Awakenings IV

The McEnroe Enigma

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What is the psychedelic experience ?

What are the effects psychedelic drugs ?

Do psychedelic chemicals cause psychedelic experience ?

Why are psychedelic effects so unpredictable ?

I've been pondering such questions for decades. They can be asked in a variety of ways, and surely all who have partaken of these substances have asked themselves such questions. For many, answers may have remained elusive, at least in any technical, psychological, neurological sense. Without a university background in the sciences, mystical or spiritual approaches to understanding psychedelic experience must usually suffice.

For me, it all started over fifty years ago on the rooftop of a little stone cottage in a quiet Guadalajara suburb. My assistant and I had rented the place to set up a basic chemistry laboratory for a project of extracting the alkaloids

of the seeds of the famous *ololiuqui* vine of the ancient Aztecs. In the rainy season the plant grows widely in that part of Mexico, and it was easy, with a little financial kicker, to get local boys to collect the seeds for us. Ultimately we hoped that it would be possible to extract sufficient quantities of the alkaloid mixture to convert the simple amides therein to lysergic acid. A way to produce modest quantities of LSD could be the result of these researches, without having to find a source of the usual precursor, ergotamine tartrate.

The extract of mature *Ipomoea violacea* [1] seeds that we prepared seemed to radiate power, just sitting there in its flask. A light amber, odorless syrup which, in the darkened laboratory fluoresced brilliantly blue under ultraviolet light, it was an extreme contrast with the series of messy, difficult to purify volumes of intermediate sludge we had treated. But finally, there it was: a few hundred milligrams of highly purified lysergic acid alkaloids. The following day would see the first test of its activity, with myself as the experimental subject.

The morning-glory extract provided quite a surprise! It was in many respects the most powerful psychedelic experience I had yet encountered. Perhaps the methods of our extraction had yielded a product more representative of the shaman's recipe than the preparations obtained by other investigators, who reported only modest psychedelic effects. The experience of that day was hardly modest, from the beginning moments it certainly did not fail to inspire reverence and humility, no matter what the direction to which I managed to guide it.

The intensified colors and geometric patterns, the rippling waves so often seen in watching clouds in the sky, the slowing of time and other typical effects so frequently described by psychedelic voyagers had some time ago become only minor and unattended aspects of psychedelic experience for me. Certainly, I still noticed these effects, if I took the trouble to pay attention to them. But the psychedelic experience had become for me a way to achieve a perspective for exploring the fundamental questions that have mystified humans since the beginning of our time on earth. Who are we, from where have we come, and so forth. It was a task that required freeing oneself from preconceptions, from everyday habits of thinking that pervade normal consciousness and are quite difficult to identify, much less overcome, habits that affect the outcome of seeking in unknown and unconscious ways. The psychedelic experience had for me reliably provided such an ability. Relieved of habits of thinking, creativity seemed to be stimulated in a way difficult to achieve in normal consciousness.

At a high point of the experience, a minor earthquake occurred which, for the life of me, seemed to be provoked by my patterns of thought. Standing upright, directly facing the sun, I was following a train of thought about energy transfers; about what might have been Early Man's perceptions of the source of life; about the ancient practices of sun worship; about the long history of the use of this psychedelic by Aztec shamans and what those ancient wisemen might have perceived.

Aztec Sun-Stone Calendar

At a certain brief moment in my meditations I sensed a premonition of the forbidden, that I was getting into dangerous territory in some way, and precisely then the earth tremor crystallized a moment of fear sufficient to squelch my enquiry entirely! A psychedelic voyager who believes in the reality of external beings, animal spirits and whatnot — often claimed for ayahuasca and DMT experiences — might venture that it was the spirit of ancient Aztec shamans warning me... My own opinion might be that, like many animals, I sensed the earth tremor slightly in advance of the actual event, and it was that premonition that was the source of my fear. That the event should happen during a psychedelic experience is not such a large coincidence either: tremors are frequent in that area of the globe, and I am not at all prepared to believe that the long-gone spirits of Aztec shamans were so annoyed that I should be using their sacred drug that they provoked an earthquake! Yet the

coincidence did retain some mystery, especially since the psychedelic literature mentioned that such coincidences were not uncommon.

I believe it was the experience of that day that first started me thinking analytically about the “effects” that these substances produced, trying to understand how they could be so different from person to person and from experience to experience. And the experience of that day seemed to indicate that psychedelics might possibly cause mysterious coincidences, external events and situations that could not logically be connected to one's ongoing conscious processes.

Where to Look?

What would be instructive for pursuing such questions? Which scientific disciplines should be consulted? And which philosophers and philosophies might have something to contribute? Can introspection during psychedelic experience provide evidence that is not just self-specific?

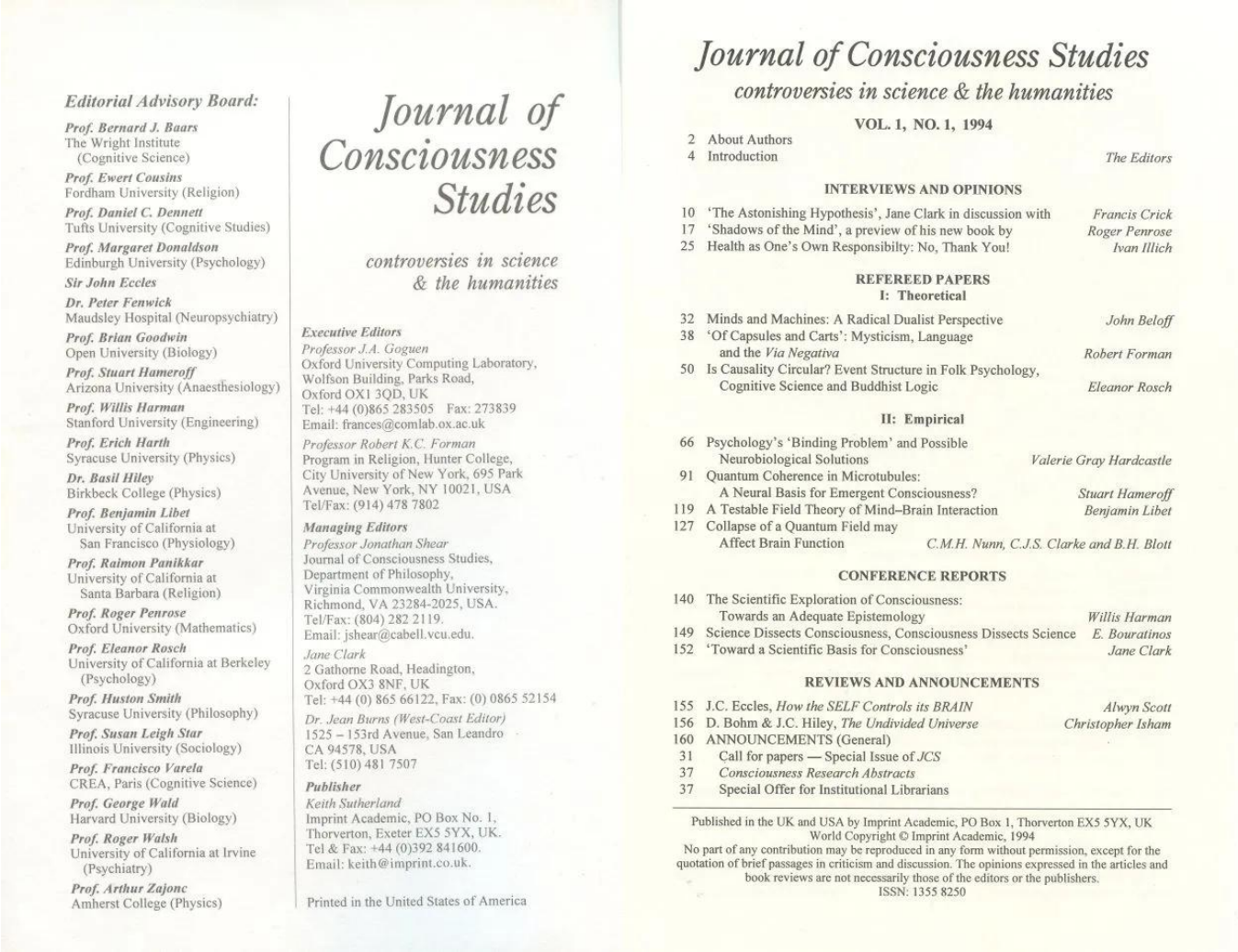
In one sense it might seem that answers should not be all that difficult to find.

> The LSD experience is one about which there can be no argument about priorities between chemical and psychological factors. For there is no doubt whatever the chemical is given first and must cause the biochemical changes which later find expression in the psychological experience... A good deal is known about its [LSD’s] phenomenal reactivity. What is not known is which one of its many biochemical reactions is the most relevant in producing the psychological changes. [2]

So then, it seems we should first discover all the brain sites — the neuro-receptors in the synapses of the brain's neurons — where the psychedelic chemicals gravitate to, and then? Are we searching for the “neural correlates” of psychedelic experience in the same manner as contemporary neuroscientists are attempting to define the neural correlates of all manner of mind states, even consciousness itself? Many such researchers have collected extensive libraries of brain-scan data they claim show such things.

Cognitive Neuroscience

Around 1990 I began reading the many books appearing on consciousness and associated subjects. A great many scientists and philosophers were publishing their views. I also subscribed — from the first issue in 1994 — to *The Journal of Consciousness Studies*



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...and attempted to keep up with it all, it was quite time-consuming and technically demanding.

I also bought Michael S. Gazzaniga's thick 1995 tome *The Cognitive Neurosciences* (1400 pages!) as well as *Toward a Science of Consciousness: The First Tucson Discussions and Debates*, 1996. That one was no lightweight either, with contributions from fifty-five top-notch thinkers from the several disciplines all collected under the Cognitive Neuroscience banner.

So that my readers may have a well-defined idea of just what CN involves:

> Cognitive neuroscience is the scientific field that is concerned with the study of the biological processes and aspects that underlie cognition, with a specific focus on the neural connections in the brain which are involved in mental processes. It addresses the questions of how cognitive activities are affected or controlled by neural circuits in the brain. Cognitive neuroscience is a branch of both neuroscience and psychology, overlapping with disciplines such as behavioral neuroscience, cognitive psychology, physiological psychology and affective neuroscience.[2] Cognitive neuroscience relies upon theories in cognitive science coupled with evidence from neurobiology, and computational modeling. — Wikipedia

Cognitive Neuroscience: An Overview

> C.M. Wessinger, E. Clapham, in Encyclopedia of Neuroscience, 2009
>
> Interest in how brain enables mind has been ongoing for centuries; however, the field of cognitive neuroscience is relatively new, dating back to the 1970s. Cognitive neuroscience employs a multidisciplinary approach when investigating the neurobiology of cognition. Techniques such as neuronal stains, physiological measurements, and brain imaging are utilized in the effort to understand the biological basis of information processing. However, cognitive methods are also recruited to induce mental operations that will be investigated neurologically. The cognitive neuroscientist will continue to find innovative methods of combining such complexities in the ongoing search of understanding of how brain enables mind.

The Arrow of Causation

"Brain enables mind"? The brain is a physical object, the mind is... exactly what? At first glance it doesn't seem to be a physical entity. I've seen brains preserved in formaldehyde, but never a mind. Does cognitive neuroscience claim that the arrow of causation originates in the physical brain, and then produces a consciousness that apparently has extra-physical attributes? Or

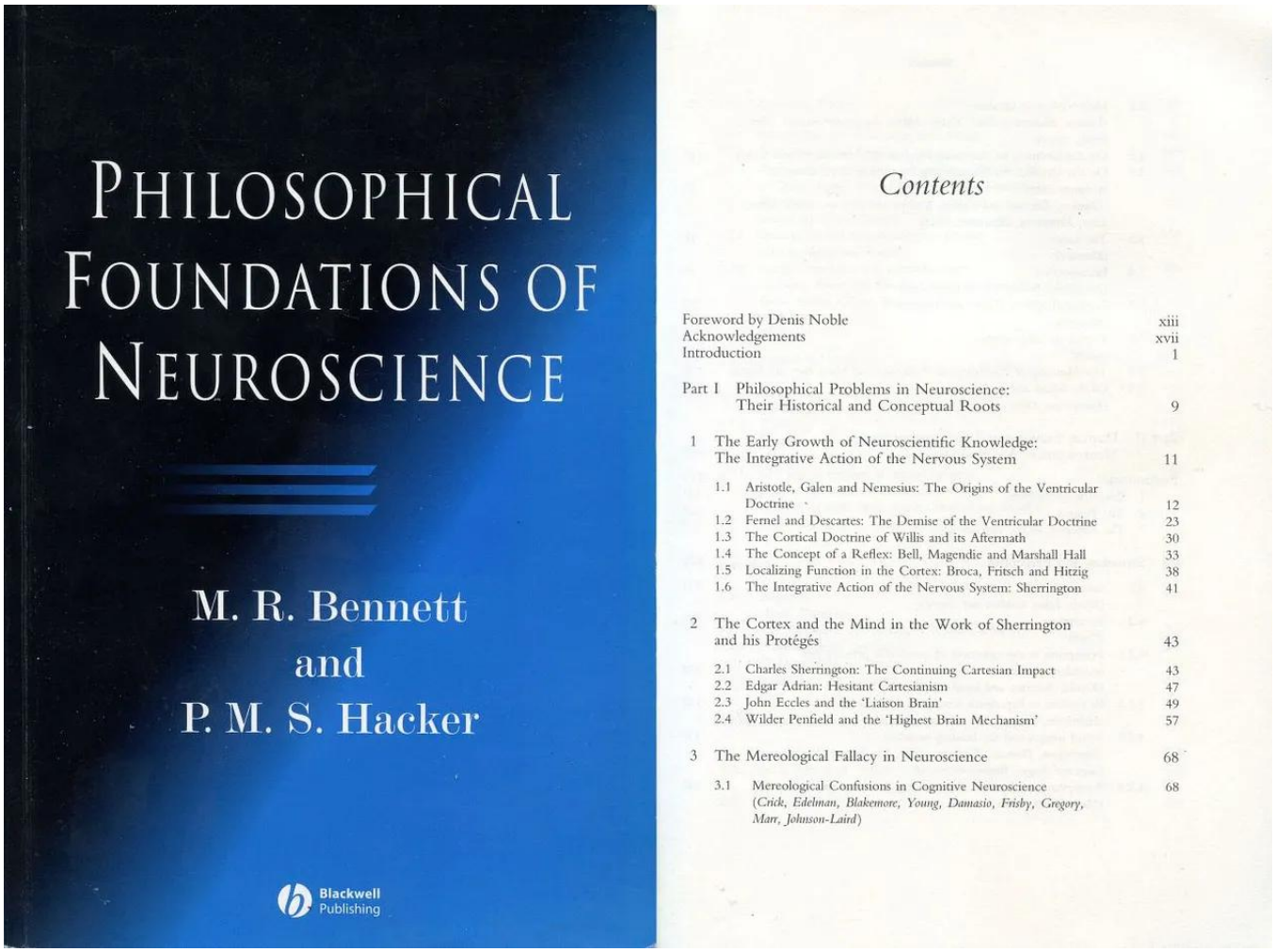
are the sum-total of brain processes identical with mind and consciousness sc that the latter are illusory, or at least capable of being ignored for scientific purposes? Absolute determinism would seem to be unavoidable in that case: every event in the universe, including every action of living beings, would follow ineluctably from the immediately previous physical situation. Thus consciousness, as an extra-physical and thus illusory phenomenon, could have no effect on physical reality. Free will must then be an illusion? Wait... wait just a minute...

I continued on with my studies of the many hypotheses and theories appearing almost daily, but the more I read, the more the questions multiplied. The way to understand psychedelic consciousness must surely pass through an understanding of the many byways of the theories of CN, even if paradox and illogic seemed to be close partners of the CN project.

I gave it my best shot — over a period of a few years! — but after extensive reading and note-taking it didn't seem that science was closing in on what philosopher David Chalmers called "the hard problem of consciousness". [3] Widely differing models and hypotheses about the so-called mind-body problem showed, at least for me, that consciousness science was still in its infancy, with a long maturation and very probably revolutionary changes in fundamental paradigms being necessary.

Then along about 2004 another weighty volume came to my attention: *Philosophical Foundations of Neuroscience.* [4] Here was revealed, again at great length but this time by only two authors, a neurophysiologist and a philosopher, much of what was wrong about what all the consciousness experts had been saying for the past two decades. It wasn't that all these high-powered scientists had amassed a mountain of faulty data, or hadn't achieved astounding discoveries about the physical realities of the nervous system. But rather that,

> The reductionist agenda in biological science has generated so many conceptual difficulties that someone, sometime, had to analyse these problems in depth from outside the reductionist viewpoint.



So that the reader may get an idea of the immense scope of this important book, the complete Table of Contents can be viewed by clicking the image above. From the introduction:

> I must issue a warning: this book is highly controversial. Some of my scientific colleagues will strongly challenge, and will surely be deeply provoked by, the claim that neuroscience has frequently and systematically confused conceptual and empirical questions. To them I would say, first, that the authors clearly recognize the brilliance and phenomenal achievements of the scientists whose conceptual work they analyse. This is emphatically not a book debunking experimental science, any more than the fact that most physiologists now dismiss the dualist philosophy of Sherrington or Eccles detracts in any way from recognizing the immense significance of their scientific achievements. We find it perfectly possible to admire the experimental and associated analytical skills while wincing

> when we see how completely trapped they were in their outdated and indefensible philosophical position.

The rest of the introduction to PFN may be viewed here.

But even in 1996 at the Tucson Conference, at least one long-time expert in psychedelic research had sounded an alarm:

> We must not minimize the fundamental nature of the challenge implicit in consciousness research. Western science is about understanding cause. It is a tenet of modern society that that science can lead us toward the ultimate explanations for phenomena. However, the very conviction that a complete nomothetic science is possible—that everything can be ultimately explained through inviolable scientific laws—rules out consciousness (mind, spirit) as a causal reality. At the same time, everything in our personal experience affirms the importance of our ability to choose, and our deep inner guidance toward the better choice. This poses a fundamental dilemma. Either we must deny our own innate wisdom because "science knows better," or we have to face the fundamental inability of science in its present form (quantum physics and all) to give us an adequate cosmology to live by and to guide our society by." — Willis W. Harman — From his address to the First Tucson Consciousness Conference in 1994. [5]

Divergent Pathways

By the first decade of the new century, important revisions of some long-accepted CN paradigms were being published. But, apparently, not the most fundamental of them.

> "An understanding of how *the human brain produces cognition* ultimately depends on knowledge of largescale brain organization. Although it has long been assumed that cognitive functions are attributable to the isolated operations of single brain areas, we demonstrate that the weight of evidence has now shifted in support of the view that cognition results from the dynamic interactions of distributed brain areas operating in large-scale

> networks.... Much of our current knowledge of cognitive brain function has come from the modular paradigm, in which brain areas are postulated to act as independent processors for specific complex cognitive functions. Accumulating evidence suggests that this paradigm has serious limitations and might in fact be misleading. Even the functions of primary sensory areas of the cerebral cortex, once thought to be pinnacles of modularity, are being redefined by recent evidence of cross-modal interactions. A new paradigm is emerging in cognitive neuroscience that moves beyond the simplistic mapping of cognitive constructs onto individual brain areas and emphasizes instead the conjoint function of brain areas working together as large-scale networks. (*italics mine*) [6]

This paragraph is notable for some remarkable new truth but also some remarkable continuing error. Cognitive neuroscience was having to admit that some previous, thought-to-be-secure paradigms (the mapping of cognitive constructs onto individual brain areas) were faulty. These revisions were, at the time, of interest to me for understanding psychedelic effects, as I will discuss below. Yet the view was still that "the human brain produces cognition." But at least the field of consciousness science was making some progress.

Cognition, like love, is "a many splendored thing" ! [7] Indeed, love may well be one of cognition's more mysterious elements, among many other emotions, volitions, perceptions... and memory itself. But can we say that "the human brain produces cognition" in an analogous way that the pancreas produces hormones? Does the brain *produce*, i.e., manufacture, generate, construct, *cause* our every perception, belief, emotion, intention, and all the rest of what we perceive as part of consciousness? It would seem so, considering the statements of the CN definitions above and the many papers and books I've referred to. Francis Crick put it most boldly: "You, your joys and sorrows, your memories and ambitions, your sense of personal identity and free will are, in fact, no more than the behaviour of a vast assembly of nerve cells." [8]

But agreement is hardly universal, although dissenting voices, for various

reasons, do not occupy center-stage at conferences nor are their papers and books as easy to locate.

And getting back to the questions I posed concerning psychedelic experience: If there are serious errors in CN views, it is essential to understand them since they are also relevant — perhaps even more so — for arriving at an accurate account of psychedelic experience. If brain produces consciousness, or if brain states are identical with conscious states, can we say the same about psychedelic consciousness? Are there specifiable neural configuratons in the brain which can be said to produce psychedelic experience? A leading figure of psychedelic research these days, Robin L. Carhart-Harris, seems to think so. Neural correlates of the psychedelic state as determined by fMRI studies with psilocybin "These results strongly imply that the subjective effects of psychedelic drugs are caused by decreased activity and connectivity in the brain's key connector hubs, enabling a state of unconstrained cognition."

Remember also that we are looking for a way to understand psychedelic experience that would apply to an Awakening for Proto- *H. sapiens*!

So, let's have a look at what the dissenting voices are saying about Cognitive Neuroscience.

What, then, is wrong with CN?

A geat deal. Does the brain think? Does the brain *do* all sorts of things that are strictly psychological, does it predict, hypothesize and decide? A little analogy:

Does the arm execute a tennis shot? A few physiology graduate students were watching a tennis match on TV one day when the professor was out having lunch, and they all commented on how McEnroe's forehand smash was a classic, and seemingly identical each time, almost robotic. They got a bright idea: "Let's attach one of those new mini-scanners to his arm and map all the muscular correlates of his forehand smash! We should apply for a research

grant immediately."

Sure enough, many arm-scans later it was revealed that certain muscle cells invariably acted in synchrony, and others alternatingly, some even took a rest from time to time, etc. etc. But did they *understand* the phenomenon of a forehand smash? Did they think that the arm *caused* the smash? One of the budding scientists had some doubts, and took a closer look with his trusty microscope. "Hey! Check this out! All those muscle cells are connected to... to nerves! And all those nerves connect to... the brain! Why would the arm be telling the brain about its actions?"

"Aha! Maybe the brain is what is *causing* the smash!" said another. "This is truly revolutionary".

After publication of a few seminal papers in the *Journal of Conspicuous Events* doubts crept in again, and one of the more perceptive students suddenly blurted out, "Who is this John McEnroe dude anyway, and where does *he* enter into the picture?" McEnroe, his tennis schedule too occupied, naturally refused to submit to a call from the laboratory requesting a few weeks of his time for further studies of the phenomenon of the forehand smash. So, still today there is much mystery about the result of the whole research project, and where to go next.

Perhaps the difficulty was in *knowing who was doing the thinking*?

Following here and in succeeding installments of "Awakenings", are short summaries of some of the more important works I have come across in my ongoing quest, works usually by scientists and philosophers outside the mainstream of consciousness research, works which strongly suggest, as I have done above, that scientifically satisfying answers to the mind/body problem are still a long way off. I also provide links to excerpts, and entire chapters of these works so that the reader may follow my research in greater detail and become as convinced as I am of where we are now, and where we must go to understand these tricky topics.

First off, then, and this one is extremely important:

The Mereological Fallacy

The first part of chapter three in *Philosophical Foundations of Neuroscience.* [see the above image] is titled "Mereological Confusions in Cognitive Neuroscience." Please have a read of this important analysis here

The authors conclude, (a brief summary):

> It is our contention that [the] application of psychological predicates to the brain *makes no sense.* It is not that as a matter of fact brains do not think, hypothesize and decide, see and hear, ask and answer questions; rather, it makes no sense to ascribe such predicates *or their negations* to the brain... *The brain is not a logically appropriate subject for psychological predicates...*
>
> Our point, then, is a conceptual one... Psychological predicates are predicates that apply essentially to the whole living animal, not to its parts...
>
> Mereology is the logic of part/whole relations. The neuroscientists' mistake of ascribing to the constituent *parts* of an animal attributes that logically apply only to the *whole* animal we shall call 'the mereological fallacy' in neuroscience... Human beings, but not their brains, can be said to be thoughtful or thoughtless; animals, but not their brains, let alone the hemispheres of their brains, can be said to see, hear, smell and taste things; people, but not their brains, can be said to make decisions or to be indecisive.

Please read the entire excerpt if you have doubts. The upshot is that *brains alone* cannot *do* what only the owner of the brain can do, with the *assistance* of his brain, of course. This applies to such things as a wide range of cognitive, cogitative, perceptual and volitional capacities. The *brain* does not have experiences, believe things, interpret clues on the basis of information made available to it, or make guesses or predictions. [9]

The *brain* does not conceptually manipulate rules, categorize, know things, reason inductively, or construct hypotheses or representative maps. If you think I am flogging a dead horse, please read the excerpt, for some of our most important sceintists are claiming that *the brain* in fact *does* such things. A brain cannot *think* any more than it can run around the block. Just as an arm cannot produce a forehand smash in a tennis match.

A common reaction to such criticism has been that the neuroscientists, exploring new territory, simply have not developed the proper terminology for their revolutionary claims, that saying that *the brain does this or that psychological thing* is merely a *façon de parler.* But see the PDF linked here for a rejoinder to such claims. (Search thd PDF for *façon de parler*)

Neither can it be said that a brain is conscious! Consciousness too, is a property of an entire organism. In fact, consciousness is not really a property, or a thing, but a *behavior* extensive in time.

And if consciousness must be understood according to these provisions, how much more so must psychedelic consciousness be so understood! *The brain*, nor its neurons, nor its systems and modules insofar as those can be shown to exist... *does not produce, cause, manufacture, generate or construct psychedelic experience!*

And therefore, a brain, under the influence of a psychedelic chemical, is not the cause of a psychedelic experience! And so, we may not say that psychedelic drugs cause psychedelic experiences.

I am, of course, not saying that the brain does nothing at all. What it does do I will expound upon in the next part of of this series, "Awakenings V".

Awakenings V

SALIENCE • 10 MAY

Read full story →

1 Identical with the common botanical "Heavenly Blue Morning Glory" sold in garden stores.

2 “How does LSD Work” in *The Hallucinogens*, Hoffer and Osmond, Academic Press 1967 p211.

3 The first contributor to *Toward a Science of Consciousness: The First Tucson Discussions and Debates.* “Facing Up to the Problem of Consciousness”

4 Bennett and Hacker, *Philosophical Foundations of Neuroscience.* Blackwell, 2003.

5 According to Robert Sapolsky, a neuroscientiest and primatologist at Stanford, it’s not just other animals that are deterministic machines, he says, but humans. Embracing a scientific worldview, for Sapolsky, means accepting that there’s no free will. Every development, including every action of living beings, follows inexorably from the previous state of things: “We are nothing more or less than the cumulative biological and environmental luck, over which we had no control, that has brought us to any moment.” (From a review of *Determined: A Science of Life Without Free Will* in the New York Review of Books, February 2025

6 Steven L. Bressler and Vinod Menon: “Large-scale brain networks in cognition: emerging methods and principles” Feature Review in *Trends in Cognitive Sciences* 14 (2010) 277-290.

7 Popular song with music by Sammy Fain and lyrics by Paul Francis Webster. The song appeared first in the movie Love Is a Many-Splendored Thing, and it won the Academy Award for Best Original Song in 1956. From 1967 to 1973, it was also used as the theme song to Love is a Many Splendored Thing, the soap opera based on the movie.

8 Francis Crick, *The Astonishing Hypothesis*, Charles Scribner’s Sons 1994

9 One of the latest offshoots of CN is the idea of the brain accomplishing "predictive processing". The conclusion of that theory is that our perception is but a controlled hallucination.