to being quite difficult to account for naturalistically, *when all the facts are considered* (Facco et al., 2015; Facco & Argillo, 2012; Greyson, 2015; van Lommel, 2007), further attempts at explaining them also serve as some of the best examples. Explanations involving dimethyltryptamine (DMT; Timmerman et al., 2018) or REMS intrusion with other physiological elements and hypothetical quantum accessories (Bókkon et al., 2013) have been offered. Both sound more plausible than the tunnel example, at first glance. Upon closer inspection however, these resemblances likewise only *seem* to exist at a problematic level of abstraction of the two phenomena.

As pointed out by others, including a case study of an NDEr who had both NDE and DMT experiences (Michael et al., 2023), the extent to which DMT experiences resemble NDEs is imperfect, at best. In the primary study making this comparison by Timmerman et al. (2018), the similarity of the two types of experiences is alleged based on psychometric scores on the NDE scale by DMT experiencers. Although the use of measurement seems rigorous, in this case, it inadvertently conceals the fact that the two categories are *only* a plausible match when viewed in terms of the abstraction required for such operationalized measurement. In a later within-groups comparison with psychedelics more generally, Martial et al. (2024) found these differences even

in measurement, such as the divergence of low-level phenomena (i.e., the details of the experiences) although, arguably, the abstraction of measurement still served to obscure rather than clarify the differences/similarities between the experiences.

Although it is true that both DMT and NDEs typically involve elements that the NDE measure asks about, such as perceptions of otherworldly entities and environs, when one closely examines the descriptions of the environs and entities reported, the sense of resemblance quickly fades. For instance, a brief but prototypical quote representing a common theme of DMT experiences illustrates the point:

A lot of very strange clowns…mechanical entities. Very cartoonistic. And again trying to show me something… It was like a toy …continuously moving and changing shapes and colors… [they would] push them in my face… and I could see every single detail (Michael et al., 2021)

This illustrates how critical details clearly make DMT a poor fit as a model for NDEs, which rarely if ever include anything remotely like cartoonish mechanical clowns attempting to present enigmatic objects, or many other common DMT themes. Although *some* elements of DMT experiences may *sometimes* resemble those of NDEs, such as the appearance of mystical luminosity experience (Dinsmore, 2024) or other mystical states in both, even a casual side-by-side perusal of DMT and NDE experience reports available on the internet easily reveals that the two are generally almost entirely unalike, *when the phenomenological facts are taken seriously*.

Although the inter-subjective consistency of entities and features across different individuals' DMT experiences *is* certainly quite intriguing, generally their resemblance to NDEs is so minimal as to be negligible. Note that no argument is being made here that *no* DMT experience resembles *any* NDE; indeed, some qualitative study of ayahuasca experiences has found similar characteristics to NDEs (Liester, 2013). However, overall, the two experience types simply do not resemble one another, except in the most abstract descriptions or categorizations. It should also be noted that Timmerman et al. (2018) propose that DMT-induced states model NDEs, emphasizing shared phenomenological features, rather than asserting that NDEs are necessarily DMT hallucinations. The term "model" places the focus of their research on the investigation of underlying neurological mechanisms of altered states of consciousness, in part by their shared subjective features. Ontological claims regarding NDEs are notably absent here, although the hallucinatory interpretation seems implicit, particularly in their concluding remarks, and their remarks on the topic outside the context of their academic writing (Bryant, 2018).

In the interests of ensuring clarity as to how the abstraction of measurement can lead to instances of the AMF via obscuring critical details, as in the above study, consider this more mundane fictional example devised to make it particularly obvious. Imagine administering a survey to test whether those who claim to have experienced a passenger ride in a fighter jet performing aerial maneuvers may in fact be merely confused roller coaster riders. If the survey's questions were worded to assess the presence of vague or abstract phenomenological features such as intense G-forces, rapid directional changes, disorientation, and occasional sensations of weightlessness, the resulting jet passengers' roller coaster ride survey scores would likely be high. However, at a sufficient level of analysis of the incongruent details, it would become abundantly clear that considering such survey results to be substantial support for the "confused roller coaster riders" hypothesis would be grossly misguided. Problems similar to this have also been found in real-world research contexts, such as by Lang et al. (2019), where vaguely worded survey items failed to differentiate adequately between clearly distinct constructs.

Bókkon et al. (2013), to their credit, offer sophisticated explanations, in terms of attempting to account for each component of the experience in the modular way that is typical of neuroscience, and acknowledging the incompleteness of their explanation at the conclusion of the paper (p. 9). Nevertheless, the alleged resemblance of the various neurophysiological components they propose as probable explanatory models for NDEs to the NDE accounts themselves, again, are only presented at a level of abstraction that excludes a great deal of the phenomenological facts. This makes their attempt, sophisticated as it may be, another instance of the AMF.

Here, ocular reperfusion is offered as an explanation for the light aspect of NDEs, but with no adequate account of why it contains such detailed noetic and affective qualities, that extend far beyond mere visual brightness, being frequently described by experiencers as an overwhelming love and wisdom beyond anything they had previously thought possible, nor why or how it often appears as a local light source at a particular location in the space they perceive themselves to exist within in that state, like a kind of sentient sun that they move in relation to. As for the details of encountering deceased relatives or beings of light, Heavenly (or occasionally Hellish) environs, telepathic communication with the light itself or other beings, and many others included in NDE accounts, REM intrusion is offered. In other words, a quasi-dream-state producing imagery is suggested, along with the ocular reperfusion to create the light effect.

However, again, when one does not amputate or selectively ignore the phenomenological facts that are not compatible with this explanation, the mismatch of NDEs with the proposed components becomes clear. If one examines the phenomenological content and qualities of dreams during REM sleep and compares them to the content and qualities reported in NDEs, the tremendously greater variety of content and entirely different subjective quality of dreams is readily apparent. This is clear not least to experiencers themselves, who as human beings have all naturally experienced many dreams throughout their lives, and often go out of their way to emphasize how un-dream-like their NDEs were. Dreams are also highly various within the same person and between people, and often nonsensical, if perhaps at times symbolic, and mostly contain content pertaining to daily life. Compare this to the clear and inter-subjectively consistent pattern of experiences characteristic of NDEs regardless of religious or secular background. Only at a level of abstraction such as "imagery of people, places, and events while apparently unconscious externally, which at the time the individual regards as real," can the two experiences of REM dreams and NDEs be said to resemble one another. At any greater level of detail than that, again, the apparent resemblance falls away.

Phenomenologically, the light of NDEs is described typically as a point of light in the distance in a void that is then approached via movement through that space. Sometimes, it is accompanied by entities, often telepathically interacted with once arrived at, and radiates a profound love and knowledge that seem to be intrinsic qualities of the light itself, somehow. It sometimes appears almost as if not merely a being, but also a portal to another luminous world, from which deceased relatives may emerge to greet the experiencer. Given the intricate and inter-subjectively consistent details of these experiences, attributing them to mere phosphenes illuminating the retina accompanied by intrusive dream imagery is only plausible if one abstracts the phenomenological description to a superficial caricature, such as "light and imagery of beings or places," and ignores the strong similarity between experiences.

In relation to the inter-subjective consistency in NDEs just alluded to, some may turn to the differences that have been found in NDEs cross-culturally, to refute this point. Stating briefly something that deserves a much lengthier discussion, often this cross-cultural variability and its significance are both exaggerated. This is because: a) NDEs are not defined by their near-death context but by their phenomenological features and do not always occur near death (Charland-Verville, 2014); b) NDE-dissimilar deathbed visions from non-Western cultures are often compared with Western NDEs, ignoring that experiences that do have the features of NDEs also exist in those other cultures (Belanti et al., 2008), and NDE-dissimilar experiences near death like-

wise occur in Western cultures; c) a level of inter-subjective consistency within even one culture that so greatly exceeds that of any other category of dreams or hallucinations within that same population, and often contradicts the experiencers' beliefs or existential assumptions, still weighs strongly against the hallucinatory hypothesis, regardless of how much they may vary from other populations.

It is worth noting that although unexplained details of spiritual experiences like NDEs are sometimes acknowledged as such in AMF-tainted research, they are typically assumed to be unproblematically awaiting straightforward explanations, much as a complex activity like riding a bicycle might be systematically explained by aspects of brain function one component at a time, (e.g., visual, motor, proprioceptive, etc.), until all are eventually accounted for. However, when each of the proposed explanations added to the model proves to be equally ill-fitting or problematic in some way or another (Greyson et al., 2009; Greyson, 2015; Long & Perry, 2010; van Lommel, 2007), at some point the hope that accumulating multiple implausible explanations will somehow coalesce into a plausible one begins to seem less like a matter of patient inquiry and more like an act of wishful thinking or even faith. Again, the concept of promissory materialism is pertinent here.

Critically, it is not only the *presence* of details that require explanation, but the striking *specificity and inter-subjective consistency* of those details. Moreover, the fact remains that the specific details occasionally pertain to verified external or even distant physical events impossible to have been perceived by the flatlined body's sensory organs, known to researchers as Apparently Nonphysical Veridical Perceptions during NDE (Holden, 2009), or simply veridical NDEs. Although attempts to verify this phenomenon under experimental conditions have been unsuccessful (Parnia, 2014), the conditions used were highly questionable, it is not at all clear why one finding oneself newly removed from their body and gazing down upon their own corpse would be particularly inclined to notice cards left atop cabinets. Given that the phenomenon is widely-enough reported, and often-enough verified by trustworthy third parties such as doctors and other medical professionals, it still represents a deeper mystery to which skeptics have no compelling response, but merely allegations that the witnesses inadequately scrutinized the alleged occurrence, or perhaps a psi-based hypothesis as an absolute last resort. In the latter case, why we might think it likely that psi would be operating in a near-completely inactive brain would also require explanation. More examples could be given, but these are hopefully sufficient for the current purpose.

Discussion

The elephant in the room is, of course, that these experiences and others like them are regarded as veridical perceptions or glimpses of a metaphysical domain of existence by many if not most people, if religious origins are included, and yet are being studied in the subculture that is generally most opposed to such beliefs, the academy with its orthodox view of physicalism. Failing to explicitly acknowledge this unique cultural positioning may render researchers more vulnerable to inadvertently employing problematic approaches like the AMF, which are otherwise easily recognized as such. The tacitly apologetic role of these hallucinatory explanations within the secular orthodoxy may, in fact, be the ultimate source of researchers' vulnerability to this methodological error. This may also be why the wider secular public is likewise blind to this emperor's proverbial nudity, despite no special training being required to see the dissimilarity of the phenomena being compared. Although naturalistic or physicalist explanations are inevitable in a scientific community that operates primarily within that ontological framework, explanations should be judged by their adherence to the principles of sound reasoning and consideration of all the relevant facts, not their ability to artificially shore up the prevailing paradigm against problematic anomalies.

As a closing note, this article critiques what the author sees as ideologically driven scientific practices in an admittedly confronting way, but it is not intended to defame or single out individual researchers who have inadvertently employed the AMF, some of whose works are mentioned here. The aim is constructive: to bring attention to the problematic nature of this approach. The hope is that this will contribute to a much-needed neutrality and long-overdue acknowledgement of the charged nature of this research, and how it can give rise to significant biases, such as the AMF. It is important to mention that bias in the opposite direction is also possible, so a circumspect awareness of these tendencies should be practiced by all researchers, whatever their personal beliefs. Quite unlike scientists studying relatively innocuous topics, such as the effects of certain smells on memory or the neural mechanisms of facial recognition, researchers in this field occupy a precarious position within one of the greatest debates in modern culture. Navigating such a socially complex pursuit demands a conscious recognition of this position, and a circumspect awareness of our unfortunate tendency to sacrifice the principles of truth and scientific inquiry to the influences of prevailing cultural narratives, professional validation, or even simply certain psychological comforts we may derive from believing we have a firm grasp on what is and is not real (Kastrup, 2016), and perhaps the social validation that comes with having provided some reassurance to others in that regard.

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Biais de Rapprochement par Abstraction: Un Problème Procrustéen dans la Science des Expériences Anomales

Jonathan Dinsmore

Résumé: La science des expériences anormales, actuellement en pleine expansion, est unique en ce sens qu'elle se situe nécessairement à la frontière instable entre les ontologies souvent opposées de la religion/spiritualité et du physicalisme séculier. Comme on pouvait s'y attendre dans une position aussi controversée, l'étude scientifique des fondements neurobiologiques hallucinatoires de ces expériences a donné lieu à l'émergence de certaines pratiques biaisées, dont l'erreur d'abstraction est un exemple frappant. Cette erreur méthodologique consiste à utiliser, sur la base de ressemblances, des phénomènes hallucinatoires connus pour expliquer ce qui est largement considéré comme des expériences spirituelles, alors même que cette ressemblance repose sur une abstraction des deux phénomènes, suffisamment généralisée pour masquer leurs différences et les faire apparaître similaires. Il s'agit d'une forme subtile de biais de sélection qui manipule ou filtre la prise en compte des données au service d'engagements théoriques/

philosophiques, ce qui peut être jugé antis scientifique, puisque l'objectif premier de la science est d'adapter la théorie à la réalité à partir de données recueillies et analysées aussi rigoureusement et objectivement que possible. Des exemples et une discussion approfondie de cette erreur sont présentés, avec un appel aux chercheurs à cesser cette pratique scientifiquement problématique.

French translation by Antoine Bioy

Der Irrtum der Abstraktionsanpassung: Ein Prokrustes-Problem in der Wissenschaft der anomalen Erfahrungen

Jonathan Dinsmore

Zusammenfassung: Die derzeit expandierende Wissenschaft der anomalen Erfahrungen ist insofern einzigartig, als sie sich zwangsläufig in dem heiklen Grenzgebiet zwischen den oft gegensätzlichen Ontologien von Religion/Spiritualität und säkularem Physikalismus befindet. Wie in einer derart konfliktreichen Position zu erwarten, hat die wissenschaftliche Untersuchung der halluzinatorischen neurobiologischen Grundlagen dieser Erfahrungen zur Entstehung bestimmter voreingenommener Praktiken geführt, von denen der Irrtum der Abstraktionsanpassung ein prominentes Beispiel ist. Dieser methodologische Irrtum besteht darin, dass bekannte halluzinatorische Phänomene aufgrund ihrer Ähnlichkeit als Erklärung für das herangezogen werden, was allgemein als spirituelle Erfahrungen angesehen wird, obwohl die angebliche Ähnlichkeit vollständig auf einer Abstraktion beider Phänomene beruht, die so weit geht, dass inkongruente Details verschleiert werden und sie scheinbar ähnlich erscheinen. Dies beinhaltet eine subtile Form der selektiven Auswahl, die die Betrachtung von Daten im Interesse theoretischer/philosophischer Verpflichtungen manipuliert oder filtert, wodurch sie wohl als unwissenschaftlich angesehen werden kann, da das primäre Ziel der Wissenschaft die Anpassung der Theorie an die Realität ist, und zwar anhand von Daten, die so streng und objektiv wie möglich gesammelt und analysiert werden. Beispiele und weitere Diskussionen zu diesem Irrtum werden zusammen mit einem Aufruf an Forscher, diese wissenschaftlich problematische Praxis einzustellen, vorgestellt.

German translation by Eberhard Bauer, Ph. D.

A Falácia da Correspondência entre Abstrações: Um Problema Procustiano na Ciência das Experiências Anômalas

Jonathan Dinsmore

Resumo: A ciência atualmente em expansão sobre as experiências anômalas é única, no sentido em que, necessariamente, se situa nas fronteiras traiçoeiras entre as ontologias frequentemente opostas da

religião/espiritualidade e do fisicalismo secular. Como se poderia esperar em uma posição tão inerentemente tensa, o estudo científico dos fundamentos neurobiológicos alucinatórios dessas experiências resultou no surgimento de certas práticas tendenciosas, das quais a Falácia da Correspondência entre Abstrações é um exemplo proeminente. Essa falácia metodológica envolve, com base na semelhança, o uso de fenômenos alucinatórios conhecidos como explicações para experiências que são amplamente consideradas espirituais, apesar da suposta semelhança depender inteiramente de uma abstração sobre ambos os fenômenos, na medida em que é necessário obscurecer os detalhes incongruentes e torná-los aparentemente semelhantes. Isso implica uma forma sutil de seleção discriminatória que manipula, ou filtra, a consideração de dados no interesse de compromissos teóricos/filosóficos, tornando-a indiscutivelmente anticientífica, na medida em que o objetivo principal da ciência é a adaptação da teoria à realidade, por meio de dados coletados e analisados da forma mais rigorosa e objetiva possível. Exemplos e discussões adicionais dessa falácia são fornecidos, juntamente com um apelo aos pesquisadores para que cessem essa prática cientificamente problemática.

Portuguese translation by Antônio Lima, Ph. D.

La Falacia de la Equiparación de Abstracciones: Un Problema Procusteano en la Ciencia de las Experiencias Anómalas

Jonathan Dinsmore

Resumen: La creciente ciencia de las experiencias anómalas es única en el sentido de que necesariamente se sitúa en la traicionera frontera entre las ontologías a menudo opuestas de la religión/espiritualidad y el fisicalismo secular. Como cabría esperarse en una posición tan intrínsecamente tensa, el estudio científico de los substratos neurobiológicos alucinatorios de estas experiencias ha dado lugar a la aparición de ciertas prácticas sesgadas, de las que la Falacia de Equiparación de Abstracciones es un ejemplo destacado. Esta falacia metodológica consiste en utilizar, basándose en la semejanza, fenómenos alucinatorios estudiados como explicación de lo que en general se consideran experiencias espirituales, a pesar de que la supuesta semejanza depende totalmente en abstraer ambos fenómenos, en la medida necesaria, para ocultar los detalles incongruentes y hacerlos aparentemente semejantes. Esto supone una forma sutil de selección que manipula o filtra la consideración de la evidencia en aras de predisposiciones teórico/filosóficas, por lo que podría considerarse anticientífica, en la medida en que el objetivo principal de la ciencia es la adaptación de la teoría a la realidad a través de datos obtenidos y analizados de la forma más rigurosa y objetiva posible. Se ofrecen ejemplos y un análisis más detallado de esta falacia, junto con un llamamiento a los investigadores para que pongan fin a esta práctica científicamente problemática.

Spanish translation by Etzel Cardeña, Ph. D.

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