

Third Biennial SSE European Meeting

Freiburg, Germany

October 11–13, 1996

Program (Abstracts - See Below)

The Third European Meeting of the Society for Scientific Exploration will be held at the Hotel Novotel Freiburg, October 11–13, 1996. Eberhard Bauer and the Institut für Grenzgebiete der Psychologie und Psychohygiene is hosting the meeting and coordinating registration. In addition to a Welcoming Address by Eberhard Bauer, a number of other distinguished scholars have accepted invitations to speak on the following themes:

Perspectives in Cosmology

Cosmology: The Observational Approach

Dr. Halton Arp, Max Planck Institut für Astrophysik, Garching, Germany

Cosmology: A Tutorial

Laurence W. Fredrick, Department of Astronomy, Univ. of Virginia,
Charlottesville, VA, USA

The Possible Connection of the Zero-Point Field to the Fundamental
Properties of Matter

Bernhard Haisch, Lockheed Martin Solar & Astrophysics Lab., Palo Alto,
CA, USA

Space, Time and Quantized Redshifts

William M. Napier, Armagh Observatory, Armagh, Northern Ireland

The Evolution of the Universe: How a Paradigm Evolved

Prof. William C. Saslaw, Dept. of Astronomy, Univ. of Virginia,
Charlottesville, VA, USA

Information, Anomalies, and Living Systems

I. Empirical Evidence

New Results of the Munich Dowsing Studies
Prof. Hans-Dieter Betz, Sektion Physik der Universität München,
Garching, Germany

The Mars Effect Seen by the Commite PARA
Dr. J. Dommaget, Observatoire Royale de Belgique, Bruxelles,
Belgium

The Maharishi Effect: A Model for Social Improvement. Time Series
Analysis of Phase Transitions to Reduced Crime and Improved
Quality of Life — 42 Studies Completed
Guy D. Hatchard, Maharishi University of Natural Law,
Skelmersdale, Lancashire, UK

Physiological Correlates of Meteorological Activity
Prof. Dieter Vaitl, Klinische u. Physiologische Psychologie, Justus-
Liebig-Universität Giessen, Giessen, Germany

II. Current Concepts

Cartesian Cut, Heisenberg Cut, and the Concept of Complexity
Dr. Harald Atmanspacher, Max Planck Institut für Extraterrestrische
Physik, Garching, Germany

New Light on a Fifth Field
Dr. Ervin Laszlo, Montescudaio (Pisa), Italy

The Meaning of Meaningless Psi-Information and the Model of
Pragmatic Information
Dr. Walter von Lucadou, Parapsychologie Beratungsstelle,
Freiburg, Germany

III. Emerging Patterns

Teaching Inventive Thinking to Science Students: Reflections
on a Preliminary Study
Dr. Avshalom Elitzur
Chemical Physics Department, Weizmann Institute of Science,
Rehovot, Israel

Evidence for Anomalous Information in Random Binary Sequences

Prof. Robert G. Jahn, Princeton Engineering Anomalies Research, Princeton University, Princeton, New Jersey, USA

The Informational Character of Biophotons

Dr. Fritz-A. Popp, International Institute of Biophysics, Biophoton Research, Kaiserslautern, Germany

Contributed Presentations

Empirical Evidence for Information in Living Systems as a Possible Earthquake Precursor

Andrei Apostol

Medical Decision-Making for Patients Without Decision-Making Capacity: Alternate Approaches

Arthur S. Berger

Project ANNA-BELLE: Anomalies in Normal-User Network Applications Based on Experiments in a Lovely Lehrstuhl Environment

Matthias Berger et al. (sponsored by M. Ibison)

Using Internet to Study Anomalous Cognition: Getting Rid of Noise in a Noisy Environment

Dick J. Bierman and Rens Wezelman

The Decline Phenomenon — Effect or Artifact?

Holger B sch and Harald Walach (sponsored by E. Bauer)

The Ganzfeld-ESP Experiment: Honing a Useful Tool

Richard S. Broughton et al.

Borderlines of Creativity: Magical Ideation and the 'Dark Side' of the Brain

Peter Brugger (sponsored by E. Bauer)

Rationality of the Paranormal

O. Costa de Beauregard

Direct Mental Interactions with Living Systems (DMILS) Research:
Findings, Interpretations and Future Directions
Deborah L. Delanoy (sponsored by R. Morris)

Arguments for an Exclusive Research Program within Ufology
Gerald L. Eberlein

Further Thoughts on the Mars Effect
Suitbert Ertel

Vacuum Electromagnetic Field Interactions by Physical and Mental
Means
H. D. Froning, Jr.

Long-Term Effects of Near-Death Experiences on Health and Well-
Being
Bruce Greyson

The Giftedness of Children Who Claim Previous Life Memories
Erlendur Haraldsson

Synchronicity and Quantum Physics: Pauli, Jung and the Emergence
of Non-local Information in Quantum Systems
Ezio M. Insinna (sponsored by W. von Lucadou)

Cases of the Reincarnation Type: An Evaluation of Some Indirect
Evidence
Jurgen Keil

Three New Gitxsan Cases of Children Born with Pierced Ear
Birthmarks
Antonia Mills

An Empirical Approach to the 'Telepathy Problem'
Robert L. Morris

Selection and Influence Models Debate Confronted with a Sense of
'Balance'
Fotini Pallikari-Viras

Cases of the Reincarnation Type in Northern India with Birthmarks
and Birth Defects

Satwant K. Pasricha

Study of Telepathy Between Rabbits

Rene Peoc'h

Techno-Dowsing: Developing a Physiological Response System to
Improve *Psi* Training

Paul Stevens (sponsored by R. Morris)

A Bayesian Approach to the Cosmological Redshift Problem

Peter A. Sturrock

Methods to Increase the Efficiency of Statistical Evaluation,
Demonstrated by the Reanalysis of a Controversial Experiment of
Dowsing

Ulrich Timm (sponsored by E. Bauer)

PSI EXPLORER: A Novel Approach for Exploring Scientific
Anomalies

Mario P. Varvoglis

Traces of Unidentified Flying Objects on Military Radar Devices over
Central Europe

Illobrand von Ludwiger (sponsored by H. Puthoff)

Is Homeopathy a Pharmacologically Specific Treatment? A Meta-
Analysis

Harald Walach (sponsored by E. Bauer)

Evidence for a Non-Classical Experimental Test of the Model of
Pragmatic Information

Stefan Schmidt and Harald Walach (sponsored by E. Bauer)

The Second Uncertainty Rule in Psi Experiments

Hongzhang Xu (sponsored by W. von Lucadou)

The NOVOTEL FREIBURG is located in the center of Freiburg, within a few blocks of the picturesque Old City area. It is a ten-minute walk or a short taxi ride

from Freiburg Central Station, which is approximately three hours by train from Frankfurt International Airport, or a one-hour bus ride from the French side of EuroAirport Basel/Mulhouse.

Society for Scientific Exploration 3rd European Meeting Abstracts

Cosmology: A Tutorial

**Laurence W. Fredrick
Leander McCormick Observatory University of Virginia, USA**

In this paper we develop for the non-expert the techniques and methods used to make the observations for the study of cosmology. Also, it is necessary to develop definitions for words used by the specialists who make the observations. In developing the physical and mathematical background we will pay attention to second and third-order terms where necessary. We start by defining electromagnetic radiation and proceed to the Doppler effect. This latter effect must be examined carefully as it is what has led to the concept of an expanding universe. We will look at possible supportive studies such as the use of Cepheid variables for measuring distances. We will then look how elemental abundances are measured including isotopic ratios and why this is important. We will have to explain the tools used to make the measurements. There are errors in all measurements and these must be taken into account so we will spend a little time on those. There may even be errors in our measurements, systematic and/or random, sometimes referred to as "cosmic errors", which we know absolutely nothing about. In a brief final section we will look at some of the physical constants, for example the fine structure constant, to see if they shed any light on cosmological theories. We stress that this is our present picture. There are observations to come and techniques to be used that we have never dreamed of. Radio emission from certain objects in the universe has existed from the beginning, but we did not and could not even speculate about that until radio was invented. New and unexpected observations and techniques must fit into the currently accepted view or that view is called into question.

The Evolution of the Universe: How a Paradigm Evolved

William C. Saslaw

Department of Astronomy University of Virginia, USA

From ancient times to the twentieth century, folklore, religion, astronomy and cosmology have tried to explain how the structures we see around us have formed and evolved. I will sketch the development of these ideas briefly, then concentrate on why astronomers presently favor a big-bang type of cosmology over a steady-state or other alternatives. They are strongly influenced by observations of the expansion of the universe, its age, the observed abundances of the elements such as helium, carbon, silicon and iron, and the detection of the cosmic microwave background. Not all astronomers are completely convinced that the big-bang is valid, however. Some distinguished cosmologists and observers have proposed alternative theories and made anomalous discoveries which may not fit in with the accepted big-bang paradigm. I will discuss some of these variant views, why they have not convinced most astronomers, and what it takes to change a paradigm.

Cosmology — The Observational Approach

Halton Arp

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Observations of galaxies and quasars continue to amass contradictions to conventional cosmological theory. We start by showing that high energy radiation coming from the center of our Local supercluster involves active galaxies and quasars of high red shift. This requires both a more general solution to the general relativistic field equations and ongoing matter creation in the center of the largest aggregate of cosmic material that we know. Recent observations of high redshift quasars ejected from low redshift, active galaxies will be shown. These observations support a Machian universe in which objects are continually created, evolve in redshift and luminosity and undergo secondary and tertiary ejection.

Space, Time, and Quantized Redshifts

Bill Napier

Armagh Observatory Armagh, Northern Ireland

The Interpretation for the extragalactic redshift-distance relation as a universal expansion has been fundamental to cosmological thinking over the past 70 years, and is the cornerstone of the Big Bang hypothesis for the origin of the Universe. I present here new evidence which appears to be in crass confrontation with this paradigm: the redshifts of spiral galaxies do not increase smoothly with distance, as expected for an expansion, but rather increase in a series

of quantum jumps at intervals of about 37.5 km/sec. The phenomenon has now been observed in several high-precision redshift datasets involving over 250 spiral galaxies so far. It is easily seen by eye and has survived various statistical tests for robustness; none of the traps which beset the unwary (observational selection, telescope or reduction artefacts, peculiar behaviour of the power statistic) seem able to account for it. I indulge in speculation about the cosmological implications of this mysterious behaviour.

A Bayesian Approach to the Cosmological Redshift Problem

Peter A. Sturrock

Center for Space Sciences and Astrophysics Stanford University, Stanford, California, USA

The methods of scientific inference can help clarify the questions, methods and results of controversial areas of science. An example of such an area is the cosmological redshift problem, concerning which scientists tend to have strong initial opinions — otherwise known as "prejudices."

The basis of scientific inference is Bayes' theorem that relates the post- probability of a hypothesis to the prior probability and to the likelihood, on that hypothesis, of the relevant evidence. Scientists typically devote considerable effort to evaluating the statistical significance of the evidence (that is, of "measuring the likelihood"). However, the prior probabilities are usually studiously ignored, perhaps because they are regarded as subjective and indeterminable, perhaps because the prior probability concept is regarded as not quite respectable. By contrast, it is here proposed that it can prove profitable to examine prior probability assessments regarding controversial topics, since this leads one to examine one's assumptions on that topic, and since one may find that the particular assumptions concerning that topic depend on more basic assumptions that otherwise might not be brought into the open.

Concerning the cosmological redshift problem, we can identify two specific propositions: (a) there may be anomalous contributions to the redshifts of some objects, and (b) the redshift distributions of some classes of objects may contain periodic components. It will be argued that it is indeed advantageous to view the probabilities of these propositions as contingent upon the probabilities of more fundamental propositions that will be discussed in this presentation.

The Possible Connection of the Zero-Point Field to the Fundamental

Properties of Matter

Bernhard Haisch

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Among the many properties of physical matter, three of the most fundamental that underpin the existence of the universe we live in are stability, inertia and gravitation. Apart from radioactive isotopes, most atomic species are very long-lived. The substance and solidity of matter reflect the property of inertia, i.e. resistance to acceleration as embodied in Newton's law, $F = ma$ - or its relativistic equivalent which defines inertial mass. Matter interacts with itself through its property of possessing gravitational mass, thus allowing the formation of planets, stars and galaxies.

Gravitation has been assumed to be well understood since the publication of Einstein's general theory of relativity in 1915 and the starlight deflection observations of 1919 by Eddington's eclipse expedition; gravity is taken to be not a Newtonian-like action-at-a-distance force, but rather a manifestation of space-time curvature. Einstein's principle of equivalence states that inertial mass and gravitational mass are identical, yet there has been no explanation for the origin of inertia analogous to space-time curvature. Moreover gravitation has resisted unification with the other fundamental forces: electromagnetism, weak and strong interactions. Einstein himself pursued theories of electro-gravity to supersede relativity for many years, but without success. The stability of atoms was resolved by Bohr in 1913 by fiat: he postulated a new law of nature forbidding orbiting electrons from emitting continuous radiation and thus decaying. This eventually led to quantum theory, our modern conceptual basis for atomic and nuclear properties.

Although apparently correct in their respective domains, gravitation and quantum theory remain conceptually incompatible. A deeper origin for inertia is rarely considered in modern physics. Recent investigations of the electromagnetic zero-point field (a form of light) suggest the surprising result that it may provide a unified basis for the inertia, gravitation and stability of matter. A NASA-funded research effort is now underway to develop these concepts further. If these ideas prove to be true, the possible implications range from revolutionary technologies to paradigm shifts in ontology.

New Light on a Fifth Field

Ervin Laszlo

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Hypotheses that, underlying and interconnecting observable phenomena, there may be a

physically real (as contrasted with quantum probability) fields are entirely reasonable: fields themselves are not observable, but their effects are. There is no intrinsic reason why nature should be limited to the four universal fields of interaction, the gravitational, electromagnetic, and the strong and the weak nuclear fields. A fifth, interconnecting field need not be postulated ad hoc, however: it could be an effect of a hitherto theoretically insufficiently explored scalar or torsion spectrum associated with the quantum vacuum. The conceptual basis for this hypothesis has been advanced by this writer in recent books; the mathematics of such a field are being elaborated, in turn, by a Russian team headed by Anatoly Akimov. As the present paper briefly indicates, the heuristic power of the interconnecting field concept is enormous: it integrates otherwise anomalous physical, biological, and psychological phenomena. Its systematic exploration may be the next milestone in the current advance of science toward an adequate as well as integrated conception of physical and living nature with the world of human experience.

Vacuum Electromagnetic Field Interactions by Physical and Mental Means

**H.D. Froning, Jr.
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Tiller [1] suggests that mind — as a subtle energy — can interact indirectly with remote things or processes, causing phenomena currently considered "anomalous" or "paranormal". Here, [1] proposes that mental emanations can alter phases of vacuum zero-point fluctuations, and that such alterations can be physically manifested globally and electromagnetically through the action of the magnetic vector potential. In this respect, Barrett [2] has derived expanded versions of Maxwell's equations by hypothesizing the possible existence of electromagnetic (em) phenomenon with higher field symmetry than the $S(1)$ field symmetry of ordinary em radiation. The expanded Maxwell equations include terms involving global coupling of different fields through the action of the magnetic vector potential, and their solutions include not only ordinary em radiation - but more subtle em radiation possessing the higher $SU(2)$ symmetry of Yang-Mills fields. Experimental and theoretical work of Mikhailov [3] and Barrett [4] also show that $SU(2)$ fields are associated with ferro-magnetic aerosols in magnetic suspension and that the aerosol suspension - which is unaffected by the $S(1)$ fields of ordinary laser radiation - strongly interacted with the $SU(2)$ fields of polarization modulated laser light. This paper builds upon the results of [2], [3], [4] in examining the possibility of the vacuum zero-points fields containing components of $SU(2)$ symmetry and of being interacted with em radiation of comparable field symmetry. The paper also defines an experiment to test such a hypothesis by determining the effect (if any) of ordinary and polarization modulated laser light upon the Casimir Force arising from vacuum field changes in the vicinity of two closely spaced conducting plates. The paper also proposes that the Casimir Force experiment be repeated to explore Tiller's subtle energy hypothesis, with the laser beam augmented by mental emanations

(subtle energies) associated with human intent and then with the laser beam completely replaced by subtle energy emanations.

The Mars Effect as Seen by the Committee PARA

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This paper deals with the research made by the Committee PARA on a problem already proposed in 1960 by M.M. Gauquelin and effectively undertaken only in 1967. The results and their discussion have been published by the Committee in his Bulletin: *Nouve lles Breves* (issue nr. 43, septembre 1976, pp 327-343). Here are also recalled some events of the history on the researches that followed this publication. The main research is here first detailed. It contents two parts that unfortunately have generally not well been understood by many of those who later have analysed this research. A first part of it concerns the establishment of a specific statistical material as well as ist analysis following the principles proposed by M. Gauquelin in order to verify the astronomical and statistical computations made by this author, A full agreement between M. Gauquelin and the Committee Para thus resulted on this part of the research. A second concerns the validity of the formula proposed by M. Gauquelin to compute the theoretical diagramme of the appearances of the sportsmen in the twelve classes. A careful theoretical investigation of the mechanism of the phenomenon led to a statistical model. From this analysis it appears clearly that the principles proposed by M. Gauquelin have to be rejected because they do not take correctly into account the fundamentals of the problem, that means the secular and diurnal demographic factors. This has been the main disagreement between M. Gauquelin and the Committee. As a consequence, the Committee rejected the belief in any Mars effect in case of sportschampions, no clear proof having been given by M. Gauquelin in that respect. This conclusion should of course be extended to any other planetary effect on human beings. Since then many other tentatives of solving the problem by other searchers have been realized. Unfortunately without reaching a common agreement. This is not surprising because whate- ver one may try to find in favour or in disfavour of the reality of the mars effect, the main difficulty consists in establishing the theoretical reference diagramme to which the observed one should be compared. This seems to us impossible because nobody knows how to compute the demographic factors to be used. Some complementary unpublished considerations are also given.

Further Thoughts on the Mars Effect

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In the Belgian Committee PARA's (CP's) view their own early attempt to verify the Gauquelin claim reached an impasse: Expected birth frequencies for planetary positions allegedly defy calculations. Three other skeptic committees, however, the Gauquelins and the author of the present paper himself tested a number of ways to avoid the CP's dilemma. Alternative approaches will be presented and evaluated. It will be shown that even less precise expected distributions affected by random error cannot give rise to nor replicate the Gauquelin planetary effects. The author's favorite alternative, randomization, already attempted, in principle, by the Belgian Committee, but not pursued by them, procured results equalling those that were obtained by Gauquelin's classical method. Evidence will be demonstrated using the French sports champions' data, the last data base collected independently by organized skeptic researchers.

Rationality of the Paranormal

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Time extendedness of matter in Euler's variational calculus and in the relativistic spacetime concept. Cause-effect reversibility in Bayesian conditional and Boltzmannian transition probabilities. Negentropy-information reversibility. Quantum non-separability and CPT invariance. All these traits of the mathematical description of Nature 'rationalize' the possibility of precognition, psychokinesis, telepathy, and suggest existence of an all pervading 'collective unconscious'.

New Results of the Munich Dowsing Studies

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The dowsing phenomenon represents a longstanding puzzle which receives continued attention in almost all countries. Historically, the essential claim consists in the assumption that certain persons are able to locate underground water and possibly other materials without using obvious conventional information or technical systems other than, say, a rod or a pendulum. A large body of experimental evidence is available, interpreted both as proof by one side, but as anecdotal and fortuitous by the other side. Various investigations have been conducted in the past which yielded quite reliable conclusions, though no general agreement

could be achieved in the realm of science. We report results of our scientific program which we have conducted for some 10 years and which is still continuing in order to clarify some of the basic questions. During the first phase, we tried to find proof for either existence or non-existence of the debated phenomenon. Within a period of two years some 100 dowsers have been tested by means of sophisticated experiments and a statistical analysis of the results revealed a very high level of significance for the existence of a real dowsing phenomenon. In a second test program, the performance of a particularly skilled dowser has been examined, who worked on behalf of a government agency and located some 1000 wells in arid areas throughout the world. His success was undebatable. As a consequence, an increasing number of earth scientists began to agree that the matter should be pursued further on a scientific basis. This led to a third phase of investigation, in which geological experiments have been conducted which are still going on and aim at the skill of dowsers to locate underground anomalies. Experiments with a dozen of gifted dowsers have been carried out. In addition, well-location success of a commercially operating dowser is investigated, who is sufficiently talented to give a water-guarantee to his clients. Our latest studies involve the observed capability of dowsers to sense directions of underground disturbances ("reaction zones"); first results of double-blind tests will be presented. Meanwhile the evidence in favour of the phenomenon has become overwhelming and the question to be investigated is no longer whether dowsing skills exist but how well these skills can be demonstrated.

Methods to Increase the Efficiency of Statistical Evaluation, Demonstrated by the Reanalysis of a Controversial Experiment on Dowsing

Ulrich Timm

Institut für Grenzgebiete der Psychologie und Psychohygiene D-79098 Freiburg

In several earlier papers the author discussed the extreme inconsistency and variability of psi effects: It is obvious that experimental psi results vary intra and interindividually (and also intra and interexperimentally) in a statistically significant degree. Under these circumstances the simple addition of hits, carried out over all the experimental sections and subjects, is the least efficient method of statistical evaluation. That was why the author recommended to replace this traditional method by refined methods of aggregation weighing the results of the single sections according to their size. Another recommendation of the author applied to the experimental design: It can be mathematically derived that the statistical significance of a psi experiment increases, when the chance hit probability (p) decreases. E.g., an ESP experiment in which the S has the choice between 10 possible targets is more favourable than an experiment with 5 or even 2 alternatives. In the new paper the two methodological principles are first applied to an experiment on dowsing, which has been published by Betz (1989) and criticized by Enright (1995). In this experiment the dowsers had to identify the location of a hidden water-pipe on a test line of 10 m. The distance between the target and the dowser's

response was statistically evaluated. The simplest possibility of evaluation is to define a "hit region" around the target location. The hit probability p results from the quotient between the length of the hit region and the total test line. In the author's reanalysis p as well as the aggregation of the single results were systematically varied. The corresponding variation of the statistical significance largely met the theoretical expectations.

Techno-Dowsing: Developing a Physiological Response System to Improve Psi Training

Paul Stevens

**Department of Psychology Koestler Parapsychology Unit Edinburgh University,
Scotland, UK**

Working under the assumption that psi results from the detection of a weak energetic signal propagating in space and/or in time, reception of this signal resulting in modified neuronal excitation, it is proposed that the psi signal contains second-order information about the psi-source's physiological reaction to the stimulus, rather than information about the stimulus itself. In cases of precognition, reception of the signal could prime a similar physiological response as it would be interacting with the same system as that which produced it. With this in mind, the physiological responses from 20 unselected volunteer participants were recorded. An artificial neural network (ANN) was first trained to recognise a variety of responses (recognition, vague-recognition and null-recognition), then used to predict a precognitive psi target based on participants' physiological responses to concepts related to the target. Measures taken were peripheral blood flow, electrodermal activity and electroencephalographic activity. The ANN trained on all participants' data successfully reduced the possible target pool from 8 to 2, in 8 out of 20 cases. For individually trained networks, this increased to 11 out of 20 cases. As predicted, ANN prediction was successful for those participants exhibiting psychological androgyny ($t = 1.194$, $df = 17$, $p = 0.125$ 1-tailed, ns) and field independence ($t = -1.320$, $df = 18$, $p = 0.102$ 1-tailed, ns). It is concluded that this is a viable and useful approach that would benefit further study.

The Influence of Sferics on Electro cortical Activity in Humans

Dieter Vaitl & Anne Schienle

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Giessen**

In three experiments the influence of very low frequency sferics (VLF-sferics) on electrocortical

activity in humans was investigated. VLF-sferics are electromagnetic impulses with frequencies between 1 and 100 kHz which are emitted by lightning during thunderstorms. Since sferics are very short (? 500 us) and weak (?10 nT) signals, our primary concern was to test whether or not the human organism would be able to respond towards this weak stimulus at all. Besides that, the existence of interindividual differences in sferics responsivity were studied. Here, the hypothesis was tested if weather sensitive subjects are characterized by an enhanced sensitivity towards sferics. For the investigation, a simulation system was utilized that had been developed at the Technical University of Munich with which a previously registered sferics impules (1o kHz sferic) can be reproduced. In each of the three experiments the signal was pre sented repeatedly in intervals between 50 and 150 ms for a period of 10 minutes. During this time and also during the control periods without stimulation, the background electrocortical activity (EEG) was registered, which was later analyzed by spectroanalysis. A total of 126 subjects participated in the studies. They had been recruited from two student samples (n = 52; n = 41) and one weather sensitive group consisting of women suffering from weather induced headaches (n = 33). From the findings of the three experiments the following statements can be deduced: 1. Sferics are able to influence electrocortical activity in humans by increasing the power within the alpha band and the beta band of the EEG 2. The sferics influence extends beyond the stimulation period 3. A prolonged influence of sferics exposure was displayed by subjects with a high degree in weather sensitivity, somatic complaints, and neuroticism, who continued to stay on an enhanced power level. The underlying physiological mechanisms, as well as the biological relevance of this phenomenon, are not yet clear. As a possible magnetosensing organ the pineal organ is discussed, which responds towards magnetic stimulation with changes in melatonin secretion.

Empirical Evidence for Information in Living Systems as a Possible Earthquake Precursor

Andrei Apostol

Center for Biolocation Elmhurst, New York, USA

During the period of time March 1985-July 1996, empirical evidence of anomalous human behaviour was recorded around geological faults, before large (magnitude larger than 7.0) and great (magnitude larger than 7.7) earthquakes. The faults were situated in the interior of North America continental plate and the expected earthquakes were recorded at the active margins of Cocos oceanic plate, from Northern Mexico to Panama. To indicate the possible location of the expected large earthquake, observations on human behaviour around two perpendicular faults are necessary. Data obtained before large events in Mexico, show a certain signature, when compared with similar information obtained before large earthquakes at other locations. Such data were reported at the Fourteenth Annual SSE Meeting held in Huntington Beach, California, June 15-17, 1995. At the same meeting, a prediction was attempted for an

earthquake with magnitude larger than 7.0, at the Pacific Ocean coast of Guerrero province in Mexico, during the summer of 1995. A large earthquake in Guerrero was never recorded in the last 10 years. However, on September 14, 1995, a magnitude 7.2 event occurred at the predicted place in Guerrero, with the predicted magnitude, just a few weeks later than the predicted interval of time. Simple statistics of recurrence for earthquakes indicate the Pacific Ocean coast of Mexico as one of the most likely region, situated at the active margin of Cocos oceanic plate, to experience a great magnitude event in the next ten years, in Guerrero or Jalisco. There is empirical evidence, based on information in living systems presented in this paper, suggesting the Fall-Winter period of the year 1996 as the possible time for a large-great earthquake in Mexico. The data of anomalous human behaviour recorded around geological faults in the New York area during March-June 1985, before the great (magnitude 8.1) Michoacan earthquake of September 19, 1985, in Mexico, are similar with the one obtained during the period of time March-July 1996.

Study of the Telepathy between Rabbits

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It has been realized an animal telepathy experiment with rabbits. One studies couples of rabbits female of the same reach isolated by 2 in their cage during 6 months. Then each rabbit is separated of its sister. One measures by plethysmography the blood flow variations of the two rabbits. They present frequent and spontaneous fears, easily detectable by plethysmography. The fears of the two sister rabbits occur very often with an inferior gap of 5 seconds when these rabbits are temporarily removed. On the contrary, two rabbits who have never lived together in the same cage have less often fears occurring to less of 5 seconds of interval. Results are statistically very different with chi-square ($p < 10^{-4}$). This experiment seems to prove the telepathy existence.

Direct Mental Interactions with Living Systems (DMILS) Research: Findings, Interpretations and Future Directions

Deborah L. Delanoy

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Can a person interact with the functioning of other living systems solely by means of mental intentionality? The findings from a large number of studies suggest that biological systems can

respond to conscious intentions, even under conditions designed to preclude all conventionally recognised forms of interaction. But are these results credible? In considering this question, the most sophisticated of these studies, known as Direct Mental Interactions with Living Systems (DMILS) studies, are examined. Their methodology is thoroughly described. Alternative explanations for the findings, including possible artifacts and deceptive activity, are explored. Previous summaries of these studies are presented and updated with more recent contributions, including DMILS research from Edinburgh. The findings from these experiments show reasonably consistent, small to medium effect sizes. Correlations between these effects and psychological measures are also noted. What are the implications of these findings? Prof. William Braud, the most prolific and a very rigorous DMILS researcher, has interpreted his results as representing a subtle, yet profound, interconnectedness between living systems. However, these studies tell us little about the nature of this "interconnectedness", nor whether these interactions may have any practical applications. It is argued that these issues can not be properly assessed on the currently available data. Further knowledge of the processes underlying these experimental findings is required. Towards this end, the Institut für Grenzgebiete der Psychologie und Psychohygiene are sponsoring further DMILS research. The initial research will examine the contribution of different variables in DMILS protocols, in an attempt to clarify their respective roles in producing these anomalous effects. This work should assist in better understanding the critical variables in these studies and lead to more standardised methodology. Also, it may serve to enhance the effect sizes currently being found in DMILS experiments. The research project is described, and the questions to be addressed are discussed. Although this presentation will focus specifically on DMILS protocols, the discussion will be set within the more general context of methodological issues in investigating anomalous interactions with biological systems.

The Ganzfeld-ESP Experiment: Honing a Useful Tool

Richard S. Broughton, Cheryl H. Alexander & James C. Carpenter
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The ganzfeld-ESP experiment, in which a mild state of sensory isolation is coupled with relaxation to create conditions thought to favor the conscious retrieval of ESP information, has achieved landmark status through the work of Charles Honorton and his colleagues at the Psychophysical Research Laboratories in Princeton, NJ. While this experimental technique has achieved an impressive level of repeatability, the growing number of replications and attempted replications being reported indicate that there remains a good deal of variance unaccounted for, which continues to be an obstacle to achieving a truly comfortable level of repeatability. In this paper we report the results of a recently completed formal attempt to replicate the PRL results and compare our findings with the PRL data base and a large database of ganzfeld-ESP trials collected in our laboratory in non-automated experiments. The

formal replication attempt consisted of two series of 50 first-time or novice participants and one series of 51 first timers defined as emotionally close. The experiment used essentially the same equipment that was used by PRL researchers. Overall, the replication series yielded a direct hit rate of 26.5% ($ES? = .52$), which was insufficient to confirm the PRL findings. The emotionally close subset produced a hit rate of 37.5% which was significantly above chance ($ES? = .64$, $p = .035$) and similar to the 42% hit rate found with emotionally close PRL participants. Some, but not all, variables associated with good performance, were consistent with earlier findings. Recognizing that the ganzfeld-ESP experiment involves a psychodynamic interaction between participant and experimenter very similar to that of psychotherapy (for a first-time client, no less), we present a progress report on the development of scales derived from the participant's utterances which assess the participant's adjustment to the experimental situation and may predict success in the trial. An initial study with 50 trials indicated that a cluster of factors indicating higher anxiety were associated with the production of incorrect or psi-missing imagery. We will present the results of a second investigation based on transcripts from the PRL series of experiments.

An Empirical Approach to the "Telepathy Problem"

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Considerable evidence is emerging that individuals can interact with each other in ways that appear to go well beyond those we presently understand, often referred to as telepathy. In addition to anecdotal evidence such as so-called "crisis telepathy" cases, there is an increasingly successful data base from studies using procedures such as the ganzfeld (a noise reduction technique) and DMILS (Direct Interaction with Living Systems) protocols. These studies suggest that agents and receivers can interact successfully in well controlled experimental situations designed to rule out conventional interpretations. Such interactions have practical considerations for various biologically important circumstances, such as healing, child rearing, aiding those in trouble and avoiding threat. There are also important theoretical considerations, depending upon what kinds of mechanisms are responsible. Several categories suggest themselves: 1) Fraud, as in the faking of special interpersonal powers by cult leaders and others, for personal gain or influence; 2) Misattribution of communication via cognitive errors; 3) Communication through enhancement of known sensory and motor means; 4) Truly new means of communication. Within the last category, various theoretical options have been suggested: the receiver may obtain information about the physical surroundings of the agent; or the agent may actively influence the brain activity or mentation of the receiver. This paper will describe all of these options more fully and will illustrate some of the strategies for evaluation them empirically, drawing on recent successful ganzfeld research at Edinburgh

which obtained significant overall positive effects despite strong controls against fraud and artefact, but found no differences among three sender/no sender conditions designed to control for expectancy effects. Additional findings from the study regarding the characteristics of receiver mentation under the different conditions will also be presented. The paper will conclude by outlining a systematic research programme to explore the various factors, conventional and otherwise, that may contribute to the evidence for telepathy.

Long-Term Effects of Near-Death Experiences on Health and Well-Being

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Near-death experiences, often with paranormal elements, that many people report following a close brush with death have been credited with remarkable effects on attitudes and physical well-being. This study, still in progress, investigates NDEs and their long-term effects on health and well-being among patients who come close to death from heart disease. Patients admitted with a nearly-fatal cardiac illness to a university hospital are interviewed about unusual experiences around their close brush with death. On the basis of this interview, patients are assigned to the experiencer group or the control group according to an established criterion for an NDE. The experiencer group and a control sample matched for age, gender, and diagnosis are given additional interviews that assess cognitive function, capacity for physical activities and life satisfaction prior to the cardiac event, social support network, risk for further cardiac disease, and significant medical variables. Apparent paranormal phenomena occurring around the close brush with death, such as out-of-body vision or extrasensory perceptions, are investigated with interviews of others who may be able to offer verification. At 12 and 24 months following the initial interview, each subject will repeat the interviews assessing capacity for activities, life satisfaction, and social support network; subjects and their families will complete questionnaires on the patient's life changes; and subjects' medical condition will be appraised through medical records.

The Giftedness of Children who Claim Previous-Life Memories

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Investigation of Cases of the Reincarnation Type (CORTs) have primarily been concerned with their verification. Little attention has been paid psychological and socio-psychological factors which might dispose a child to report previous-life memories, such as rich fantasy life, a need

to compensate for social isolation, high suggestibility, dissociative tendencies, attention-seeking and disturbed relations with parents. The author has investigated 49 cases of children in Sri Lanka who talk about a past life, mostly describing events that led to accidental death. Psychological tests were administered to 30 children aged 7 to 13, who at an earlier age had persistently claimed to remember a previous life. The same tests were administered to a control group of peers. Children claiming previous-life memories had a larger vocabulary, higher scores on the Raven Progressive Matrices, better memory and performed much better in school. They proved to be a group of gifted children. They were not more suggestible than their peers nor more fantasy-prone according to the Gudjonsson Suggestibility Scale, tended to be lower on these factors, particularly children whose statements had shown a relatively high degree of correspondence with the facts in the life of some deceased person who had been identified as a potential previous personality. Children claiming previous-life memories had a higher problem score on the parent's form of the Child Behaviour Checklist: parents found them to be argumentative, like to be alone, to be more nervous and stubborn than their peers. They felt they had to be perfect, and were much concerned about cleanliness. Their teachers found them to be excellent pupils, working harder, learning more and behaving better than other children. Stevenson has sometimes observed these children to have unexpected skills that they were unlikely to have learnt from their environment. This study reveals that these children are generally highly gifted, particularly concerning their vocabulary, something previously observed by our interpreters, who have stated that many of these children speak more like grown-ups than children.

Cases of the Reincarnation Type in Northern India with Birthmarks and Birth Defects

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Introduction. Investigations of the cases of children, who claim to remember previous lives, have shown that many of them have marks on the body of the person whose life a child seems to remember. After many years of investigating cases, we have, in recent years, focused attention on the feature of birthmarks and birth defects. Among the cases of this group, ten have been studied with sufficient thoroughness to warrant a report at this time. **Subjects.** Except two cases, all were investigated in the 1990s. The subjects were all Hindus living in northern India. Eight were male and two were female. Their median age at the time of our first investigation was 8 years and 7 months; the cases were investigated within 5 or 6 years of their development. Eight of the concerned deceased persons were Hindus, two were Moslems. **Methods.** The principal methods of investigation were interviews with the subject, its parents, other available relatives, friends and neighbors who qualified as firsthand informants. On the side of the concerned deceased person, surviving members of his/her family, who

qualified as firsthand witnesses, were interviewed. The subject's birthmarks/birth defects were carefully examined, described, sketched, and photographed; the subject's version about their origin in a previous life was recorded. Every effort was made to verify independently the correspondence between the birthmarks/birth defects and the supposedly corresponding wounds on the deceased person. Whenever possible, medical records, usually postmortem reports, were obtained. Description of Birthmarks and Birth Defects. Two of the subjects and major birth defects. One child was born without his right hand and distal part of the right forearm; the deceased person whose life he remembered had had his right hand badly mangled in machinery. Another child had a severe malformation of the spine (kyphosis) as well as a prominent birthmark on the head; the concerned deceased person had been beaten to death. Two other subjects had minor defects of ears and also had birthmarks. The remaining subjects had birthmarks which corresponded to gunshot wounds, knife wounds, burns, and injuries in accidents. Discussion. The paper will review several possible interpretations for the birthmarks and birth defects. Chance seems an unlikely explanation when two or more birthmarks or birth defects correspond to wounds or defects on the concerned deceased person. In some instances maternal impressions (influence of the mother's mental images on the fetus) may be the correct explanation for the physical abnormalities, but would not explain all the other features of such cases.

Cases of the Reincarnation Type: An Evaluation of Some Indirect Evidence

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In a published summary of recent case studies (Keil, 1994) I suggested that paranormal processes may be involved. The counter hypothesis which requires the most detailed analysis before it can be rejected is the one which states that significant information transfers are mainly due to unintentional normal processes about which the families involved are not aware. Such a normal information transfer is most likely when the subject and the previous personality are members of the same family (or village) or when the subject's parent and relatives expect the subject to be a rebirth case. Some subjects in this category, however, never speak about a previous life. This and other related findings support the suggestion that the counter hypothesis above is not an adequate rejection of a paranormality hypothesis in connection with cases of the reincarnation type.

Three New Gitxsan Cases of Children Born With Pierced Ear Birthmarks

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In cultures that have a belief in rebirth, some children identify themselves or come to be identified by others as a particular person returned. In terms of evidence of the survival after bodily death, the cases among the North American Indians and Inuit are less compelling because they are almost always examples of same family rebirth: in such circumstances it is typically difficult to eliminate the element of cultural expectation. This paper examines three new cases of Gitksan children in Northwest British Columbia, Canada who were born with pierced ear birthmarks. Pierced ear birthmarks are culturally meaningful to these people because the heirs to the positions of leadership in their matrilineal clans had their ears ritually pierced in potlatches to ear-mark them for elevation to the positions of greatest respect and power. Therefore to be born with these marks is seen as a sign of being a high chief reborn. The question is whether these non-inherited marks present data that can best or only be explained by the rebirth hypothesis. The cases range from a boy only 18 months old, to a brother and sister 5 and 9 years old. The strengths and weaknesses and complexity of the cases are presented, the pierced ear marks are visually portrayed (in slides), and the alternative explanations (such as genetic transmission that has yet to be mapped on the chromosomes) examined. The study notes that mapping the trajectory and impact of the soul is much more difficult than discerning the meaning of all the sites in a human's genetic construct.

Evidence for Anomalous Information in Random Binary Sequences

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Strong correlations between the output distribution means of a variety of random binary processes and the pre-stated intentions of some 100 individual human operators have been established over a 12-year experimental program. More than 1000 experimental series, employing four different categories of random devices and several distinctive protocols, show comparable magnitudes of anomalous mean shifts from chance expectation, with similar distribution structures. Although the absolute effect sizes are quite small, of the order of 10-4 bits deviation per bit processed, over the huge databases accumulated the composite effect exceeds seven standard deviations ($p \approx 3.5 \times 10^{-13}$). These data display significant disparities between female and male operator performances, and consistent serial position effects in the individual and collective results. Data generated by operators far removed from the machines and exerting their efforts at times other than those of machine operation show similar effect sizes and structural details to those of the local, on-time experiments. Most other secondary parameters tested are found to have little effect on the scale and character of the results, with one important exception: studies performed using fully deterministic pseudorandom sources, either hard-wired or algorithmic, yield null overall mean shifts, and display no other anomalous

features.

The Decline Phenomenon: Effect or Artifact?

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A phenomenon called the decline-effect (DE), the decline of performance over time, is widely accepted throughout much of the parapsychological community. Two reasons for this acceptance are frequently offered. First, that it represents a fundamental pattern of the paranormal process, and second, that the DE is held responsible for the replication problem in parapsychology. Researchers have offered several hypotheses to account for the DE. The authors hypothesize that the DE actually is a statistical artifact. They suggest that the correlations of effect-size and chronological order are normally distributed. To test the normal-distribution hypothesis all available meta-analyses in parapsychology, and DE data from two five year periods of the Journal of Parapsychology were collected. Both analyses independently confirmed the hypothesis. A Kolmogorov-Smirnov Z of .98 ($p = .29$, 2-tailed) has been found for the correlation-value distribution of the meta-analytical data (DE between experiments) and a Kolmogorov-Smirnov Z of .63 ($p = .82$, 2-tailed) for the DE data from the Journal of Parapsychology (DE within-experiments). A two-factor hypothesis is discussed that might explain why the DE has remained for over 100 years in the parapsychological literature. The authors suggest that other "internal effects" be evaluated in a similar way.

Selection and Influence Models Debate Confronted with a Sense of "Balance"

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Statistics anomalies in tests with Random Event Generators have shown an anomalous influence attributed to a property of consciousness. Recently, however, the DAT mathematical analysis done on a large random number database concluded that there can be no influence responsible for the apparent anomaly, because (a) the parent distribution remains unperturbed, (b) the "intention" data deviates statistically from chance due to a high precognitive skill and an accurately timed data selection. The conclusion regarding the unperturbed parent distribution is supported by evidence from tripolar protocol REG tests in which the "high" and "low" intention data, together with control data yield the "perfect" calibration Gaussian. It is, also, supported by evidence from RNG tests done by the author,

and independent background radiation and other ESP tests. The DAT interpretation of a physical phenomenon involving the psi property of consciousness stands very weak. To the already existing arguments a couple of others will be presented, based on the actual evidence which is claimed to support the selection model. A new mathematical analysis, which is currently underway, shows that it is possible for the intention data to display the unperturbed parent distribution behaviour under certain mathematical analyses, even though their probability distribution exhibits the anomalous effect of an influence. It is important that in any mathematical analysis both intention and control data are studied equally, before conclusions are drawn about the parent distribution. This new mathematical analysis supports a previous hypothesis of a consciousness mediated psi influence of a reversible process nature, which influences both intention and no-intention data in a balanced way (BET). According to the balancing effect idea the process which links the psi property of consciousness with the rest of the physical reality, generates information which influences simultaneously the whole of physical reality and not only a part of it (e.g. intention dataset). If we are studying only the intention data we see the statistical result of an influence. But, if we look at the large whole of generated data (intention and no-intention) we get the statistics of the unperturbed distribution, which however carry the influence character revealed under this specific mathematical analysis.

The Second Uncertainty Rule in Psi Experiments

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The success of classic physics is strongly based on the arbitrary replicability in observation. However the Psi phenomena can not be observed at will. This situation has led the author to have argued in an article [Psi research, Vol.1, No.4 (1982), 16] of the second uncertainty (SU) rule in observation of Psi phenomena, i.e., the probability P of a Psi event to occur is competed by the control or confidence level C of the experiment. The simplest expression for the second uncertainty rule can be formulated: $C + P = 1$ The first uncertainty (FU) principle [Heisenberg 1927] can be shown rooted in Fourier transform. That a linear transform constitutes the base of any observation or measurement for drawing information by linking domains of the time and the energy, or of the space and the speed, and vice versa. In parallel, the SU rule agrees with the basis of Pauli's complementarity of reality and exclusion principle while it can not be related to linear transforms. The long term effort of 100 years or more in parapsychology or psychic research and of its critics has supported the SU. The recognition of the SU does not kill the Psi research at all. Instead, it enhances the data weighting from the simple average method for the past collection. It may also save time otherwise wasted for some parapsychologists and their critics from being pursuing or expecting the arbitrary replicability which holds only for

certain simple phenomena at low level stages of development. As with many realistic systems, the arbitrary replicability may not necessarily apply. Methods on how to draw information from a low probability event has already well developed in modern physics & electronics. The trigger and imaging sampling play rules. The micro-jet signal and the other results of author's Psi experiments are shown. The mind-matter modulations mind-machine couplings are discussed and further experiments suggested, e.g., on ionic channels out of the living body. Models (DDSEERS) of creation of phonon, photon (x-ray, UV and light pulses) and fine machining effects of the ionic channels will be developed.

Using Internet to Study Anomalous Cognition: Getting Rid of Noise in a Noisy Environment

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Traditional parapsychological experiments are constrained by the limited availability of subjects and the limited amount of time experimenters have to run these subjects through often complicated protocols. Internet and more specifically the World Wide Web may be used as a virtual experimental laboratory where both constraints disappear thus enabling large scale experimentation. Because this kind of experiments are completely automated they do not require any time from experimenters after they have been opened to the public. In some theoretical model of anomalous cognitive phenomena it is suggested that the information is transmitted through unknown channels as a weak signal. A logical consequence would be to increase the number of measurements which should result in a better signal to noise ratio. On the other hand the unattended nature of the subjects, typically connected to the Internet from their home or their office, may result in a considerable number of non serious attempts effectively to be considered as noise. A pilot experiment in 1994/95 where subjects (N-sessions = 104) had to describe a picture that was randomly chosen and fed back immediately after their description was submitted (precognition) yielded some promising results. For instance self-attributed artistic interest as well as state of consciousness during the experience of the (still to be determined) picture were significant predictors of success. Therefore the experiment was left open for public access on the Internet for another year. Six hundred and twenty eight subjects contributed 825 sessions in this follow up experiment. Analyses of the data set were done by two independent analysers, one analysing the odd, the other the even sessions. Each of the analysers did enter his private predictions before they started analysing the data set. These predictions were supposed to be conflicting but were not communicated to each other. The goal of this manipulation was to discriminate between effects that intrinsically could be attributed to the subjects and effects that could be due to so-called experimenter or analyser psi. The over-all results did not confirm the results of the pilot experiment. However the artistic interest analysis gave significantly opposite effects for the

two analysers in a direction predicted before starting the analyses ($F = 2.23$, $df = 8$, $p < 0.025$). Furthermore in contrast with the pilot study, a significant tight variance in the distribution of z-scores over the subjects was found ($\chi^2 = 714.4$, $df = 824$, $p < 0.005$) as was predicted by one of the analysers. This too may be logically explained as an experimenter/analyser effect.

Project ANNABELLE: Anomalies in Normal-User Network Applications Based on Experiments in a Lovely Lehrstuhl Environment

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Inspired by work done at the Princeton Engineering Anomalies Research Lab (PEAR) on variations of a pseudo random number generator caused by human volitive presence, ANNABELLE will apply and validate PEAR's methods and results within a networked environment. In particular, our project will look at if and how anomalies influence the performance of an Ethernet local area network (LAN). In a first step it will identify all potential impacts such anomalies may have in a LAN-based environment as well as sources of external disturbances. In this presentation we will start analysing the behaviour of the network's "Binary Exponential Backoff" algorithm. This algorithm conducts the network's behaviour in case a retransmission is necessary. This strategy is based on a randomly determined waiting time between two consecutive transmission attempts in case a previous collision prevents a packet from being transmitted correctly and is employed in all Ethernet-type LANs. The project will run on an exclusively used part of the departmental network, interconnecting three PC workstations. Measurements will be performed using state-of-the-art logic analysers.

PSI Explorer: A Novel Approach for Exploring Scientific Anomalies

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Anomalies research does not take place in a vacuum, but within the broader context of scientific inquiry - which, in turn, is but one facet of our complex societies. Although we typically address our work to peers and colleagues, rigorous research and scholarly publications alone do not guarantee our long-term survival: the expansion of anomalies research ultimately depends upon its pertinence and meaningfulness within more global socio-economic frameworks. We thus need to constantly extend our communication efforts outwards, to other scientists and laypersons alike. This is particularly the case, insofar as

anomalies research is plagued by information of questionable quality or motives - from the distortions of the popular media to the disinformation campaigns of skeptical advocacy groups. Psi-Explorer, based upon the multimedia technology of CD-ROMs, constitutes one approach for presenting scientific anomalies to non-specialists. Focusing upon receptive-psi phenomena, or ESP, Psi-Explorer seeks to provide a serious, yet accessible overview of the essential facets of parapsychology. Oriented toward both scientific and lay audiences, the CD-ROM balances density of technical information with audiovisual presentations, an aesthetic user interface, and a variety of means for exploring one's own latent psi potentials. Users learn about the different facets of the field by exploring several 3-D spaces. For example, in the Lab they can view videos illustrating the most promising lines of contemporary research, and read complementary text presentations. In the Test Room, gamelike psi tests with statistical analyses and storage of results allow the user to assess different mental strategies for guessing hidden targets. And in the Sphere, users can follow a guided-imagery procedure for getting in touch with their latent mental potentials. In the present conference I will focus on the Forum, where multimedia animations illustrate scientific attempts to come to terms with the paradox of psi. The Forum is divided into two distinct spaces: Psyche, presenting mentalistic models (e.g., dualistic and collective unconscious theories); and Physis, presenting physicalistic approaches (e.g., transmission models and models inspired by QM). These presentations are not intended to offer definitive answers, but rather to stimulate reflection on the nature, the meaning of psi phenomena.

Teaching Inventive Thinking to Science Students: Reflections on a Preliminary Study

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During the last few decades, several methods of initiating, enhancing and speeding the creative process have been developed. They are all widely marketed outside the academia but have received only little scientific attention so far. The lecture briefly reviews these methods and points out the dire failure of mainstream psychology to subject them to serious theoretical and experimental study. Then, a novel Israeli method of enhancing innovative thinking is described. A unique experiment is reported during which the method has been taught to graduate science students who were required to apply the method to a variety of scientific problems encountered during their research. The results are encouraging, warranting replication and further research.

The Meaning of Meaningless Psi-Information and the Model of Pragmatic

Information

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The Model of Pragmatic Information (MPI) is a conceptual framework to describe and to quantify the "meaning" of a given information. The term "meaning" includes two aspects, an internal and an external one: meaning which is created by an object or a situation for its environment and meaning which is attributed to an object or a situation by its environment. A random sequence, for instance, does not convey very much meaning in its own. However, if it is used as a target of a PK- experiment a special meaning is attributed to it (e.g. "1" is called "hit" and "0" is called "miss"). If the experiment is successful, the question arises, whether the random sequence contains a PK-signal, which can be conceived as carrier of an internal meaning of the sequence. In my paper I will give examples, both from spontaneous cases and experimental results of parapsychology, which show that external attribution of meaning is a necessary condition for the occurrence of psi-effects. However, in contrast to the usual assumption, the "internal" psi-information seems to be meaningless. Without additional information from the environment a meaningful "psi-signal" cannot be recognized. For this purpose it is necessary to give an operational definition of the term "signal". It is argued that "Psi-effects" are no "signals" but "only" (non-local) correlations or "pseudo-signals" which do not allow to "identify" a hit without resources from the environment. The distinction between the "internal" and the "external" pragmatic information of a psi-experiment gives a criterion for the replication of Psi-results. The seemingly "internal" meaning exists only "post hoc" as correlation. It is a feature of the "organizational closure" of the system which is created by the external attribution of meaning to the system. If the "internal" pragmatic information about the system available to the experimenter from a previous experiment could be "used" to code a real external signal, the non-local correlations change or disappear, leading to a result completely different from the previous experiment. From this viewpoint the well-known decline effect appears in a new light.

Evidence for a Non-Classical Experimenter Effect

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We conducted a well controlled experiment in order to find out, whether lay- and professional dowsers and radiesthetists are able to unconventionally extract information. We used a widely used one-hand rod which is said to have unique sensitive properties for everyone without training. One hundred and six respondents to a publicity campaign coming from all over Germany and including lay as well as many professional and experienced persons performed

in three identical reproductions of one single experiment: Ten test probes contained the purest known mineral water (Volvic), 10 contained E 605 (parathion, lethal dose). The probes were sealed in glass phials, wrapped in natural silk and fixed in small cylindrical brass containers, identical in appearance. Then their sequence was randomized following a natural random sequence from a 90strontium source. The code was known neither to the experimenter (S), nor to the three assistants introducing the subjects to the experiment. The assistants had to make subjects acquainted with the rod and the task expected from them. Consequently, they only knew that the subjects had to detect, whether a probe would be "good for them" or "bad for them". They did not know anything about the design, the test substances or the number of respective probes. Subjects were left alone in the experimental room, with only a video camera monitoring them. Research assistants only guided the subjects to the door of the room and brought them back, without entering the room or being present while subjects were dowsing. The experimenter (S), who knew about the design and the contents of the probes, but not about the sequence, only saw subjects after they had performed the experiment and data were secured. There was no effect of unconventional information transfer over the three experiments with 106 subjects (20 possible guesses, $p = .703$, Wilcoxon). However, there was a strong effect, consistent over all three experiments, with one of the three research assistants ($p = .02$ two-sided Wilcoxon): Subjects introduced by this assistant had significantly more correct responses. We cannot explain this clear and consistent effect by recurrence to experimenter effects, as all assistants had the same information and knowledge, and none knew anything about the design or the contents of the probes. Since the experimental task was non-classical as well, and the experiment was well blinded and controlled, we can only conclude that this specific person interacted in a way that enabled subjects to unconventionally extract information out of the system.

An Experimental Test of the Model of Pragmatic Information

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The Freiburg Dowsing Experiment (method and design see the other abstract by Walach & Schmidt) was also designed to test the Model of Pragmatic Information (MPI) of Walter von Lucadou. This was done by conducting one experiment and two identical replications the third of which was done with the knowledge of the combined effect of experiments 1 and 2 together. The MPI predicts a decline-effect after the information is known. The experiment itself revealed no significant dowsing effect, but a significant negative correlation between hit rate and paranormal beliefs was discovered. This could serve as an information in the sense postulated by the MPI. The three correlation coefficients between hit rate and paranormal belief vary around the mean of $r = -.29$. A clear decline effect is not obvious from the data. Therefore more subtle modelling procedures have to be applied the result of which is not available yet but will

be submitted as soon as possible.

The Informational Character of Biophotons

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Information of signals which are emitted or taken up from biological systems can be analyzed according to (1) whether they deviate from "randomness", (2) whether they correlate to physiological functions, (3) whether they induce some biological effects. We have been measuring "biophoton emission" from living systems for about 20 years. Up to now there is no general agreement either about the source or about the biological significance of biophotons. However, we know certainly that: (1) Biophotons correspond to light emission far away from thermal equilibrium. The frequency distribution as well as the photocount statistics display the very interesting feature that it may express, as well "white noise" and an ideal chaotic field as, on the other hand, the frequency distribution providing optimum signal/noise-ratio and an ideal coherent field respectively. This puzzling phenomenon is of fundamental importance to understand the optimization of communication at all. (2) Biophoton emission correlates with a variety of biological and physiological functions, if not with all of them. Of particular interest is the temperature dependence which is characteristic for all physiological functions, if not with all of them. Of particular interest is the temperature dependence which is characteristic for all physiological functions, indicating that biophoton emission may originate from physiological functions or work as their real trigger. (3) We investigated non-substantial communication by means of biophoton emission. We have indications from measurements on cell cultures and phagocytosis experiments, daphnia and dino-flagellates.

Is Homoeopathy a Pharmacologically Specific Treatment? A Meta-Analysis

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All available clinical studies (randomized controlled, most of them double blind) of homoeopathic therapy versus control (mostly placebo) which have been published in orthodox peer reviewed medical journals were subjected to a meta-analysis. 42 studies were retrieved, 1 did not present the data necessary. Two more studies were included, one of which was the one most often quoted as best realization of classical homoeopathy, the other was our own replication study which is in the process of being published. Analysis was conducted according to a fixed and random effects model. There was an average effect size (ES), according to the

d-statistic-approach chosen, of $d = 0.27$ to $d = 0.29$. If analysis was chosen according to a fixed model, this ES was significantly different from zero, but with a large heterogeneity of variance (Q statistic highly significant). If the analysis was according to a random effects model, the ES was only slightly smaller, but not different from zero any more. This is a strong indication that there is no single homogenous ES but a heterogeneity of effects. None of the descriptive variables of the studies, however, could explain the variance in a regression analytic approach, or could lead to a meaningful partitioning of studies into subpopulations. As it stands, homoeopathy seems to produce a large range of ES from as large as $d = 1.6$ to -1.4 . According to this analysis, the effect is not statistically different from zero. This is in contrast to another meta-analysis done by a separate group of researchers who found a small but significant effect. While their analysis was built on the risk-difference as ES measure, this might explain the difference. This analysis reported here also included a correction for dropped-out patients which lead to more conservative estimates of ES.

Cartesian Cut, Heisenberg Cut, and the Concept of Complexity

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It will be discussed why and how epistemological arguments are helpful for systematic and formal progress toward a proper understanding of complex systems. Two crucial notions in this context are those of the Cartesian cut between the material world and its non-material counterpart and the Heisenberg cut between an object and its environment, corresponding to the issues of model building and measurement. Both cuts are of utmost but most often implicit significance for modern science. Taking them into account explicitly can contribute to a resolution of certain problems in the study of complex systems. Possible implications for mind-matter relationships will be indicated.

Synchronicity and Quantum Physics - Pauli, Jung, and the Emergence of Non-Local Information in Quantum Systems

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C.G. Jung's theory of synchronicity has been regarded until now as a purely theoretical approach for psycho-physical interactions. The application of synchronicity to the field of scientific research might now become possible on the basis of W. Pauli's personal interpretation of both quantum mechanics and Jungian synchronicity. Pauli's suggestion of a

complementary irrational interaction between the observer's unconscious and the observed quantum system has remained neglected for almost forty years. His approach needs now to be rehabilitated and investigated. Pauli's interpretation of the measurement problem implies an extension of both Bohr's original concept of complementarity and Jung's concept of archetype. It suggests further to view archetypes as factors similar to mathematical attractors whose range of manifestations (viewed from the observer's ego consciousness) spans from the physical to the psychic domain. In other words, following Pauli, we may say that, in some particular cases, the collapse of the wave function becomes a spontaneous process in which the observed system is correlated with the psychic attitude of the observer. The system's answer stays in a complementary relationship not only with the observer's ego consciousness (as suggested by Wigner) but mainly with his unconscious psyche. Thus, individual (random) occurrences, which quantum physics tries to eliminate with the help of statistical calculations, become the open door to synchronistic events. Jung's theory of synchronicity and Pauli's interpretation of quantum mechanics allow us to view quantum systems and dynamical systems in general as the most suitable places for the manifestation of synchronistic events in the form of coherent sequences of individual quantum events. An experimental approach to test the possibility of synchronistic interactions between a quantum system and an observer is suggested by the author. Such an approach totally differs from present experiments derived from observational theories. The first major difference consists in monitoring the unconscious activity of the observer (dreams, etc.) as well as his neuro-physiological activity during sleep (EEG and/or MRI and/or PET). The second consists in simultaneously analysing the qualitative aspects of at least two separate quantum systems. The analysis concerns not only time correlations between the individual (random) quantum events produced by the spatially isolated systems but also the putative emergence of regularities within each system.

Borderlines of Creativity: Magical Ideation and the Dark Side of the Brain

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What is the magic of the creative process? Is there a creative component in the belief in magical forces? - I propose that both magical ideation and creativity arise from a distinct pattern of functional hemispheric asymmetry. Current work in the field of hemispheric differences suggests that previous notions of a general left hemisphere superiority for language processing may constitute a severe oversimplification. In particular, it is the right hemisphere which is thought to be dominant for the appreciation of non-prototypical, indirect semantic associations. Experimental findings are presented that reveal an association of magical ideation with (1) enhanced right hemisphere participation in lateralized tasks, and (2) a preference for remote over close associations in word production tasks. Being a function

primarily mediated by the right hemisphere, "seeing connections" between remotely associated cues may be one important common element of both magical and creative thought. Further research will also have to address the differences between these two modes of thinking.

Arguments for an Exclusive Research Program Within UFOlogy

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In spite of numerous reports concerning UFO-encounters it has so far been almost impossible to identify and secure objective traces of possible encounters. Upon psychodiagnostic testing, UFO sighters and believers show an underdeveloped object relationship. Hypnotic regressions provide no evidence (s. "catathymic imagination"). In place of maximalistic explanations (UFOs come from outer space, out of the future, or from parallel worlds) the scientist must give preference to minimalistic explanations which are in accordance with the interviewee's personality. Here, forensic psychology and biographical research take first place. UFO-believing researchers support a maximalistic hypothesis of mimicry: Extraterrestrials disguise themselves in "participative folklore". Critical researchers insist on a minimalistic hypothesis: Sighters of and believers in close encounters, as well as abductees, mask psychosomatic symptoms in ufonaut folk-lore: problem-masking hypothesis. A research program is recommended that limits itself to psychosocial explanations.

Traces of Unidentified Flying Objects on Military Radar Devices over Central Europe

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Main properties of unidentified flying objects observed during the past 50 years are: 1. their inimitable manoeuvres in the atmosphere, 2. their evasiveness, 3. their physical interactions with their surroundings. Because of point 1 these objects are a new kind of phenomena. Because of 2) mainstream science disputes their existence, but because of 3) their existence is in principle detectable by measurement devices.

Radar devices are ideally suited for that since they can follow the objects in large areas and long durations and are registering at the same time velocity and acceleration. Since the military airspace control is responsible for the identification of not responding airplanes and other flying

objects it should be capable to provide information on these objects.

However, what the surveillance capabilities of military airspace control systems can achieve is in general classified. Only in few occasions protocols of non identified radar traces are released to non-military research for further analysis. Some significant results of investigations are presented. Abnormal traces of several objects and false echoes as shown on radar screens will be discussed. Examples of unidentified traces synthetically processed will be given, resembling hovering objects changing their flight path even by 90 degrees. Finally a computer animation of UFO flight profiles, based on real radar data are presented in a three-dimensional scenario.