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EXPLORING CONSCIOUSNESS CONFERENCE
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SOCIETY AND CONSCIOUSNESS:
HOW ALTERED STATES OF CONSCIOUSNESS SHAPE SOCIETY
BY AMANDA FEILDING

HOW ALTERED STATES OF CONSCIOUSNESS SHAPE SOCIETY

My name is Amanda Feilding and my talk today is about how altered states of consciousness shape society.

While humans are an incredibly clever species, we often lack common sense to the point of insanity thereby drastically threatening our own survival. Sir Martin Reiss, the Astronomer Royal, gives our species less than a 50- 50 chance of surviving beyond the end of this century. A gloomy prognosis, considering we control the planet. So it's an interesting question how has this come about? How has an animal evolved to such an incredible level of sophisticated interaction, while losing touch with the natural instinct of self-preservation? I suggest that consciousness, and its many manifestations, including deficiency of consciousness, are at the centre of the problem, and the key to its solution.

Many, including myself, have long been fascinated by the thread of expanded consciousness interwoven with the evolution of human society. It is critical to understand the neurobiology underlying the expanded mind, so that we can more easily assimilate its advantages into modern society, thereby improving both our overview and our common sense. By using the new magic-key of brain-imaging, we can see further into the human brain, and the workings of the mind, than ever before. We can dive deeper into the 3-pound fatty universe of chemical and electrical activity that in some amazing, and still mysterious way, produces consciousness. A major objective of the Beckley Foundation is to help explore this hidden world.

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As an artist and a researcher of altered states of consciousness, I can recognise the creative hand inspired by heightened awareness. How that state was achieved, whether by dancing, chanting, breathing or the ingestion of psycho-active plants and animals, which affect the workings of the psyche in a special way, is impossible to know for sure. However the marks left behind in the artwork of such ancient civilisations as Chauvet, Tassili, Mesopotamia,

Egypt, Crete, Eleusis and Mesoamerica tell of a deep involvement with enhanced states of consciousness at the very core of human development.

HUMAN CONSCIOUSNESS: ITS ROLE IN THE EVOLUTION OF HUMAN SOCIETY

I will now talk a bit more specifically about the development of human consciousness and the role it has played in the evolution of society.

LAST COMMON ANCESTOR

Very few of our genes are uniquely human. We share 50% with bananas, 60% with worms, and 98-99% with the great apes. The last common ancestor we shared with the chimpanzees was 5 to 7 million years ago. Changes in brain shape and structure, particularly the development of the cortex, have had the most significant impact on the dominance of the human species. The development of the human brain has depended on the increasing complexity of neuron connectivity.

AQUATIC APE HYPOTHESIS

After the time of the last common ancestor it is probable that groups of apes settled near water, and there found food supplies rich in essential fatty acids. The evidence to support this theory comes from certain adaptations of the hominid form to an aquatic environment, such as bipedalism; hairlessness; a fatty layer to improve insulation; a descended larynx allowing mouth-breathing; and advanced breath control. This aquatic phase of the ancestral ape would probably only have lasted 2 or 3 million years, a brief period in evolutionary terms.

THE UPRIGHT POSITION AND HYPOTHESIS OF ITS HIDDEN DISADVANTAGE

Walking in the upright position, which probably evolved in the water, had immediate and indispensable advantages. However, I would suggest that there is one possible disadvantage, which has so far been overlooked: the loss of a quantity of blood from the brain due to gravity. Since blood is heavier than cerebrospinal fluid (the other fluid in the central nervous system), the ratio of the two fluid volumes may have changed in favour of CSF if that is so. In order to keep the diminished volume of blood directed to those centres most essential for survival, an internal mechanism of distribution is required. The solution to this problem came about by the evolution of the speech system, which provided an initial stimulus to a particular centre, to which blood would then be directed, enabling it to function. Function in other parts of the brain would simultaneously be repressed, because arteries leading to these areas would be constricted, thereby reducing the flow of blood directed to them. In this way the speech system became a superimposed control tower over other functions of the brain.

HOW CAN WE ACCOUNT FOR THE GREAT LEAP FORWARD AROUND 50,000 YEARS AGO?

For over a hundred thousand years, our ancestors had been making tools that did not develop much. At some point around 50,000 years ago, there was a dramatic change in the human mind, even though the brain did not alter in its gross physical structure. It is obvious that something radical happened to the human brain to make it significantly more creative and intelligent, producing an explosion of artistic and technical skills. The development of language, music, religion, art and increasingly more complex technology happened in a very short span of time in evolutionary terms.

I suggest that this largely came about due to the interaction of three developments, all related to the tendency towards the hyperconnectivity of neurons:

1. Genetic changes in fat metabolism
2. The development of a sophisticated mirror neuron system
3. The practice of mind-altering techniques including the ingestion of psychoactive substances

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HYPERCONNECTIVITY

Hyperconnectivity is the name of the human game. Man has the most highly evolved system of neural networks. There are around 100 billion neurons in the human brain, each through its axons and dendrites, communicating with anything from 1000 to 10 million other neurons. Somewhere between 100,000 and 50,000 years ago, there was some change in the way neurons make and break connection with each other. For communication to be successful there need to be channels to conduct electricity, and effective insulation to stop the channels interacting when not required. Phospholipids (fats) serve this function, providing insulation that can be opened up easily at specific points, to let electrical impulses and chemicals pass. As connectivity increased, so did the number of associations that could be made. This provided the structure needed for complicated mechanisms, such as the mirror neuron and language systems, to evolve.

CHANGES IN FAT METABOLISM

Many of the features that distinguish us from the apes are intimately related to the biochemistry of fat. Both the neurons themselves, and their many connections, are fat rich. The human brain is 60% fat, of which 20% is essential fatty acids. The growth of this fatty brain may have evolved simultaneously with the growth of other fat deposits, that formed bosoms and bottoms. These features distinguish us from our closest animal relatives.

It is probable that a chance genetic mutation changed the metabolism of essential fatty acids, which were found abundantly in food sources in and near water. Omega-3, an essential fatty acid, is used to produce a faster, more richly connected network of nerve cells. This gave rise to the modern human mind with its apparently unique capacity for processing multisensory information at high speed, and making far-reaching associations, that formed the basis of complex, symbolic thought. The huge increase in the complexity of synapse-connections caused a massive improvement in cognitive function and memory, providing an intellectual power unique to the human species.

THE MIRROR NEURON SYSTEM

Another genetic mutation that may have played a crucial role in human evolution was the development of a sophisticated mirror neuron system. A mirror neuron is one that fires not only when a monkey grabs a peanut, but also when it watches another monkey grabbing a peanut. Mirror neurons enable a baby to copy its parent sticking out their tongue, by creating an internal model of the action, and then re-enacting it in its own brain. Amazing, considering it can't see its own tongue, yet it matches the visual appearance of the parent's tongue with the felt appearance of its own.

Mirror neurons have played a vital role in the evolution of language, empathy and self-awareness. By improving the ability to learn through imitation, the mirror neuron system has contributed to the rapid transmission of cultural innovations, liberating humans from the chains of a strictly gene-based evolution.

SYMBOLIC REPRESENTATION & METAPHOR

The mirror neuron system is likely to have increased our capacity to produce symbolic representation in the form of language. Our brains are essentially model-making machines, constructing useful virtual reality simulations of the world. The increased connectivity of neurons allows greater communication within, and between, different brain systems, enabling higher order symbolic representations of sensory input to be formed. This economic encoding helps subsequent computation, enabling higher cognitive processes, like speech and thought, to evolve.

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What artists, poets and all creative people have in common is their skill at forming metaphors, linking seemingly unrelated concepts in their brain. Increased hyperconnectivity throughout the brain would make a person more prone to metaphor. Such people, with their excess of connections, (which maybe is linked to a hyperconnectivity gene), tend to make far-flung associations more fluidly and effortlessly than other people.

LANGUAGE

The improved connectivity in the brain, together with other mutations, such as increased breath control, and changes in the larynx, enabled the ape to evolve language, which is a superimposed sound-symbol system, capable of condensing multiple perceptions. This crossing over of sensory sensations is like that found in synesthesia, where brain modules become accidentally cross-wired as a result of genetic mutation. Anything that increased the inclination to hyperconnectivity, such as the taking of psychoactive substances, could enhance creativity, including the development of language. Language separated humans from other animals, and led to the evolution of societies and the development of culture.

ALTERED STATES OF CONSCIOUSNESS

The practice of mind-expanding activities such as the taking of psychoactive substances was, I think, fundamentally interwoven with the early development of man, helping to expand the boundaries of consciousness. The mind was opened to new visions by maximising hyperconnectivity, and spreading further the network of simultaneous associations. The heightened perception of altered states, however it was achieved, was the basis of the shamanic tradition and the focus of innumerable mystical cults, the tool by which the seer revealed new knowledge, and was inspired to reach a higher level of creativity and spirituality.

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The Beckley Foundation reflects my own position of being interdisciplinary, respecting no borders between science, religion, philosophy, history and politics. It is

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a charitable trust that supports and directs research at the top academic institutions in collaboration with leading experts in these fields.

SCIENCE PROGRAMME

Based in Oxford, it supports a programme of experimental research at leading scientific institutions, both in the UK and abroad. The studies use a range of research tools, including brain imaging techniques, to investigate the extent to which yoga, exercise, meditation and the use of specific substances may act to alter brain physiology, and to modify mood and cognitive functions. Further research by the Beckley Foundation will look at how techniques that influence levels of consciousness may be used as tools to enhance well-being in healthy individuals, and to help in the treatment of a variety of psychological and physical disorders, from depression, anxiety and addiction, to the relief of pain in the chronically ill and dying.

RESEARCH PROGRAMME

Some of the studies we are doing at the moment include the following.

- ‘The Unconscious Watershed’ carried out with Oxford University. This is a neuroimaging study to pinpoint the **where** and the **when** of *conscious*, as opposed to *unconscious*, processing in the brain. Having established the baseline, we will then investigate changes brought about by manipulations of consciousness, such as sleep deprivation and the use of THC.
- ‘The Neurobiology of Altered States of Consciousness,’ carried out with Aston University, Birmingham. This study will use fMRI and MEG imaging techniques to look at changes in brain activity and blood flow, that correspond to alterations in awareness of sensory perception, including the sense of time, place, self and emotion, experienced during meditation and other states of altered consciousness.

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- A PET study of changes in blood supply, both global and local, after the ingestion of psilocybin in human subjects, carried out at the University of Zurich.
- A questionnaire study looking into reasons for drug use among young people, carried out with the Institute of Psychiatry in London.
- A series of studies to elucidate individual differences in anandamide metabolism and their relation to depression, anxiety and stress.

POLICY PROGRAMME

THE Beckley Foundation also directs an international drug policy programme. Over the last 70 years, most National Governments have kept to a United Nations framework for international drug policy. They hoped that this would lead to a significant reduction in the use of recreational drugs, and therefore, the level of associated health and social problems. However, the continued growth of the global illegal drug market, and the spread of different forms of drug use to all parts of the world, has led to a crisis of confidence in the ability of existing policies to achieve their objectives. The Beckley Foundation Drug Policy Programme aims to support the objective evaluation of drug policies at national and international level. We have and will do this by commissioning research and analysis that addresses the key questions currently facing policymakers. The findings will be distributed to academics, policymakers, and non-governmental organisations, in the hope that the search for solutions will increasingly be informed by rational evidence. In particular, we advocate a drug policy, which would be built on a scientifically based scale of harm of all social drugs, both legal and illegal, an idea that was so eloquently expressed by Professor Colin Blakemore at the Admiralty Arch Seminar in 2003.

SEMINARS

Over the last 2 years, the Beckley Foundation has organised a series of seminars under the general heading, '*Society and Drugs: A Rational Perspective,*' to address the issue of drugs in society from a multi-disciplinary perspective. The aim is to achieve an overview of the scientific, medical, social, economic and political issues

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surrounding the use and abuse of drugs, illicit and legal. Three seminars have been held, and a fourth will take place at the House of Lords in October 2004, entitled *Global Drug Policy- Future Direction*. In 2002, the first seminar in this series, entitled 'Drugs and the Brain', was held at Magdalen College, Oxford. Events in 2003 included a meeting at the Royal Society on '*The Role of Drugs in Society*,' and a seminar held at Admiralty Arch, London in association with the Cabinet Office Strategy Unit, entitled '*An Interdisciplinary Perspective on Alcohol and other Recreational Drugs*'. You can get summaries of these proceedings from me at the end of the talk or download the complete documents from the Beckley Foundation website.

We have also organised smaller gatherings of scientists such as a series of Dialogues on *Consciousness & The Brain* held at Beckley Park. The first of these was called, '*Location of the Mind*,' and the second is to be entitled, '*Quantum Physics and Consciousness*.'

CONCLUSION

In conclusion, I would stress again, that the great creative artworks of early man were often inspired by altered states of consciousness. His developing abilities and unique form of awareness, resulting from changes in brain structure, and a love affair with mind manipulation, helped separate the talking ape from his last common ancestors. With the development of language, and finally writing, man evolved a self-reflecting gaze, and an ability to transmit knowledge to future generations. The internal network of associations became a virtual reality, a superstructure able to monitor its own workings, so enabling man to evolve creativity, and communication, far surpassing the abilities of his fellow animals. However, there is some deficiency in man's state of consciousness, which limits his vision and makes him act in ways detrimental to his own happiness and survival. Only by finding means to overcome this inadequacy, by enhancing his consciousness, and regaining the lost overview and common sense, will man avoid causing his own extinction. Buddha's claim, echoed by most of the great sages of the Axial age was that, only by reaching beyond

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themselves, to a reality that transcends their rational understanding, do men and women become truly human. Thank You.