

THE BECKLEY FOUNDATION

INTERNATIONAL SYMPOSIUM ON THE OCCASION OF THE 100TH
BIRTHDAY OF ALBERT HOFMANN
BASEL JANUARY 13TH-15TH 2006

LSD: PRECIOUS KEY OF NEUROSCIENCE

By Amanda Feilding

It's such an honour for me to be here at the 100th birthday celebration of my hero, the great modern alchemist, Albert Hofmann. When I saw him last year I promised to do my utmost to give him a present worthy of such an auspicious day – I *promised* to open the doors to scientific research into the effects of LSD in the human brain.

It seems unbelievable that for almost forty years, scientific research into LSD, this great tool of neuroscience, has been forbidden. The good news is that the researchers I am working with in the US, sponsored by the Beckley Foundation, have just got the first two permissions to start the first pilot study with human volunteers on LSD. The bad news is that our best efforts were not good enough to get the research going before Albert's birthday, as the final permission is still pending. I hope that this first pilot study will open the gates to an orchard filled with ripe fruit ready for picking, thereby hopefully increasing our understanding of consciousness and the mechanisms underlying its altered states.

In this talk, I would like to tell you a little about myself and why I have a passion for the subject of expanded consciousness, and why this led me to set up the Beckley Foundation. I will talk about the effects of living on LSD and the hypothesis underlying how it and other techniques to alter consciousness work by increasing the blood supply to the brain. I will underline the value of LSD as a tool both in neuroscience and psychotherapy, and finally point out why this potential expansion of brain function is so vitally important in evolutionary terms.

Back to the beginning! I had a very odd upbringing, isolated and on the outskirts of society. As a child I had visionary experiences – from about 5, I had the habit of communing with a god on the mound in the garden at Beckley; at the local Catholic church, Corpus Christi, I regularly floated up to the ceiling – no doubt helped by the incense. Later, aged 16, at Mistra in the Peloponnese, I experienced a glorious mystical union with nature, from which I was only brought back by holding on to the sound of the goat's bell – rather like the harp

THE BECKLEY FOUNDATION

of the Bwiti cult. Inspired by these experiences, I studied Comparative Religions and Mysticism with the renowned Prof. Zaehner. I learned classical Arabic to read the Sufis, and struggled to find out more about the mystical experience and what underlay it – all with no great success.

Then in 1965 I found LSD – or maybe it found me. “Aha”, I thought, “this is what I have been looking for!” With LSD I could better experience the subtle energies and the interconnectedness of all things, from my inner world to the pulsating, living universe.

Luck filled my sails - six months later, I started a great love affair with a Dutch natural scientist of genius, Bart Huges. He taught me many things. He proposed that LSD heightened consciousness by causing an increased supply of blood to the brain, by constricting the veins, which irrigated billions more neurons and thereby intensified perceptions – sensory, psychological and intellectual.

Suddenly, I had found my path, an ideal technique to open that door to a new world view where one sees reality at a deeper level, with a clearer view from higher up the mountain. I now had in my possession the key to the Aladdin’s cave of the mind.

Put at its simplest, Bart’s hypothesis was that when our ape ancestors stood upright 2 million, or so, years ago, they suffered a loss of blood from the brain, because blood is heavier than cerebrospinal fluid. With less blood, fewer brain cells are irrigated by the blood carrying glucose and oxygen, metabolism decreases, thereby lowering the level of consciousness, and common sense, of the world’s now dominant animal. In contrast, he proposed, when we increase the volume of blood in the brain by, for example, standing on the head, yoga, meditation or LSD we restore the lost blood, bringing with it increased awareness. The ancient practice of trepanation may also be found to change the ratio of brain blood to cerebrospinal fluid.

Brain metabolism is the result of the oxidation of glucose. Normally, only a relatively limited number of brain cells are functioning at any one moment. If, as Bart hypothesised, LSD increases the global supply of blood to the brain capillaries, enabling billions more brain cells to combust simultaneously, this in turn, results in a fall in the glucose level of the blood, leading to distortion of normal function and loss of concentration, unless extra glucose and vitamin C are taken to restore a normal sugar level.

THE BECKLEY FOUNDATION

Incidentally, when I first met Albert Hofmann, I asked whether he thought that LSD might increase the volume of blood in the brain. He answered that he was a chemist, not a physiologist, but that he hung from his feet every day to get more blood into his brain.

After 1965 I regularly, often daily, used LSD as a tool with which I could control my level of consciousness. Moderate doses, with vitamin C and glucose to maintain the blood sugar level, and so the mental concentration, were used for creative thought and disciplined work, higher doses for more mystical and psychological exploration. The expansion added sparkle to perception, enabled me to think deeper, see further, and feel more sensitively. With more neurons firing simultaneously the interface between the internal and external is expanded.

For several years I psychoanalysed myself - I found that on LSD I could be both doctor and patient simultaneously. I read the full works of Freud, Wilhelm Reich and Nietzsche on LSD, with a lot of extra glucose. This way, I was better able to understand the subtlety of Freud's works, which were written largely on the accelerated metabolism of cocaine. Alternatively, I allowed the sugar level to fall, in order to regress, and be able to plunge into the eye of the hidden trauma. Those years of psychic digging were extremely valuable. At the same time, I played thousands of games of 'Go', a Chinese board game of pure intellect, an ideal test of cognitive function. LSD, with extra glucose, enabled me to see the game from a higher viewpoint, see new patterns, and win more games.

Many people I have met over the years who have done great things like looking after the poor in Africa, starting a school for 500 untouchables in India, discovering how to duplicate DNA, have told me that they think they would never have done such things without the insight they acquired through a psychedelic experience.

Whether Francis Crick discovered DNA on LSD is debatable, but what isn't in doubt is his great interest in the substance. In a draft lecture written in 1967, he talks of LSD and asks if a chemical were produced which was non-addictive and made 'people more intelligent', would we object to it?

Even the spider weaves a more perfect web on LSD.

It is possible that with informed, controlled use of that magic molecule, the alchemist's elixir, the holy grail of consciousness, humankind could increase

THE BECKLEY FOUNDATION

creativity, improve self-knowledge, enhance happiness, and experience a sense of the mystical. If this is so, it's a vital tool that our poor over-stressed species, so lacking in common sense, desperately needs.

Of course it is important to keep in mind the fact of individual differences. Just as people have different faces, so too, they have different biochemical, physiological and psychological make-ups – what is good for one individual is not necessarily so for another, nor indeed for the same individual at a different time or setting. LSD is a substance which needs to be treated with the greatest respect and caution.

One of the advantages of LSD, apart from being so powerful, non-toxic and, in my opinion, potentially good for the health, is that it has a completely different character at its different levels of dosage - at a large dose it is the God Shiva, powerful and transformational, capable of lifting the veils so that one sees the deeper truth or, alternatively, of shaking the foundations of one's personality like a card castle in an earthquake...however, because of its power, it can be very dangerous if used irresponsibly.

At a medium dose it can add insight, fun and vitality without unduly complicating dealings with other, drug-free human beings.

At this level, it is possible to adjust the dose to achieve the desired level of consciousness, and then maintain that level by regulating the dose from day to day. To use this technique safely, it is essential to remember to take vitamin C regularly, for without that the adrenalin can run out and the sugar level of the blood fall to a dangerously low level. For the specialised art of working on LSD, the understanding of the hypothesis about the underlying blood supply changes, is very valuable.

I believe LSD enables the blood to reach parts of the brain usually closed off from function. It widens the interconnectivity of the neurons by supplying more energy. It is a most valuable tool to alter the mind of man so we are better able to study ourselves and the external world.

LSD could also turn out to be a most valuable aid in neuroscience and psychiatry. Exploring brain function only from the normal state of consciousness may be denying us a vital new lens with which to explore the complexities of the mind. Einstein was right when he said "no problem can be solved with the same consciousness that created it". We need to step outside the box in order to truly

THE BECKLEY FOUNDATION

see what is going wrong. LSD may well be the tool psychiatry has been waiting for – particularly in today’s climate of global neurosis and the need for cost-effective healthcare. Psychedelics, when used in a controlled, clinical setting can be safe and effective means to reduce inhibitions, increase the recall of repressed memories, loosen the ego, and facilitate the free flow of hidden feelings.

If research does endorse the hypothesis that LSD increases the volume of blood in the brain capillaries, then it could prove valuable in the treatment of the diseases of old age. Depression and early signs of Alzheimer are both characterised by the shrinking of parts of the brain as blood flow to those areas is diminished. By increasing the blood supply, low-dose LSD might also help those, who have suffered a stroke and lost function in part of the brain, to re-learn that function.

The Beckley Foundation encourages careful, diligent, dispassionate research into psychedelics and other techniques, such as meditation, that can enhance consciousness. The better understanding of the brain deserves nothing less than the most systematic and thorough exploration. The sad fact is that because of the excesses of a minority of users in the 1960s, governments overreacted by prohibiting scientific research into these substances, as well as their use. The baby was thrown out with the bath water.

Now is the time to resume serious scientific research into how psychedelics may be able to help treat the ills of troubled mankind and expand our knowledge of the workings of the brain. Since research with psychedelics was prohibited, the art of brain imaging has grown exponentially, and there have been huge advances in neuroscience. Serotonin was discovered shortly after LSD, and more recently other neurochemicals, such as anandamide and the endorphins.

The urge to alter consciousness is innate and as old as human kind. We now know that the means of altering consciousness originate in the human nervous system – external drugs just make use of internal mechanisms. Like the cuckoo they take over the nest. They are quick and effective but accompanied by a Pandora’s box of potential dangers, particularly when used in ignorance.

Society needs to recognise this urge to heighten consciousness and incorporate it into the social fabric, as traditional societies have always done. Religions and philosophies have for millennia struggled with the problem of consciousness and its altered states. However, until recently, ‘consciousness’ was a dirty word in science. Now it is accepted, but it is still a total enigma.

THE BECKLEY FOUNDATION

As Francis Crick said in 2003: “A few years ago one could not use the word ‘consciousness’ in a paper for say ‘Nature’ or ‘Science’, nor in a grant application. But thankfully, times are changing, and the subject is now ripe for intensive exploration.”

However, even today, a scientist cannot expect academic promotion or funding, if he wants to study ‘expanded consciousness’, whether brought about by meditation or psychedelics, especially if he wants to research the potential *benefits*.

It is this gap in scientific enquiry that the Beckley Foundation hopes to fill: to help untangle the complicated web of interaction between neurons and blood supply, chemical action, electromagnetic waves, and subjective awareness in different states of consciousness. By better understanding the mechanisms that underlie consciousness and its altered states we gain knowledge in how to control this attribute which lies at the heart of humanity.

I would now like to point out why this potential expansion of brain function is so vitally important in evolutionary terms, by briefly looking at the history of the development of the human brain. The dominance of humanity as a species on this planet may be traced directly to the massive increase in the complexity of neuronal connectivity. This complexity gave rise to the development of language and abstract thought.

This last great leap forward in terms of evolution of the human brain took place about 50,000 years ago. The change was dramatic. Our ancestors suddenly advanced from hundreds of thousands of years of making simple spearheads to creating the beauty of the cave art, which is pure magic, never to be surpassed.

This happened because of the combination of several changes which have left no trace in the skeleton. Dominant among them, I believe, were three major factors: 1) there was a change in the fat metabolism which resulted in more fat deposits, on bosoms and buttocks and, even more importantly, around the brain fibres. These last improved insulation and conductivity – brain messages travelled faster and further than before, increasing and expanding connectivity. 2) There was also an increase in dominance of the mirror neuron system, which increased our ability to copy, to empathise and to learn, thereby facilitating another layer of connectivity out of which language, the Ego and culture evolved. The third vital

THE BECKLEY FOUNDATION

factor, I believe, was the habit acquired by our ancestors of altering their consciousness. This could result from adrenal-based activities, such as hunting, fighting, dancing, or chanting to smoking toads and ingesting potions. Several animals have been observed to eat psychedelic mushrooms, but the human animal, being much more obsessive, took it much further and made it central to his social fabric.

The shamanic tradition was born, out of which evolved spirituality and music, alchemy and art, astronomy and medicine and all the other specialised areas of abstract thinking, which form the core of humanity.

To recap: when the ape stood upright, he reaped many advantages, including seeing further and running faster, but there was one great disadvantage – loss of blood from the brain...the fall from the Garden of Eden. Indeed, one could hypothesise that the basic predicament of being human is that of having lost blood from the brain, because of the force of gravity, which gives preference to the lighter fluid, cerebrospinal fluid. I would suggest that our early ancestors learnt to overcome this shortage of blood by developing a mechanism of constriction in the brain, which keeps the diminished volume of blood directed to the most essential centres. It does this by constricting the arteries to the rest of the brain. This mechanism, which evolved with the development of language, became the Ego – a conditioned reflex mechanism, based on word recognition, which keeps the blood directed to where it is most needed. The Ego became a super-imposed system of control of the blood supply in the brain: “In the beginning was the word”. (John 1,1)

Hence, the word became the internal instrument by which man controlled his behaviour. It enabled us to do all those incredibly clever things that our strange species has managed to do over the millennia, but at the cost of inserting a verbal filter between our inner awareness and our perception of the world.

In time, the supremacy of the word led to analytic and dialectic thought processes, and indeed it is these that have been the foundations of our scientific and technological advances. Western Man has been so awe-struck by these successes that he has become tunnel-visioned, putting all his faith into reason, argument, and analysis. The result of this great faith in empirical knowledge is that we dismiss as superstition, fantasy, or chance all those things that cannot be explained by our current knowledge base.

THE BECKLEY FOUNDATION

Although LSD is a product of Western scientific thought, its actions in the brain widen our perception, lighting up parts of the brain that are normally in slumber. I would hope that by combining modern scientific and analytic techniques with the broader fields of perception gained through heightened consciousness, we could learn more about those areas, both inside the brain and out, that are beyond our current materialistic knowledge base.

By learning more about the brain, by following the Delphic instruction to 'Know Thyself', we can shortcut the slow changes brought about by evolutionary mutations, and improve the functioning of the brain by clever manipulation.

Many predict that the 21st century will be the century of Neuroscience. Humanity's ability to alter its own brain function might well shape history as powerfully as the development of metallurgy in the Bronze Age and mechanisation in the Industrial Age. Now our growing ability to alter brain function can be used to treat mental dysfunction in people who are ill and to enhance some mental processes of healthy individuals. Indeed, the concept of enlightenment, literally the bringing of light to the mind, might be seen in scientific terms, as the increase in the oxidation of glucose, itself the encapsulation of the energy of sunlight. Thus the expansion of consciousness can be viewed as the flooding of the mind with the extra light of increased metabolism.

There is good evidence that LSD can increase the sense of spirituality. The Beckley Foundation is currently involved in research to explore how the use of psychedelics may increase the experience of the mystical, both in high level meditators and non-meditators. We are also investigating the mechanisms underlying the mystical experience and how it compares to those similar experiences triggered by psychedelics. Here is a pilot study of Sister Jayanti, a lifelong Brahmakumari meditator, who was recorded having a mystical experience in a MEG machine (MagnetoEncephaloGraph). It showed a profound increase in heart rate (from 60 to 90 beats per minute) during the meditation phase, which indicates a substantial increase in blood circulation. It also showed a reduction in synchronous power in the beta frequency in the somato sensory areas of the cortex, as well as a vast increase in synchronous power in the right cerebellum in the gamma frequency range. This is an exciting finding, which I plan to follow up with other high-level meditators from different disciplines.

The following images are not neuroscience, but from an artwork called '*The Alchemical Art of Transformation*', which I started many years ago. This is a

THE BECKLEY FOUNDATION

Doppler ultrasound reading of an artery near the circle of Willis, before and after taking LSD. As you can see, the velocity of blood circulation, V , has almost doubled, and the pressure gradient, PG , during the heartbeat, has almost tripled.

The next three images come from EEG recordings taken before and after ingesting LSD. Once again the heart rate has increased from 65 to 95 beats per minute, and we see a large increase in brainwave activity in the higher frequencies: high alpha, beta and especially gamma.

This gives an interesting new twist to the term 'high'.

There are many indications that the careful use of psychedelics may well amplify the benefits of psychotherapy in numerous areas of human suffering, including post-traumatic stress disorder, eating disorders, compulsive disorders, partnership problems, recovery from addiction and facing the trauma of death. We need to research these possibilities with the vigour demanded by modern scientific standards, as happily is just beginning to happen.

Dr. Ronnie Sandison, now aged 89, was one of the very first to give LSD to neurotic patients. Starting in 1952 he gave it to over 500 patients. On average each person got between 5 and 20 doses. He found he got optimal results from relatively small doses of between 50-120 mcg. He saw that the great advantage of LSD was that you could break through to complexes which were otherwise unreachable. Most of his patients had previously got stuck in their treatment, having been treated for 10 years or more. He used LSD to treat all sorts of complexes, and particularly alcoholism. Indeed, Bill Wilson co-founder of Alcoholics Anonymous, who took LSD in 1956 and had an experience "which was totally spiritual", wanted to include LSD in the AA regime, but was dissuaded.

Dr. Sandison is one of the many distinguished scientific advisers of the Beckley Foundation about which I would like to say a very few words.

The Beckley Foundation Drug Policy Programme influences policy by bringing together top experts from different disciplines to discuss this difficult area of social policy. To this end, the Beckley Foundation has given a series of, so far, five seminars, entitled *Drugs and Society: a Rational Perspective*. Scientists and policy analysts, police chiefs and representatives from government and international agencies, such as the UN and EU, gather to discuss drug policy and brain science in a confidential setting, like the House of Lords, in London.

THE BECKLEY FOUNDATION

The Beckley Foundation also produces Proceeding Documents from the seminars, as well as Reports and Briefing Papers on global drug policy issues, in order to fill the vacuum on evaluating the effectiveness of current national and international policies.

We have also initiated two organizations, first, an international network of the world's leading drug policy analysts, and second an International Consortium of NGOs involved in drug policy. The former will collaborate and produce academic papers, the latter will exchange information on drug policy matters, and undertake advocacy with national governments and international agencies.

The Beckley Foundation Scientific Programme seeks to do research which will widen our understanding of the neurophysiological changes underlying different states of conscious experience, particularly concentrating on those areas of research which are especially taboo in the current climate.

Some of the current research projects can be found on the Beckley Foundation website.

In the small kingdom of Bhutan, high up in the Himalayas, the most important official statistic is not Gross National Product but Gross National Happiness. It is possible that learning how to enhance consciousness would increase happiness. The laws and customs of a society need to be based on common sense and justice. At the present time, the potential value of psychedelics has been airbrushed out of the scientific and medical cornucopia. Let's open the doors to research. That would honour Albert's 100th birthday in an appropriate way.

Should the results of the research endorse the numerous positive self reports, then Albert's inspired premonition in 1943, will be freed to reap its full benefit for struggling mankind, by encouraging a creative stream of energy to illuminate the path through the fog.

Thank you Albert for being the one you are, and for having been the initiator of so much enlightenment.