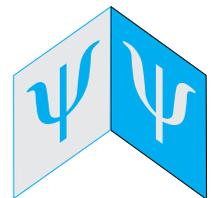


# Biennial Report 2012–2013



Institut für Grenzgebiete der Psychologie  
und Psychohygiene e.V. (IGPP)  
Freiburg im Breisgau

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Institut für Grenzgebiete  
der Psychologie und  
Psychohygiene e.V.  
Freiburg i. Br.

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# Inhalt

Preface .....	1
1. History .....	3
2. Research .....	5
2.1 Theory and Data Analysis.....	6
2.2 Empirical and Analytical Psychophysics.....	12
2.3 Research Group Clinical and Physiological Psychology .....	17
2.4 Cultural Studies and Social Research .....	21
2.5 Cultural and Historical Studies, Archives and Library.....	25
2.6 Counseling and Information.....	33
2.7 Bender Institute of Neuroimaging (BION).....	40
3. Personal .....	43
3.1 Corporate Members.....	43
3.2 Council.....	43
3.3 Management.....	44
3.4 Administration .....	44
3.5 Departments.....	44
3.6 Advisory Boards.....	46
4. Appendix.....	47
4.1 Publications .....	47
4.2 Habilitation Treatise, Doctoral and Diploma Theses.....	56
4.3 Teaching .....	56



## Preface

Extraordinary experiences and phenomena are part of our life, whether we like it or not. They fascinate; they remind us that we - and the world we live in - are not and do not always function the way we imagine. There are realms, which are still mysterious and inexplicable, and this will most likely be so for a long time. The unshakeable belief in the reality of these phenomena and the stubborn scepticism towards these are the two poles between which the discourse about their appearances and their authenticity takes place. It concerns experiences at the frontier of our everyday reality, extraordinary subjective experiences, physical and biological anomalies, and if nothing else, it concerns the expansion of our life horizon and the expansion of the understanding of the world we live in.



Fig. 1. Prof. em Dr. Dieter Vaitl, Director of the Institut für Grenzgebiete der Psychologie und Psychohygiene e.V.

It does not revolve solely and exclusively around the classical phenomena of parapsychology, such as hauntings, extrasensory perception, or telepathy, but more generally and in the broadest sense it concerns the study of hitherto poorly understood phenomena and anomalies at the frontiers of knowledge. And these exist more or less manifest in all scientific disciplines, be it physics, biology, medicine, psychology, or social sciences.

For over six decades, the Institute for Frontier Areas of Psychology and Mental Health (IGPP) in Freiburg founded by the physician and psychologist Hans Bender in 1950 has striven to explore the world of anomalous phenomena with all existing scientific methods. Since then, the Institute has been at the centre of controversial scientific discussions about these issues and has become very familiar with the ups and downs of the social dynamics with which these discussions are conducted. At the beginning of the research of the Institute, the available methods were largely those of the fields of psychology, medicine, and the humanities. In recent years, neuroscientific methods diversified these with increasing significance. Finally, physics were at place when it came to the development of explanations concerning anomalous phenomena. Nevertheless, whatever unusual happens and however extraordinary the experiences people make are, they always take place in a social context and are anchored in the reality of life. This is what the social sciences deal with.

Research in the field of frontier areas must be organized inevitably in a multi-disciplinary and intercultural way. However, this presupposes that the dialogue between and the discourse within the disciplines involved in this research needs to develop and maintain a common language of

communication. Such a thing cannot be standardized and thus needs to be in a constant process of optimization.

The reflexive concern with frontier areas and anomalies is not only important under these specific aspects, but also provides a basis for reflection for the traditional scientific landscape. Common central questions are, for example, the replicability of results, the social context in which they occur, and not least the pitfalls that lead to misinterpretations when, for instance, no distinctions are made between ontological and epistemic statements.

The current biennial report attempts to give an insight into some of the Institute's pursued research approaches and areas of work and summarizes the main findings from 2012 and 2013. This aims and hopes to revive the discourse on how we can deal with frontier experiences confronted with in our daily life and our scientific endeavours.

January 2014, Freiburg

Dieter Vaitl

# 1. History

The exploration of phenomena and experiences in the frontier areas of our reality has a long tradition in Freiburg. The Institute for Frontier Areas of Psychology and Mental Health (IGPP) contributed significantly to this. Its founder, Professor Dr. Dr. Hans Bender (1907 - 1991), was probably the best known and the most popular academic representative of German parapsychology after the Second World War (Fig. 2). Shortly after the war, Hans Bender began to establish an Institute in the “Eichhalde 12” building in Freiburg-Herdern (Fig. 3). There, operations began in 1950 and he was the Institute’s director until his death. Soon, a connection with the university was established; between 1954 and 1975, Bender held a Professorship of Psychology and its Frontier Areas at the Department of

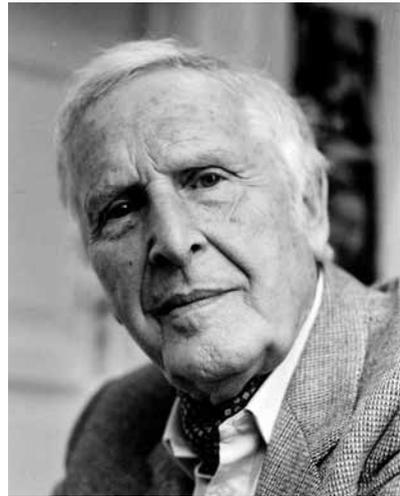


Fig. 2. Hans Bender, the founder of the IGPP around 1980.

Psychology at the University of Freiburg. He was followed by Professor Dr. Johannes Mischo (1930 - 2001), who held the Professorship until 1998 and was the director of the IGPP until 2001. His successor since 2001 is Professor Dieter Vaitl, University of Gießen.



Fig. 3. The IGPP at Eichhalde 12 in Freiburg in 1967. (Photo Willi Pragher, Landesarchiv Baden-Württemberg, Staatsarchiv Freiburg, W 134 Nr. 065218c).

Historically, the “Eichhalde-Era” can be seen as the heroic time of the institute: Until the mid/end eighties of the last century, it was highly influenced by the charismatic personality of Hans Bender, who was seen as the Parapsychology Professor (“Spook-Professor”) par excellence. Bender’s lectures and seminars at the University of Freiburg gained legendary status with generations of students. Several hundred auditors followed his Tuesday lectures at the university fascinated and amused about his enthralling elaborations of the future, based on well-documented prophetic dreams, or of haunting research, such as the Rosenheim case.

Bender never tired of pointing out that uncommon (paranormal) experiences and occurrences

(psi-phenomena) are basic human features and that they belong to human life, deserving to be researched in detail. Besides establishing this form of science in the canon of psychological disciplines, he contributed with his intensive public work to the fact that the frontier areas of psychology became popular and found entrance into the academic discourse. The financial and personnel resources of the institute were very modest at first and were financed mainly by the foundation of the Swiss biologist and parapsychologist Dr. Fanny Moser (1872 - 1953) (Fig. 4). The financial shortage surrounding the research of the frontier areas changed in 1992, when the IGPP started to be financially supported by the Holler Foundation, leading to an expansion of the previous fields of research.

The spouses Holler had already in the 60's decided that their assets should fall to a charitable foundation.

Asta Holler, who outlived her husband by 20 years, provided with her will assets, which should allow time unlimited benefits ( Fig. 5). In September 1990, one year after Asta Holler's death, the foundation started work. Heidrun Edelmann wrote an overview worth reading about the Holler-Foundation with the title „Vermögen als Vermächtnis. Leben und Werk der Stifter Christian und Asta Holler“ (München: Oldenburg, 2011).



Fig. 5. Asta Holler um 1970.



Fig. 4. Fanny Moser around 1920.

The improved financial situation called for a restructuring of the Institute. With the growing number of research projects and scientific personnel from natural, social, and cultural sciences, the Eichhalde-Institute was left and the Institute moved into the centre of town. Since then, the IGPP and its research has been the focal point of very different scientific cultures. Today, the IGPP is the world's largest institution of its kind.

## 2. Research

Following its initial mission, the IGPP concentrated as in the previous years on interdisciplinary research of so far insufficiently understood phenomena and anomalies at the frontiers of our knowledge. These include conditions of altered states of consciousness, extraordinary human experiences, mind-matter interactions as well as their social, cultural, and historical context in the humane, social, and natural disciplines. This mission is declared in the institute's statutes.

One outstanding characteristic of the IGPP is its philosophy of neutrality and its institutional independence. At the centre is the investigation of frontier areas of psychology. Its topics and methods can be summarized with the term "reflexive anomalistics". "Reflexive" means an anomalistic, which, in the discourses in its field, is aware of the context of the epistemological characteristics of the examined phenomena and the particular methodological problems associated as well as the entanglement between subjective evidence, scientific data, and social discourse. In order to fulfill these tasks, the IGPP has a specific organizational structure. It is a registered organization with eighteen members from various universities, the economics, medicine, and the legal and cultural studies. The Institute is led by a three-member board, which selects from its ranks a director for a four-year term. The Rules of Procedure of the IGPP provide that a scientific advisory board accompanies and evaluates the research and performance. The advisory board consists of nationally and internationally recognized scientists and researchers and serves as an external advice and monitoring system in relation to the objectives that are set out in the statutes of the IGPP. Research at the IGPP splits into three research subjects:

- *Natural sciences and experimental research*

Research interests include for example generalized quantum theory, acategoriality, mind-matter interactions, physiology of subjective evidence (deception, lies, pseudo-memories), time and space as fundamental dimensions of consciousness, questions about the "objectivity of perception", or altered states of consciousness.

- *Social and cultural scientific research*

Research interests include for example the prevalence and patterns of extraordinary experiences as well as social relationships between stigmatization, anomalies and heterodoxies in the construction of reality, the problems and history of parapsychology and anomalistic research and its predecessors since the 19th century to the present as well as spirituality, religion and psychotherapy.

- *Counseling, information, documentation*

In addition to the above-mentioned fields of research, the IGPP maintains a broad-based counseling, information and education program for people with extraordinary experiences. These include as accompanying research the conceptual development and empirical testing of specific diagnostic tools and treatment approaches for people with such experiences.

Until the end of 2013, subjects of research and methodological emphasis of these three research areas was split into five different research departments and one research group. The following activity reports are arranged accordingly:

- Theory and Data Analysis
- Empirical and Analytical Psychophysics
- Research group Clinical and Physiological Psychology
- Empirical Cultural and Social Research
- Cultural and Historical Studies, Archive and Library
- Counseling and Information

For the implementation of neuroscientific studies, a cooperative institution exists: The Bender Institute of Neuroimaging (BION) at the Justus-Liebig-University of Giessen. It was financed (€ 3.5 million) by the IGPP and has been in operation since 2000. The BION's centre is a magnetic resonance tomograph, which is available exclusively to psychological studies of brain functions. With it, head structure and brain function during the execution of certain tasks (e.g. imagination) and certain mental states (e.g. hypnosis, meditation) can be explored.

## **2.1 Theory and Data Analysis**

The main research activities of the Department of Theory and Data Analysis are the analysis and interpretation of the empirical body of knowledge referring to psychophysical relations and extraordinary states of consciousness. In particular, this refers to: 1. Development of theoretical concepts for an integration of empirical results into the body of knowledge of the involved scientific disciplines. 2. Elaboration and application of new techniques of data analysis as well as proposals for future studies.

The research areas in TDA have been structured according to three focal areas, defined by the following topics: 1. Concepts of Mind-Matter Relations, 2. Generalized Quantum Theory, 3. Multistability and Acategoriality. Research themes in these areas are interlocked in such a way that they overlap or complement one another at particular central and critical points.

### **Concepts of Mind-Matter Relations**

Even though most research in contemporary cognitive neuroscience assumes that mental states “basically are” neural states, this assumption floats in space essentially without solid theoretical or empirical evidence. The uncontroversial fact that mental and neural states are correlated has not yielded a clear picture of the nature of these correlations so far. A pertinent paper by Anderson (“Neural Reuse”, *Brain and Behavioral Sciences*, September 2010) gives a good impression of how inscrutable the current state of the art presents itself. Alternatives to simplistic reductive

approaches, which presumably do not represent the complexity of the situation properly, are therefore of great interest. In recent years we have been involved with two such alternatives that we could develop as far as toward realistic and empirical applications and proposals. One of these projects aims at a version of emergence, which is more flexible than plain reduction on the one hand, where a fundamental description is assumed to “fix everything”, and, on the other hand, not as arbitrary as a radical emergence where “anything goes”. The other project arises from an analysis of the speculative ideas of W. Pauli and C.G. Jung around the middle of the last century. It considers mental and material domains as dual aspects of one underlying, psycho-physically neutral reality.

### *Contextual emergence*

Contextual emergence characterizes a specific kind of relationship between different levels of scientific descriptions of particular phenomena. It was developed and refined in collaborations within and outside the department, essentially since 2000. Contextual emergence utilizes lower-level features as necessary (but not sufficient) conditions for the description of higher-level features. It can be viably combined with the idea of multiple realization, a key issue in supervenience, posing sufficient (but not necessary) conditions.

In scientific areas such as physics, contextual emergence has been demonstrated as a formally precise and straightforwardly applicable interlevel relation. The situation becomes more challenging for less rigorously formalized fields of research. This is the case in the areas of cognitive neuroscience or consciousness studies, focusing at relations between neural and mental states. A review under the title “contextual emergence” at *scholarpedia* has recently been updated.

### *Mental causation*

In the philosophy of mind, the argument of overdetermination is often used against the causal efficacy of mental states on neural states. If neural states are described as effects of previous neural states, then an additional mental influence (mental causation) “overdetermines” the neural states. This can lead to severe inconsistencies. In a series of influential publications, Kim has argued (with his “supervenience argument”) that the reducibility of mental states to neural states is the easiest way out of this dilemma.

However, Kim’s dilemma evaporates if mental states are defined by proper partitions of the neural state space in the sense of contextual emergence. For mental states to be causally efficacious at all, they must be robust in their temporal evolution. This central point is guaranteed by their construction from stable statistical neural states. The corresponding kinds of dynamics are then topologically equivalent and, as a consequence, compatible. Such a correlative balance of mental and neural states has been proposed by Yablo in 1991. We could for the first time show how it can be realistically implemented in detail.

*Atmanspacher; together with Harbecke*

*Publications: Atmanspacher (2012b), Harbecke & Atmanspacher (2012)*

### *Dual-aspect monism*

Correlations between mental and material states are an intrinsic feature of mind-matter models which consider such states as dual aspects of an underlying reality that itself is neither mental nor material. An early version of such a model is due to Spinoza, and since then variants thereof have recurrently been formulated, mostly outside philosophical mainstream directions. Well-known names in the modern philosophical history of dual-aspect monism are Strawson, Nagel, and Chalmers. From the perspective of philosophically interested scientists, Wolfgang Pauli and C.G. Jung are to be mentioned (in addition, e.g., Bohm and d’Espagnat).

In a series of publications, partly with a history-of-science flavor, we could systematically reconstruct the most significant characteristics of the ideas of Pauli and Jung. For this purpose, the comprehensive correspondence of Pauli, edited in eight volumes by Karl von Meyenn, was enormously helpful. We worked out how the apparently related position of neutral monism (Mach, James, Russell) deviates from the conception of Pauli and Jung. A key difference is that the psychophysically neutral reality in the Pauli-Jung scheme is empirically accessible only in an *indirect* fashion, through its aspects.

*Atmanspacher*

*Publication: Atmanspacher (2012a)*

### *Journal “Mind and Matter”*

The journal “Mind and Matter” was established in 2003 and has received increasing visibility as a high-quality publication outlet for questions of mind-matter research since then. The journal appears semi-annually and is, since 2013, indexed and abstracted by Elsevier’s scopus system. The number of submissions grows continuously, the current acceptance rate is about 30%. Since 2005 the journal has been produced and distributed by Imprint Academic, Exeter (UK). The themes of the 2012 and 2013 issues so far were “Time and Temporality” (10/1) “Secular Enchantment”, (10/2), “Kinds of Time”(11/1) and “More Kinds of Time“ (11/2) (Fig. 6.)

*Atmanspacher, Moos*

*Publications: Atmanspacher, ed., Mind and Matter*

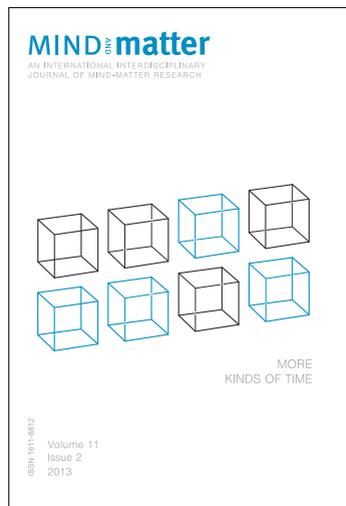


Fig. 6.

### **Generalized Quantum Theory**

Quantum theory contains two key concepts, complementarity and entanglement, that are often metaphorically applied to situations beyond physics. In 2002 we proposed an axiomatically formalized, generalized quantum theory to make such applications more rigorous. The crucial

formal criterion leading to complementarity and entanglement is the non-commutativity of particular observables of the system considered. The ordinary Hilbert space quantum mechanics can be recovered by stepwise adding the necessary features.

Meanwhile, a number of international groups utilize tightly related approaches for questions and problems of psychology, for instance decision processes, multistable perception, associative semantic networks, etc. Since 2007 there are regular conferences for this novel field of research. Our own work in the field refers to non-commutative effects in bistable perception, order effects in surveys, and learning processes. In addition to pertinent publications concerning these topics, we also published a comprehensive review article (“Quantum Approaches to Consciousness”, updated 2011, Stanford Encyclopedia of Philosophy) and popular presentations of the basic ideas.

*Atmanspacher, together with Busemeyer, Pothos, Wang*  
*Publications: Atmanspacher (2013b), Wang et al. (2013)*

### ***Temporal Nonlocality of Mental States***

The concept of temporal nonlocality has been discussed in physics for 25 years (Leggett and Garg, Physical Review Letters 1985), but could not be experimentally realized for physical systems so far. It refers to states of a system that are not sharply localized in time but extend over a time interval of non-zero duration. We investigated the question whether, and how, such a temporal nonlocality can occur in mental processes.

For this purpose we exploited the empirically supported Necker-Zeno model for bistable perception, which is based on non-commuting operations implying an option for nonlocal states. We derived so-called temporal Bell inequalities and demonstrated under which conditions they can be violated in this model, indicating temporal nonlocality. The empirical proof of such a violation is difficult because of the invasiveness of measurements. We will pursue corresponding attempts with particular emphasis on a recent proposal to design so-called adroit measurements which allow tests of invasiveness.

*Atmanspacher, Filk*  
*Publications: Atmanspacher & Filk (2012a,b,c, 2013c)*

### ***Complementarity of mental descriptions***

Descriptions of mental states and their dynamics can be incompatible, or even complementary, if they are based on an improper partition of the underlying neural state space. Compatible psychological descriptions, which are consistent with the underlying neurodynamics, emerge only if the mental states defined at the psychological level are dynamically stable. Such stable states can be constructed, in the sense of contextual emergence, by so-called generating (or Markov) partitions. From this perspective, the program of a unified science of psychology, with mutually compatible domains of description, depends on a proper choice of partitions of the neural state space.

On the other hand, there are interesting ramifications of *non*-generating partitions as well. Because they lead to non-commuting, incompatible observables and descriptions, they might be the basis for (epistemically) entangled mental states, to be interpreted analogous to quantum theoretical superposition states. It is conceivable that such entanglement correlations extend over time, so that temporally nonlocal mental states arise. We constructed an explicit example of how entangled states can emerge from non-generating partitions.

*Coordinators: Atmanspacher, Filk; together with beim Graben*

*Publication: beim Graben, Filk & Atmanspacher (2013)*

### ***Order effects in surveys***

The non-commutativity of observables plays an important role in numerous psychological situations, in which the result of successive operations depends on their sequence. This applies in particularly obvious ways to so-called order effects (or context effects) for responses to questionnaires or surveys. Such effects are well-known and have been addressed using classical statistical techniques (Markov or Bayesian modeling) so far.

We analyzed such order effects on the basis of non-commuting operators (questions), leading to a framework for a quantitative treatment of response distributions in terms of non-classical probabilities. This reproduces all order effects known from literature, which are basically expressed as shifts of expectation values. A recent paper by Busemeyer and Wang shows that such effects can be quantitatively explained within a non-classical Hilbert-space model. We predicted additional variance effects, resembling the Heisenberg relations of quantum theory, and alterations of correlations among variables.

*Atmanspacher, Römer*

*Publication: Atmanspacher & Römer (2012)*

### **Multistability and Acategory**

The discrimination between reality and illusion is to a large degree based on the capability of our perceptual system. The information available via our senses, however, is restricted and to a varying degree ambiguous. It has to be disambiguated and interpreted continuously in order to construct stable and reliable percepts. Ambiguous figures are paradigmatic examples in this context. Information from those figures is maximal ambiguous and percepts get only temporarily stable and alternate repeatedly between possible outcomes. We use this phenomenon of multistability to study the influence of sensory and cognitive factors during the construction of an endogenous perceptual world.

### ***Visual ambiguity, perceptual instability and cognitive evaluation***

Tiny figural changes can disambiguate an ambiguous stimulus and stabilize its percept. Recently, we found two event-related potentials, a fronto-central P200 and a parieto-central P400 that are very prominent with unambiguous stimuli and that are nearly absent with the ambigu-

ous stimulus variants. This pattern of results was found with geometric (Necker lattice) and semantic (Old/Young woman) stimuli. In this project we looked (1) for similar effects from ambiguous and unambiguous motion stimuli and (2) for correlations between the degree of ambiguity and the amplitude of the ERP components. Results: (1) P200 and P400 amplitudes are inversely proportional to stimulus ambiguity and (2) their timing and spatial distributions are highly similar across very different visual dimensions (geometry, semantics and motion).

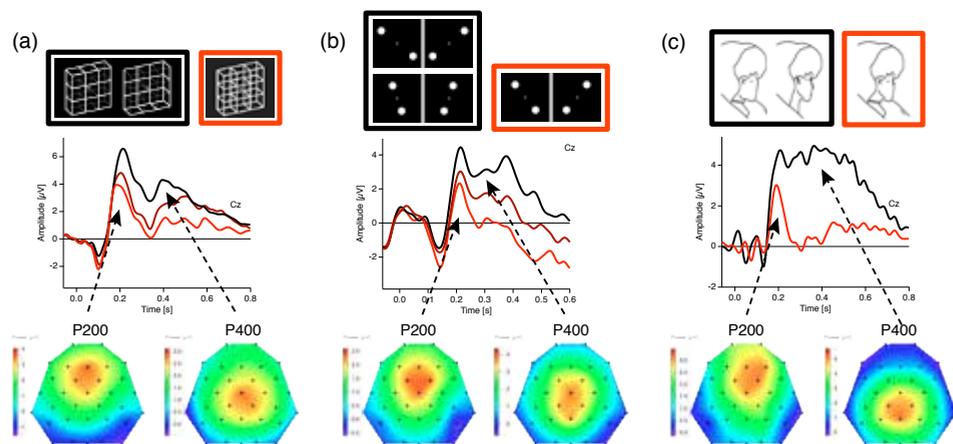


Fig. 7. Smaller ERP amplitudes with increasing ambiguity of the visual stimulus (Top: EKPs from Cz electrode; bottom: P200 and P400 voltage maps). The pattern of results is highly similar across visual dimensions.

Interpretation: Our perceptual system matches the incomplete and ambiguous sensory input with perceptual memory contents in order to construct stable and reliable percepts. A high-level probabilistic (Bayesian) inference unit evaluates the perceptual constructs, the result being reflected in the P200 and P400 amplitudes.

*Kornmeier, Wörner; together with Bach*

*Publication: Wörner (2012)*

*This study resulted in a larger project with a successful grant application in 2013 (DFG).*

### *What happens in the brain when perception changes but not the stimulus?*

During prolonged observation of an ambiguous figure, perception changes although the physical stimulus stays unchanged. Understanding the “where” and “when” of perceptual reversals may contribute to a general understanding of categorial perceptual representation. However studying this endogenous event is difficult because the time of the reversal event is necessary to know but difficult to measure. We have developed an experimental paradigm that allows a time-resolved analysis of the neural processes underlying a spontaneous perceptual reversal. In a series of studies we found that endogenous perceptual reversals come with a chain of ERP components (“ERP” = event related potential), starting with an early signature in visual areas.

This ERP chain shows strong similarities but also differences to a chain evoked by physically induced reversals of disambiguated stimulus variants. Our results from a series of studies have been replicated by several labs around the world and indicate that destabilization of a temporary stable a perceptual brain state and restabilisation of a maximal instable (acategorical) perceptual state are two independent processes working on different time scales.

*Kornmeier, together with Bach*  
*Publication: Kornmeier & Bach (2012)*

### ***High-level influence on the perception of ambiguous figures***

The durations of the temporarily stable percepts (“dwell times”) of ambiguous figures can be modeled by right-skewed distribution functions. In a first step of the current study we performed a goodness-of-fit analysis on dwell times for a visual and an auditory ambiguous stimulus. The lognormal fit function provides the best fit for both sensory domains, although fitting parameters from the two sensory domains did not correlate. In a second step we compared parameters of visual ambiguity with parameters of attention and temporal integration. We found highly significant correlations: short dwell times come with fast attentional processing. Furthermore, the variance of the dwell time distribution correlates with the duration of auditory gestalt percepts. Both the parallels between the dwell times from the two sensory domains and the correlation between ambiguity parameters and attentional and temporal integration parameters indicate an important role for higher level processing units during perception of ambiguous sensory information.

*Atmanspacher, Kornmeier, Wittmann; together with Candia, Folkers, Wernery.*

## **2.2 Empirical and Analytical Psychophysics**

The research program of the Department for Empirical and Analytical Psychophysics aims at exploring the functional relations between conscious experience and its physical conditions. This program ranges from traditional psychophysical topics (sensory perception, perception of space and time) up to selected topics of consciousness research. Of special interest are spontaneous or experimentally induced alterations in perception/cognition of the external world, sometimes dubbed “illusions of perception.” Research activities during the reporting period can be subdivided into three thematic groups: (1) Time perception and time consciousness, (2) Psychophysics of visual space, (3) Theory and history of psychophysics.

### **Time Perception and Time Consciousness**

#### ***Perception of modulated time series***

Three experiments on serial perception of temporal intervals in the range from ~1 to 6 seconds were carried out. Sequences of short acoustic signals (“pips”) separated by periods of silence were

presented to the observers. Two types of stimuli were used, with the inter-pip intervals making geometric or alternating series. The modulus  $1+\delta$  of the inter-pip series and the base duration  $T_b$  were varied as independent parameters. The observers judged whether the series were accelerating, decelerating, or uniform (3AFC paradigm), or to distinguish regular from irregular sequences (2AFC paradigm). On an individual basis, the responses were transformed to “intervals of subjective uniformity” (ISUs). We found that the ISUs shifted systematically towards negative  $\delta$ s—i.e., to accelerating series—with longer base durations ( $T_b = 4.4$  or  $6$  seconds). This phenomenon corresponds to the “subjective shortening” of past temporal intervals, known from experiments with pairwise comparison or reproduction of time intervals, and is accounted for by the dual klepsydra model (DKM; see Biennial Report 2010–2011, p. 53) of internal time representation. This finding also implies a subtle but objectively measurable illusion in time perception: slightly accelerating time series are subjectively perceived as uniform, while strictly uniform time series are subjectively perceived as decelerating.

*Wackermann, Pacer, Wittmann*

*Publications: Wackermann, Pacer & Wittmann (2012, 2013)*

### ***Influence of induced emotions on perceived duration***

In a study probing for the effects of acoustic emotional content on the experience of time, we employed an acoustic duration reproduction task with stimulus duration of 2, 4 and 6 s. We used 45 emotionally negative, positive, and neutral sounds from the International Affective Digitized Sounds System in a sample of 31 young healthy participants. To investigate the influence of induced emotions on perceived duration, the effects of emotional modulation were quantified via dual klepsydra model (DKM) based estimates of parameters of internal time representation. An effect of emotional valence/arousal is revealed, namely, a significantly longer reproduction response for emotional stimuli than for the neutral stimuli. The advantage of the DKM-based approach is its ability to disentangle stimulus-related effects, which are represented by “flow intensities”, from general effects which are due to the lossy character of temporal integration. We interpret the observed effect within the DKM framework as transient increase of internal “flows”. This interpretation is in line with recent conceptualizations of an “embodiment” of time where the model-positing flows correspond to the ongoing stream of interoceptive (bodily) neural signals. Neurophysiological findings on correlations between the processing of body signals and the perception of time provide cumulative evidence for this working hypothesis.

*Wittmann, Wackermann*

### ***Time perception and mindfulness meditation***

Mindfulness meditation encompasses the non-judgmental awareness of the present moment. This entails among other aspects of emotional self-regulation the components of a) attention regulation and b) body awareness. Moreover, the experience of time is embodied. That is, physiological states of the body, as received and integrated in the insular cortex, play a fundamental

role for the perception of time. We were interested whether self-attributed mindfulness levels as dispositional factor of being mindful in daily life is related to time estimation, the time perspectives, and self-reported impulsiveness in an unselected student population. No studies exist on the perception of time in individuals with higher levels of dispositional mindfulness.

A sample of students ( $n = 63$ ) completed self-report measures of mindfulness (FMI, CHIME), the time perspectives (ZTPI), impulsiveness (BIS), conducted psychophysical tasks of (a) auditory duration discrimination in the milliseconds range, (b) visual duration reproduction in the multiple-second range, and performed an attention task, the Attention Network Test. Being more mindful in daily life was related to less impulsiveness, better emotional handling of the past, and a more pronounced future perspective. Mindfulness was also related to more accurate timing in the milliseconds and multiple-seconds range but not to attentional control. These findings suggest a close association between dispositional mindfulness with the temporal organization of behaviour and the perception of time. That is, the effects of mindfulness on attention and body awareness thus open up an empirical window in studying related effects on the experience of time and its psychophysiological correlates.

Therefore, in a subsequent study sponsored by the Bial foundation, Portugal, which started in June 2013, we aim at comparing  $n = 40$  experienced mindfulness meditators with matched  $n = 40$  controls in their ability of time perception. In order to get this comparably large number of meditation experts, a dual-center study is undertaken with  $n = 20$  experienced meditators and  $n = 20$  control subjects studied in Freiburg (IGPP, Freiburg; University Freiburg, lab of Stefan Schmidt) and in Munich (University of Munich, Lab of Karin Meissner), respectively.

*Wittmann, Gutina, Sarikaya, Lehnen; together with Meissner, Kobls, Schmidt*

*Publication: Wittmann & Schmidt (2014)*

## **Psychophysics of Visual Space**

Vision is a most developed sensory function in humans and one of the most important sources of our consciousness of the external world. Although the fundamental physical, physiological and neural mechanisms are well-known, there are still many unresolved problems that require further research efforts, particularly in the domain of visual space perception.

The visual field is a two-dimensional manifold of optical qualities, upon which a full-featured perception of three-dimensional space is constituted. The focus of our research is on the intrinsic dynamics of the visual field, as manifested by context-induced distortions of perceived lengths, angles and forms. These phenomena, also called “geometric–optical illusions” (GOI), are known for more than 150 years, yet are still insufficiently explored and little understood. Psychological explanations of GOIs in terms of “unconscious inferences,” postulating 3D scenic interpretations of the visual percept, were proposed and widely popularized for decades. However, these explanations seem to work only for carefully selected examples or small subsets of GOIs, and fail to account for their variations. By contrast, we do not seek explanations of the

GOI phenomena via mechanisms of 3D vision; instead, we want to understand these phenomena as manifestations of the visual field's self-organizing and percept-structuring activity. Our approach is thus closer to the “nativist” concepts of sensory physiology and gestalt theory.

*Mathematical models of context-induced form distortions*

Percept–context interactions in the visual field are easily experimentally demonstrated. For example, straight lines appear to the observer as curved (Fig. 8a), or a circle appears as a “squeezed”, oval form (Fig. 8b). In collaboration with the Department of Theory and Data Analysis we developed a modeling approach to predict and quantify these perceptual deformations.

In the first study we focused on distortions of straight lines (target) in superimposed arrays of curvilinear elements (context). Conceiving of the context curves as flow lines of a vector field, and assuming local interactions of this field with the target as functions of the intersection angles, the model can be framed as a minimization problem in the calculus of variations. The solution of this

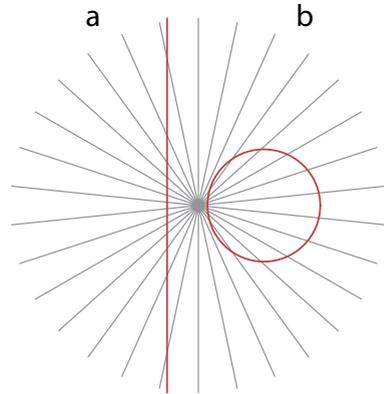


Fig. 8.

problem yields a “shape term”,  $\sigma$ , which combines additively with the target  $\tau$  to produce the distorted percept  $\tau^* = \tau + \alpha \sigma$ . The effect magnitude is modulated by the scalar parameter  $\alpha$  which can be determined experimentally. A series of experiments, using different types of context patterns, showed very good reproducibility of the effects magnitudes  $\alpha$  across different contexts, in spite of marked inter-individual differences.

Formally, the effect of the context is modeled as a perturbation of the underlying geometry. Without context, the shortest path between two points (geodesic) is a straight line, which characterizes the Euclidean geometry. With a context present, the (distorted) percept  $\tau^*$

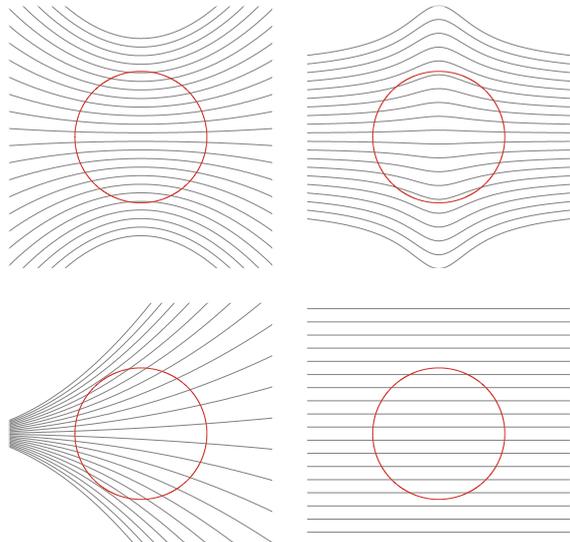


Fig. 9.

of a straight line mimics a geodesic in a certain context-perturbed, non-Euclidean geometry. The perceptual deformations under study thus are interpreted as resulting from a perturbation of the geometry of the visual field. This idea was the starting point for a second study focused on phenomena known as Ehrenstein–Orbison illusions (Fig. 8b). Observing that semi-circles are geodesics in a certain model of hyperbolic geometry, we used the above-stated principle to predict deformations of circular targets induced by different context patterns (Fig. 9). The predictions are in good agreement with experimental phenomenology and supported statistically by experimental determinations of the magnitude factor  $\alpha$ .

*Wackermann, Pacer; together with Ehm*

*Publications: Ehm & Wackermann (2012,2013)*

### ***Experimental studies of the Oppel–Kundt phenomenon***

Another example of GOI is the “filled space expansion”: a path in the visual field, which is subdivided by other visual elements, appears longer than a path in the visual field undivided. This effect, also known as Oppel–Kundt (OK) phenomenon, is of particular interest for visual psychophysics as it implies a violation of additivity of length in the visual field. In our earlier studies we focused on the functional dependence of the OK effect on numerosity, extent and shape of the subdividing elements (cf. Biennial Report 2010–2011, p. 56). In recent follow-up studies we investigated influence of varied optical properties, namely, the figure–ground luminance contrast and polarity. We found (1) increasing effect magnitude with increasing absolute contrast, and (2) consistently greater effects with negative polarity (luminous figure on dark background) than with positive polarity (dark figure on light background) for the same absolute contrast. These results are important for the interpretation of the OK phenomenon: If the expansion effect were of purely cognitive nature, it would arguably depend only on the geometric properties of the stimulus; influence of optical properties indicates that early stages of visual processing are involved. Summarizing: The OK-effect as well as context-induced deformations reported in the preceding section provide evidence for dependence of the metric of the visual field and its actual content (i.e., the visual percept). Mathematical models have been developed for different classes of GOI phenomena and successfully tested; next steps should lead to integration of those particular approaches in a unified mathematical formalism.

*Wackermann, Zottnick*

*Publications: Wackermann (2012a,b)*

## **Theory and History of Psychophysics**

### ***Psychophysics and phenomenological physics***

Psychophysics was defined by G. Th. Fechner (1860) as “the exact science of the functional relations of dependence [...] between the corporeal and the mental, the physical and the psychological, world.” The notion of functional relations played a key rôle in Mach’s conception of

“phenomenological physics” as opposed to the then prevailing conception of mechanics as an explanatory basis for the totality of natural phenomena. The aim of our investigation was a historical reconstruction of the ideas of “phenomenological physics” from Kirchhoff, Hertz, Mach up to the 20th century. Attention was paid particularly to the notion of “functional relation,” applicable from the elementary level of objects/percepts, via empirical regularities (“facts”) up to mathematical expression of a successful theory (“laws”). A generalization of the functional concept of laws is found in “functional schemes” (F. Gonseth), overarching and interconnecting particular theories or even different disciplines (“phenomenology of structures”: P. Bernays). In this perspective, psychophysics appears as a phenomenological science par excellence, aiming at functional schemes connecting partial descriptions of human experience (physics, psychology). The relationship between psychophysics and neurophysics can be conceived by analogy to the relation between thermodynamics and statistical mechanics. A continuation of some of Mach’s idea on phenomenological physics can be seen in the research program of “integral psychophysics” that has been defined as “physics of the world inhabited by sentient and sensible subjects” (Wackermann 2010).

*Wackermann*

*Publication: Wackermann (2013b)*

### ***Fechner Day 2013***

The 29th Annual Meeting of the International Society for Psychophysics, “Fechner Day 2013”, was held from 21st to 25th October in Freiburg i.Br., organized by the EAP department. The scientific program of the conference comprised 100 oral and poster presentations, authored by 180 scientists from 18 countries. Presented papers covered a broad spectrum of topics, from experimental and theoretical psychophysics, mathematical and cognitive psychology, psychophysiology up to clinical and industrial applications, and historical and philosophical issues. A special symposium, “Ernst Mach’s legacy: Psychophysics and beyond,” was dedicated to the 175th anniversary of Mach’s birth, focusing on contributions of this eminent physicist and philosopher to various branches of scientific knowledge. Summaries of presented works were published in the proceedings book of the conference. The conference provided the opportunity to report original research and novel developments in all branches of psychophysical science, and also for a rich and informal intra- and interdisciplinary exchange, and contributed significantly to visibility of the IGPP on the international scale.

*Wackermann, Wittmann, Gutina, Lehnen, Pacer, Sarikaya; together with Skrandies*

*Publication: Wackermann, Wittmann, & Skrandies, eds. (2013)*

## **2.3 Research Group Clinical and Physiological Psychology**

The main topics of the research group “Clinical and Physiological Psychology” are the psychophysiology of true and false reports and the psychology of exceptional experiences. In addition

to application-oriented research in these fields, fundamental methodological studies concerning psychophysiological interdependencies are carried out.

The following methods are employed: 1. Recording of brain electrical potentials (EEG) to obtain information about the involved neuronal processes, 2. peripheral physiological measures (skin conductance, cardiovascular parameters, breathing) which, mainly via the autonomic nervous system, lead to conclusions about ongoing psychophysiological processes, and 3. psychodiagnostic methods (questionnaires).

### *Social influences on the psychophysiological responses in the detection of concealed information*

When extraordinary events and experiences are claimed, the correctness of the corresponding reports is frequently doubted. Closer examination reveals that the usually assumed dichotomy of “true” and “false” is often blurred. Studying this class of phenomena aims at obtaining a better understanding of various types of false reports, their psychological sub-processes and their physiological correlates.

In the classical Concealed Information Test (CIT, originally Guilty Knowledge Test) according to Lykken (1959), the physiological responses of different physiological response systems are captured during the concealment of information. Several previous studies used different variations of the CIT in order to identify mental sub-processes of information concealment.

The current project aims at elaborating the theoretical foundations of the CIT. It was repeatedly shown experimentally that psychophysiological responses in the CIT depend on the emotional and motivational conditions under which the CIT is performed. This leads to conceive that the psychophysiological responses are also considerably dependent on the social influences effective during the CIT. Although concealing information is essentially social action, the effect of a social counterpart on the physiological responses in the CIT was barely investigated so far.

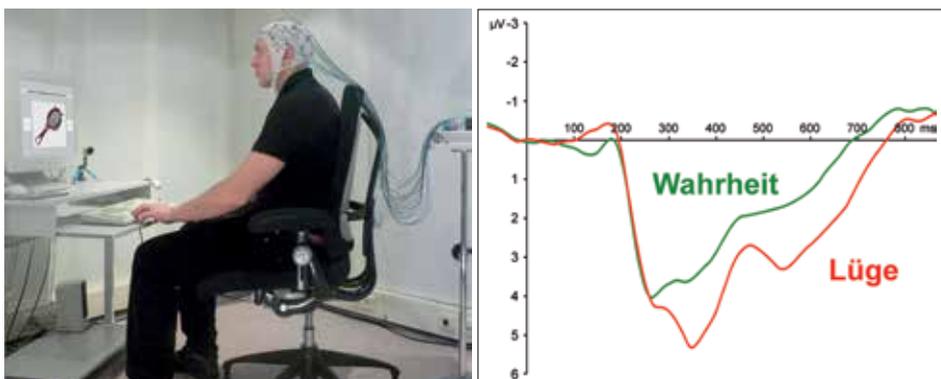


Fig. 10. Detection of concealed information in a laboratory experiment. Left: Typical setting in the experimental chamber with computer-based interrogation and EEG measurement. Right: Event-related potentials compared between information concealment (“lie”) and actual absence of knowledge (“truth”).

Seventy-one subjects participated in a pilot study on social influences in the CIT. Subsequent to an instructed theft ('mock crime') they underwent a CIT. In a between-subjects design, CIT questioning was either performed via a pre-recorded male voice accompanied by the presentation of a virtual investigator's face on the screen, or via a text field displaying the question text without face or voice. Electrodermal activity, respiration line length, phasic heart rate, and finger pulse waveform length were recorded. The typical response differences used for detecting concealed information were enhanced for the respiratory and cardiovascular measures, while the electrodermal response differences did not differ between conditions.

Results underline the importance of social aspects in the processes of concealing information and its detection. Subsequent studies will aim at identifying those components of social influence which are particularly effective in the CIT.

*Ambach, together with Assmann*

*Publication: Ambach, Assmann, Krieg & Vaitl (2012).*

### ***Book project "Experimentelle Psychophysiologie in Grenzgebieten" [Experimental Psychophysiology in frontier areas]***

Psychophysiological and neurophysiological methods are of growing importance in frontier area research. In this book project, fourteen scientific chapters were collected and edited which provide a definition of the current state and a critical reflexion of experimental psychophysiology conducted in this field of research.

Three introducing chapters attend to the term 'frontier areas', the experimental procedure per se, and the psychophysiological approach. A definition of the scope of experimental psychophysiological research in frontier areas is proposed; the spectrum of current research lines is described.

Five chapters constituting the 'experiments' section introduce five exemplary psychophysiological approaches differing with respect to the methods employed ('peripheral' physiology, electroencephalography, magnet resonance imaging, transcranial magnet stimulation) and the scope of explanations for the extraordinary. These contributions focus on functional cerebral correlates of altered states of consciousness, somatic explanations for out-of-body experiences, fundamentals of perception and memory, as well as a neurophysiological investigation of unconventional model assumptions such as telepathic entanglement of spatially separated subjects.



Fig. 11. Experimentelle Psychophysiologie in Grenzgebieten. Würzburg: Ergon.

The third section, labeled 'positions', comprises six contributions from markedly different perspectives of the issue of frontier area research and, particularly, the psychophysiological approach within it. The different scientific perspectives of the extraordinary, of its investigation, and of the psychophysiological approach yield a vivid impression of the ongoing controversial discussions on the destination and the justification of frontier area research and on the momentousness of psychophysiology and neurophysiology.

*Ambach, together with Lüer, Baioui, Stark  
Publication: Ambach, 2012 (Ed.)*

### ***Special research topic of the online journals "Frontiers in Cognitive Science" and "Frontiers in Human Neuroscience"***

Entitled "Basic and applied research on deception and its detection", a special research topic within the open access journals "Frontiers in Cognitive Science" and "Frontiers in Human Neuroscience" was edited. Focusing on deception as well as its detection, twenty-one papers reflecting the current international research scene with respect to this theme were collected and edited. Beside the number of original experimental reports, four review articles were enclosed.

*Ambach, together with Gamer*

### ***Presentiment in the detection of concealed information***

Studies regarding presentiment that have been published in recent years have led to high levels of attention in the scientific community as well as in the press. The newly reinforced controversy relates on the one hand to the compatibility of presentiment with the current scientific doctrine in perceptual psychology and on the other hand discusses sharply in how far these study results are a consequence of methodological errors. The scientific study of the phenomenon itself as well as the repeatedly renewed question aiming for a valid methodology gave the starting signal for the BIAL Foundation sponsored project with the English title: "Forefeeling guilty knowledge - An innovative approach in presentiment research".

Our goal is to overcome the flaws of already published studies by methodological improvements. The lack of an explanatory model for presentiment makes it difficult to build an experimental design and raises the question of how the physiological measurements should be parameterized. As an innovation compared to most previous experiments, we opt for the collection of several physiological variables that are assigned to different physiological systems. The combination of mock crime and Concealed Information Test provides a good way to manipulate the personal relevance of stimuli experimentally. An improved randomization should minimize possible expectation effects. Different randomization types and resulting stimulus sequences become part of the methodological analysis itself. The study has a sample size of 154 participants and is currently in the evaluation phase.

*Siller, together with Ambach*

### *Psychophysiology and personality of subjects with extraordinary experiences*

Within the framework of the project “Presentiment in uncovering concealed information” it came to a collaboration with the Information and Counseling Services department of the IGPP. Individual differences in personality and attitude come into consideration as moderators of presentiment. In addition to the collection of psychophysiological data we applied a personality test (16-PF), an attitude test for self-efficacy (GSE) and a questionnaire about exceptional experiences of the phenomenology of unusual experiences (PAGE-R).

*Siller, together with Fach*

## **2.4 Cultural Studies and Social Research**

It cannot be denied that the IGPP looks back to a long tradition of social-scientific research. However, the latter did not always happen under this name, and for a long time also not with fixed organizational and staff rooting. This changed in spring, 2002, when the Department of Empirical Cultural and Social Research was established and the sociologist Michael Schetsche came from Bremen to the IGPP in Freiburg, to supervise the building up of the institution and to function as its head. Together with the core team in those days (Liane Hofmann, Gerhard Mayer, Ina Schmied-Knittel) a research concept was developed which systematically applied social- and cultural-scientific methods to those questions and topical complexes as being set up by the statutes of the IGPP, thus opening up new horizons for research. Finally, in agreement with the institute’s leadership a research programme was shaped which focusses on six extended, structurally connected research fields: (1) extraordinary experiences, their individual and collective interpretation, (2) spiritual, occult and magical ways of thinking and acting in present times; (3) the way in which esoteric, occult and alternative-religious groups are organised, (4) the social proliferation of heterodox belief systems, interpretation patterns and reality constructions, (5) the reaction of the social environment to extraordinary experiences and concepts of the world, (6) the ways in which the mass media discuss such experiences and concepts of the world.

It may well be that in terms of methodology the carried out projects do not cover the entire classical canon of empirical social- and cultural research, but at least most of it is: representative surveys and qualitative interviews, single-case analysis and field observation, media analysis and reception research, the analysis of interpretation patterns and discourses. The topical focus within this context has changed over the years. Whereas in the early years the research projects – to give just one important topical complex for each phase of the development – was much on experiencing, interpreting and acting in non-everyday life fields of experience, in a later phase religio-sociological and religio-philosophical questions were in the focus of interest. And in the past two years the view has increasingly been on the relation of unusual experiences, alternative knowledge of reality and social stigmatising (a DFG project from this research focus will be ex-

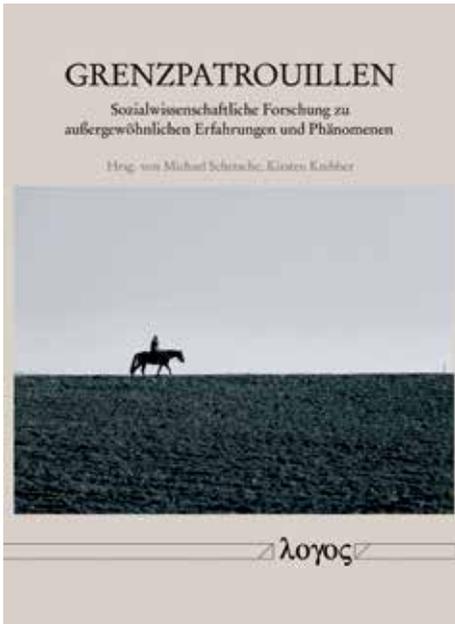


Fig. 12. Collection of essays published on the occasion of the 10th anniversary of the department Cultural Studies and Social Research at the IGPP.

emplarily presented further below). This new focus is meant to take up theoretical concepts from sociology and psychology on social stigmatising, to then apply them systematically to research fields and questions from the field of anomalistics. We started with a DFG project in the context of which these questions – referring to the former GDR – were investigated in a sociological-historical way (for more on this, see below). Due to the restructuring of the IGPP’s research work, currently we do not know how this research focus will develop in the long run.

In the following, some selected projects are supposed to give an exemplary idea of the work of the Department of Empirical Cultural and Social Research in the past two years. These projects are respectively rather empirically, theoretical-methodologically and editorially oriented.

***DFG - funded research project “In the shadow of scientism. Dealing with heterodox bodies of knowledge, experiences and practices in the GDR”***

Although there are a number of indications that paranormal experiences and practices existed in the GDR and were also subjected to governmental defense and control activities, little is known about the details: neither about how the corresponding spheres of life were shaped quantitatively and qualitatively, nor which strategies were exactly implemented to ensure the orthodox order of reality and how the government dealt with such “dissenters”. Against this background, a proposal for a third-party funding was submitted to the DFG in 2012 comprising the following central questions: How did the private, public and academic negotiation of parapsychological topics and paranormal experiences – in the broader sense – take place in the former GDR?

Underlying is the deliberation that for the GDR-administration the paranormal, and the life-worldly experiences and practices associated therewith, were shaking the founding tenets of the reality knowledge coined by Marxism-Leninism. Accordingly, a rejectionist stance towards respective topics and experiences in principle can be assumed. And the question arises what kind of consequences had to be expected by those who had been involved in topics deviating from the prevailing world view. Or even had ideologically inappropriate experiences themselves? In other words: How relevant were topics such as telepathy, prophetic dreams, premonitions, spook, ghosts and afterlife phenomena, parapsychology, astrology and divination practices, miracle

cures or UFOs in the everyday life of GDR citizens? Had the breeding ground for respective beliefs and practices in the GDR really been eliminated as the official discourse claimed, or was there – so to speak in the shadow of the official public order – an occult “underground”?

To further investigate these issues three central dimensions of analysis were formulated: (1) the reconstruction of paranormal bodies of knowledge, experiences and everyday practices as well as the associated actors in the GDR, (2) the analysis of governmental strategies of protecting the dominant order of reality (including the role of mass media), (3) the exploration of how exactly “heretics of reality” were dealt with. The empirical approach to the field shall primarily rely on self-reports of actors in the field as well as of representatives of former authorities of social control (partly narrative interviews). In addition to these interviews a discourse and interpretation pattern analysis, focusing on statements in the mass media and official documents shall serve as a further methodological approach of this research project.

The application was approved by the DFG in 2013, with an expected term of three years. The project team consists of Ina Schmied-Knittel (project director), Michael Schetsche (scientific director), Andreas Anton (scientific editor/ PhD). For more information visit: [www.okkulteddr.de](http://www.okkulteddr.de).

### *The theory of cryptodox knowledge*

In the context of the knowledge-sociological paradigm (Berger/Luckmann 1966), this project investigated – at first theoretically and methodologically – any “shadow knowledge” which might be well hidden within our knowledge order. Connecting to the frequent distinction between orthodoxy and heterodoxy, such shadow zones were summarized by the new knowledge-sociological category of cryptodoxy. In this context it was postulated that in modern societies there is a number of such zones of cryptodox knowledge, from where in the normal case no knowledge comes to the outside. As this mono-directional closing off also prevents any scientific analysis, the appropriate shadow zones can only be analysed by way of those examples whose originally cryptodox knowledge stocks have meanwhile become publicly known. The project may be considered a theoretical and methodical foundation for carrying out a number of empirical case studies on the reconstruction and measurement of individual kinds of – relevant for this IGPP department – historical shadow knowledge, such as the hidden tradition of secret magical practices.

By a first preparatory step, in a theoretical essay for the sociology journal *Soziale Welt* the foundations for an understanding of the relation of orthodoxy, heterodoxy and cryptodoxy were paradigmatically formulated. The initial theoretical definition was exemplarily substantiated by way of four historical case examples of shadow knowledge. This was e. g. about empirical observations by ethnologists and anthropologists which had to be suppressed because otherwise they would have violated the predominant concept of reality of the respective discipline. Another example presented magical practices and concepts of the world as they were passed on in rural areas and had to be kept secret from the social environment. These examples as well as others

were used for discussing two different processes of the development of shadow knowledge: tabooing and the development of clandestine patterns of interpretation. The then still much theory-oriented considerations pointed out to a still lacking empirical research programme on the knowledge sociology of cryptodoxy.

By a second step the methodical foundations were laid for such a programme. In an essay for the Berliner Journal für Soziologie the guidelines for future empirical studies on shadow knowledge (not only in the field of the research on border areas) were formulated. Starting out from another historical example, a research programme was developed by way of which in the future it will be possible to analyse what exactly shadow knowledge looks like, how it develops and what may make it disappear. In this context, concrete suggestions for a research programme of seven steps were presented, which is methodically oriented at the more recent knowledge-sociological discourse analysis, however while extending it by some specific dimensions. The essay was concluded by discussing methodological and ethical basic problems of a research programme on cryptodox knowledge in modern societies. If and to which extent this theoretically and methodologically sketched research programme on the reconstruction of shadow knowledge in the field of border area research will be implemented must be left to the future.

### ***Publication Projects: Handbooks “Scientific Anomalistics” and “Spiritual Crises”***

In 2012, two major publication projects have been initiated which are basically maintained by research associates of the department of Cultural Studies and Social Research. It's about two scientific handbooks, one of them on the thematic field of anomalistics, the other one on spiritual crises. Both will be published by Schattauer (Stuttgart). The Handbook *At the Frontiers of Knowledge. Handbook of Scientific Anomalistics* is published by Dr. Gerhard Mayer, PD Dr. Michael Schetsche Dr. Ina Schmied-Knittel, and Prof. Dr. Dieter Vaitl.

The field of anomalistics is concerned with a wide range of subjects and particular questions with regard to phenomena and experiences which are touching the borders of our seemingly well-grounded reality. They include e.g. near death experiences, crisis telepathy, altered states of consciousness, apparitions as well as UFO sightings, or even controversial cultural practices like astrology and dowsing. The volume intends to give a review of the research approaches, explanatory models, and methods of anomalistics, as well as introduce the most important fields of research with its particular issues in a concise manner. The three-part structure of the volume corresponds with this content-related purpose. The first section is dedicated to the historical development as well as to theoretical debates concerning anomalistics. In the second section, more than 25 fields of research are introduced in separate chapters. Finally, the third section deals with the methodology and methods in the field of anomalistics which strictly adapt the common standards of scientific methodology but have some thematically-related particularities. (Publication date: Summer 2014).

The Handbook *Spirituality and Spiritual Crises: Handbook for Theory, Research, Practice* is published by Dr. Liane Hofmann and Patrizia Heise. On an overall societal level a steadily growing

interest in spiritual issues and approaches can be observed so that social-scientists have already stated a “megatrend spirituality”. Besides the health- and growth-enhancing aspects of a spiritual orientation and practice, the possible problems and crises potentially associated therewith, are increasingly becoming the focus of professional attention. Such phenomena have been discussed under the terms of “spiritual emergencies”, “transpersonal disorders”, “crises of consciousness development”, “spiritual or religious problems” or “exceptional experiences”. It was repeatedly predicted that the incidence of clinically relevant problems of this type will further increase due to the high popularity of alternative psycho-spiritual practices and that psychotherapeutic practitioners will be increasingly confronted with respective issues. Therefore the anthology intends to give an overview of the current state of theoretical concepts, empirical research findings and treatment approaches as regards the problems and crises in the context of spiritual development, orientation and practice. Part I of the anthology is dedicated to the historical backgrounds of the subject matter. In part II relevant theoretical models are presented. Part III is concerned with classical patterns of such problems. Part IV highlights empirical findings and research desiderata. Part V is about issues of psychodiagnosis and treatment and part VI addresses further reaching societal perspectives. In addition to demanding conceptual work as well as, partly very time consuming, editorial work, members of the department had to write themselves more than ten articles for both handbooks during the report period. The spectrum of subjects covered ranged from primarily phenomenon-related to cultural-critically classifying to methodical and methodological contributions. (Publication date: Spring 2015).

## **2.5 Cultural and Historical Studies, Archives and Library**

The department investigates the cultural and social history and the history of science of parapsychological research and other unorthodox fields (“Historical Parapsychology”). The emphasis is on the historical reception of spiritism, occultism, psychical research and parapsychology in Germany from the 19th century up to today. Of particular interest is the reception of paranormal phenomena with regard to established scientific disciplines like psychology, medicine, literary studies or history of art. Special topics of interest are: (1) biographies of psychical researchers and psychics or mediums; (2) the history of organizations and societies in the field; (3) the role of photography in the history of parapsychological research; (4) the relationship between occultism and fine arts; (5) the history of the IGPP and the biography of its founder Hans Bender. All these studies rely critically on the holdings of the IGPP library and the IGPP archives.

### **Historical and Biographical Studies**

#### *Parapsychology – quo vadis?*

In a special issue celebrating the 75th anniversary of the *Journal of Parapsychology* in 2012 the *JP* editor John Palmer collected predictions and prescriptions of 32 parapsychological research-

chers dealing with the question: 'Where will parapsychology be in the next 25 years?' This essay describes the future importance of the following scenarios: (1) the great importance of spontaneous phenomena in the daily life of many persons; (2) the problems of acceptance of parapsychology as a scientific discipline and the continuation of the psi controversy stabilized by the public presence of 'skeptical' organisations worldwide; (3) the continuous interest of cultural and social scholarship in the history of research into 'occult' and paranormal phenomena while avoiding epistemological questions regarding the ontological status of such phenomena; (4) the question what constitutes 'progress' in an 'unorthodox' field like parapsychology; (5) the different meanings of 'progress' as mirrored in the PA presidential addresses during the last 50 years; (6) the academic success story in Great Britain that could be called the 'Bob Morris legacy of an interdisciplinary, integrative parapsychology'; (7) a new theoretical development that treats paranormal phenomena as entanglement correlations in a generalized quantum theory which seems to have fallen on especially fruitful soil in their German home country.

*Bauer*

*Publication: Bauer (2012)*

### ***"On the magic hill" – a parapsychological biography***

A biographical chapter published in the anthology *Men and Women of Parapsychology, Personal Reflections* tries to give personal answers to five questions formulated by the editor Rosemarie Pilkington: (1) How did you become intrigued with, and involved in, investigating the so-called paranormal? (2) What do you feel has been your most important contributions to the field? (3) What might you have done differently, or what beliefs did you have when you entered the field that were changed through your experiences? (4) What unusual experiences have you had that exceeded your "boggle threshold"? (5) What advice would you give to young people entering the field as to what areas are of utmost importance and as to pitfalls of which they should be aware? As a background for these answers the experiences and impressions of a collaboration at the Freiburg Institute comprising more than forty years in different functions are described, starting in 1967 as a student collaborator at the former "Eichhalde Institute" located on the "magic hill" and later as a scientific assistant of the Institute's founder Hans Bender.

*Bauer*

*Publication: Bauer (2013a)*

### ***Some remarks on the recent history of the reception of parapsychology in Germany***

In 2012, an essay review by Adrian Parker of the book by Australian historian Heather Wolfram: *The Stepchildren of Science: Psychological Research and Parapsychology in Germany, c.1870–1939* (2009) was published in the *Journal of the Society for Psychological Research*. It contains a number of misleading claims on the recent history of psychological research in Germany, especially regarding the history of the Freiburg Institute, its research agenda and the funding of this field through private foundations. In a detailed commentary, all these erroneous claims are refuted.

*Bauer, Hövelmann, v. Lucadou*  
*Publications: Bauer et al. 2013a; Bauer et al. (in print)*

### ***Otto Prokop, Hans Bender and the history of the Freiburg Institute***

The results of a study by historian of medicine, Florian G. Mildenerger, on “Otto Prokop, das Ministerium für Staatssicherheit und die Parapsychologie”, published in 2013 in the *Zeitschrift für Anomalistik*, are critically reviewed from the point of view of three directly involved contemporary witnesses. The following issues are dealt with in greater detail: Prokop’s long lasting role as Hans Bender’s skeptical opponent in West Germany; the repercussions of the verdict of the highest German Federal Court on parapsychology in 1978; a conference of the German Criminological Society in 1978 in its historical context; the ‘Marburg Manifesto’ initiated by Dutch skeptic Piet Hein Hoebens on possible points of collaborations between critics and proponents; the public perception of parapsychological research in the former Soviet Union.

Bauer together with Hövelmann and v. Lucadou

*Bauer, Hövelmann, v. Lucadou*  
*Publication: Bauer et al. (2013c)*

### ***The “Occult Freiburg” in the 19th and 20th century - a topography***

Only little is known about the situation and the spreading of the scientific and the popular occultism in the second half of the 19th and the first half of the 20th century in the city of Freiburg. A local historical research project investigates relevant indications on special events and remarkable protagonists and is looking for more traces in that field. The basic sources for the research are the collections of the archive and the library of the IGPP, records in the local and regional archives being situated in Freiburg as well as the reporting in contemporary newspapers. The projected topography maps relevant places in the area of Freiburg, for example places of entertainment, lectures or experiments, habitations of well-known occultists, scientists or residences of important publishing-houses and book-shops.

*Schellinger*

### ***Security through insecure knowledge? Parapsychological insights and paranormal practices in secret services, the military and the police***

With detailed case studies the question shall be explored when and how parapsychological knowledge was considered, or occult or paranormal practices are applied, in unambiguously constituted systems such as secret services, the military and the police, all of which usually hark back on a secure range of methods. What were the conditions under which paranormal abilities were used, who had the responsibility for such practices and which protagonists took part in? There will be a particular focus on the currently poorly explored history of occultism and parapsychology during the period of National Socialism. There are some first findings in respect to a special department in the German War Navy as well as for the use of paranormal methods by the

NS criminal police and the SS in 1943. These imply primarily scientific-pragmatic motivations rather than ideologies concerning the paranormal on the part of certain groups within the NS system.

*Schellinger, together with Anton, Schetsche, Wittmann*

*Publication: Schellinger (2012)*

### ***Personal mediums and crime: The history of 'criminal telepathy' in Germany (1880-1980)***

This research project investigates the historical trajectories of the practices and problems that defined 'criminal telepathy' from 1880 to 1980. The focus is on the confrontation and cooperation of so called "psychic detectives" and other personal mediums with paranormal abilities with the law enforcement authorities in Germany. For this project, the following questions are of central interest: How was the area of potential conflict and cooperation between mediums and law enforcement agencies affected by the specific protagonists? Which positive and negative consequences for involving a psychic detective and other mediums in police investigations of spectacular cases can be identified? How has the interaction between law enforcement agencies and psychic detectives changed in the 20th century, and how important were thereby criminal-policy decisions, particularly in the context of political system changes? How have the specific expectations of state agencies and general public changed and what factors were central for approving and disapproving the assistance of "psychic detectives"? Since 2011, the dissertation project is part of the Network Research Project "Societal Innovation through 'Non-hegemonial' Knowledge Production. 'Occult' Phenomena Between Media History, Culture Transfer and Science, 1770-1970" of the *German Research Foundation (DFG)*.

*Schellinger*

## **The Occult in Art and Photography**

This field of work is dedicated to the relationship between art and photography and occultism. It entails (a) archival and documentary work, (b) the handling of research requests, and (c) service, organizational and research tasks related to exhibitions and publications.

### ***The occult in contemporary art and exhibitions: Lines of reception and forms of acquisitions***

Aesthetic practice often shows an influence of the 'occult' which amongst others was demonstrated by numerous exhibitons during the last years, some of them were organized in cooperation with the IGPP (in 2012 and 2013 for example: "L'Europe des Esprits ou la fascination de l'occulte, 1750–1950", Zentrum Paul Klee, Bern, Switzerland, 2012; before in: Musée d'Art moderne et contemporain in Strasbourg, Frankreich; "Zeitgespenster. Erscheinungen des Übernatürlichen in der zeitgenössischen Kunst", Museum Morsbroich, 2012/2013; "Antigrizioso",

Palais de Tokyo, Paris, 2013). The explorative project examines the various forms of artistic approaches to the 'occult' and tries to establish criteria for differentiation. For example a typology e.g. artists acting like 'medium' 'media theoretician', 'historian' etc. Not only research on historical cases is undertaken – e.g. on artists from classical modernism like Kandinsky – but also on contemporary art. It includes interviews with artists about their motivations, intentions, etc. Another thematic focus is on the theoretical and organizational background of exhibition projects, either monographic or overviews on the topic. A collection of documents is being built up covering information and material on relevant persons, exhibitions, literature, catalogues, press articles, flyers, correspondences etc. There is a focus on such projects, where the IGPP was involved.

*Fischer, Schmied-Knittel; together with Moos*

### ***The mesmerized Munich: The researcher on mediumship and photographer Albert von Schrenck-Notzing***

The archival exploration of the papers of Albert von Schrenck-Notzing (1862–1929), located in the archive of the IGPP, is completed to a large extent. This field of work was intensified in consideration of the narrative study by Prof. Dr. Manfred Dierks on “Thomas Mann’s Ghost Baron: Life and Work of Baron Albert von Schrenck-Notzing”, which was published in 2012 (Psychosozial Publishers). On the occasion of a presentation of the book the exhibition “Mesmerized Munich” dealing with Schrenck-Notzing’s work and life was presented in his former mansion, now domicile of the farmer’s association of Bavaria.

A treatise on “Albert von Schrenck-Notzing and photography” is currently being written. It includes a comprehensive catalogue of existing pictorial documents on hypnotism and mediumship, complemented by a register of comparable original photographs in external collections and archives, as well as a list of exhibitions. Research in other archives were conducted, as far as it was possible. One point of focus represents the significance of Schrenck-Notzing’s pictorial documents for artists like the painter Francis Bacon.

*Fischer, together with Bauer*

### ***The photographic work of Louis Darget***

Louis Darget (1847–1926) was among the pioneers and key actors within so-called „fluidal photography“, which gave rise to wide-reaching debates even in academic circles particularly around 1900, also exercising a recognizable influence on artistic positions of the time. The conservatory measures to clear, restore and sort the Darget collection located in the IGPP archives were continued. The research for supplementary images in other collections is completed. Beside the collection of “Comité d'études de photographie transcendente” two other private collections could be located and examined. These works are part of a research project in collaboration with Clément Cheroux (Centre Pompidou, Paris). The publication of a monographic study is envisaged, which is intended as an initial comprehensive portrayal of this groundbreaking

ing contribution to the photographic history of occultism.

*Fischer, together with Chéroux*

### *The collection of the photographer Leif Geiges at the IGPP archives*

On various occasions the Freiburg based photographer Leif Geiges (1915–1990) documented the research activities by Hans Bender at the IGPP. Of great significance are some series of photographs from 1949–1951 illustrating “reconstructed” poltergeist phenomena. The collection of documents, which forms part of the photographic collection of the IGPP, was listed and evaluated in detail. The images were partly digitized and a database is being set up. Furthermore the importance of these photographs for the understanding of certain works of art is a topic of interest. The photographs of the artists Anna and Bernhard Blume often shows the transformation of images and ideas from the occultistic contexts into art works. A case study examines the influence of Leif Geiges images on the artists, who has been in contact with Hans Bender. An exhibition is envisaged in collaboration with the “Museum für Neue Kunst” in Freiburg.

*Fischer, together with Litz*

## **Archives**

### *History*

The tasks of the IGPP archive are the long-term protection, indexing and utilization of documents and materials which are important for the cultural and social history and of the history of science of parapsychology viz. border areas of psychology in general, and for the history of the Institute in particular. Since the foundation of the IGPP, the documentation and collection of relevant research material belong to its central tasks. A special archive with its own structure was established after the Institute has moved from the “Eichhalde” to the “Wilhelmstraße” in 1996. Due to its specific and unique profile, the IGPP archive is of a particular significance within German and European scientific culture. As a special and scientific collection, the IGPP archive is a corporate member of the “Association of German Archivists”.

### *Collections*

The IGPP archive consists of several major groups of collections: photographs; audio material; film material; objects; and completed databases. The main body consists of research files of the Institute when it was located at the “Eichhalde” (Freiburg) from 1950 to 1995, among them collections of reports of spontaneous phenomena, like precognitive dreams, or collections of RSPK case studies, as well as the research files of the Institute in the “Wilhelmstraße” (Freiburg) since 1996. Next in line are partial or complete collections of personal papers (currently 35 holdings) belonging to a variety of important researchers in psychical research and parapsychology, e.g. Albert v. Schrenck-Notzing (1862-1929), Fanny Moser (1872-1953), Albert Hellwig (1880-1950) or Hans Bender (1907-1991). Finally, there are collections of relevant items, e.g.

of academic theses, reports or publications as well as comprehensive press collections (currently: 44 holdings). A more detailed overview regarding the archival holdings and general information on the archive can be found on the website of the IGPP at <http://www.igpp.de/german/archive/info.htm>.

During the period under review, the holdings of the IGPP archive were supplemented by 40 acquisitions of various size and content. It ranges from a single master thesis to larger collections, among them various private donations. Among them were some parts of the scientific collections of the German psychologist Suitbert Ertel (Göttingen), extensive material of parapsychological research groups in The Netherlands (donated by Wim H. Kramer) or more than 8500 letters written by clients to the mental healer Günther E. Schwarz ("John") from Bavaria.

### *Indexing the archives and its use*

The continuous archival description of relevant holdings or documents is one of the main tasks of the IGPP archive. An example for such a description project is the final inventory of the large scientific collections of the German philologist and writer Heino Gehrts (1913-1998). The description and indexing of archival documents is accomplished using the archival database "Augias-Archiv". Currently there are 1500 searchable archival items with more than 8000 index terms.

Apart from the acquisition and protection of relevant material, the analysis and utilization for scientific projects is a major focus of archival work. Archival holdings are utilized by staff of the Institute as well as by external researchers whose research interests are approved by the IGPP. During the period under review, numerous publications utilizing archival material of the Institute were produced, among them a book about the life and work of Albert von Schrenck-Notzing (M. Dierks) and a research article describing the frequent media appearances of Hans Bender, the founder of the IGPP (A. Lux). IGPP archival materials, mainly from its photographic collections, were also presented in several exhibitions.

*Bauer, Fischer, Schellinger*

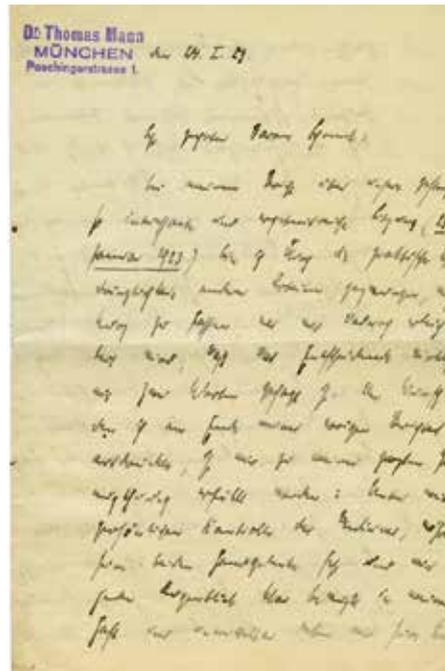


Abb. 13. Thomas Mann's letter to Albert von Schrenck-Notzing, 24.01.1923. Collection Albert von Schrenck-Notzing, Archives IGPP.

## Library

### *History*

The historical basis of the Institute's library comprises the collection of the Swiss biologist and psychical researcher Dr. Fanny Moser (1872–1953). Among its 2000 volumes rare original editions from the early history of mesmerism, magnetism, occultism and psychical research can be found. Another important collection of 2500 volumes belonged to Albert von Schrenck-Notzing, M. D. (1862–1929), a Munich physician and psychotherapist and a well-known pioneer of researches into “physical mediumship”, including telekinesis and materialization phenomena. Starting with 1970, with the help of the Stiftung Volkswagenwerk, it became possible to build up systematically a comprehensive collection of literature dealing with parapsychology and other anomalistic research topics. Since 1973, the IGPP library has been supported by the Deutsche Forschungsgemeinschaft (DFG) (German Research Society) as a specialized research library for Parapsychology and Frontier Areas of Psychology. Since 2011, the DFG is supporting the IGPP library as a special collection (Sondersammelgebiet) as part of the University library of Freiburg. The IGPP is responsible for the scientific supervision and selection of the library and collaborates closely with the University Library of Freiburg. A TV interview with Dr. Antje Kellersohn (director of the University library of Freiburg) and Eberhard Bauer (IGPP) about the development and structure of the ‘Sondersammelgebiet Parapsychology at the University of Freiburg’, can be found at [www.ub.uni-freiburg.de/index.php?id=3676](http://www.ub.uni-freiburg.de/index.php?id=3676).

### *Profile of the library*

The goal of the library is a systematic and comprehensive collection of the whole spectrum of the national and international scientific literature dealing with parapsychology, psi research and anomalistics (including so called “grey” literature). This comprises (1) spontaneous paranormal experiences like telepathy, clairvoyance, precognition, psychokinesis, apparitions, paranormal impressions and RSPK or poltergeist phenomena together with relevant case collections, field studies, laboratory experiments and theoretical models comprising its historical development, methods, results, problems, controversies and interdisciplinary aspects of research into scientific border areas; (2) psychological fringe experiences like out-of-body and near-death experiences, lucid dreams, multiple personalities; (3) collecting the whole spectrum of “fringe sciences”, like occultism, spiritism, e. g. “occult techniques” such as pendulum, contacts with the dead, mediumistic communications, channeling, memories of previous lives, voices on tape; (4) esoteric and New Age literature; (5) dowsing and radiesthesia (“earth rays”); (6) mental and spiritual healing and paramedicine; (7) magic, possession, witches and demons; (8) secret societies, sects, lodges; (9) cabbala, numerology, symbolistics; (10) divination and oracle techniques (Tarot, I Ging); (11) UFO research; (12) conjurors and trickery; (13) the whole field of “anomalistics”, including phenomena in the sense of Charles Fort (“Fortean”), e. g. cryptozoology (Loch Ness, Bigfoot), Atlantis, Bermuda Triangle, Ancient Astronauts etc.

## Holdings

With approximately 60.000 volumes in the areas mentioned above, the IGPP has one of the most comprehensive libraries of its kind in Europe. The collection increases by about 1700 volumes per years on average. The library has subscribed to approximately 260 international journals and newsletters. All international specialist journals for parapsychological research and anomalistics have completely been registered in the library stock. The current stock of journals is around 2000, more than half of which are unique specimen nowhere else available. As a result, the IGPP library is a unique source of information and documentation regarding all topics of parapsychology and frontier areas of psychology. All volumes can be borrowed online from the library of the University of Freiburg

([www.ub.uni-freiburg.de/olix](http://www.ub.uni-freiburg.de/olix)). About 34.000 requests were recorded in the years 2012 and 2013. In 2005 the IGPP started in collaboration with the University library of Freiburg, to digitalize selected journals in order to make them available via internet. Decisive selection criteria are aspects of the conservation of these journals (disintegration of paper) and its value for historical sources regarding the cultural, social and scientific history of spiritualism, occultism, psychological research and parapsychology. Until 2013, the following journals were published online ([www.ub.uni-freiburg.de/dipro/igpp/](http://www.ub.uni-freiburg.de/dipro/igpp/)):

(1) *Magikon* (1840–1851); (2) *Sphinx* (1886–1896); (3) *Psychische Studien* (1874–1925); (4) *Zentralblatt für Okkultismus* (1907–1933); (5) *Zeitschrift für kritischen Okkultismus* (1925–1928); (6) *Zeitschrift für Parapsychologie* (1926–1934); (7) *Das Wunder* (1927–1929); (8) *Neue Wissenschaft. Zeitschrift für Grenzgebiete des Seelenlebens* (1950–1968); (9) *Zeitschrift für Parapsychologie und Grenzgebiete der Psychologie* (1957–1968).

*Bauer, Brunner*



Fig. 14. Illustration in: *Tischrücken und Klopffeiserei*, Düsseldorf, Arnz, 1853. Library of the IGPP, University Library Freiburg.

## 2.6 Counseling and Information

### History

Since its foundation in 1950 by Prof. Hans Bender (1907-1991), the IGPP has provided the public with an information and counseling service covering the whole spectrum of parapsychology, fringe sciences and anomalistic phenomena, summarized under the neutral term “Exceptional Experiences” (ExE). This includes information and material about the distribution

and phenomenology of psychic experiences together with expert knowledge regarding the state of the art of interdisciplinary research related to border areas of psychology and anomalous phenomena. A special counseling program of the IGPP is designed to meet the individual needs of individuals who have to cope with “occult”, supernatural or paranormal experiences causing them and others emotional distress (“mental hygiene”).

### *Patterns of Exceptional Experiences (ExE)*

Depending on their cultural tradition or ideological background, “exceptional experiences” are described as supernatural, supersensory, magical, paranormal, spiritual, transcendent, transpersonal etc. For ages, such experiences belong to the varieties of human experiences that are well-known interculturally. The varieties of ExEs which are reported by IGPP clients can be grouped into six major categories: (1) As ‘extrasensory perception’ (ESP) such experiences can be described when persons outside their usual sensory channels get information about objective events unknown to them (“clairvoyance”) or about thoughts and feelings of other persons (“telepathy”). This implies also the knowledge of unpredictable future events (“precognition”, “announcing dreams”); (2) Poltergeist (RSPK) phenomena encompass physical anomalies (the disappearance or appearance of objects or their movement without apparent cause), acoustic phenomena (e.g., steps, raps) and visual impressions (appearances of lights or shapes etc.); (3) phenomena of a presence describe a diffuse invisible entity-like presence (beings, forces, atmospheres etc.). They were often reported during the awakening accompanied with an inability to move one’s body (sleep paralysis) and frequently with sensations of pressure and touches (“nightmare”); (4) experiences of being influenced manifest themselves in somatic symptoms and the hearing of inner voices often connected by the afflicted persons with strange forces, black magic or spells; (5) mediumship encompasses exceptional experiences occurring in the context of occult techniques such as moving glasses, table tilting, pendulum or “channelling” whose messages are often interpreted as coming from ghosts or departed persons; (6) as meaningful or fateful coincidences such occurrences or events are described which are subjectively perceived as being connected or determined in an extraordinary way (e.g. the frequency of accidents or mishaps, the special role of a certain number in a person’s biography etc.).

Exceptional experiences are occurring mostly spontaneous, i. e. unexpected and without an apparent cause. They can be self-induced also by techniques like automatic writing or practices of



Abb. 15. Table tilting, around 1950  
(Photo Leif Geiges).

meditation. In addition there are externally induced ExEs which are reported after having contacted healers, psychics, clairvoyants or after having experienced offerings of the esoteric scene. A lot of people can appreciate such experiences in a positive way and are able to integrate ExEs in their world view without problems. Given specific circumstances however, ExEs can also induce emotional distress and anxieties and the afflicted persons have problems to cope with them in an adequate way. They often are looking in vain for explanations and practical help in the existing psychosocial care institutions. The goal of our counseling work is to improve the situation for such persons looking for help. The offer for counseling is free of cost and open for everyone.

## **Counseling and Care Activities**

### *Documentation system*

With the help of the documentation system (DOKU), introduced at the IGPP in 1998 in accordance with current standards for basic documentation, more than 4200 people requesting for counseling concerning ExE were recorded and evaluated. The results reveal over the years quite similar patterns concerning the reported exceptional phenomena, the sociodemography of the advice-seeking people and the distribution of clinically significant variables.

### *Number of counseling cases*

From 2012 to 2013, except from more than 1000 general requests for information, about 300 persons from all over Germany make use of the special counseling service for people reporting ExE and seeking advice. An estimate based on the data from 2012 for both years shows that ca. 25% of all inquiries came from the county state of Baden-Württemberg, and among them only about 2% from the Freiburg area. Approximately 53% of all first counseling contacts were established by phone. All 300 inquiries taken together required about 1500 counseling contacts, 54% of all contacts were realized by e-mail, 37% by phone, 7% by letters, 2% face to face at the IGPP or at home of the clients. In addition there are more than 1000 requests for information (by e-mail, telephone and letters) coming from the general population, including for example journalists, students, scientists and others regarding all possible aspects of parapsychological research and anomalous phenomena in general which are not recorded especially by the DOKU system.

### *Clients*

Almost 63% of the clients are women, and the average age is 42 years. Almost 35% of the clients are nondenominational. In accordance with the data from recent years, there is a high educational level: 47% obtained a high school diploma (Abitur/Matura), 27% are graduates of a technical school or a university. A conspicuous trend to social isolation was also found to be without change: About 60% of the clients are singles, divorced or widowed. Approximately 35% is living without a (marital) partner, 40% live on their own. At the moment of first contact, about 45% were unemployed, unable to work, or retired. 90% of the clients report social conflicts (divorces, financial difficulties, etc.), 70% report psychological problems (proneness to fear, de-

pression, etc.), and 75% complain about physical symptoms and diseases. Accordingly, 80% of the clients feel distressed and burdened by their general living conditions even independent of ExE. Despite missing data in the majority of cases, it is quite certain that 20% of the clients had psychotherapy and/or psychiatric treatment before or during their counseling contacts with the IGPP. By a conservative estimation, the percentage in fact may be around 40%. About 50% of the clients reported and described symptoms which were assessed as psychological impairments by the IGPP counseling staff. About 60% of all persons who had contacted the IGPP, evaluate their ExE clearly negative and experience them as stressful, while the rest is mostly ambivalent in their assessment. About 90% of the reported ExE happened unprepared and unexpected. Only in a few cases they are induced by psychotechniques and other methods such as glass tilting or automatic writing. Yet less frequently they are related to contacts with healers, psychics and suppliers from the esoteric scene.

### *Exceptional Experiences (ExE)*

On average the phenomena reported by the clients are associated with one or two ExE-patterns. Coincidence phenomena like *Extrasensory Perception* (clairvoyance, telepathy, precognition) or *Meaningful Coincidences* are the most common with 37%. External anomalies, especially kinetic and acoustical phenomena, belonging to the ExE-pattern *Poltergeist and Apparitions*, comprise 29%. About 28% are belonging to the pattern of *Internal Presence and Influence* with somatic phenomena, thought insertion and hearing of voices. Finally, 6% are Dissociation phenomena in which – often connected with sleep paralysis – an invisible *External Presence and Nightmare* or *Automatisms and Mediumship* (e. g., automatic writing, channeling) are reported.

*Bauer, Belz, Fach, Fangmeier, Schupp-Ihle, Wiedemer*

*Publications: Bauer & Belz (2012), Bauer et al. (2012), Belz (2012a), Belz & Fach (2012), Belz & Fach (in print)*

### *Accredited advanced training courses on psychotherapy and counseling in persons with Exceptional Experiences*

Since 2003, the IGPP counseling team offers regular advanced training courses regarding “Counseling and therapy in persons with exceptional experiences”. The two-day seminars target psychological and medical psychotherapists and counselors in psycho-social services. The aim of the seminars is the mediation of the counseling concept as developed by the team. The implementation of these seminars is due to various intentions: Our clients frequently report that their ExEs are met by therapists and physicians with insecurity, skepticism or pathologization. Hence, we aimed to conceptualize a service offering colleagues qualified strategies for the therapeutic coping with ExEs. With this offer, which from the outset has been accredited with CME points by the state authorization associations for psychotherapy and medicine in the mandatory training for psychotherapists, we also pursue the idea to install the topic of ExEs in general therapeutic coverage. Moreover, the seminars yield contacts to colleagues throughout German language countries, to whom clients could be referred to if needed.

From 2003 to 2007 there was one seminar annually; in 2005, due to a great demand, there were two identical events. In response to various requests for immersion seminars, the team developed a new concept and has offered two events per year with different foci since 2008. In the first seminar, the focus is on theories and models to understand conditional and contextual factors related to the emergence of exceptional experiences. The second seminar, which is practice-oriented, is focused on the mediation of our counseling concept.

In total, until 2013 more than 200 colleagues from various professional backgrounds from Germany, Switzerland and Austria have attended. The seminars reveal that the topic is relevant in the practice of resident colleagues. Evaluations by means of written and oral surveys after each seminar have hitherto revealed a high degree of satisfaction in attendees regarding content, scientific standards and practical relevance.

*Bauer, Belz, Fach, Fangmeier, Schupp-Ihle, Wiedemer*

### ***Networking***

The Third International Expert Meeting on Clinical Parapsychology, jointly organized by the Institut Métapsychique International (IMI) in Paris, Wim Kramer of the Dutch “Het Johan Borgman Fonds” (HJBF), and Eberhard Bauer (IGPP, Germany) took place at the IMI in Paris from 20 to 22 April 2012. It was the continuation of the First Expert Meeting in 2007 in Naarden (Netherlands) and of the Second Expert Meeting in 2010 in Freiburg (Germany). 21 psychologists, psychiatrists, psychotherapists and other counselors from IMI, IGPP and institutions in Argentina, Belgium, England and Holland participated. The general topic of the meeting was “Varieties of Clinical Practices with Exceptional Experiences”.

*Bauer, Fangmeier*

## **Research on Exceptional Experiences**

### ***Studies with the questionnaire to survey the phenomenology of Exceptional Experiences (PAGE-R)***

Based on the completely revised and re-conceptualized “questionnaire to survey the phenomenology of exceptional experiences” (PAGE-R) in 2011, a corresponding online version 2012 has been developed and implemented. It is used routinely in addition with the data collected by the counseling staff with the documentation system (DOKU), to collect further information on the ExE based on self-assessments of the clients. Whereas the DOKU is used to record only ExE that are relevant during the actual counseling process, the PAGE-R registers the occurrence and frequency of phenomena and ExE-patterns of all four basic classes (external phenomena, internal phenomena, coincidence phenomena, dissociation phenomena) over the entire life time. In addition, the corresponding time frames, states of consciousness, external circumstances, the subjective evaluation, and the importance of ExE are obtained systematically (Fig.16).

As part of a research project at the Psychiatric University Hospital Zurich, an online survey of

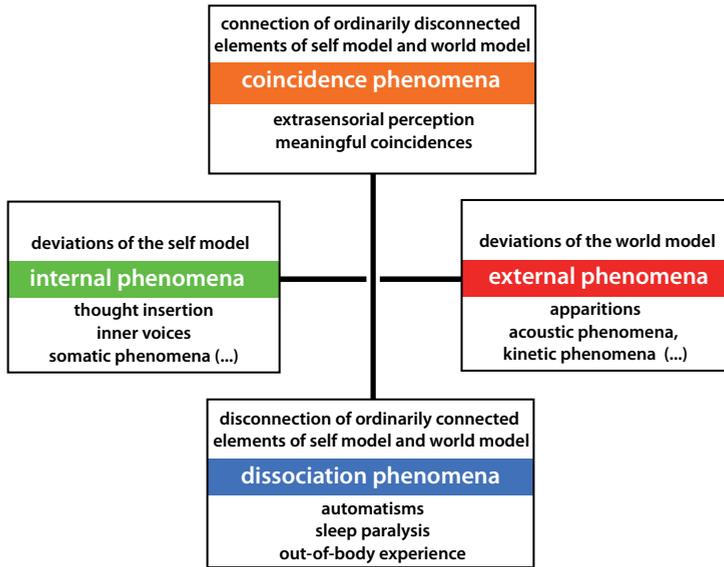


Fig. 16. The four basic classes of exceptional experiences (ExE).

the Swiss general population was carried out in 2012 with the PAGE-R. It was representative concerning gender, age, and education. It included a systematic comparison of this sample (N=1352) with the IGPP clientele on the basis of a follow-up survey in 2011 with the PAGE-R (N=176) and counseling cases recorded between 1996 and 2006 with the DOKU (N = 1465). In all samples, ExE of all four basic classes occur in comparable frequency proportions: coincidence phenomena (“extrasensory perception”, “meaningful coincidences”) are dominant, internal phenomena (“internal presence and influence”) and external phenomena (“apparitions and poltergeist phenomena”) are about equal in second or third place, and dissociation phenomena (“mediumship and automatisms”, “sleep paralysis and nightmare”) are the rarest.

Whereas the IGPP clientele is consistent in both datasets, there is an important difference to the Swiss sample of the general population. Both the frequency and the intensity of ExE were rated significantly higher by about 50% concerning all ExE-patterns by persons looking for advice at the IGPP. Furthermore, IGPP clients regard their ExE as more important for their life and value them on a high degree as “positive and enriching” and as “negative and burdened” at the same time – an ambivalence that is not found on such a level in the general population.

No significant differences could be found between both groups concerning the external circumstances. In all samples ExE occur predominantly in the waking state and mostly spontaneously. Mental techniques, drugs, contact with occultism and healers, or contexts of extreme situations do not play major roles.

The fact that all ExE-patterns occur not only in clients seeking help but also, although less often, in the general population gives reason to suppose that ExE are widespread and continuously distributed in their intensity and frequency. Only ExE that occur to a great extent seem to be accompanied by stress and mental disorders.

In current studies two student populations are investigated by using the PAGE-R. One data set is supplied by Dr. Ulrich Ott (BION), whose psychology classes at the University of Giessen starting with 2012 are filling out the PAGE-R. The other set originates from students of Freiburg University who participate in a current research project at the IGPP. This study, run by Dr. Wolfgang Ambach and Alexander Siller, investigates by using the PAGE-R the role of individual proneness to ExE and possible correlations with the outcome in a presentiment experiment. Further collaborations are taking place with Dr. Christine Simmonds-Moore, assistant professor of psychology at the University of West Georgia. She is preparing an English translation of the PAGE-R with the intention to use it in a cross-cultural comparative study about the distribution of ExE in different local areas. In addition, there is an exchange with Professor Ann Taves and other religious scholars of the University of California at Santa Barbara, who are also interested in an English version of the PAGE-R to investigate the distribution of ExE in different cultural contexts.

*Fach, together with Atmanspacher*  
*Publication: Fach et al. (2013)*

### ***ExE and dual-aspect monism***

Based on Metzinger's theory of mental representations four classes of ExE can be postulated: In the human model of reality with its two basic components, the self model and the world model, internal or external phenomena and coincidence phenomena or dissociation phenomena are possible deviations. The good agreement of empirical material (see above) with the theoretically derived expectations justifies the assumption that the phenomenology of ExE is grounded on fundamental ordering principles. Following W. Pauli and C. G. Jung who conjectured a dual-aspect monism, ExE appear as acausal mind-matter correlations arising from the splitting of a psychophysically neutral domain. As deviations from structural mind-matter correlations that are persistent and reproducible, like correlations of neuronal and mental states or psychosomatic correlations, they can be induced by psychosocial and psychodynamic processes and manifest as elusive and non-reproducible exceptional phenomena. Case studies on this background show that induced mind-matter correlations are accompanied by unconscious conflicts concerning basic human needs, especially bonding and autonomy. The systematic investigation of complementary aspects in the phenomenology and psychodynamics of ExE permits specific intervention strategies and has a strong potential for the future development of counseling and therapy concerning clients afflicted by ExE.

*Fach, together with Atmanspacher*  
*Publications: Atmanspacher & Fach (2013a, 2013b, in print), Fach (in print)*

## 2.7 Bender Institute of Neuroimaging (BION)

The BION was opened in 2000. Since the commencement of its new statute at November 23th 2012 it is an institution of the Department of Psychology and Sports Science of the Justus-Liebig-University Giessen, cooperating closely with the IGPP. The core of the BION is a magnetic resonance tomograph (MRT), which is exclusively available for psychological investigations of brain functions. The MRT generates a homogeneous magnetic field of 3 Tesla and provides cross sections of any requested orientation, representing the interior head structure and brain function during particular tasks.

Ten research groups of different divisions of the department are currently working at the BION. The following report focuses exclusively on the work of the research group “Altered States of Consciousness – Meditation Research”, headed by Dr. Ulrich Ott, an employee of the IGPP, in close coordination with Prof. em. Dr. Dieter Vaitl.

### *Exceptional experiences of yoga practitioners*

In traditional scriptures of yoga and in reports of contemporary yoga practitioners many descriptions of exceptional experiences can be found. On the one hand, these are classical psi phenomena like precognition and telepathy. On the other hand, reincarnation and energy experiences in the body (“kundalini syndrome”) are recurrent topics. The connection between training in meditation and an increased occurrence of such phenomena was noticed early in parapsychological research, yet, only in recent years renowned parapsychologists (William Braud, Dean Radin, K. Ramakrishna Rao, among others) have advocated the explicit inclusion of advanced meditation practitioners in experimental research. For a better understanding of the yoga training path, the different methods of yoga were analyzed and described from a psychological and neuroscientific perspective in a nonfiction book, thereby creating a foundation for future research. In addition, consequences for research were addressed in an open peer commentary on an article about meditation and psi in the “Zeitschrift für Anomalistik”.

*Ott*

*Publications: Ott (2012e, 2013a)*

### *Favorable and adverse effects of meditation*

This ongoing project originated from a meeting with Willoughby Britton at the *Mind and Life Summer Research Institute* 2011 in the USA, where she presented the *Dark Night Project*, a research project concerned with adverse effects of meditation and difficult stages on the contemplative path. Currently, the boom of meditation in clinical settings and the general population focuses primarily on positive health-outcomes. On the other hand, phenomena described in traditional texts, notably including adverse effects of meditation, are hardly recognized. The project intends (1) to develop a detailed description and classification of phenomena induced by meditation, (2) to determine factors that have an influence on the occurrence of these phe-

nomena – for instance personality traits or duration and type of practice –, and finally (3) to identify successful strategies for prevention and treatment. The investigation will focus on semi-structured interviews first and will be followed by a questionnaire survey carried out in Germany. Throughout several expert conferences the presentation of the project was very well received and several affected practitioners have already signaled that they are willing to report on their experiences.

*Ott, Tremmel; together with Britton*

### *Changes in the brain induced by meditation training*

In three previous MRI studies, data was obtained from persons participating in different meditation trainings. The data at hand was recorded repeatedly in longitudinal designs where the period between the measurements lasted one year, four weeks, or one week. For comparison, other methods like hatha yoga and autogenic training were also included in some instances. Based on current hypotheses and findings on the effects of meditation on brain structure (volume and density of gray matter) and the structural integrity of nerve fibers connecting brain regions (white matter, structural connectivity), several bachelor theses and a doctoral thesis are currently reanalyzing the available data in order to investigate the following questions: (1) How does meditation training modify the ability to regulate neuronal networks which are involved in the focusing of attention or are activated during daydreaming? (2) Is it possible to replicate findings of a correlation between brain structure and absorption trait, and to extend these find-

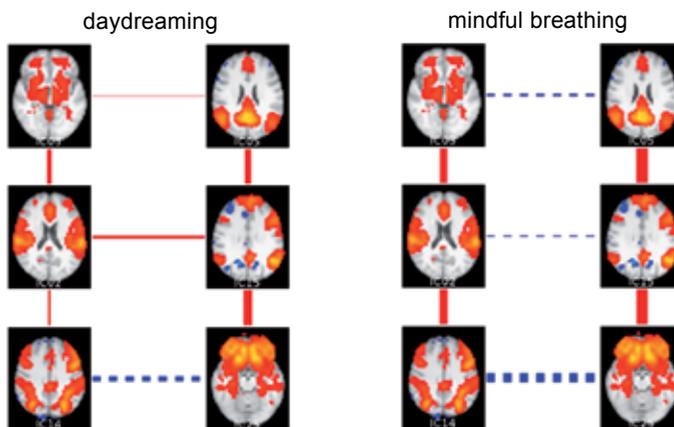


Fig. 17. Connectivity of brain regions in two states of consciousness. In the left hand columns, three network components are shown which are active during attention regulation, the opposing right columns show three components assigned to the default-mode network, which is active during mind wandering. Compared to daydreaming, negative coupling of these networks increases during meditation: if one network is active, the other network is inhibited. Within both networks, positive coupling increases during meditation (vertical connections). Thickness of lines represents the strength of coupling (= partial correlations): positive = solid lines; negative = dashed lines.

ings regarding structural and functional brain connectivity? (3) How does meditation training influence brain aging? The results of these analyses could provide the bases for the development of tailored meditation interventions for the treatment and prevention of mental disorders that are characterized by patterns of impaired connectivity and degeneration of brain structure (pain and anxiety disorders, depression, and Alzheimer's disease, among others).

*Ott, Rumpf; together with Hölzel, Walach, Laneri*  
*Publications: Ott (2012a, 2013c, 2013d)*

### ***Setup of peripheral-physiological measurements in the MRI scanner***

The installation of the new Siemens Prisma 3 Tesla MRI scanner in the BION was accompanied by several modifications concerning the simultaneous recording of peripheral-physiological measures (such as: wireless transmission of ECG, finger pulse, and respiration; new amplifier system for recording of EDA, muscle activity and movements by 3D accelerations sensors). Past studies found that the recording of these measures provides an important information source. For instance, a decrease in skin conductance (reduced activity of sweat glands) indicates relaxation during meditation, or respiration patterns change during the mindful observation of bodily sensations during breathing. Furthermore, measures like respiration and cardiac pulse are increasingly included in the analysis routines of functional MRI data, in order to identify physiological artifacts that could complicate and falsify analyses. As an important prerequisite for future studies the hardware and software for recording and analysis of physiological data was setup, tested, and documented.

*Ott*

### ***Re-evaluating mental absorption in anomalous experiences***

An information processing model has been developed that attributes the intensity of anomalous experiences to the intensity of mental absorption. The anomalous experiences of eidetic imagery, extrasensory perception (ESP), sensory hypersensitivity, and synesthesia are related to one another, to personality traits, like boundary thinness and transliminality, and to mental disorders, like autism spectrum disorders and schizophrenia spectrum disorders. Furthermore, each of these experiences, traits, and disorders is related to some form of absorption. The experiences may vary in intensity, ranging from weak and transient forms to strong and enduring forms. Stronger forms of these experiences are akin to ordinary conscious perception. In the model, it is hypothesized that absorption covaries with these anomalous experiences from a transient state to a skill, e.g., to be gained by intensive focused attention meditation, as well as an enduring condition. Absorption modulates the intensity of these experiences by enhancing concepts, emotions, imagery, sensory input, and extrasensory input and by amplifying resulting concepts, emotions, imagery and perceptions. It is hypothesized that the frequency of ESP experiences is modulated by a second mechanism.

*Publication: Tremmel (2013)*

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### 3.1 Corporate Members

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## 4. Appendix

### 4.1 Publications

#### *Refereed Publications*

Achtner W. & Ott U. (2013): Protestantism and mysticism from the perspective of neuroscience. *Theology and Science* 11(3), 208–223.

Alexander N., Klucken T., Koppe G., Osinsky R., Walter B., Vaitl D., Sammer G., Stark R. & Hennig J. (2012): Interaction of the serotonin transporter-linked polymorphic region and environmental adversity: increased amygdala-hypothalamus connectivity as a potential mechanism linking neural and endocrine hyperreactivity. *Biological Psychiatry* 72(1), 49–56.

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- Wittmann M. (2012): *Gefühlte Zeit: Kleine Psychologie des Zeitempfindens*. C. H. Beck, München.

## *Journals*

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## *Other Publications*

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## 4.2 Habilitation Treatise, Doctoral and Diploma Theses

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Fehr L. (2012): Der Einfluss von Hatha-Yoga auf Körperwahrnehmung und Gehirn: eine MRT-Studie mit voxel-basierter Morphometrie, Master Thesis, Universität Gießen.

Hinderer U. (2012): Auswirkungen von einem Jahr spirituellem Training auf Persönlichkeit, Meditationserfahrung und Hirnstruktur, Diploma Thesis, Universität Gießen.

Kornmeier J. (2012): Ambiguous figures – What happens in the brain if perception changes but not the stimulus, Habilitation Treatise, Universität Freiburg.

Laube K. (2012): Neuroplastische Effekte von Hatha-Yoga-Training auf Hirnstrukturen der vegetativen Regulation, Master Thesis, Universität Gießen.

Leipner S. (2012): Ein achtwöchiges Hatha Yoga Training und dessen Einfluss auf die Emotionsregulationsfähigkeit: eine morphologische Studie, Master Thesis, Universität Gießen.

Kraftschik F. (2012): Mensch-Maschinen, Wirklichkeitsmaschinen. Eine exemplarische Studie zur Rolle der Science Fiction in der Zukunftsforschung, Diploma Thesis, Universität Freiburg.

Schaub W. (2013): Morphometrische Besonderheiten im Gehirn von Patienten mit generalisierter Angststörung und der Einfluss eines 8-wöchigen Mindfulness-Based Stress Reduction Kurses, Diploma Thesis, Universität Gießen.

Schönwetter T. (2012): Psychophysiologische Anomalien? Einsichten über die Orientierungsreaktion in Studien mit unkonventioneller Fragestellung, Doctoral Thesis, Universität Gießen.

Schombach L. (2012): *Hirnstrukturelle Veränderungen durch Stressbewältigung: Hatha-Yoga als Intervention*, Diploma Thesis, Universität Gießen.

Wörner R. (2012): *EEG-Korrelate zum Grad der Mehrdeutigkeit eines visuellen Reizes*, Diploma Thesis, Universität Freiburg.

Zillgen K. (2012): Bewegung und Bewusstsein: Wirkungen von Hatha-Yoga auf neurostrukturelle Korrelate der Sensomotorik und subjektive Maße der Achtsamkeit, Master Thesis, Universität Gießen.

## 4.3 Teaching

Ambach W.: Psychophysiologische Methoden und ihre Anwendung. Guest lecture „Mess- und Assessmentmethoden“, Masterstudiengang Psychologie, Universität Freiburg, WS 2012/13, WS 2013/14.

Ambach W.: Memory Detection - Die Aufdeckung verheimlichten Wissens. Seminar, Bachelor- und Masterstudiengang Psychologie, Universität Freiburg, SS 2012.

Ambach W.: „Experimentelle Psychophysiologie“. Seminar, Bachelor- und Masterstudiengang Psychologie, Universität Freiburg, SS 2013.

Anton A.: Einführung in die Gesundheitssoziologie. Guest lecture „Angewandte Gesundheitswissenschaften“, Hochschule Furtwangen, Hochschule Furtwangen, WS 2012/13, SS 2013.

Atmanspacher H. & Giuliani D.: Sommerakademie der Studienstiftung des deutschen Volkes, Ftan, Schweiz, August 2012.

Atmanspacher H.: Der Jung-Pauli-dialog then and now. C. G. Jung-Institut Zürich, SS 2012.

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- Fach W.: Außergewöhnliche Erfahrungen und ihre verborgene Ordnung. Theoretische Grundlagen, empirische Ergebnisse und Fallbeispiele aus der Praxis. Two guest lectures „Religionswissenschaft, Ethnologie, Spiritualität“, C. G. Jung Institut Zürich, WS 2012/13.
- Fach W.: Beratung und Hilfe für Menschen mit außergewöhnlichen Erfahrungen. Theoretische Grundlagen, empirische Forschung und Fallstudien auf dem Hintergrund der Synchronizitätsannahmen von C. G. Jung und Wolfgang Pauli. Guest lecture „Spezielle Fragen zur psychotherapeutischen Praxis“, C. G. Jung Institut Zürich, SS 2013.
- Fach W.: Ein Modell parapsychologischer Phänomene und Beratung bei außergewöhnlichen Erfahrungen. Forschungstag „Therapeutische Arbeit mit Synchronizität und außergewöhnlichen Erfahrungen“. Guest lecture, C. G. Jung-Institut Stuttgart, September 2013.
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- Kornmeier J., Bach J. & Heinrich S.: Neurobiology of visual perception. Lecture, Master of Science, Universität Freiburg, SS 2012.
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- Ott U.: Bewusstsein. Psychologie als Referenzfach in Bachelor-Studiengängen I. Two lectures, Universität Gießen, WS 2012/13, WS 2013/14.
- Ott U.: Modul 7: Hirnforschung und Spiritualität/Meditation (Spiritualität, empirische Humanwissenschaft und Quantenphysik). Seminar „Spiritualität und Interkulturalität. Institut West-Östliche Weisheit Universität Freiburg. November 2013 - January 2014.
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- Schellinger U.: Freiburg als locus occultus (19.-21. Jahrhundert) – eine Topographie. Seminar, Historisches Seminar, Universität Freiburg, WS 2013/14 (together with Sylvia Paletschek, Anna Lux, Natascha Adamowksy, Günther Klugermann).
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- Schetsche M.: Soziologie der Grenze. Soziologie, Bachelor-, Master, Magisterstudiengang, Universität Freiburg, SS 2012.
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- Schetsche M.: Wie wirklich ist Wirklichkeit? Exzeptionelle Theorien zur Wissenssoziologie. Soziologie MA, Universität Freiburg, SS 2013.

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