

ENCECON

Workshop



The First MLE Hub Meeting of the European
Neurophenomenology, Contemplative, and
Embodied Cognition Network
(ENCECON)

6-10 June 2016
Château de la Bourlie
France



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COGNITIVE AND BRAIN SCIENCES
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MIND & LIFE
EUROPE

ENCECON

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6-10 June 2016
Château de la Bourlie
France

About the Workshop

The workshop will be a residential 3-day retreat to facilitate an in-depth and integrated exploration into the areas of embodied cognition, contemplative neuroscience, and neurophenomenology. More specifically, this workshop will explore three key topics:

1) The Role of the Brain Resting State in Meditation

What is the functional meaning of brain resting states networks (i.e., default-mode networks) in relationship to mental states (i.e., mind-wandering, mindfulness, cube of thought, etc.), personality traits, and self-related processes? What is the relationship between different styles of contemplative practice and these main brain networks?

2) The Role of the Body in Meditation

What is the relationship between meditation, interoceptive body awareness, and the brain? What is the role of bodily posture and physical relaxation in inducing and maintaining mental states (i.e., stillness and ease of the mind, mind-wandering, rumination, etc.)? What are the potential confounding effects of psychophysiological changes (i.e., heart rate, respiration rate, etc.) associated with different experiential states on neuroimaging measures, including BOLD fMRI and electrophysiology?

3) Neurophenomenology

What are the methodological challenges in collecting and analyzing first-person data in conjunction with third-person data? How to refine the terminological framework to capture experiential processes in furthering neurophenomenological and computational approaches to the study of mind and its embodiment? How to develop statistical tools for the analyses of first-person qualitative data and integrate those with classical 3rd person brain or physiological data.

This first ENCECON Workshop is organized by Mind and Life Europe in cooperation with the Department of Social Neuroscience from the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig (Tania Singer), the Institute of Psychiatry, Psychology and Neuroscience at King's College London (Elena Antonova), the Mood Disorders Centre at the University of Exeter (Thorsten Barnofer) as well as the Lyon Neuroscience Research Center (INSERM U1028 - CNRS UMR5292) from Lyon 1 University (Antoine Lutz).

The ENCECON Network

The overall aim of the network is to support European scientists engaged in empirical and theoretical research on embodied cognition, contemplative neuroscience, and neurophenomenology. The objective of the network is to address concrete theoretical and methodological challenges currently hampering the empirical investigation of experience, its relationship to brain and body and its potential for well-being. This objective will be approached by gathering a community of researchers interested in both the empirical investigation of the mind, brain, and body and the integration of direct experiential inquiry and rigorous first-person methodology with these third-person approaches.

List of Participants

Dr Oussama Abdoun	PostDoc, INSERM, Lyon Neuroscience Research Center, Bron, France
Dr Elena Antonova	Lecturer in Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom
Ian Baker	PhD Student, Medical Anthropology, University College London, United Kingdom
Prof. Olaf Blanke	Founding Director, Center for Neuroprosthetics; Bertarelli Foundation Chair in Cognitive Neuroprosthetics; Professor, Brain-Mind Institute; École Polytechnique Fédérale de Lausanne (EPFL); Professor, Department of Neurology, University of Geneva, Switzerland
Dr Thorsten Barnhofer	Associate Professor, Moods Disorders Centre, University of Exeter, United Kingdom
Constanza Baquedano	PhD Student, INSERM, Lyon Neuroscience Research Center, Bron, France, & Psychology School, Pontificia Universidad Católica de Chile, Santiago, Chile
Dr Aviva Berkovich-Ohana	Neuroscientist and Senior Lecturer, Edmond J. Safra Brain Research Center, and Departments of Counseling and Human Development, as well as Learning, Instruction and Teacher Education at University of Haifa, Israel
Boris Bornemann	PhD Student, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
Dr Gaël Chételat	Director of the research team "Multimodal Imaging of Brain Pathologies", INSERM, University of Caen Normandy, Caen, France
Dr Maria Engström	Head of Division of Radiological Sciences, Department of Medical and Health Sciences, Linköping University, & Senior Lecturer in Experimental Magnetic Resonance Imaging, Sweden
Dr Tim Gard	Neuroscientist, Institute for Complementary and Integrative Medicine, University Hospital Zurich and University Zurich, & Translational Neuromodeling Unit (TNU), Institute for Biomedical Engineering, University of Zurich and Swiss Federal Institute of Technology (ETH), Zurich, Switzerland
Diego Hangartner	Founding Director and Principal Teacher, Institute of Secular Ethics and Mental Balance (ISEMB), Switzerland
PD Dr Philipp Kanske	Group Leader, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
Anna-Lena Lumma	PhD Student, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
Dr Antoine Lutz	Researcher, INSERM, Lyon Neuroscience Research Center, Bron, France

Dr Daniel Margulies	Leader, Neuroanatomy & Connectivity Research Group, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
Prof. Johannes Michalak	Department of Clinical Psychology, Witten/Herdecke University, Witten, Germany
Dr Giuseppe Pagnoni	Associate Professor, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Italy
Prof. Claire Petitmengin	Télécom École de Management, Institut Mines-Télécom, Evry, France
Eléa Perraud	Student of Psychology, Bordeaux University, France
Prof. Olga Pollatos	Head of the Clinical & Health Psychology Lab, Institute of Psychology and Education, Ulm University, Germany
Dr Marisa Przyrembel	PostDoc, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
Matthieu Ricard	Buddhist monk at Shechen Monastery in Nepal
Prof. Anil Seth	Co-Director, Sackler Centre for Consciousness Science, University of Sussex, Brighton, United Kingdom
Prof. Tania Singer	Director, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
Fynn-Mathis Trautwein	PhD Student, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany

Program

Time	Monday, June 6 Arrival	Tuesday, June 7 Contemplative Neuroscience Session Chair: Tania Singer
07.45-08.30		Meditation Matthieu Ricard
08.30-09.30		Breakfast
09.30-11.00		Morning Session Part I Talks: Philipp Kanske Fynn-Mathis Trautwein Contemplative View by Matthieu Ricard Group Discussion
11.00-11.30		Coffee break
11.30-13.00		Morning Session Part II Talks: Daniel Margulies Giuseppe Pagnoni Contemplative View by Diego Hangartner Group Discussion
13.00-14.30		Lunch break
14.30-16.00		Afternoon Session I Talks: Tim Gard Maria Engström Contemplative View by Ian Baker Group Discussion
16.00-16.30		Coffee break
16.30-18.00	Arrival until 18.00	Afternoon Session II Talks: Oussama Abdoun ¹ Elena Antonova, & Antoine Lutz ² Gaël Chételat Contemplative View by Matthieu Ricard Group Discussion
18.00-19.00	Dinner	Dinner
19.00-21.00	Welcome and Introduction Welcome Remarks by Planning Committee Kick-off presentations by Antoine Lutz and Tania Singer Discussant: Matthieu Ricard	Group Discussion – Contemplative Neuroscience Chair: Elena Antonova
21.00-21.30	Meditation Matthieu Ricard	Meditation Matthieu Ricard

Wednesday, June 8 Neurophenomenology Session Chairs: Elena Antonova and Antoine Lutz	Thursday, June 9 Embodied Cognition Session Chair: Thorsten Barnhofer	Friday, June 10 Departure
Meditation Matthieu Ricard	Meditation Diego Hangartner	
Breakfast	Breakfast	Breakfast
Morning Session Part I Introduction to Neurophenomenology by Elena Antonova and Antoine Lutz Contemplative View by Matthieu Ricard Experiential Exercise by Matthieu Ricard Group Discussion	Morning Session Part I Talks: Boris Bornemann Olga Pollatos Contemplative View by Ian Baker Group Discussion	
Coffee break	Coffee break	
Morning Session Part II Talk: Claire Petitmengin Contemplative View by Diego Hangartner Group Discussion	Morning Session Part II Talks: Johannes Michalak Diego Hangartner Group Discussion	
Lunch break	Lunch break	
Afternoon Session I Talks: Marisa Przyrembel Anna-Lena Lumma Contemplative View by Ian Baker Group Discussion	Afternoon Session Talk: Olaf Blanke Anil Seth Contemplative View by Diego Hangartner Group Discussion	
Coffee break	Coffee break	
Afternoon Session II Talks: Constanza Baquedano Aviva Berkovich-Ohana Meditation by Ian Baker	Group Discussion – Embodied Cognition Chair: Tania Singer	
Dinner	Dinner	
Group Discussion – Neurophenomenology and Contemplative Practice Chair: Thorsten Barnhofer	Closing Remarks by Planning Committee Closing Meditation by Diego Hangartner Slide Presentation: Ian Baker	
Meditation Diego Hangartner	Party Time	

09.40 – 10.05

Dissociating and embedding socio-affective and -cognitive processes in large-scale neural networks

*Philipp Kanske, Anne Böckler, Fynn-Mathis Trautwein, & Tania Singer,
Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences,
Leipzig, Germany*

The neural networks associated with socio-affective (empathy, compassion) and socio-cognitive processes (mentalizing/Theory of Mind) have been well-characterized over the last years. The goal of the present talk is twofold: (1) To explore the separability of these functions during online social understanding on a subjective, behavioral and on a neural level and (2) to investigate the embedding of the related neural substrates in large-scale task-free neural networks. To this end, we acquired resting state as well as behavioral and neuroimaging data (fMRI) during a social video task in a large sample of participants (N = 178). The videos were short autobiographical narrations of emotionally negative and neutral events that allowed for asking Theory of Mind questions about the thoughts of the narrators and factual reasoning questions about the content of the stories, thereby allowing for independent assessment of socio-affective and socio-cognitive processing. Linking the phenomenological with the neural level, participants reported increased negative affect after emotional stories, which covaried with activity strength in the meta-analytically defined “empathy network”, but not with activity in the “Theory of Mind network”. Vice versa, performance in answering the Theory of Mind questions correlated with “Theory of Mind network”, but not “empathy network” activity. Interestingly, neither behavioral markers of social affect and mentalizing (i.e. emotional valence ratings and Theory of Mind performance) nor activity in the two respective neural networks correlated with each other. Furthermore, resting state functional connectivity to task activation based seed regions for empathy and Theory of Mind yielded distinct networks that strongly overlapped with the respective task activations and correspond to the well-described default mode network (Theory of Mind seeds) and the salience or central executive network (empathy). The data strongly argue for dissociable and independent socio-affective and -cognitive functions that are embedded in large-scale task-unrelated neural circuits.

10.05 – 10.30

Modulation of activity in default mode and cingulo-opercular networks through stimulus-driven and executive control of attention

*Fynn-Mathis Trautwein, Philipp Kanske, & Tania Singer, Department of Social
Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences,
Leipzig, Germany*

A classical model of human attention holds that two main components of externally directed attention – stimulus-driven reorienting and executive control – rely on independent neural systems. However, questioning full independency, more recent network-based approaches to human brain function highlight the role of a common set of regions, often referred to as saliency or central executive network, in a huge variety of cognitive tasks involving externally directed attention. Furthermore, a common feature of these tasks is down-regulation of activity in the default mode network, which is upregulated when attention is directed internally. Finally, activation patterns diverge in temporo-parietal junction (TPJ), with increases during stimulus-driven, but decreases during executive control of attention. We explicitly addressed this question of specificity vs. commonality of neural networks related to stimulus-driven reorienting and executive control of attention in a task that independently manipulates both functions and probes for subjectively experienced fluctuations of attention (i.e. mind-wandering). In a large sample

($n = 282$), reorienting was induced through invalid spatial cueing and executive control through flanker-target conflict while fMRI data were acquired. Results revealed a strong overlap of activations related to both attention functions in cingulo-opercular and fronto-parietal regions. Furthermore, activity in left anterior insula (AI) showed super-additive increases of activity during concurrent demand of both functions. Furthermore, the neural activation pattern in TPJ showed an anterior vs. posterior distinction, with reorienting related activation in anterior TPJ, but joint downregulation during concurrent demand of both functions in posterior TPJ – a region that was upregulated during subjective reports of mind-wandering. This dissociation was replicated in resting state functional connectivity analysis, embedding the anterior TPJ peak into the cingulo-opercular salience network, and posterior TPJ into the default mode network. Finally, task-based functional connectivity indicated inhibitory coupling between posterior TPJ and AI during concurrent attention demands. These results demonstrate involvement of domain-general brain networks in different attentional functions and a central role of anterior insula in regulating these networks.

Implications of these findings for the relationship between lower-level domain general and higher-level socio-cognitive and socio-affective functions will be discussed. Furthermore, in light of mental training-induced changes in the investigated attentional, socio-affective, and socio-cognitive functions, we will discuss their involvement in different types of contemplative practice.

11.40 – 12.05

Topographic principles of cortical connectivity

*Daniel S. Margulies, Neuroanatomy & Connectivity Research Group,
Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany*

Distinct large-scale cortical networks have been well characterized in recent years, but we are still lacking an integrative understanding of how they spatially related to one another. The hypothesis was recently proposed by Buckner and Krienen (2013) that cortical distance from highly differentiated primary sensory areas may determine gradients of specialization. I will present work extending the ‘tethering hypothesis’ by investigating how spatial proximity along the cortical surface relates to functional specialization and cortical morphology. Beginning from the default-mode network (DMN), we observe a functional continuum from the heterogeneous to highly specialized: more distal regions are specialized in either primary sensory or motor functions and more proximal regions are associated with abstract cognition and internally-oriented content. Domain-general systems subserving functions such as attention, working memory, and executive control are then situated between these two expanses of cortex. The implications of these findings for theories of cortical development and function will be discussed.

12.05 – 12.30

Predictive coding as a theoretical framework for contemplative research

*Giuseppe Pagnoni, Department of Biomedical, Metabolic and Neural Sciences,
University of Modena and Reggio Emilia, Italy*

Predictive coding is a theoretical framework that has recently gained much attention in the neuroscience community, and which views the brain as a device exquisitely specialized for predicting sensory stimulation. In its most general incarnation, Karl Friston’s Free-Energy Principle, the theory sees the organism as an allostatic process constantly busy in minimizing long-term surprise, and the accommodation of the discrepancy between predictions and effective stimulation is seen -- much like in Francisco Varela’s notion of autopoiesis -- as the root of any cognitive activity. In this talk, I will introduce the basic concepts of the theory and argue for its usefulness for advancing our understanding of the mental processes mobilized by contemplative practices.

14.40 – 15.05

Resting state brain functional organization and fluid intelligence in older yoga and mindfulness practitioners

Tim Gard, Institute for Complementary and Integrative Medicine, University Hospital Zurich and University Zurich, & Translational Neuromodeling Unit (TNU), Institute for Biomedical Engineering, University of Zurich and Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

Numerous studies have documented the normal age-related decline of neural structure, function, and cognitive performance. Preliminary evidence suggests that meditation may reduce decline in specific cognitive domains and in brain structure. Here we extended this research by investigating the relation between age and fluid intelligence and resting state brain functional network architecture using graph theory, in middle-aged yoga and mindfulness meditation practitioners, and matched controls. Fluid intelligence declined slower in yoga practitioners and meditators combined than in controls. Resting state functional networks of yoga practitioners and meditators combined were more integrated and more resilient to damage than those of controls. Furthermore, mindfulness was positively correlated with fluid intelligence, resilience, and global network efficiency. These findings reveal the possibility to increase resilience and to slow the decline of fluid intelligence and brain functional architecture and suggest that mindfulness plays a mechanistic role in this preservation.

15.05 – 15.30

Same-same but different? Meditation and resting state networks

Maria Engström, Center for Medical Image Science and Visualization, Department of Medical and Health Sciences, Linköping University, Sweden

Several previous studies show that meditation practice induces brain plasticity. However, although it is expected that different meditation techniques induce changes in different brain networks, few studies have shown evidence. During this talk I will present preliminary data from a functional magnetic resonance imaging (fMRI) study on brain function during focused attention, open monitoring, and loving kindness meditation, and during rest. Three groups of participants were investigated three times each: 1) experienced Zen meditators, 2) novice meditators, and 3) a waiting list control group. All participants were firmly instructed in the meditation techniques to be used during fMRI, and they also trained three times a week using recorded instructions. We analyzed for functional connectivity in the default mode, attentional, and the salience networks. Results will be discussed in terms of meditation-induced altered states of consciousness in relation to functional brain networks.

16.40 – 16.50

A network-based analysis of brain functional connectivity in expert meditators

Oussama Abdoun, INSERM, Lyon Neuroscience Research Center, Bron, France

Graph-based modelling of the brain functional networks has been increasingly refined in the last 10 years and applied to a variety of phenomena including development, aging, minimal states of consciousness and neurological and mental disorders. One strength of graph theory is that

it can provide a synthetic description of topological properties of networks through a handful of metrics, such as the degree of segregation and integration, or the presence and localization of hubs and central nodes. In addition, modularity analysis allows to model the brain as a network of interconnected sub-networks. The latter approach emphasizes functional interactions between brain areas rather than their relative activation, which may open new perspectives on brain mechanisms underlying those mental states and activities that engage several functions at the same time. Here I will review the potential of network-based analysis for the neuroscientific study of contemplative practices, and present some preliminary results from an application of this approach to functional MRI data acquired during various meditative states in long-term practitioners.

16.50 – 16.55

The neural correlates of ‘non-dual’ mindfulness

*Elena Antonova, Institute of Psychiatry, Psychology and Neuroscience,
King's College London, United Kingdom*

I will present fMRI data from an ongoing study of open monitoring/open presence using instructed resting state paradigm in the long-term practitioners of Dzogchen and Mahamudra. The paradigm compares three mind modes as formulated by Teasdale (1990): mindless emoting (Mind-wandering epoch), conceptualisation/doing (Future planning epoch), and mindfulness/being (Mindfulness epoch). The data will be discussed in relation to the role of some of the nodes of the Default Mode Network, namely ventro-medial and dorso-medial Prefrontal Cortex (vmPFC and dmPFC respectively), and Posterior Cingulate/Precuneus in self-referencing. The data suggest that in very experienced practitioners, whose ‘ability’ to rest in open presence for some periods of time has been validated by their meditation teachers, there is an attenuated activity of all three nodes during Mindfulness epoch as compared with Mind-wandering, whereas in less experienced practitioners, vmPFC appears to be active, indicating perhaps subtle levels of self-fixation indicative of open monitoring (rather than open presence).

16.55 – 17.00

Reconstructing and deconstructing the self: Cognitive mechanisms in meditation practice

Antoine Lutz, INSERM, Lyon Neuroscience Research Center, Bron, France

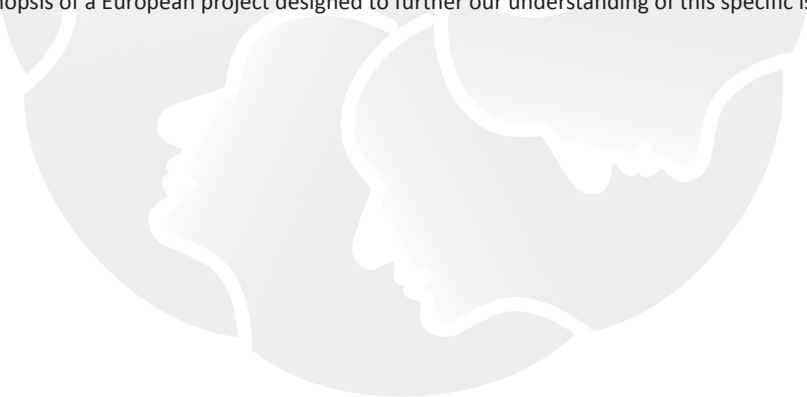
Scientific research highlights the central role of specific psychological processes, in particular those related to the self, in various forms of human suffering and flourishing. This view is shared by Buddhism and other contemplative and humanistic traditions, which have developed meditation practices to regulate these processes. Here I will briefly review a novel classification system that categorizes specific styles of meditation into attentional, constructive, and deconstructive families based on their primary cognitive mechanisms (Dahl et al. 2015). With this typology of meditation practices, we suggested that meta-awareness, perspective taking and cognitive reappraisal, and self-inquiry may be important mechanisms in specific families of meditation and that alterations in these processes may be used

17.05 – 17.30

What could be learned from normal and pathological ageing brain networks?

Gaël Chételat, INSERM, Caen, France

Resting brain network changes in ageing and Alzheimer's disease (AD), and the functional impact of these changes, are cues to better understand the relationships between brain networks and mental states including those related with contemplative practices. This presentation aims at pointing to some of the changes in brain intrinsic connectivity that characterize normal and pathological ageing and their behavioural correlates, which may help understanding the links between brain networks connectivity and meditation practices. In ageing, resting-state network changes are mainly characterized by difficulties in switching from one network to another and a breakdown of connectivity integrity along the anterior-posterior axis; the executive control and dorsal attention networks are the most sensitive to ageing. In AD, most changes occur within the default mode network and correspond to decreased intrinsic connectivity. Those changes are related to cognitive decline (of attention, executive function – switching capacities, and memory) but also to the loss of self-awareness. For example in AD patients, the loss of awareness of memory capacities (called as anosognosia and associated with a loss of identity) is due to a disruption of the connectivity between memory and self-awareness networks. We also argue that the age and AD-related changes in network intrinsic connectivity are associated with a less efficient control of limbic emotion-relevant structures by the executive control and attentional networks (mainly involving prefrontal areas), which results in an impairment of emotional balance – a difficulty observed in ageing and AD and associated with worse prognosis. We will show very preliminary data on the potential effects of meditation on the ageing brain networks, and present the synopsis of a European project designed to further our understanding of this specific issue.



09.40 – 10.10**Introduction to neurophenomenology***Elena Antonova¹, & Antoine Lutz²**¹ Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom**² INSERM, Lyon Neuroscience Research Center, Bron, France,*

The presentation will outline the research program for the neuroscience of consciousness called 'neurophenomenology' introduced by Varela (Varela, 1996). At a theoretical level, neurophenomenology pursues an embodied and large-scale dynamical approach to the neurophysiology of consciousness (Varela 1995). At a methodological level, the neurophenomenological strategy is to make rigorous and extensive use of first-person data about subjective experience as a heuristic to describe and quantify the large-scale neurodynamics of consciousness (Lutz 2002). As we will argue, the collaboration with meditation experts could provide a paradigmatic research tool to explore this approach. The presentation will focus on neurophenomenology in relation to three challenging methodological issues about incorporating first-person data into cognitive neuroscience: (i) first-person reports can be biased or inaccurate; (ii) the process of generating first-person reports about an experience can modify that experience; and (iii) there is an 'explanatory gap' in our understanding of how to relate first-person, phenomenological data to third-person, biobehavioural data. The challenges of this explanatory gap will be discussed in relation to the neurophenomenology program (Bitbol & Antonova, 2016). The pragmatic implications of this framework for meditation research will be discussed, in particular in the case of mindfulness meditation research (Lutz et al. 2015).

11.40 – 12.30**What is it like to meditate?***Claire Petitmengin, Télécom École de Management, Institut Mines-Télécom, Evry, France*

In our society where interest in Buddhist meditation is expanding enormously, numerous scientific studies are now conducted on the neurophysiological effects of meditation practice and on the neural correlates of meditative states. However, very few studies have been conducted on the experience associated with contemplative practice: what it is like to meditate – from instant to instant, at different stages of the practice – remains almost invisible in contemporary contemplative science. New concrete "micro-phenomenological" interview methods have recently been designed to help us become aware of our lived experience and describe it with rigor and precision. After a brief introduction to these methods, I will describe their application to two processes involved in meditative experience: a) the twofold process of loss of contact with the current situation and generation of virtual ones in "mind-wandering" episodes, and the process of regaining and maintaining contact with the present situation induced by meditation practice; b) the premises of the emergence of a thought. I will then highlight the interest of such descriptions for meditation practitioners and meditation teachers, and outline the research directions they open.

14.40 – 15.30

Lessons from the *ReSource* Study: Examples for neurophenomenological research using different levels of first-person accounts and analyses

Anna-Lena Lumma, Marisa Przyrembel, & Tania Singer, Department of Social Neuroscience, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany

Investigating how subjective experiences are related to neuronal and physiological processes is among the most fascinating but challenging endeavors within neuroscience and philosophy. Neurophenomenologists suggest studying participants who have well developed introspective skills to better disentangle how subjective experiences and neuronal mechanisms are associated. Hence, prior studies have frequently invited expert meditators as participants. Expert meditators often have a better meta-awareness of their own subjective experiences, which not only suggests that contemplative practices such as meditation can influence introspective skills, but also that they can potentially be used as a tool to study subjective experiences. However, even within this context, the question how to best operationalize and study different types of subjective experiences as well as their change is still under empirical investigation.

To refine and facilitate neurophenomenological studies, we will introduce a classification of different types of subjective experiences, clustering the latter according to three distinct levels of complexity. We will suggest that (i) the coarse level represents stable, trait-like subjective experiences that are typically measured with closed-format self-report questionnaires; (ii) the semi fine-grained level represents state-like subjective experiences that fluctuate more frequently and can be assessed with ratings of momentary experiences; and (iii) the fine-grained level represents more subtle subjective experiences that are often hard to verbalize and can best be measured with open-format measures and structured in-depth interviews. We will then present data for each type of above subjective experience level from the *ReSource* project, a large-scale longitudinal mental training study in which participants underwent training within three 3-months training modules that were designed to teach attentional, socio-affective, or socio-cognitive skills. Based on these findings, we will discuss the advantages and implications of applying the above classification to different types of subjective experiences, and how such an approach could facilitate and clarify neurophenomenological research

16.40 – 17.05

A brief mindful instruction de-automatizes approach-oriented impulses towards attractive foods

Constanza Baquedano, INSERM, Lyon Neuroscience Research Center, Bron, France, & Psychology School, Pontificia Universidad Católica de Chile, Santiago, Chile

Being aware that mental events are mere representations and not necessarily an accurate depiction of reality, is one of the key feature of mindfulness meditation. In Western psychology this process has been called de-reification or cognitive diffusion. Dereification can be opposed to experiential fusion, the process of being lost or totally immersed into the contents of one's mind. Here we investigated whether a "de-reified attitude" compared to an "immersed attitude", as induced by brief instructions, differentially modulate automatic approach-avoidance tendencies when processing visual stimuli. Specifically, we focused on how these instructions modulated impulses towards attractive foods.

In a paradigm adapted from Papies et al 2012, participants saw first neutral and attractive food pictures with either a mindful or immerse attitudes. Then participants performed an approach-Avoidance Task (AAT) based on these images. Dependent measures include behavioral and salivary volume measures, EEG, and first person accounts. Replicating Papies et al. 2012, we found reduced automatic bias toward attractive food only in visual stimuli that followed the mindful

instruction but not the immersed instruction, as measured by performances in the ATT. We also found that the saliva volume was reduced during the mindful condition compared to the immersed one and that the two instructions differentially impacted early and late evoked related potentials (ERPs) during exposure. Remarkably, thanks to the qualitative analysis of first person data, we discovered that participants used mainly two different cognitive strategies to achieve “de-reificated attitude”. These strategies were correlated with different neural signatures. Overall, these findings suggest that a de-reificated attitude de-automatizes the approaching bias towards attractive stimuli found during experiential fusion and that this “de-reificated attitude” is achieved by multiples cognitive strategies.

17.05 – 17.30

Neuro – thin and thick – phenomenology

Aviva Berkovich-Ohana, Edmond J. Safra Brain Research Center, and Departments of Counseling and Human Development, as well as Learning, Instruction and Teacher Education, University of Haifa, Israel

In this talk I would like to first briefly review several projects we carried using a neurophenomenological approach, in order to enable discussion of the emerging challenges. The presented projects include several papers, all employing contemplative practitioners which demonstrated the ability to stably produce and describe in the laboratory setup unique states of consciousness: (i) An EEG study of two proficient practitioners which experienced unique states spontaneously occurring during meditation (Berkovich-Ohana, Phenomenology and the Cognitive Sciences, 2015). These states, known as fruition, are common within the Mahasi School of Theravada Buddhism, and are considered the culmination of contemplation-induced stages of consciousness; (ii) An MEG group study of cortical mapping for characterizing self-awareness in proficient meditators (Dor-Ziderman, Berkovich-Ohana, Glicksohn, & Goldstein, *Frontiers in Neuroscience*, 2013). Here, the participants volitionally produced dissociated and distinct types of self-awareness: a ‘narrative’ self-awareness, a ‘minimal’ self-awareness, and a ‘selfless’ mode of awareness; (iii) An MEG group study of cortical mapping for characterizing temporal and spatial awareness in proficient meditators (Berkovich-Ohana, Dor-Ziderman, Glicksohn, & Goldstein, *Frontiers in Psychology*, 2013). Here, the participants self-induced altered spatio-temporal states of consciousness; and (iv and v) A case study of one proficient practitioner exploring the sense-of-boundaries (SB). The participant volitionally produced three mental states characterized by a graded SB experience, while being scanned by MEG. Here, depth phenomenology (Ataria, Dor-Ziderman, & Berkovich-Ohana, *Consciousness and Cognition*, 2015) was used to guide the study of the underlying neural activity, partly validated in an independent group of meditators (Dor-Ziderman, Ataria, Fulder, Goldstein, & Berkovich-Ohana, Under review).

The presented studies employed diverse depths of phenomenology - on the spectrum described as varying between ‘thin phenomenology’ and ‘thick phenomenology’ - in order to guide the neurological analyses in different ways. The methodological benefits and challenges of the different presented approaches are discussed.

09.40 – 10.05

Changes in interoceptive processes induced by TMS and mindfulness-based therapy

Olga Pollatos, Institute of Psychology and Education, Ulm University, Germany

Interoception is understood as the sensing and representation of signals concerning the internal state of the body. Different facets of interoceptive processes have been suggested, including interoceptive accuracy (e.g. behavioral testing such as performance on heartbeat perception tests), metacognitive awareness (e.g. confidence-accuracy correspondence) and subjective interoceptive sensibility (e.g. as assessed via self-report questionnaires). Furthermore, the so-called heartbeat evoked potential (HEP) offers an additional possibility to examine automatic processing of cardiac signals. Data on manipulating interoceptive abilities by the use of repetitive transcranial magnet stimulation (rTMS) and mindfulness-based therapy, here the use of the body-scan, will be presented. Theta burst stimulation (cTBS) was used to inhibit specific central locations of the interoceptive network including the right anterior insula and the right somatosensory cortices in 18 healthy males. Main results were that right inhibiting anterior insula resulted in a significant decline in cardiac and respiratory interoceptive accuracy and in a coherent decrease in perception security. cTBS over somatosensory cortices reduced cardiac interoceptive accuracy and affected metacognitive awareness. Inhibiting right anterior insula and right somatosensory cortices increased interoceptive sensibility and reduced the HEP amplitude over frontocentral locations. Mindfulness-based body scan (referring to Kabat-Zinn) was used in 49 healthy participants applied over eight weeks using e-diary approach to make sure that all participants regularly practiced 20 minutes a day. Interoceptive facets as well as the HEP were examined before and after this training time. Main results were that interoceptive accuracy as well as metacognitive awareness increased over time as compared to a control group. Effects on the HEP were supporting the behavioral results. Our findings strongly suggest that cTBS is an effective tool to investigate the neural network supporting interoceptive processes. Furthermore, regularly applied mindfulness-based therapy interventions can change interoceptive abilities, depending on the basic level of interoceptive abilities.

10.05 – 10.30

From bodily self-consciousness to embodied cognition and disembodied meditation

Olaf Blanke

Swiss Federal Institute of Technology (EPFL), Geneva, Switzerland

Past work has indicated that subjective aspects of consciousness, in particular the fact that consciousness is bound to the self, are based on multisensory bodily signals (visual, tactile, and proprioceptive stimuli) as well as interoceptive bodily cues. Although, the former are processed in premotor, posterior parietal and temporal cortex and the latter in the insula and anterior cingulate cortex, these data suggest that these regions form an integrated cortical system that is of key importance for embodied cognition and bodily self-consciousness. I will present studies that investigate bodily self-consciousness (i.e. self-identification, self-location, first-person perspective) by exposing subjects to prolonged, but altered, multisensory bodily stimulations (visual, tactile, proprioceptive) or to specific interoceptive (cardiac or respiratory) stimulations. Moreover, both types of prolonged bodily stimulation (exteroceptive or interoceptive), are not just powerful modulators of bodily self-consciousness, but also impact visual consciousness and several cognitive processes (embodied cognition). I will conclude by linking these neuroscience

data to meditation practices centering on disembodiment, arguing that the controlled induction of altered states of bodily self-consciousness (by physical relaxation, mental states, multisensory stimulation, etc) may facilitate and enhance certain meditation practices.

11.40 – 12.05

Embodiment in dysfunctional and healthy states of mind

Johannes Michalak, Department of Clinical Psychology, Witten/Herdecke University, Witten, Germany

Under the term ‘embodiment,’ basic research in psychology and related fields has proposed a complex reciprocal relationship between the body and the way in which cognitive and emotional information is processed. During the past decades a large number of empirical studies have consistently shown that bodily postures and movements affect psychological processes. Moreover, first studies have investigated the role of the body in dysfunctional psychological processes in depressive disorders. These findings coincidence with the centuries-old wisdom of various spiritual traditions that mindfulness of the body and specific body posture affect the state of mind of individuals and are important foundations for meditative and contemplative practice. This presentation will focus on studies on the role of the body and mindful body awareness in dysfunctional states of mind in depression. Moreover, effects of mindfulness-based cognitive therapy, an approach to prevent relapse in depression, on movement patterns will be presented. Finally, the concept of vital energy that is seen as a link between the body and the mind and as an essential basis for contemplative and meditative practice in different traditions (e.g., Qi in the Chinese Daoist and Buddhist tradition, Prana in the Indian Yoga tradition, Lüng in the Tibetan Tradition , Ruah in the Hebrew tradition and Spiritus Sanctus in the Christian tradition) will be discussed.

12.05 – 12.30

Body awareness and autonomic regulation: Assessment, changes induced by mental training, and future directions

*Boris Bornemann, Department of Social Neuroscience,
Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany*

Bodily changes and their perception are implicated in virtually all psychological processes, particularly in emotion. Contemplative traditions have long recognized the connections between bodily and mental processes and have devised practices that involve and cultivate certain types of body awareness. It is thus a straightforward prediction that contemplative practice will yield changes in the ways the body is perceived and regulated. In this presentation, I will describe methods to assess body awareness and regulation of the bodily (autonomic) nervous system. Using recent data from a large-scale longitudinal study, the ReSource Project, as well as previous work, I will illustrate which aspects of body awareness and autonomic regulation are affected by different types of contemplative practice and which are not. I will discuss the methodological challenges of finding appropriate measures to assess body awareness and the role of respiration which can be both an important influence on the autonomic nervous system and a confounding factor in its measurement. Finally, I will critically evaluate the current measurement procedures with regard to their capacity of capturing the transformations in mind-body interactions which contemplative practices may induce and propose directions for future development.

12:30 - 12:45

Perspectives on embodiment and the embodied mind in early Buddhist meditation

Diego Hangartner, Institute of Secular Ethics and Mental Balance, Zurich, Switzerland

The presentation will begin by briefly explaining the nature of the early Buddhist source material, followed by employing this material to cover three main topics:

- a) Negative perspectives on embodiment in early Buddhist meditation practice, exemplified in the contemplation of the anatomical parts of the body;
- b) Neutral perspectives on the body as evident in the development of mindfulness of the body in any of its postures;
- c) Positive perspectives on the embodied mind experienced during progress through the meditative absorptions, where the whole body is described as filled with intense bliss and happiness.

By way of conclusion, these three aspects will be shown to stand in a meaningful relationship to each other.

15.05–15.30

Expect yourself: The cybernetic Bayesian brain and embodied selfhood

*Anil K. Seth, Sackler Centre for Consciousness Science, School of Engineering and Informatics,
University of Sussex, Brighton*

The brain is not just a machine to think with, and the body is not just a machine to move with. We are “beast machines” with our mental lives deeply rooted in our physiology. The experience of being an embodied self rests on how the brain perceives its body, both from the outside (exteroception), and from the inside (interoception). I will summarize a view of embodied selfhood through the lens of ‘predictive processing’, by which perception is thought of as a process of probabilistic inference on the causes of sensory signals. At the heart of this view is a model of interoceptive inference which says that subjective feeling states (emotions) arise from actively inferred predictive models of the causes of interoceptive signals. The model also predicts that embodied selfhood is grounded in active inference of those signals “most likely to be me” across interoceptive and exteroceptive domains. I will present some evidence for this view, including a version of the ‘rubber hand illusion’ incorporating visual feedback of heartbeat signals via augmented reality. These ideas and findings bring new relevance to some old ideas in artificial intelligence, typically associated with cybernetics and predictive control, and they may also have implications for understanding various psychiatric conditions.

Seth, A.K. (2015). The cybernetic Bayesian brain: from interoceptive inference to sensorimotor contingencies. In Open MIND, eds. T. Metzinger & J. Windt. Frankfurt a.M., GER: MIND group (see <http://open-mind.net/>)

Seth, A.K. (2013). Interoceptive inference, emotion, and the embodied self. *Trends in Cognitive Sciences* 17(11):656-573



After graduating in 2009 from a French engineering school (École Centrale de Lyon), **Oussama Abdoun** obtained a PhD in neuroscience at University of Bordeaux where he carried out electrophysiological studies on animal brain development. After his PhD, he took two years off, part of which he dedicated to the study of buddhism and training in meditation. In 2015, he joined Antoine Lutz' group as PostDoc to apply some of the latest computational methods (network analysis, Bayesian modelling) on brain imaging data from expert meditators. He is also involved in MEG studies to investigate the effects of long-term contemplative practice on attention and consciousness.



Elena Antonova is a Lecturer in Experimental Psychology at the Institute of Psychiatry, Psychology and Neuroscience, King's College London. Her main research interest is the neuroscience of mindfulness, particularly structural and functional brain changes in long-term meditation practitioners from the Tibetan Buddhist traditions of Dzogchen and Mahamudra. She also has a keen interest in the philosophy of mind and the philosophy of neuroscience. Elena has been actively involved with the Mind and Life Institute, and co-organized the first two European Summer Research Institutes in Germany in 2014 and 2015. Her personal meditation practice is informed mainly by Dzogchen teachings. Elena has been learning about Dzogchen and taking practice instructions from Tsoknyi Rinpoche, whose retreats she has been attending for the last 8 years.



Ian Baker is a PhD candidate in Medical Anthropology at University College London and holds an M.A. in literature from Oxford University. He is the author of academic articles on physical cultivation and yogic practice in Tibetan Buddhism, including 'Embodying Enlightenment' (Asian Medicine: Tradition and Modernity, J.P. Brill) and 'Tibetan Yoga' (University of Vienna Press). He is also the author of seven books on Tibetan cultural history, environment, art, and medicine including *The Heart of the World*, *The Dalai Lama's Secret Temple: Tantric Wall Paintings from Tibet*, *The Tibetan Art of Healing*, *Celestial Gallery*, and the forthcoming *Tibetan Yoga: Secrets from the Source* (Thames & Hudson 2017). He was lead curator for Wellcome Collection's 2015 – 2016 exhibition of Himalayan art entitled 'Tibet's Secret Temple: Body, Mind and Meditation in Tantric Buddhism', to which he also contributed film and photography from the Himalayan region. He has also written for National Geographic Magazine on subjects pertaining to Tibet and the Himalayas and was named by National Geographic as one of seven 'Explorers for the Millennium'. He has been a student of Tibetan Buddhism since 1977 and has undertaken prolonged meditation retreats in the Himalayas under the guidance of Nyingma masters such as Dilgo Khyentse Rinpoche and Chatral Sangye Dorje Rinpoche.



Olaf Blanke is Founding Director of the Center for Neuroprosthetics and Bertarelli Foundation Chair in Cognitive Neuroprosthetics at the École Polytechnique Fédérale de Lausanne (EPFL). He also directs the Laboratory of Cognitive Neuroscience at EPFL and is Professor of Neurology at Geneva University Hospital and Geneva's new Campus Biotech. Olaf has made major contributions to the neuroscience of multisensory perception, embodiment and self-consciousness with broad impact beyond neuroscience, in psychology, philosophy, neurology and engineering. Most recently, he has pioneered the development of cognetics by integrating technologies from robotics, virtual reality, and neuroscience. His medical activities (cogniceuticals) are dedicated to the application of these neurotechnological breakthroughs to novel diagnostics and therapeutics in orthopaedic, neurological, psychiatric, and respiratory disease.



Thorsten Barnhofer is an Associate Professor at the Mood Disorders Centre, University of Exeter, where he conducts research into the use of mindfulness-based interventions for the prevention and treatment of mental disorders. He has been involved in research programs on the effects of Mindfulness-Based Cognitive Therapy (MBCT) in highly vulnerable patients, and has a particular interest in the investigation of the cognitive and neural mechanisms of action of mindfulness meditation.



Constanza Baquedano studied biochemistry and molecular biology. She is now a student of the Neuroscience PhD program at the Pontificia Universidad Católica de Chile, Santiago, Chile and Université Claude Bernard Lyon 1, Lyon, France. The PhD thesis she is working on entitled "Des-automatization through awareness: Electrophysiological correlates of meditative states and settings", directed by Antoine Lutz and Dr. Diego Cosmelli. Constanza's doctoral research's goal addresses meditation's capacity to de-automatize recurrent cognitive and neuronal patterns using a semantic expectations failure and an approach and avoidance paradigm. In order to do this, she uses both electrophysiological and first person methodologies. Her main interest is understanding how abstract qualities of cognition, such as mental constructs and subjective experience, are precisely transduced into the nervous system and the body. She strongly believes that the conjunction of first person and third person data are necessary to fully address these questions. In this sense, advanced meditators are an excellent model to implement neurophenomenological methodologies, in order to get a more complete description of the mind-body interaction phenomenon.



Aviva Berkovich-Ohana is a Neuroscientist and a Senior Lecturer, affiliated at the University of Haifa, Edmond J. Safra Brain Research Center, and Departments of Counseling and Human Development, as well as Learning, Instruction and Teacher Education. Major research interests of her lab include the effects of contemplative mental training on brain function and structure, cognition and self-reference, as well as the possible applications to the field of Education. To these ends, Aviva utilizes a broad spectrum of tools, including EEG, MEG, fMRI/MRI, and various cognitive tasks. Other major research interests include neuro-phenomenology in collaboration with proficient contemplative practitioners, as well as theoretical conceptualization of consciousness.



Boris Bornemann is a PhD candidate at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig, Germany. After completing his studies of psychology in Berlin and San Diego, he moved to Leipzig to support Tania Singer in preparing the ReSource Project, a large scale study on the effects of contemplative training. His scientific work mainly focuses on body awareness and regulation of the



Gaël Chételat is Director of Research at INSERM and responsible for a research team named "Multimodal neuroimaging in brain diseases" in Caen (Normandy, France). Gaël is particularly interested in assessing the relationships between the different neuroimaging modalities to further the understanding of the physiopathological processes of ageing and Alzheimer's disease. Her works combine structural and functional MRI with PET using different radiotracers in individuals ranging from cognitively intact young and older adults to patients at different stages including subjective cognitive decline (SCD) to demented patients. Her research team is also interested in the concepts of lifestyle, wellbeing and healthy ageing, which they approach in assessing the relationships between lifestyle factors and different neuroimaging markers of ageing and AD, in relation with cognition. They will also run intervention programs based on lifestyle modification to promote mental health and wellbeing in the ageing population. In particular, she will coordinate two large clinical studies on seniors (> 65 year old) in 2016 to investigate the impact of meditation training on ageing and well-being (H2020, Medit-ageing 2015-2020).



Maria Engström's academic training is within theoretical physics and mathematical modeling. From that background, she developed a strong interest in understanding complex systems, such as the brain. After initial training as a psychiatric nurse, she completed her PhD in Computational physics and is currently working as Professor in Medical Image Science at Linköping University in Sweden with research interest in functional magnetic resonance imaging (fMRI) in different clinical and theoretical projects and mathematical modeling of neurovascular couplings. Maria's interest in meditation and its effect on the brain is both personal, since she practices meditation regularly for more than 10 years, and professional, since she has been involved in (and now performing) functional imaging studies on meditation.



Tim Gard is a Research Fellow at the Institute for Complementary and Integrative Medicine and the Translational Neuroscience Unit of the ETH, University Hospital Zurich, and University of Zurich, Switzerland. His research focuses on the neural and psychological mechanisms of yoga and mindfulness meditation in a variety of contexts including pain, depression, education, and aging. Tim conducted his research at leading centers in these fields, including the Lazar Lab at Massachusetts General Hospital, Harvard Medical School, USA, the Tata Institute of Fundamental Research, India, and the Ott group at the Bender Institute of Neuroimaging in Gießen, Germany. Furthermore, Tim was trained in Mindfulness Based Stress Reduction and Mindfulness Based Cognitive Therapy at the Center for Mindfulness at the University of Massachusetts Medical School in Worcester, USA.



Diego Hangartner completed his studies in pharmacology at the ETH Zurich, specializing in psychopharmacology and addiction. His main interest is understanding the mind and the working of consciousness. He lived for 11 years in Dharamsala, India, learned Tibetan, and studied for 7 years at the Institute of Buddhist Dialectics. He has completed several retreats, worked as an interpreter, translating Tibetan into many languages, and published a few books. On returning to Europe in 2003, he taught widely, and organized several large events with His Holiness the Dalai Lama, such as his visits to Switzerland (2005) and Hamburg (2007), and participated in research aimed at exploring the benefits of meditation as a long-term practitioner. Diego is associated and worked with the Mind and Life Institute since the 1990's: He was Mind and Life's COO from 2009 – 2012 in the USA, co-founded Mind and Life Europe, and was its director until 2014. Moreover, Diego founded the "Institute of Secular Ethics and Mental Balance" (ISEMB), an interdisciplinary initiative, to develop and provide tools and programs that foster mental balance. Created and teaches "The Wheel of Mental Balance". Besides acting as the ISEMB's Founding Director, he is also the institute's principal teacher.



Philipp Kanske is a psychologist and neuroscientist currently working at the Department of Social Neuroscience at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig. His research interests center on emotion, how we regulate emotions and understand the emotions of others. Philipp uses neuroscience tools to investigate alterations of these processes in psychopathology and is interested in understanding their plasticity through mental training.



Anna-Lena Lumma did her undergraduate studies in Cognitive Science at the University of Osnabrück and received her BSc in 2010 and her MSc in 2012. During this time she developed an interest in Contemplative Science and subsequently started a PhD related to the topic in the Social Neuroscience Department at the Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany. The focus of her PhD is to investigate how different types of subjective perceptions change over the course of a longitudinal mental training study and elaborate how these changes are related to alterations in autonomic nervous activity and brain structure.



Antoine Lutz is a tenured scientist (Chargé de Recherche) at the Lyon Neuroscience Research Center (CNRL), INSERM, France. He did his PhD in cognitive sciences in Paris, France with Francisco Varela and his postdoctoral work with Richard Davidson at the University of Madison-Wisconsin. After working for ten years in the US as a research scientist, he joined the Lyon Neuroscience Research Center in France in January 2013. His research team focuses on investigating the neurophysiological basis of mindfulness and compassion meditations and their impact on consciousness, attention and emotion regulations, and pain perception as measured by cognitive, affective and social neuroimaging paradigms using EEG, MEG, intra-cortical EEG, and fMRI. His research is currently funded by an European ERC consolidator grant (Brain&Mindfulness, 2014-2019). He has also started to be engaged in an European consortium funded to study the impact of meditation on the ageing brain (Meditageing, H2020, 2016-2021).



Daniel S. Margulies leads the Neuroanatomy & Connectivity Research Group at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig, which investigates cortical organization by mapping patterns of connectivity using a variety of noninvasive methods. He previously worked at New York University and Humboldt University, and was awarded the Otto Hahn Medal for his doctoral dissertation in 2010.



Johannes Michalak is Professor for Clinical Psychology and Psychotherapy at the Witten/Herdecke University, Germany. He received his PhD in Psychology from the Ruhr-University Bochum, Germany, in 1999. From 2005 until 2006, he was Acting Professor at the University Heidelberg, Germany, and 2009 Visiting Professor at Queen's University Kingston in Canada. From 2011 until 2014, Johannes was Full Professor at the University of Hildesheim, Germany. His main research interests are Mindfulness-based Cognitive Therapy and embodiment in psychological disorders. For over 20 years he practices Zen meditation and Qi Gong.



Giuseppe Pagnoni is Associate Professor in the Department of Biomedical, Metabolic and Neural Sciences at the University of Modena and Reggio Emilia, Italy. After a Master in Physics, he completed a PhD in Neuroscience and has worked for several years in the Department of Psychiatry and Behavioral Sciences, at Emory University, Atlanta (GA), where he was involved in neuroimaging research on reward processing, neuropsychimmunology, social cognition, and intrinsic brain activity. With a personal interest in contemplative practices, he has conducted research on the neural and behavioral correlates of Zen meditation and is currently studying the processes underlying mental effort and the predictive coding view of brain function.



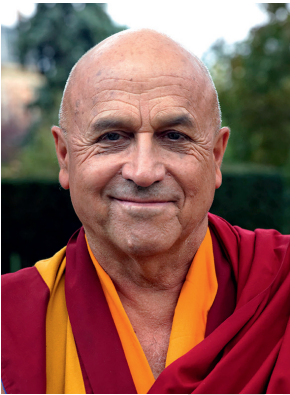
After studies in philosophy, and then ten years of consulting and research in information systems design, **Claire Petitmengin** completed a thesis under the direction of Francisco Varela at the École Polytechnique in Paris, on the subject of the lived experience which accompanies the emergence of an intuition. She is currently Professor at the Institut Mines-Télécom and member of the Archives Husserl (École Normale Supérieure) in Paris. Her research focuses on the usually unrecognized micro-dynamics of lived experience and “micro-phenomenological” methods enabling us to become aware of it and describe it. Claire studies the epistemological conditions of these methods as well as their educational, therapeutic, artistic and technological applications. Her research also addresses the process of mutual enrichment of micro-phenomenological and neural analyses in the context of neurophenomenological projects.



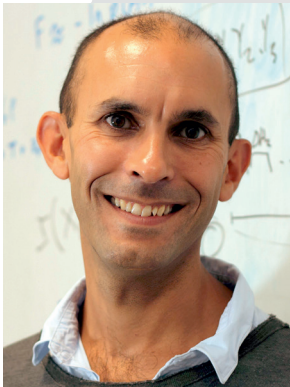
Olga Pollatos studied psychology and medicine at the Technical University of Berlin and the Ludwig Maximilian University (LMU) Munich. She completed her PhD thesis in psychology at the Department of Biological Psychology at the LMU. She was Assistant Professor in Biological Psychology and Neuroscience at the University of Munich as well as at the University of Nottingham from 2004-2008. In 2008, she received the “*Venia legendi*” in psychology. From 2008-2009, she worked as physician at the Neurology Department of the LMU. Her medical doctorate was accomplished in neuroradiology. Olga was appointed a Junior Professorship for emotion and motivation psychology from the University of Potsdam where she worked from 2009-2012. Since September 2012, she is Head of the Clinical & Health Psychology Department at the University of Ulm, Germany. Her main research interests are interoception, embodied cognition and emotion, and health variables in adults, children and pathological groups.



Marisa Przyrembel is a PostDoctoral Fellow at the Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany. Before, Marisa studied at the Université Paul Valéry Montpellier (France), at the Università degli Studi di Siena (Italy), and at the Universities of Erfurt and Jena, Germany, where she received two degrees: one in Philosophy and German Literature (2007), and one in Psychology (2008). Subsequently, she moved to the Center for Philosophy and Ethics of Science at the Institute of Philosophy at the Leibniz University Hannover, Germany. Based at the Berlin School of Mind and Brain, she earned her PhD in Philosophy of Mind at Humboldt University Berlin with honors in the interdisciplinary project called “The Brain – a Social Organ” in 2009. In 2012, she joined the Center for Subjectivity Research at the University of Copenhagen as a Visiting Researcher.



Matthieu Ricard is a Buddhist monk at Shechen Monastery in Nepal. He received a PhD in Cellular Genetics at the Institut Pasteur in France under Nobel Laureate Francois Jacob. He has lived in the Himalayas since 1972, studying with Kangyur Rinpoche and Dilgo Khyentse Rinpoche, two respected Tibetan spiritual masters. Since 1989, he served as French interpreter for His Holiness the Dalai Lama. He is the author of *The Monk and the Philosopher* (with his father, the French thinker Jean-Francois Revel), *The Quantum and the Lotus* (with the astrophysicist Trinh Xuan Thuan), *Happiness*, *A guide to Developing Life's Most Important Skill* and *Altruism: The Power of Compassion to Change Yourself and the World*. He has translated several books from Tibetan, including *The Life of Shabkar* and *The Heart of Compassion*. As a photographer, he has published several albums, including *The Spirit of Tibet*, *Buddhist Himalayas*, and *Motionless Journey*. Matthieu donates all proceeds from his books and much of his time to 140 humanitarian projects in Tibet, Nepal and India, through his charitable association Karuna-Shechen.



Anil K. Seth is Professor of Cognitive and Computational Neuroscience at the University of Sussex and Founding Co-Director of the Sackler Centre for Consciousness Science. He is Editor-in-Chief of *Neuroscience of Consciousness* (Oxford University Press) and was Conference Chair of the 16th Meeting of the Association for the Scientific Study of Consciousness (2012). He has published more than 100 academic papers in a variety of fields, and he holds degrees in Natural Sciences (Cambridge, 1994), Knowledge-Based Systems (Sussex, 1996) and Computer Science and Artificial Intelligence (Sussex, 2000). He was a PostDoctoral and Associate Fellow at the Neurosciences Institute in San Diego, California (2001-2006). Anil is Editor and Co-Author of *30 Second Brain* (Ivy Press, 2014), was Consultant for *Eye Benders* (Ivy Press, 2013; winner of the Royal Society Young People's Book Prize 2014) and contributes regularly to a variety of media including the *New Scientist*, *The Guardian*, and the BBC.



Tania Singer is the Director of the Department of Social Neuroscience at the Max Planck Institute (MPI) for Human Cognitive and Brain Sciences in Leipzig since 2010. After receiving her PhD in Psychology in 2000 at the MPI for Human Development in Berlin, she became a PostDoctoral Fellow at the Wellcome Department of Imaging Neuroscience and the Institute of Cognitive Neuroscience in London and later Full Professor of Social Neuroscience and Neuroeconomics at the University of Zurich. Her research focusses on the behavioral, neural, and hormonal basis of human social cognition and emotions and the motivational underpinnings of economic decision making. In the ReSource Project, a longitudinal study, she investigates the psychological and neuroscientific effects of mental training techniques. Tania has published her findings in many high-impact peer-reviewed journals.

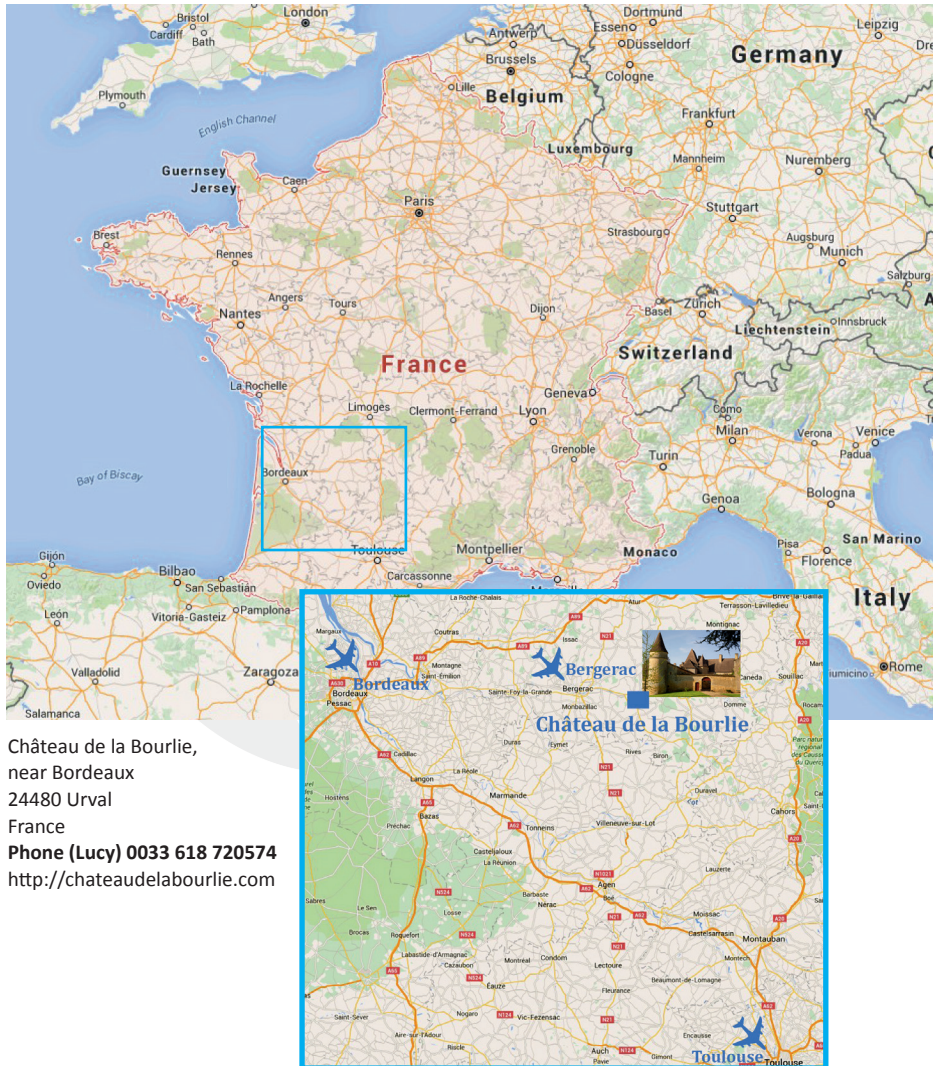


Fynn-Mathis Trautwein studied Psychology at the University of Technology in Dresden, conducting his final year research project on self-related processing in long-term meditators. Currently, he is a PhD student in the Department of Social Neuroscience at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig. Here he works within the ReSource project to investigate effects of mental training on behavioral and neural markers of attention, social affect, and social cognition.



How to get to the château?

The chateau can best be reached best by flying into the small airport called Bergerac Dordogne Périgord. The best alternative airport is Bordeaux-Mérignac. From there, it is probably most practical to share cars with participants who arrive at the same time (Nicole will be happy to put you in contact). Alternatively, you could take a bus or shuttle (see opposite page) to the train station Bordeaux St Jean from where the trains take you to the nearest train station Le Buisson in about 2.5 hours.

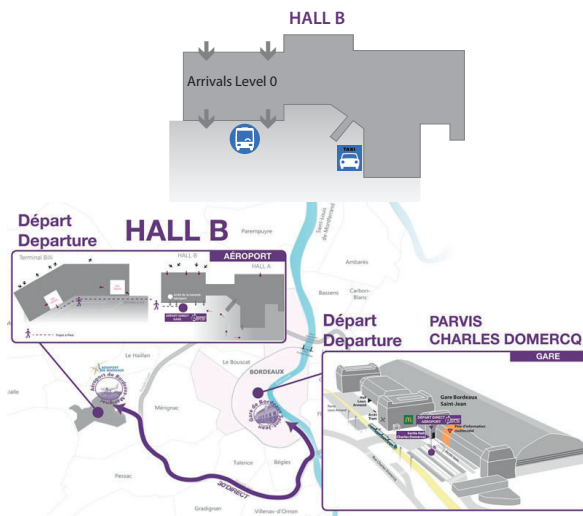


Château de la Bourlie,
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Phone (Lucy) 0033 618 720574
<http://chateaudelabourlie.com>

Transportation from Bordeaux airport to Bordeaux train station St Jean

- by TBC bus
 - <http://www.infotbc.com/ligne/1>
 - Buses of line 1+ depart every 10 minutes outside Hall B, Level 0, and takes about 40-60 minutes



- by Navette 30'Direct shuttle
 - <http://navetteaeroport-bordeaux.com/en/bordeaux-airport-shuttle/>
 - Shuttle buses depart every hour at exit 11 (also outside Hall B, Level 0) and take you within 30 minutes directly to the station (in normal traffic conditions)
- by taxi: 30-50 € (one way)

Train connections between Bordeaux St Jean / Bergerac and Le Buisson

Monday, June 6		Friday, June 10	
Bergerac->Le Buisson	Bordeaux->Le Buisson	Le Buisson->Bergerac	Le Buisson->Bordeaux
11:32-12:16	08:05-10:17*	06:41-07:28	06:41-08:55*
15:32-16:17	08:40-12:16	07:37-08:29	07:37-09:55*
17:29-18:19	09:47-12:42	09:38-10:29	08:53-11:27
	11:00-13:19	11:36-12:26	09:38-11:55*
	12:34-15:35	15:35-16:29	11:36-13:55*
	14:05-16:17*	17:36-18:29	12:43-15:28
	16:05-18:19*	19:38-20:38	13:20-16:37
	16:34-19:20		15:35-17:55*
	17:35-20:01		15:39-19:27
	18:05-20:17*		17:36-19:55*

* = Direct trains without changes

See also: <http://www.thetrainline-europe.com/plan/bordeaux-st-jean-to-le-buisson>



ENCECON Workshop

6-10 June 2016
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