

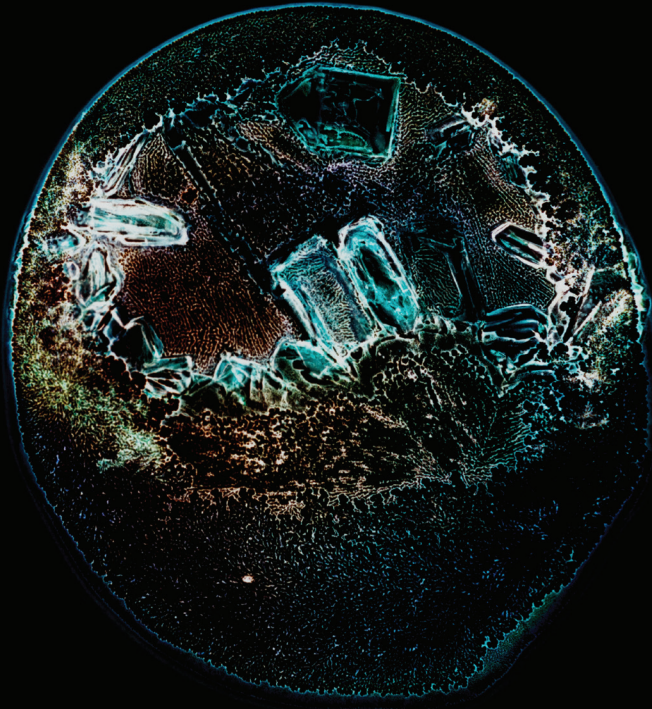
TRANSMUTATION | COSMOS | PSYCHE - A CARTOGRAPHY

an essay by

*Jeannie Moser & Christina Vagt*

ALL YOU CAN FEEL

by *Sarah Ancelle Schönfeld*



EUROPE | 37° 58' N, 23° 43' O

In the 17th and 18th centuries, transmutation emerges as an alchemical concept used to describe the conversion of chemical elements such as quicksilver into gold or silver. This occult knowledge is comprised simultaneously of tangible laboratory and experimental techniques and of a metaphysics of transformation and transmigration that has its origins in Greek antiquity.

BASEL | 47° 33' N, 7° 35' E

Between 1527 and 1528 Paracelsus, whose name is associated with magical and alchemical techniques, but above all else with large quantities of quicksilver, holds lectures in the department of medicine. Only macrocosmically, he believes, is the microcosmic human universally comprehensible. “First the knowledge of this accordance,” he writes in his *Opus Paramirum*, “allows the doctor to reach perfection. He knows the world and through knowing the world knows people, and the two of these together are only one single thing and not two.”<sup>1</sup> For Paracelsus the five entia—constitution, cosmos, venom, spirits, and God—and their disharmonic interactions cause an imbalance in the fundamental human substances: salt, sulfur, and quicksilver. Illness arises out of this imbalance. A pharmacon helps to reestablish equilibrium. Paracelsus identifies such a substance—an appropriate agents (harmonious and suitable and, according to its etymological origins, a remedy that acts through its similarities)—through the doctrine of signatures. The doctrine of natural signs reveals the curative potential of blooms, roots, fruits, barks, and leaves on organs and bodily fluids through an examination of attributes like location, form and color, structure, taste and smell, character, growth, or longevity: because walnuts call to mind cerebral coils, they should help against ailments affecting head. Based on a cosmic conception of similarity, the doctrine of signatures sets things—whether human, animal, stellar, vegetable, or mineral—in relationship to one another. Criss-crossing the order of species and genera, it forms a system of relations predicated on analogic attributes.

CAMBRIDGE | 42° 22' N, 71° 6' E

The reemergence of the term transmutation in the foundational physiological study *The Fitness of the Environment* by the American biochemist Lawrence Henderson is marked both by its difference from and its similarities to the occult alchemical practices of the early modern period. On the one hand, the concept of the conversion of chemical elements is rationalized scientifically; on the other, it establishes a new trading zone between organic and inorganic systems. The medial condition of possibility for a post-alchemical transmutation is the discovery of radiation, and along with it, the relation between the radioactive decay of chemical elements and the mutation of organisms. Beginning in the 1920s, X-rays were used to deliberately induce mutations in fruit flies and plants.<sup>2</sup>

1. Paracelsus-Lesebuch. *Die Arznei – Das Wort Gottes*, edited by Klaus Bielau, (Birnback, 2004), 44f.

2. See María Jesús Santasmases, *Size and the Centromere: Translocations and Visual Culture in Early Human Genetics*, in: Luis Campos, Alexander von Schwerin (ed.), *Making Mutations: Objects, Practices, Contexts*, Max-Planck-Institut für Wissenschaftsgeschichte Preprint (Nr. 393), 2010, 189-209, 199.

Instead of causing organisms to mutate through exposure to radiation, Henderson, having observed the transmutation of radium to helium, turned his attention to generating a genetic model of the periodic table of elements. The behavior of radium and even the classification itself suggests a “genetic relation” between elements, even if the fundamental process and its laws still remain unknown: “Certain it is that the properties of matter are no chance phenomena, and that transmutation has ceased to be merely a philosopher’s dream.”<sup>3</sup>

The relation between the color spectrum of sunlight and that of chemical elements also speaks for a doctrine of inheritance or relation between chemical elements. The spectroscope, which splits light into its (color) spectrum, shows the same chemical elements in the light of visible stars as in the sun. Everything in the universe seems to be made of the same materials: “Such facts, so familiar that they require no comment or explanation, might sufficiently justify the acceptance of the chemist’s known elements as the only important matter in the universe.”<sup>4</sup>

And so early 20th century biochemists are transformed back into cosmologists.

BASEL | 47° 33' N, 7° 35' E

Between 1935 and 1942, Swiss chemist Albert Hofmann performs experiments with alkaloids of the grain parasite ergot in the pharmaceutical laboratory of the natural materials division of the Sandoz Company. He’s looking for a circulatory and respiratory stimulant. He wants to synthesize a drug, a pharmakon. What he finds is lysergic acid diethylamide. A psychotropic substance, whose attributes are revealed immediately by its name, which unites the Greek words ψυχή (psyché) and τρόπος (tropos). It agitates, transforms, manipulates, and gives direction to the psyche. Matter causes consciousness to mutate. It infects and alienates sensual perception, modifies cognition, affects moods and feelings. One drop restructures the mind in a radical fashion.

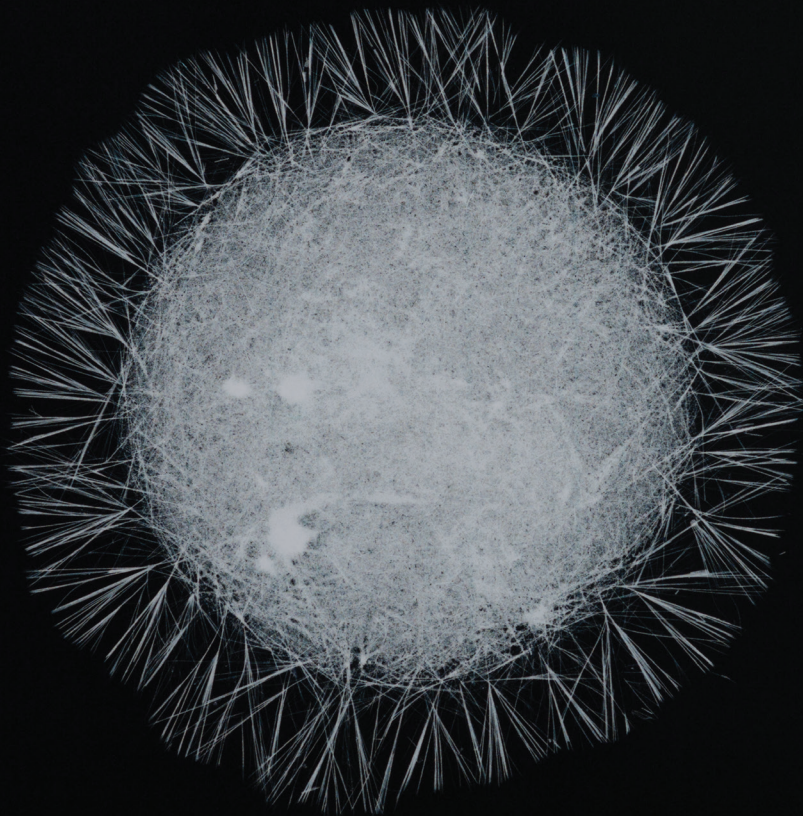
Colorless, tasteless, odorless, but hyperpotent in minimal doses, LSD is seen as a magic bullet. The emergence of the chemical is met by boundless euphoria in medicine, psychiatry, pharmacology, and neurology. It makes its way to established research institutions around the globe and has a two-decade long medical career as an analytical tool, especially in research on schizophrenia, and as a psychotherapeutic aid, as well as a psychotoxic agent of war.

Reciprocally, LSD brings the chemist foreign materials for examination in his laboratory. The substance leads mushrooms and other magic, entheogenic, or sacred drugs home to its father, who describes them as LSD’s Mexican relatives, as its natural siblings.<sup>5</sup> At the end of the 1950s, Hofmann isolates Psilocybin and Psilocin from the hallucinogenic mushroom Teonanácatl and eventually synthesizes them; in 1958 the

3. Lawrence J. Henderson, *The Fitness of the Environment. An Inquiry Into the Biological Significance of the Properties of Matter*, (New York, 1913), 15.

4. *Ibid.*, p. 9.

5. See: Albert Hofmann: *LSD – Mein Sorgenkind. Die Entdeckung einer “Wunderdroge”*, (Munich ,2002), 12; *ibid.*.: Panel discussion *Was ist Bewußtseinsweiterung?*, (Heidelberg, 1996). An audiobook is also available. See: *Erinnerungen eines Psychonauten. Von der Entdeckung entheogener Drogen*, original recordings, audio CD, Cologne, 2003.



## All You Can Feel | Caffeine

ethnomycologist Gordon Wasson sends him two examples of Ololiuqui bindweed seeds, from which he is able to derive the indolic compounds in their pure chemical form. They are magic drugs, according to Hofmann, because they allow the indigenous wise men and women “to make God’s will known to them in a direct, clear manner, and allow them in fact, to see into heaven and to come into contact with God himself.”<sup>6</sup>

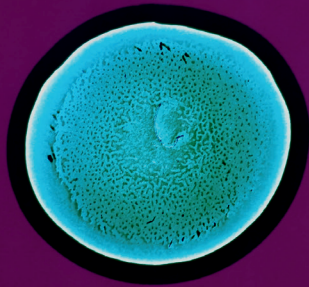
CAMBRIDGE | 42° 22' N, 71° 6' O

When Henderson brings the British mathematician Alfred North-Whitehead to Harvard as a professor of philosophy in 1924, transmutation assumes a metaphysical framework once again: Whitehead elects it as the 6th obligatory category of his main cosmological work, *Process and Reality* (1929). The concept of transmutation stands at the center of Whitehead’s proclaimed new ordering of nature, which took the

---

6. Albert Hofmann: *LSD - Mein Sorgenkind*, 116.





## *All You Can Feel* | LSD

formerly magical or alchemical transformation from inorganic to organic and from sensible to intelligible and broke it down to the level of microprocesses. Why shouldn't feeling, perception, and thought also be a part of a doctrine of universal chemical inheritance, especially since Einstein had provided the most fundamental formula of transmutation, the equivalence of energy and matter, in 1922.

BOTTMINGEN | 47° 31' N, 7° 34' E

In 1961 a fascinating and unsettling question appears: are psychotropics, through their structural similarities to the body's own substances, capable of altering a non-materially conceptualized inner core of being? In a letter to Ernst Jünger, Hofmann asks whether this core can be damaged, "through that which takes place in its

material, physical-chemical, biological and psychic shells—or whether matter, in the form of this drug, develops a potency capable of attacking the spiritual center of the personality, the self. The latter can be explained because the effect of magical drugs takes place on a glue line, through which matter and mind seep and mingle with each other. These magical substances are themselves sites of rupture in the endless kingdom of the material, through which the depth of the material, its affinity to the spirit, is revealed. [...] These correspond to the sites of rupture caused by radioactive materials in the periodic table of elements, where the transformation of matter into energy is manifest.”<sup>7</sup>

NEW YORK | 40° 43' N, 74° 0' W

Complex forms of order—whether multicellular organisms or the society of New England—require a social order according to Whitehead. Societies only exist as structures because, and for as long as, they can change and stabilize themselves, they persist only as long as they continue to pass down the old and integrate the new. This epigenetics of social order, which claims a fundamental relationship between all elements of a structured group, cannot be explained, according to Whitehead, without the transmutation of mind and matter. Thus he understands transmutation to be the process by which prehension is abstracted, the process which draws a multitude of sensory impressions together into a single sensory object: for example, the capability of an organism to obtain an average objectification (abstraction), which it trusts and knows how to employ, of its current environment through a process of analogy and differentiation (mimesis): “Transmutation is the way in which the actual world is felt as a community, and is so felt in virtue of its prevalent order.”<sup>8</sup> The capability to conceptualize one’s self, others, and the environment in their intentionality is not reserved for the conscious, in Whitehead’s view, but is instead a characteristic of life itself. Even microbes are granted a feeling for their environment, and affective relationships are the precondition for the emergence of the new. As a result of the new natural order, the mimetic, affect-based processes of imitation play out, for Whitehead, not only in art and society, but also always already take place on the level of unknown, affective microbes—and this takes place wherever life is found.

HEIDELBERG | 49° 25' N, 8° 43' E

That dead, inorganic matter like LSD can yield such drastic transformations can be explained, epistemologically at least, in that—like the doctrine of signatures—it relies on mimetic ordering, on a functional analogy between the synthetic and the biogenous. Highly active psychotropics, adds Hofmann, “are possessed in their chemical construction of very strong relations to the body’s own substances, especially those which appear in the central nervous system and play an important role in the regulation of its functions.”<sup>9</sup> Close relations exist, then, in the composition of LSD, Psilocybin, and Ololiuqui, amongst others, but hallucinogens are related just as closely to endogenous materials. As with (nor-) adrenaline and mescaline, the structural similarities between psilocybin and serotonin are striking: serotonin,

7. Ibid, 163.

8. Alfred North-Whitehead, *Process and Reality. An Essay on Cosmology*, (New York, 1929), 250.

9. Albert Hofmann: *LSD – Mein Sorgenkind*, 164.

which is widely distributed in nature and can be produced by amoebas and plants, serotonin, which the pineal gland in turn transforms into hormones, (for example melatonin, which regulates the circadian rhythms of humans), and serotonin, which is present in walnuts in large quantities. Only one oxygen molecule has to be changed, Hofmann explains in 1996, in order to convert this fundamental transmitter of our thoughts and feelings into psilocybin.<sup>10</sup> Through this argumentative maneuver matter and mind become members of one, affinity-based family. This step allows Hofmann to assume that, “in the same measure as our mental existence can be influenced by our chemical, our material organism can be influenced and shaped by our mind.”<sup>11</sup> A single trace of the substance acts as a goddess of destiny and is capable of forming the self, or vice versa.

Functional analogies and the relation of structure and attribute are the figures of thought that co-determine the psycho-pharmaceutical revolution of the mid 20th-century. And through these figures, the still contemporary idea of a self that is materially formed and can be materially regulated—the idea of a neurochemical self—emerges and is shaped. This self makes irritating or unwished perception, thought, and feeling capable of interpretation as a chemical imbalance, as a disharmonic interaction of substances in the brain.<sup>12</sup> A substance, a pharmacon, helps to reestablish equilibrium. It is a self that is open to pharmaceutical administration, correction, and discipline, even as it cultivates technologies of ebullient automanipulation. It enables the hedonistic, the medicative, as well as the optimizing modulation of the self, all of which can be subsumed under the term neuro-enhancement. There is the possibility of producing imaginative intensity, of the denaturalization and automanipulation of perception, of the corporeal stimulation of fantasy and emotion. With the appropriate chemical agents you can stay awake, accelerate, enhance concentration, or enable communication. You can burn your creative candle at both ends, lighten your mood, elevate or depress the frequency of the sensory processing of data, feel keenly, remember, forget, or just come to peace.

BERLIN | 52° 31' N, 13° 24' E

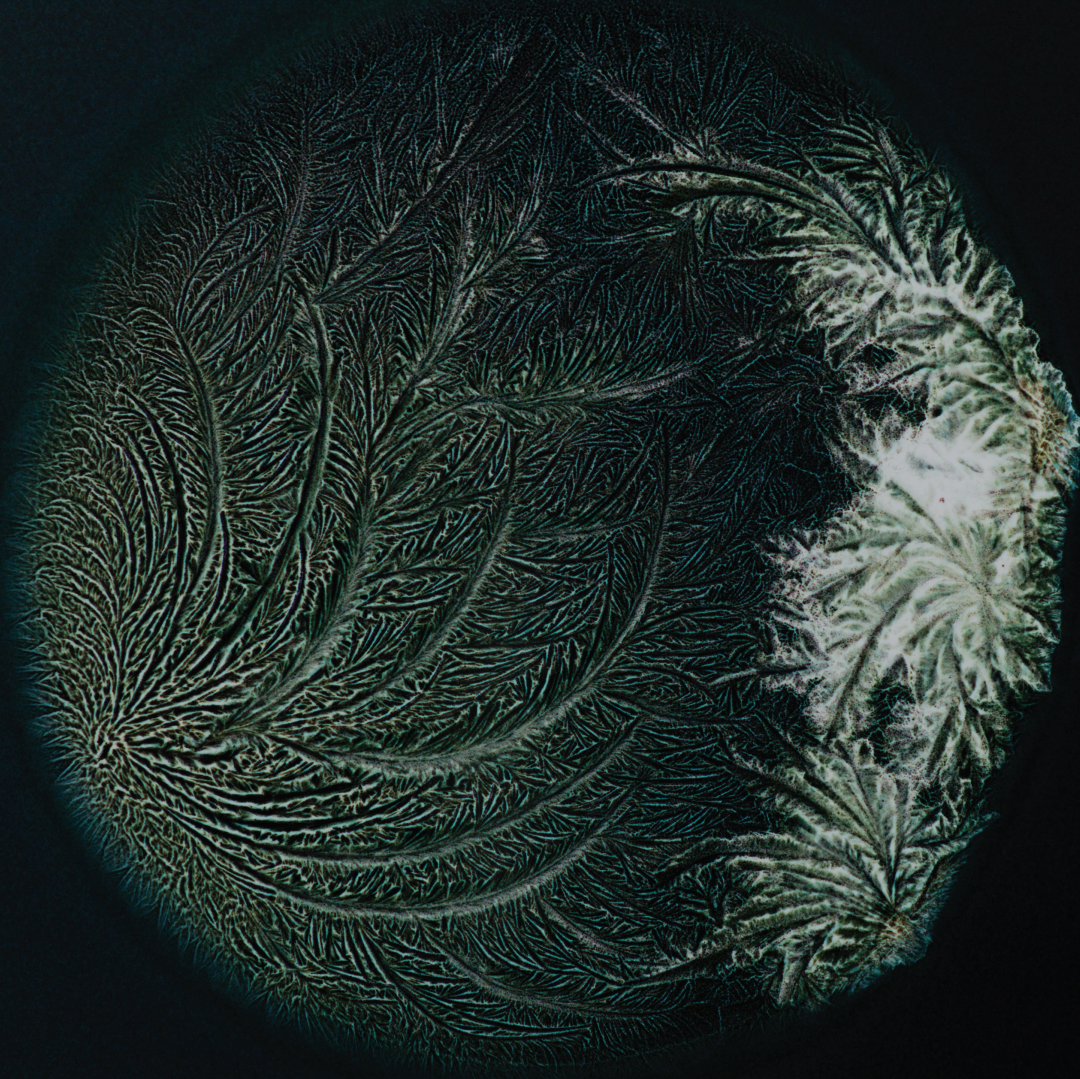
The universe is reborn second-by-second. The intellectual regression to figures of occult, alchemical, and magical ways of explaining the world can make Whitehead's speculative cosmology seem anachronistic, even though it shares a point of departure with, for example, Henri Bergson's *Lebensphilosophie* or Martin Heidegger's program for the destruction of the history of metaphysics, namely the dissolution of the Cartesian separation of mind and body, which, in the light of recent scientific discoveries in the theories of relativity, quantum mechanics, and evolution, is no longer sustainable. Philosophy is supposed to reassemble the shards of a thousand individual sciences that study the small, the large, and the living.

10. Albert Hofmann: Panel discussion [Podiumsdiskussion]. *Was ist Bewußtseinsweiterung?*

11. Albert Hofmann: *LSD – Mein Sorgenkind*, 164.

12. See: Nikolas Rose: *Neurochemical Selves*, in: *Society*, vol. 41, Nr. 1 (2003), 46-59

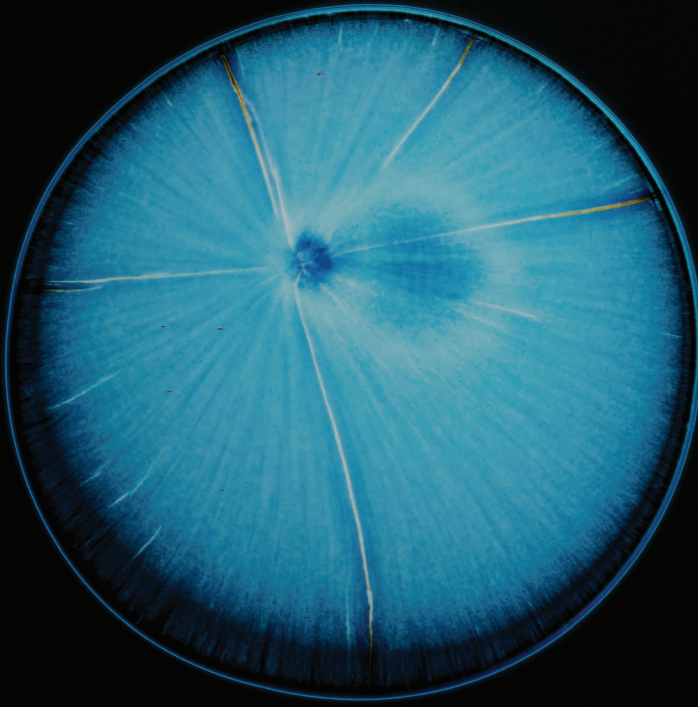




*All You Can Feel* | Pharmaceutical Speed

The parts of Whitehead's work that appear in the vestments of transmutation seem in some places as though they were neo-platonic mysticism; an alchemical synthesis of matter and spirit is revealed by closer consideration to be an attempt to metaphysically reconcile physical laws with organic processes like perception/comprehension, as well as with the emergence of novelty: when I sit in a chair, both poles—the mental and the physical—are synthesized before any conscious perception. Whitehead calls the process data processing and it is a very complex affair: my hands feel the stool long before I can make a picture of it with my eyes. The chair may not even be where I perceive it to be anymore: "The eyes and the hands are in the past (the almost immediate past) and the chair is in the present." Perception always takes a little time. My senses, at least in comparison to things, are always already in the past. For the most part this isn't apparent. If it is, I take a minute to reexamine the evidence, or there's an accident.





### *All You Can Feel* | Cocaine

Mostly we find things where we expect them microphysically however, the chair I sit on is anything but still and unmoving. In order to perceive, I must obscure; in order to understand, I must forget. All of this belongs to a higher order of endless acts of creation and decay, which constantly renew the universe: “Each creative act is the universe incarnating itself as one.”<sup>13</sup>

Cosmology appears to be a question of perspective, or much more accurately, a question of multitudinous perspectives—or at least Whitehead offers this for our consideration. If we imagine the universe as a computer graphic, the monitor doesn’t need a particularly high refresh rate—from a terrestrial perspective very little changes in the firmament in a human second. From the perspective of a photon or a space ship moving at the speed of light, however, it would all seem very different.

---

13. North-Whitehead, *Process and Reality*, 245.

EARTH | AVERAGE DISTANCE FROM THE SUN 149,000,000 KM

1969. The year of the first moon landing. Richard Buckminster Fuller's *Operating Manual for Spaceship Earth*, a parable of Armstrong's flight to the moon and back, is published. The narrator assumes the role of the astronaut, leaves the earth, and becomes an unworldly observer of a world wasting its resources in an arms race. The extraterrestrial perspective engages the blue planet as a whole, as a spaceship, as a system, as a mechanism: "I've often heard people say, 'I wonder what it would be like to be on board a spaceship,' and the answer is very simple. What does it feel like? That's all we have ever experienced. We are all astronauts."<sup>14</sup>

LOS ANGELES | 34° 3'N, 118° 15'W

Contemporaneously with the first expeditions into the great beyond, in the middle of the USA's race with the USSR to be the first on the moon, Betty Eisner, a pioneer of psychoanalytic therapy, announces enthusiastically that, "We are indeed fortunate to be explorers of inner space and the first voyagers who can make planned and often predictable trips into areas where time and space seem to have no bearing."<sup>15</sup> Self-proclaimed psychonauts commit themselves, with the help of drugs, to undertaking voyages into the great beyond of the mind.<sup>16</sup> The expression is well chosen, according to Hofmann's judgment, because the inner space of the mind is exactly as infinite and mysterious as the external beyond, and because the cosmonauts of the celestial, like those of the mental, may not linger, but must return to the everyday consciousness of the earth.<sup>17</sup> Substances promise direct access to mysterious hidden regions: controlled excursions into the psyche; into the individual and personal unconscious; into the racial and collective unconscious—even in their cosmic dimensions—are thought to be achievable. Figures and narratives of the trip are generated with a nearly inflationary enthusiasm. Within the culture of knowledge created by drug intoxication, it becomes a research expedition into the unknown terrain of the inverted universe: "a trip through the cosmos inside my head. LSD enables everyone to become an astronaut of himself."<sup>18</sup>

BLACK MOUNTAIN COLLEGE, NORTH CAROLINA | 35°37'N, 82°19'W

The perspective of the astronauts is supposed to change our vision of the earth. On spaceship earth, nationalist and racist idiocy is supposed to be dissolved into planetary consciousness. The planetary dimension—the media of transportation and communication that span the globe, the worldwide distribution and consumption of resources—are supposed to be experientially accessible to any child at any time. Buckminster Fuller's texts, and above all his architectural sketches and his designs, such as the Geodesic Dome from 1948, are supposed to serve the same purpose. The promise of a better future for the planet lies, according to Fuller, not in political and economic engagement, but in a "Comprehensive World Design." This world design and the making visible of the invisible are not the smallest factors in the survival of life on board space ship earth.<sup>19</sup>

14. Richard Buckminster Fuller, *Operating Manual for Spaceship Earth* (1969), (Baden (Schweiz), 2008), 55f.

15. Albert Hofmann *LSD – Mein Sorgenkind*, 87.

16. Betty Eisner *The Influence of LSD on Unconscious Activity*, 141.

17. Albert Hofmann *LSD – Mein Sorgenkind*, 87.

18. Alan Harrington *A visit to Inner Space*, in: David Solomon (ed.): *LSD. The Consciousness-Expanding Drug*, (New York, 1966), 72-102, 72.

19. See: Buckminster Fuller, *Operating Manual*, 31.

U.S.-MEXICO BORDER | 32° 40' N

Psychotropics figure as media through which the invisible are brought into the realm of the visible, through which investigation becomes possible. As such, they are recorded in a history of the progress of optical instruments: “five-hundred years ago we saw the external world one-dimensionally—the world was only visible to us through the bare eye,” So writes Timothy Leary in 1968, five years after he was dismissed from Harvard. “Sometimes it all seemed clear,” he continues, “sometimes it was murky with smoke or with fog. But the invention of the magnifying glass brought new layers of reality into view. Every new way of enlarging images had to be explained by a new science, a new language. Microscopes, telescopes, electron microscopes, radio telescopes. Psychedelic chemicals have exactly the same function for our inner vision.”<sup>20</sup>

PARIS | 48° 51'N 2° 21' E

Monsieur Daguerre is said to have awarded an artificial retina to physics with his invention. This, at any rate, is the metaphor Baptiste Biot, Professor of Physics at the Collège de France, uses in 1839 to honor the invention of photography and its significance for the natural sciences. Even as it praises, however, it obscures one of photography’s most important abilities. Photography, or more accurately, photo-emulsion, proves itself from the very beginning, to be a medium that can do more than merely record what the eye sees: it can also record radioactive phenomena that escape the human eye.<sup>21</sup> Ironically, it is exactly the excitability and auturgy of the photographic emulsion that causes photography to perpetually appear suspect as a scientific medium. It is exactly in the case of these photographs of radiation that one often doesn’t know whether what one sees is fact or artifact.<sup>22</sup>

LOS ANGELES | 34° 3' N, 118° 15' W

Research on consciousness that probes the unmeasured boundaries of the psyche intoxicated by LSD, Psilocybin, Mescaline, MDMA, or Ritalin, attempts, in its description and documentation of these novelties, which are suddenly able to be felt and experienced, to record what the inner eye sees with its artificially manipulated retina. In order to do so, it attempts a rhetorical operation of transmutation, in which it brings the new into the metaphor of a *terra incognita* and attacks its post-colonial cartography. The language of geography becomes a tool of revelation and of contemplation.

---

20. Timothy Leary: *Politik der Ekstase*, (Hamburg, 1970), 104.

21. Kelley Wilder, *Photography and Science*, (London, 2009).

22. Peter Geimer, *Was ist kein Bild? Zur Störung der Verweisung*, in: *ibid.*, (ed. Hg.), *Ordnungen der Sichtbarkeit*, (Frankfurt, 2002), 313-341.



Freud remains unchallenged as the first surveyor of the unconscious, but new regions are recorded on his map. “We have,” Eisner writes, “assigned names to some of the most frequently-appearing [sic] places: Cosmic Rejection or Limbo; Chaos; the Black or Schizophrenic Belt; the Desert; the Ice Country. In addition to these are the two which have occupied man’s attention since the birth of self consciousness [sic]: Heaven and Hell.”<sup>23</sup> She divides the parts of the unconscious accessible through psychotropics into three levels, between which the transitions are fluid. She calls the third the cosmic. In it oppositions are transcended: order, truth, beauty, love, and all of its combinations...—it can all be felt.

BALTIMORE | 39° 17' N 76° 37' W

The Hubble Space Telescope has been circling the earth and delivering spectacular images from the depth of the universe for more than two decades. Depth here means physical and temporal distance. Because the light of stars from more distant galaxies sometimes has to travel billions of miles before reaching earth, we see not only into the beyond, but also in equal measure into the before. Astrophysicists are the archaeologists of the universe.<sup>24</sup> Events from the cosmological depths take place only partially in the visible spectrum or don’t offer the eye enough optical differentiation: Hubble delivers digitally processed data, not color photographs. Different wavelengths and density values are only assigned to one of the three elementary colors, from which our eyes compose all other colors, once the data is back on earth. So hydrogen might become red, sulfur green, oxygen blue. Colors are intended to accentuate the most interesting parts of the heavenly bodies and introduce visible differentiations—work that stands somewhere between art and science: “creating color images out of the original black-and-white exposure is equal parts art and science.”<sup>25</sup> The supposedly spectacular and allegedly psychedelic images of the emergence and decay of entire galaxies—those images that appear as screen savers or adorn the cover of science magazines—are assembled on earth, not built in the universe. The art of falsifying colors arrived in astrophysics a long time ago; the enhancement of science is an established component of scientific work.

BERLIN | 52° 31' N, 13° 24' E

The fact that the colors are artificial does not diminish the cosmological power of photography. Whether the origin can be found in nature or in art cannot be decided from the perspective of the medium—what counts is the transmutation of both poles.

23. Betty Eisner: *The Influence of LSD on Unconscious Activity*, 141.

24. See: Patricio Guzman, *Nostalgia de la Luz* (documentary film), (Chile, 2009).

25. See: [http://hubblesite.org/gallery/behind\\_the\\_pictures](http://hubblesite.org/gallery/behind_the_pictures) (last visited 04.08.2013)