18th Herbstakademie

THE CIRCULARITY OF MIND AND BODY

MARCH 26th – 28th, 2015
in Heidelberg, Germany

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A copy of the complete conference booklet will be available for each participant at the conference.

You thus do not need to print out this extract.

PROGRAM

Wednesday March 25th	**Thursday March 26th**
from 13.30 Registration Neue Universität Universitätsplatz, 69117 Heidelberg and Institut für Medizinische Psychologie, Bergheimer Str. 20, 69155 Heidelberg	**8.15 Registration** (Foyer) Neue Universität, 2nd floor, Universitätsplatz, 69117 Heidelberg **9.00-9.15 Welcome address** (HS 14) **9.15-10.15 Haken** (HS 14) 10.15-10.45 Coffee break **10.45-11.45 Friston** (HS 14) **11.45-12.45 Kelso** (HS 14)
14.00-18.00 ***Pre-conference workshops*** ***I. Thomas Heidenreich:*** *Embodiment in mindfulness-based interventions* Neue Universität, Senatssaal, Universitätsplatz, 69117 Heidelberg ***II. Miriam Kyselo:*** *Enacting the Self - A Bodily Exploration of Self with Others* Institut für Medizinische Psychologie, Bergheimer Str. 20, 69155 Heidelberg	12.45 – 14.00 *Lunch* 14.00-15.20 Parallel sessions **Session 1a - Dynamic Systems** (HS 14) (Bruineberg & Rietveld / Ciompi / Frank / Knyatzeva) **Session 1b - Brain, Free Will** (HS 15) (Tretter / Schmidt, Jo, Wittmann & Hinterberger / Limanowski & Blankenburg / Krüger) Coffee break 15.45 – 16.55 **Poster sessions** **Session A** (Senatssaal) **Session B** (Hallway HS 15)
from 20.30 **Informal Get-Together** (Marstall Mensa, Neckarstaden, Heidelberg)	17.00 - 18.20 Parallel sessions **Session 2a - Self-Organization, Gestalt** (HS 14) (Rentschler, Jüttner, Gschwind & Caelli / Fürstenau / Portugali & Haken / Schnädelbach) **Session 2b - Social Psychology** (HS 15) (Topolinski / Böcker & Topolinski / Böger / Koole)

Friday March 27th

8.15 – 9.00 **BodyMind Wake-Up**
Berg (Senatssaal), Hartmann (NN)

Neue Universität, Universitätsplatz, Heidelberg

9.15-10.15 Boker (HS 14)

10.15-10.45 Coffee Break

10.45-11.45 Eberhard-Kaechele (HS 14)

11.45 – 13.20 *Lunch break*

13.20-14.40 Parallel sessions

Session 3a – Interoception, Body Awareness (HS 14)
(Herbert / Claxton / Schumann / Schlinkert, Tops, Baumann & Koole)

Session 3b – Mind and Matter, Philosophy (HS 15)
(Prentner / Scholl / Tewes)

Coffee break

15.10-16.30 Parallel sessions

Session 4a - Embodied Therapies (HS 14)
(Biryukova, Borodzina & Morazova / Schmid & Mössler / Samaritter / Laroche)

Session 4b – Anthropology, Embodied Culture (HS 15)
(Froese / Kimmel / Celis / Nyuli)

Break

16.50 - 17.50 Parallel Sessions

Session 5a - Body Practice (HS 14)
(Luger, Irran & Kimmel / Russell / Weigl)

Session 5b – Psychotherapy (HS 15)
(Tschacher / Encinas / Widdra)

20.30 – 00.30 **Evening program and conference party**
Institut für Medizinische Psychologie
Bergheimer Str. 20, 69155 Heidelberg

Saturday March 28th

8.15 – 9.00 **BodyMind Wake-Up**
Guerreiro (Senatssaal), Adiarte (NN)

Neue Universität, Universitätsplatz, Heidelberg

9.15-10.35 Parallel sessions

Session 6a – Embodied Therapies II (HS 14)
(Tortora / Fischman / Vermes / Koch)

Session 6b – Phenomenology (HS 15)
(Durt / Lukas / Dibitonto / Fuchs)

Coffee break

11.00-11.45 Di Paolo (HS 14)

11.45-12.30 Solms (HS 14)

Final discussion (End by 13.00)

15.00-18.00

Post-conference workshops

I. Suzi Tortora: Dancing Dialogue

Neue Universität, Senatssaal
Universitätsplatz, 69117 Heidelberg

II. Diana Fischman: Metapatterns in Movement

SRH University Heidelberg, Maria-Probst-Str. 3, 69123 Heidelberg

ABSTRACTS – ORAL PRESENTATIONS

(in alphabetical order)

Irina BIRYUKOVA, Tatiana BOROZDINA, Julia MOROZOVA, St. Petersburg (Russia)

Too see it before it appears: Movement repertoire assessment as an instrument of early (pre-clinical) diagnostics of alcohol addiction

Body-Mind interrelatedness and interconnectedness are the basic assumptions of Dance/Movement Therapy approach and we DMTs tend to take it for granted. However, it remains relevant to search for evidence of these premises.

Echoing Spinoza's notion of body and mind as parallel manifestations of the same substance, Iliyenkov (1984) says that body and mind have relationship not of cause and effect but of organ and its functioning. Thinking body is a moving body, which correlates with Damasio's notion on the grounding mental processes in the brain's mappings of the body (Damasio, 2003). Russian neurologist N.A. Bernstein, whose work on movement is still waiting for its rethinking in the light of the latest findings of neuroscience, described the unit of behavioral reality as "live movement" which is "wise" and "sighted" and psychologically described – meaningful and insightful reflection of perceived reality. The "mind" of this movement is inseparable and can exist and work only within and with the movement itself (Bernstein, 1947, 1966).

Inspired by this idea we explore ways of measuring the movement repertoire, an authentically mastered movement profile, as a manifestation of the thinking body with different populations. Developing such an assessment tool we used a body sensation self-observation questionnaire and a movement assessment tool based on LMA together with psychological tests (Michigan alcohol screening test, self-attitude questionnaire, reflexivity scale).

By comparative analysis of the movement repertoire of patients with alcohol addiction and clinically healthy people we have found a consistent correlation between the introspective bodily self-experience of patients with alcohol addictions and observable movement patterns. Both describe the "empty center", "chaotic periphery" and general experience of fragmentation, which is similar to the clinical description of alcoholic personality. In the presentation further perspectives of developing and application of this assessment tool will be discussed.

Lea BOECKER & Sascha TOPOLONSKI, Cologne (Germany)

Language wanders inwards

Two of the most ubiquitous human motor behaviors are related to oral movements, namely ingestion and language. To articulate different consonants (e.g., B or K) the tongue and lips are pressed against various spots in the mouth (e.g., lips, palate and rear). Topolinski et al. (2014) found that words that feature consonantal stricture spots wandering from the lips to the rear of the mouth, this is, inwards (e.g., BENOKA) are liked more than words with outward wanderings (e.g., KENOBA). To explain this preference we tested the hypothesis that language itself features articulation inward dynamics more frequently, presumably because this direction is similar to positive ingestion movements (e.g., swallowing instead of spitting). Thus, inward-words feel more familiar than outward-words, as inward moving dynamics are better trained, which in turn triggers positive affect. To test this idea we analyzed the 10.000 most frequently used words in English, German, and Spanish. We developed a computer software analyzing inward-outward dynamics in words following the International Phonetic Alphabet. An Index is computed describing the Inward-Outward factor of a word ranging between – 1 (outward), 0 (no direction) and + 1 (inward). For instance, in the word STOP, there are two transitions between consonants, S~T (no wandering, 0), T~P (outward wandering, – 1), resulting in an index of – 0.50. In the word MISTAKE, there are three transitions, between consonants, M~S (inward wandering, + 1), S~T (no wandering, 0) andT~K (inward wandering, + 1), resulting in an index of 0.67. Analyses revealed that in fact language shows a systematic wandering of consonantal stricture spots, namely inwards. It will be tested whether this inward tendency also shows up in non-Indo-European languages as Hungarian. Present findings stimulate the ongoing debate on language evolution by demonstrating a close link between verbal articulation and ingestion dynamics.

Claudia BÖGER, Regensburg (Germany)

Shared situations in sport and intersubjectivity in groups - Intersubjectivity, phenomenal structures, and shared situations

Can we successfully learn a movement by passively observing a video? Or do we have to bodily execute a movement in order to comprehend the meaning that is contained in it. A necessary condition for inclusion of meaning in movement is its symbolic (Metheny 1968, Cassirer 1964, Langer 1942/1980) and structural grounding. Meaning is available as an unconscious action-guiding structure (Böger 2006) and the symbolic structure is activated only via real-world experience (Danzig/Pecher/Zeelenberg/Barsalou 2007). This means that the source of meaning consists of (a) pattern of one's own movement and (b)

the effect that these movements have on the body. Metheny (1968) illustrates the overlapping between the shared situation and the intersubjective action within the groups of subjects executing sport. Intersubjectivity is further considered as a complex phenomenon that can be both perceived and understood by several participants, which in turn is also bound to the embodiment referring to those experiences concerning movement of a single person or in a group. Embodied thinking is important not only for individual learning of movements, but also for the learning of movements in groups. Effects of embodied structures in learning the butterfly-undulation (Böger 2013) show that the self of a learning person and the others are interrelated in shared situations. A final question arising from this research: to what extent are meanings (as action-guiding structures) recognizable within groups and to what extend they can be further differentiated (Barsalou 2003, Tuncel 2012, Nepper Larsen 2012)?

Steven M. BOKER, Charlottesville (USA)

Circularity and Embodiment: The Communication of Emotion in Facial Expressions

When we speak with one another in face to face conversation, we often communicate emotions using facial expressions. The expressions of one person are often mirrored in the other person's face. This embodied circularity of emotional feedback has been tied to perceptions of empathy. As we reflect each other's expressions, we come to understand how we ourselves feel and how we feel about the person with whom we are speaking. The current talk takes this circularity seriously and asks exactly how are facial expressions represented into semantics of emotion which we can verbally express. Recent work by the authors has shown that, using principal components, facial expressions in video can be tracked and reduced to a low (8 - 12) dimensional space, then redisplayed as computer generated animation such that naive participants believe it is unaltered video. Using thin-slice (5 second) videos from real videoconference conversations, we have identified an 8 dimensional semantic space of emotion words that exhibits factor invariance across stimuli and samples of participants. This presentation demonstrates a multivariate transformation that creates a frame-by-frame mapping between components tracked from faces in videoconference conversations and the eight dimensional latent emotional semantic space. Since this method involves a compression of information that simultaneously represents features of faces and semantics of emotion, the mapping may provide insight into the way that emotional facial expressions are dynamically perceived and processed by the brain during everyday interactions.

Jelle BRUINEBERG & Erik RIETVELD, Amsterdam (Netherlands)

Self-organization, free energy minimization and optimal grip on a field of affordances

We will integrate our own previous work on Skilled Intentionality with recent work on the Free Energy Principle (Friston, 2010), gradient dynamics (Tschacher and Haken, 2007) and metastable dynamics in the brain-body-environment system (Hristovski et al., 2009; cf. Kelso, 2012). This allows us to link findings at different levels of analysis: phenomenology, ecological psychology, and neurodynamics. Phenomenologically, much of our encounters with the world can be described as minimizing a felt tension or deviation from an optimum. In previous work, we have characterized Skilled Intentionality as the organism's tendency toward an optimal grip on multiple relevant affordances simultaneously (Rietveld, 2008a/b; 2013). Affordances are possibilities for action provided by the environment. On a sub-personal level of analysis, acting by minimizing a tension between organism and environment ties in with recent accounts of gradient dynamics and active inference. We think the Free Energy Principle should be understood as specifying the minimization of disattunement between organism and environment. Thus amended, this principle is helpful for understanding the embeddedness of neurodynamics within the dynamics of the system "brain-body-landscape of affordances." Next, we show how we can use this adjusted principle to understand the neurodynamics of selective openness to the environment: interacting action-readiness patterns at multiple timescales contribute to the organism's selective openness to relevant affordances. Our integrative picture then links the different levels of analysis. In the final part of the paper, we emphasize the important role of metastable dynamics in both the brain and the brain-body-environment system for adequate affordance-responsiveness. We exemplify our integrative approach by presenting research on the impact of Deep Brain Stimulation on affordance responsiveness of OCD patients.

Patricia CELIS BANEGAS, La Plata (Argentina)

Co-adaptation in cultural contact: from entities to circular processes

Migration movements are inherent to human beings. Migration phenomena, either individual or large scale, are multicausal (emotional, political, religious, economic and educational factors, among others, account for them). Nowadays human groups are interconnected beyond the limits of their cultures of origin.

The concept of acculturation is understood as the mutual process of cultural and psychological changes, which take place as the result of the contact

between two or more cultural groups and their members. Socially, it implies changes in the social structure, in institutions and in cultural practices. Individually, it implies changes in people's behavioral repertoire, which include physical, biological and psychological changes, as well as new relationships.

The points of view, disciplines, models and theories proposed to study the migration process are varied, and there is no agreement when classifications of lines of work are made; in some cases they are made according to attitude, behavior and impact on welfare (Sabatier & Berry, 1996); in other cases they are divided between those who work on culture learning, and those who focus on stress and coping processes (Berry, 2005; Ward & Kennedy, 1993). Lastly, on other occasions, a classification is made in accordance with the difficulty it generates: cultural learning, culture shock or acculturation stress, and psychopathology (Berry, 1997, 2005).

These models also consider the fact that in every cultural contact there are separate entities which influence each other. The emphasis is placed on the new group adaptation but the receiving group is usually forgotten.

Our proposal is to work on the eco-adaptation concept which generates new frameworks of interpretation and meaning, where local and global changes occur; these changes imply the modification of values, points of view, emotions and our daily experiences as a whole.

Luc CIOMPI, Belmont-sur Lausanne (Switzerland)

Nonlinear effects of emotional energies in the dynamics of schizophrenia

According to the theory of affect-logic (Ciompi 1988, 1997, 2014), so-called basic emotions correspond to psychophysical energies, or evolutionarily acquired situation-dependent patterns of energy consumption. Emotion and cognition interact inseparably in all psychosocial processes. Habitual patterns of feeling, thinking and behaving (e.g. the "normal behaviour" in a given situation) can be understood as dynamic systems whose structure is mediated by cognitive distinctions, whilst their dynamics are mediated by emotions.

This conceptualisation allows the application of central notions of dynamic systems theory on all kinds of psychosocial processes. According to Haken's synergetics, critically increasing energetic tensions in dynamic systems lead to nonlinear phase transitions into globally modified patterns of functioning. Analoguous phenomena can be observed in psychosocial systems, e.g. at the sudden outbreak of violence, panic or revolution under the effect of rising emotional tensions. Religious conversions or brain washing techniques, too, are based on similar mechanisms. In specifically vulnerable persons, oversized emotional tensions can provoke a sudden bifurcation from normal into psychotic patterns of feeling, thinking and behaving. This emotion-energetically

based understanding of the outbreak of schizophrenic psychoses has important therapeutic implications which are shortly outlined in the lecture.

Guy CLAXTON, Horsham (United Kingdom)

Welling Up: The Embodied Microgenesis of Act and Thought

Metaphors for consciousness, whether overt or implicit, powerfully drive both theoretical and empirical research. The idea that consciousness is a 'place' in the mind where mental contents can be 'seen', for example, carries the assumption that the same 'contents' of the mind may be either 'unconscious ('inactive', 'unilluminated') or 'in' consciousness ('active', 'spot-lit'). The problems associated with this view are eliminated if we start from a different metaphorical standpoint: that all actions and perceptions start as embodied 'seeds' or 'springs' that progressively 'unfurl' or 'well up', gathering form and differentiation as they go. At some point in this unfurling, neurochemical circuitry may begin to be recruited that brings with it the glimmerings of conscious awareness. Under certain conditions of internal coherence and intensity, these conscious accompaniments of complex, resonant brain-body states may become sharper and more 'intentional'. The rate and complexity of these processes of microgenesis vary as a result of experience, as do their psychological and somatic ingredients.

Habits of attentiveness or sensitivity to these unfolding patterns can also vary. Insensitivity to the earlier, less differentiated stages of an unfolding creates the experience of things 'popping into one's head' fully formed, and thus bolsters the illusion of consciousness as the 'work-space' of the mind. This insensitivity can also mask the addition, to the unfurling experience, of elements that are plausible, familiar or 'believed', and thus 'reality' becomes either enriched or contaminated, depending on the validity and appropriateness of the belief. When the status of these additives is unrecognised, they can cause a good deal of mischief – what Buddhism refers to as *dhukkha*.

Various practices exist that are aimed at adjusting these potentially dysfunctional habits of (in)attentiveness. In this presentation I shall consider mindfulness practice and a therapeutic technique called focusing as example and suggest how each can have a beneficial effect on well-being and peace of mind.

Daria DIBITONTO, Vercelli (Italy)

Breakdown in Circularity of Mind and Brain: Disembodiment, Schizophrenia and the Role of Imagination

Psychopathology of schizophrenia is presented as a core issue of enactive theory when confronted by breakdowns in circularity of mind and brain: the core disturbance of schizophrenia has been indeed recently identified with disembodiment, as lack, or weakening, of sensory-motor self-awareness, experienced as lack of the sense of mineness, i.e. the immediate, tacit awareness of being *me*, in *my body*, who is perceiving, sensing, moving, and thinking (Sass, Parnas 2003; Stanghellini 2004; Fuchs 2005 and 2013; Fuchs & Schlimme 2009; Parnas 2011). Schizophrenia amounts then to a radical, and paradigmatic experience of breakdown in circularity of mind and body, attesting the centrality of the sense of mineness, taken to be the core dimension of the so-called 'minimal self' (Gallagher, 2000; Zahavi, 2005; Cermolacce, Naudin, & Parnas, 2007), for such circularity to be possible. Firstly, I aim then to show how enactivism and psychopathology of schizophrenia complement each other, in so far as (a) enactivism provides an illuminating interpretative framework for understanding experiences of schizophrenia, and (b) work on the phenomenology of schizophrenia constitutes evidence for enactivism.

The second part of my oral presentation aims to discuss the psychopathological problem of the transition from prodromal disembodiment to acute schizophrenic symptoms like hallucinations and delusions (Stanghellini 2004; Fuchs 2013). Assuming the premises of phenomenological psychology of imagination (Sartre 1940) it is possible to explain this transition and to conceive schizophrenic delusion as reified imaginings unchallengeable by perception (Dibitonto 2014). Imagination emerges in this perspective as the crucial faculty to freely suspend, or bracket, the circularity of mind and body, inasmuch as imagination accounts for the freedom of consciousness from its corporeality as well as from its environment, what get lost in schizophrenic delusion. Imagination shall be integrated in enactive theory as pivotal point of human freedom, funding our possibility to bracket and to suspend a perceptually experienced, meaningful reality.

Ezequiel DI PAOLO, San Sebastiàn (Spain)

Interactive time-travel: An enactive view on intentions and the possibility of their intersubjective retroactive modulation

The temporality of intentions and actions in situations of social interaction can sometimes be paradoxical. I argue that in these situations it may sometimes be possible to conceive of individual acts that can, in a strong sense, be intended retroactively. This can happen when the relational patterns in social interaction literally alter the virtual structure of a participant's past corporeal intentions resulting in an odd experience of having intended something all along without knowing it. I propose that this possibility should be interpreted as more than just a narrowly epistemic phenomenon. Examining this claim involves clarifying the enactive perspective on intentionality, which I do here. The enactive approach rejects the model of a causal relation between intention and action for one of an intrinsic qualitative relation between the two as facets of sense-making. I develop this idea and compare it with Merleau-Ponty's Fundierung model of the mutual relation between corporeal and reflexive intentionality to show that co-regulated moves/affections during social interaction may modulate both arcs of this relation, creating the possibility of a re-signification that alters not the actuality but the virtual tendencies that preceded the social act.

Christoph DURT, Heidelberg (Germany)

The Brain and the Cultural World

In spite of the increasing dialogue between analytic and phenomenological philosophers, there remains a fundamental disagreement with regard to the role of representation in the study of consciousness and the brain. Both traditions widely recognize that consciousness is intentional; it is always about something, regardless of whether the things it is about exist or not. But from this, early modern philosophers concluded that consciousness is the awareness of mental entities (representations) that either correctly represent objects, their properties, or their relations in the world, or fail to do so. Contemporary analytic philosophers of mind continue and even radicalize representationalism with the claim that all consciousness is only contingently about things in the world (cf. Chalmers, 2004, Metzinger, 2006). Phenomenology, in contrast, has traditionally explained intentionality in a non-representationalistic fashion (cf. Moran, 2013c) and continues doing so (cf. Zahavi, 2011).

After showing the difference between the two accounts of the intentional directedness of consciousness with regard to representationalism, I will analyse how the founder of phenomenology, Edmund Husserl, dealt with this

issue. According to Husserl, consciousness does not only stand in one relation (representation) to reality or the brain, but there is a manifold of different intentional relations, such as perception, sensation, emotion, understanding, deliberating, doubting, intending, calculating, and judging. Consciousness presents us with features of the world that stand in a co-present horizon with other possible conscious acts that are ultimately directed to cultural reality. I explain that under this account brain states by themselves do not represent at all, but do so only when they are related to the culturally shared reality.

Marianne EBERHARD-KAECHELE, Köln (Germany)

Clinical Applications of the Circularity of Body and Mind

This talk will center on the question of how clinicians and psychotherapists can incorporate principles of embodiment into their work. Drawing on thirty years of clinical experience, examples of body/dance psychotherapeutic interventions which capitalize on the circularity of body and mind will be presented. These interventions pertain to a wide spectrum of embodiment concepts such as conceptual metaphor; enactment; the role of physiognomy, acute states and situations in learning and memory processes; partial simulation; priming mirroring, and of course emotion, to name just a few. Attempts to use the body to change the mind, or to use the mind to change the body often dissolve in the circularity of the process. For this reason critical as well as advantageous aspects of circularity will be discussed.

Enrique ENCINAS, Kolding (Denmark)

Mining Meaning in Mania and Depression: Material Objects Supporting Conversation in Patients Diagnosed with Depression.

Depression is arguably one of the most pressing health concerns of our time. Contemporary psychiatry and the pharmaceutical industry firmly hold that chemical imbalances are the cause of mental disorders, a “neuroreductionistic” paradigm that undermines a patient´s subjective experience and the healing possibilities of sense-making, crippling their ability to battle everyday problems as “existential tasks they must face” (Fuchs, 2012). As an alternative to crude scientific explanations, support groups appear to be enormously beneficial by providing meaning and insight on a conversational basis. Conversation in this setting, nevertheless, involves the straightforward verbalization of meaning, which can prove elusive to achieve especially when the notions to convey are abstract or lie behind a complex emotional curtain (as it is the case when depression is experienced).

Tangible materials might prove extremely valuable in this regard. How physical interaction with different elements (objects, artefacts or mere materials) renders rich outcomes when deployed in conversational settings has been widely debated and unexpected and cherished insights have been found to emerge and contribute to novel business and design ideas (Mitchell et al. 2010; Ehn et al. 1991). However, how can tangibility and materiality help patients in conveying verbally fruitful insights (for other patients, doctors or relatives) is a topic yet to be addressed.

This paper studies how material objects appear to aid patients in overcoming communicative hurdles imposed by depression (fear, hopelessness, indecision, confusion, etc.) and how the manipulation of physical objects allow problems to be solved easier than through strict mental computation because the cognitive load is distributed between the body, the brain and the different material components of the environment (Clark 1997), a phenomena referred to as “Cognitive Scaffolding”.

The study of material objects and their ability to prompt social interaction offers a rich new perspective on how patients co-construct meaning about their subjective experience of illness. Based on qualitative studies (on patients’ material representation of aspects of their illness during workshops), I argue that objects can behave as "patients’ advocates" facilitating oblique paths of thought and inspiration thereby nourishing the group and themselves with valuable, healing insights.

Diana FISCHMAN, Buenos Aires (Argentina)

Transcontextual Metapatterns in Dance/Movement Therapy

Humans and other species, with whom we share our environment, move. This is a sign of their essential vitality. Living systems design movement schemes, “dances” in space, which correspond to different modes of life and interaction between congeners as well as among individuals of diverse species. We observe recursive micro, macro, and metapatterns which compose organic choreographies, some of which fade and others that persist by being treasured, consciously and unconsciously, by the collectives.

Pattern is a concept that crosses the diversity of fields of knowledge, since in all areas we can find structures that are repeated recursively, manifesting themselves as shapes or processes of organic or inorganic elements, cultural or artistic productions, natural phenomena, mathematic or aesthetics functions. It is a concept impregnated on objects and world practices as well as in the observer’s perceptual skills.

Bateson (1979) adopted the term *Metapatterns* to refer to connections among all that exists and is perceived. His disciple, the environmentalist Tylor Volk

(1995) discribes them as extensive transcontextual patterns of patterns that can be seen in the entire spectrum of phenomena. Those metapatterns are not mere repetitions but recursive functional shapes that bring an advantage for life preservation. Metapatterns have meaningful connections and a high level of generalization.
In Dance Movement Therapy, Clare Schmais (1970, 1985, 1998) described choreographies observed in human groups. These movements such as forming circles, lines in parallel, rows, and spirals contain intrinsic meaning.
This presentation will relate metapatterns, image schemata (Johnson & Lakoff, 1980; Damasio, 2000), movement patterns, and metaphor as structures that underlie our possibility of embodied understanding. Metapatterns operate in understanding group dynamics, evaluation, and therapeutic interventions in Dance Movement Therapy groups.

Till FRANK, Storrs (USA)

Extended Synergetics and Applications in Perception, Clinical Psychology and Physical Intelligence

Synergetics is a theory of pattern formation and self-organization founded by Haken (1978) with a focus on the evolution equations of certain pattern amplitudes, called order parameters. In line with suggestions by Ditzinger and Haken (1989) and Tschacher and Haken (2007), the talk focuses on patterns that emerge due to self-organization but act back on the circumstances that supported their emergence in the first place. Mathematically speaking, such systems exhibit not only an order parameter dynamics but also a system parameter dynamics. The two dynamical systems mutually affect each other and give rise to an “extended” synergetic system. This framework is tailored to address situations in which behavior affects cognition and feelings and vice versa cognitive processes and emotional states give rise to behavioral patterns. Examples of applications of extended synergetics will be given in the field of perception, clinical psychology and physical intelligence. In particular, experimental and theoretical work will be presented on hysteretic transitions in a perceptual-behavioral decision-making task (Lopresti-Goodman et al., 2013) and rituals under obsessive-compulsive-disorder (OCD) (Frank, in press). In the former case, it has been found that the hysteretic transitions in decision making are qualitatively different when the body component (behavioral component) is part of the decision-making task or is removed from the task. In the latter case, a theoretical framework is presented to study how the distress feeling of an OCD patient induces and is resolved by the actions comprising an OCD ritual.

Karl FRISTON, London (UK)

Conscious and unconscious inference

How much about our interaction with – and experience of – our world can be deduced from basic principles? This talk reviews recent attempts to understand the self-organised behaviour of embodied agents, like ourselves, as satisfying basic imperatives for sustained exchanges with the environment. In brief, one simple driving force appears to explain many aspects of action and perception. This driving force is the minimisation of surprise or prediction error. In the context of perception, this corresponds to Bayes-optimal predictive coding that suppresses exteroceptive prediction errors. In the context of action, motor reflexes can be seen as suppressing proprioceptive prediction errors. We will look at some of the phenomena that emerge from this scheme, such as hierarchical message passing in the brain and the ensuing perceptual (unconscious) inference. My special focus will be the nature of prior beliefs that underlie our (conscious) sampling of the world to resolve uncertainty.

Tom FROESE, Mexico City (Mexico)

Investigations of the interactively extended embodied mind: Dynamics, phenomenology, and development

I will present the latest results deriving from many years of interdisciplinary investigations of the socially extended embodied mind. The upshot is that the process of understanding another person is best studied as primarily consisting of a direct perceptual experience of each other, whereby this genuinely second-person perspective is co-constituted by the skillful mutual coordination of bodily interaction. There are many theoretical reasons for accepting this position, and a series of agent-based models of bodily interaction show that the emergence of a dynamically extended embodiment spanning two agents is possible in principle. In fact, the mathematics of nonlinear interactions leads us to expect that such mutual incorporation should be found in actuality. But can it? We studied this possibility by means of the perceptual crossing paradigm, in which the embodied interaction of pairs of adults is mediated by a minimalist virtual reality interface. As predicted, behaviors became entrained during interaction, and there was a positive correlation between objective measures of coordination and subjective reports of clearer awareness of the other's presence. Intriguingly, there was a tendency for coordinating participants to independently report within seconds of each other that they had noticed the other, suggesting that there was a mutual recognition of a genuinely shared experience. But was this moment experienced from a second-person

perspective? And if so, did it develop as a skill? To answer these questions we performed a qualitative study of free-text phenomenological descriptions of the moment of recognition, as well as a diachronic analysis of the results. Since participants had to implicitly relearn how to perceive the other's presence, we hypothesized that there would be a recapitulation of the initial developmental stages of social awareness, starting with more dyadic forms of self-directedness. Our preliminary results indicate that this was indeed the case.

Thomas FUCHS, Heidelberg (Germany)

The circularity of subject-body and object-body

From an embodied and enactive point of view, the mind-body problem has been reformulated as the relation of the *lived* or *subject-body* on the one hand, and the *physiological* or *object-body* on the other ("body-body problem", Thompson 2007). Subjectivity is regarded as essentially bodily, that means, the body is not just the vehicle but the very source and medium of a subject's relation to the world. The problem of how lived bodily experience and the physiological body are intertwined without establishing another dualism may then be conceived as a *circularity of process and structure* in the following way: Each bodily experience or behaviour finds its sedimentation in the highly plastic neuronal memory of the developing organism, and from this sedimented experience, in turn, a changed experience and behaviour arises. In the course of time, this results in a spiral-shaped developmental series: Lived body and organic body mutually influence and modify each other. Interactive experiences become organic dispositions, habits and interaction schemes which, on their part, enable new forms of experience. The dialectics of *Leib* and *Körper* thus unfolds in time and becomes the dynamics of lived (present) and sedimented (past) experience, or of process and structure mutually turning into each other – which is precisely what we call *learning and development*.

Norbert FÜRSTENAU, Braunschweig (Germany)

Simulating Bistable Perception with Interrupted Ambiguous Stimulus using Self-Oscillator Dynamics with Percept Choice Bifurcation

A behavioral stochastic self-oscillator model with perception-attention coupling and re-entrant cognitive processing is used for simulating interrupted ambiguous stimulus induced percept reversals. The results provide further support for a dynamical systems foundation of cognitive and psychological problems as discussed in detail within the context of Gestalt psychology, and for coordination dynamics of the brain. Periodic stimulus–off switching ($t_{off} < 1$

s, t_{on} = 300 ms) was introduced by Orbach et al. (1966) as experimental paradigm to get more insight into the underlying perceptual dynamics. Their Necker cube experiments showed a maximum of the percept reversal rate R at $R_{max} \approx 36\ min^{-1}$ and $t_{off} \approx 200$ ms which was confirmed by recent experiments. Noest et al. (2007) demonstrated with a low level neural activation model that a bifurcation of the percept choice dynamics during the ambiguous-stimulus on-off switching dominates the statistics of the reversal time series. Our simulations based on a macroscopic (behavioral) nonlinear dynamics model (similar to Ditzinger & Haken, 1989) support this finding. They show that the measured R vs. t_{off}-time characteristics can be fitted with only a few model parameters: Thalamo-cortical reentrant delay T = 40 ms, attention fatigue (= adaptive feedback gain) time constant = 1 – 2 s, feedback-gain noise power J_ω. Synchronisation of attention fatigue induced self-oscillations (yielding inter-stimulus transition time $T_{Tr} \approx 4 - 5$ T) in combination with stimulus-onset induced percept choice bifurcation appears to determine the percept-reversal rates and the t_{off}-value at R_{max} . A linear approximation of the dynamical equations allows for an analytical estimate of the reversal frequency and the cognitive damping time constant ($\tau_v \approx 1$ s). By use of the Fluctuation-Dissipation theorem via noise power J_ω it defines an index of cognitive inertia (as suggested in Gao et al. (2006)) as crucial parameter of the simulated dynamics.

Hermann HAKEN, Stuttgart (Germany)

Self-organization, circular causality, indirect intervention

Western thinking is mainly dominated by some well-known principles such as

(1) a linear sequence of cause and effect;
(2) the dichotomy between body and mind.

(1) may lead to well known logical difficulties such as the egg-hen problem: what comes first?
I want to show that this problem occurs in all processes of self-organization where systems achieve their spatio-temporal and functional structures without specific intervention from the outside (in contradistinction to the action of a sculptor). The resolution to this problem is circular causality. But how can we control or influence the behaviour of a system in the absence of causality (in the traditional sense)?
The answer is indirect control ("intervention").
I argue that (2) becomes obsolete in view of the principles of self-organization that I will elucidate by means of examples from physics, psychology and sociology.

Beate M. HERBERT, Ulm (Germany)

“The body in the mind” - Mechanisms of Embodiment: The Role of Interoception for Emotion and Behavior

The idea of embodiment recognizes the mutual interdependency of mind, body and environment, and embodied cognition means that somatosensory, visceral-physiological and conceptual processes overlap.

Interoception represents the processing and perception of internal physiological, bodily signals. Research has shown that there are pronounced trait-like interindividual differences in peoples’ sensitivity for perceiving their interoceptive signals accurately (= interoceptive sensitivity, IS), and that these differences are reflected in the activity of the interoceptive network in the brain. Up to today, IS has been most commonly assessed by focusing on cardiac perception and the cardiovascular system, and there is ample evidence for cardiac IS ‘shaping’ affective, cognitive and behavioral functions.

This presentation highlights the relevance of interoception as a fundament of embodiment and demonstrates that understanding psychophysiological mechanisms of interoception is of pivotal relevance for understanding basic mechanisms of embodiment. A summary of own research will be presented giving insight into a) psychophysiological mechanisms of interoceptive sensitivity by demonstrating that IS is accompanied and can be changed by specific autonomic-nervous activity and associated cardiodynamic patterns, and b) mechanisms of “interoception across modalities” by showing that individual sensitivity for cardiac perception is positively related to individual perception of other visceral modalities such as gastric signals during specific conditions inducing activity in the respective organ systems (e.g. hunger, eating behavior).

These findings are important for understanding adaptive and disordered mechanisms of embodiment with relevance for health and disease. This will be discussed with respect to human behavior, with a focus on adaptive eating behavior, and eating-related disorders, that both are rooted deeply in mind-body interaction.

J. A. Scott KELSO, Boca Raton (USA)

The Dynamical Origins of Conscious Agency

How might variables that are typically on the mental side of the mind~body divide and variables that are typically on the physical side of the mind~body divide be reconciled? In this talk I will make the case that a conscious agent is a coupled dynamical system described by nonlinear laws 'written' on (non-forceful) variables that span body and mind. A mechanism for the birth of conscious agency and its causative powers ("I do", "I can do") falls out of a

careful re-analysis and interpretation of experiments on human infants, seldom considered in the 'new science of consciousness'. Conscious agency is shown to emerge from a (coordination) dynamics defined in an appropriate space of relevant variables that have no side.

Michael KIMMEL, Vienna (Austria)

Improvising together: Cognitive bases, intersubjectivity skills, and generative modes

Improvisation is the ability to make use of readily available, “good enough” resources in closest proximity between planning and execution, while remaining flexibly poised and respecting environmental and interpersonal emergence. This talk presents a theory of dialogic embodied improvisation, using tango argentino and contact improvisation as examples – disciplines in which expressive and interactive demands meet and in which “having to improvise” (due to adaptive pressures) and “wanting to improvise” (following one’s fancy) are both essential.

In introducing my topic, I shall contrast dance with workteams, theater groups, and music ensembles to highlight the specificities of embodied improvisation – its requirements of spatial continuity, well-formedness, and dynamic stability – and explore how goals such as safety, speed, beauty, virtuosity, playfulness, variability, or rapport shape an improvisation system’s structure.

A couple’s real-time generativity is contingent on the interplay of sensorimotor and coordinative skills which concurrently constrain improvisational choice. A first element of improvisation theory therefore specifies the requisite *cognitive bases* pertaining to (a) elementary action repertoires and (b) affordance detection capabilities (“education of attention”). Various modes of generativity arise from this: adapting mini-scripts, basic unit chaining, “surfing” a matrix of decision points, following simple dyadic control laws, and drawing on the dance’s generic logic (notably to specify affordances in essentially new situations).

Yet, generativity in dyads is considerably more demanding that solos. Interacting with the abovementioned cognitive bases, multi-person settings invariably impose constraints of collaborative meaning making. Thus, before all creativity, dancers must ensure fluency and joint stability in the two-way loop of moment-to-moment reciprocal causation connecting them. Accordingly, dancers train for special intersubjectivity skills dedicated to remaining poised and action-ready (*metastability*), maintaining continuous bidirectional information flow (*rapport, mutual resonance*), micro-coordination of action (*synchrony, complementariness*), as well as dynamic rerouting and adjustment (*dealing with emergence*).

Helena KNYAZEVA, Moscow (Russia)

The Idea of Circularity as a Basis of Enactivism

The conception of enactivism (F. Varela, E. Thompson, A. Noë, E. di Paolo, and others) may be considered as a new form of constructivism in the philosophy of mind and in epistemology. The basis of such constructivism is the idea of circularity. The very idea of circularity contains such aspects as a) circularity of subject and object of cognition, b) circularity of body and mind, c) circularity of a living organism and its environment (Umwelt), d) mutual bound of life and cognition. The close connection between the idea of circularity and enactivism as a epistemological constructivism can be understood in different aspects. First, circularity is one of the key concepts in cybernetics and in the theory of autopoiesis. It was the notion of autopoiesis that served as a foundation for the conception of embodied and enactive cognition. There is circularity of determination and self-reference both in cognition and in life. Second, circularity and constructivism are inherent to any mind, thought, method and activity. Thinking, in contrast to perception, refers to itself; thinking is independent of external influences. Mind in its perceptual and mental activities is a self-referential and autopoietic system. Mind organizes experience, when constructing what is created and invented by it. A method is knowledge of knowledge, i.e. a certain self-referent system as well. Activity which refers to activity is self-reflective activity. Self-reflective activity is a constructivist one. Third, cybernetics came into being as a science of self-organization and management in animal and machine. Cybernetics builds bridges between the natural and the artificial, the internal and the external. An integral and holistic worldview is substantial for many constructivist models of thinking, including cybernetics, autopoiesis, and modern enactivism. The coupling of subject and object of cognition, cognitive agent and its environment, life and mind – they all should be considered in a permanent circular determination. Enactivism is conceptually akin to the modern fundamental paradigm of evolutionary holism.

Sabine KOCH, Heidelberg (Germany)

Some embodied principles of human development: the movement planes

Embodiment is a paradigm in cognitive and neurosciences bringing the body and its role in cognition and affect into the scientific focus, thereby extending cognitive approaches to the level of the entire organism. In recent years, researchers found diverse effects of directional movements (e.g., Casasanto, 2009; Maass & Russo, 2003; Meier & Robinson, 2004; Topolinski, 2013) on affect and cognition, partly even when only simulating them. Such findings can

be related to semantics and the development of language on the one hand, and motor development on the other hand. They confirm and broaden our understanding of classical theories as put forth by Freud, Erikson, or Piaget, and teach us that we need to go beyond linear experimental methods (Straus, 1930). In this short lecture demonstration, we will learn about some developmental principles from movement analysis (Laban, 1980), and relate them to the findings on movement and meaning; at the same time, we will challenge these findings by looking at constraints and changes that occur when dynamic action or interaction become part of the picture.

Sander L. KOOLE, Amsterdam (Netherlands)

Dynamics of Emotion Regulation: An Embodied Cognition Approach

Emotion regulation is traditionally portrayed as a process that occurs almost entirely inside people's heads. Such a purely mentalistic conception, however, seems unable to account for the dynamically emergent and embodied nature of emotion regulation. Building on recent work in embodied and situated cognition, my associates and I have developed an embodied cognition approach to emotion regulation (Koole & Veenstra, in press). From this approach, emotion regulation emerges from the interplay between the person and situational affordances of the body and the situation. I will illustrate this new approach to emotion regulation with empirical examples in the domains of mood regulation, anger management, and coping with existential anxiety. This research invites behavioral scientists to think about emotion regulation as a process that occurs not just inside people's heads, but rather is jointly enacted through the affordances of the brain, body and environment.

Jürgen KRÜGER, Freiburg (Germany)

The Brain from Inside, the Mind, and Time

Consider a brain from within whose task is to find out what "time" is. It functions according to common neuroscientific rules. These imply that neuronal processes signify or represent NOTHING, and there is no consciousness. One has to bear in mind that neuronal processes are INFLUENCED by past events, but once that influence has been effective, past states are no longer accessible. An animal may learn to recede from a hot object but it can no longer use its neuronal network in the previous non-learned way. Thus, there is no neuronal "yesterday". Memory operations, when they are executed, are PRESENT events. Science does not allow

attributions of significance, such as "the past". However, this may occur on the phenomenal level of consciousness.
Progress in cerebral abilities is obtained when much primary overall change can be segregated into some more restricted entities that carry all the change while the great remainder can be taken as unchanged. Eye movements are an example. In the context of "time" I shall consider neuronal procedures, and in particular the consequences of their interruption and later continuation. During the pause, the procedure does not progress but "time" does.
Access to the phenomenal level of consciousness ("the mind") can be gained via neuroscience, and via an analysis of introspection. The one cannot EXPLAIN the other, but based on interruptions one can make some elucidating comparisons pertaining to "time".

Julien LAROCHE, Paris (France)

The circularity of autonomy and relation

Coordination of behavior can be accounted for by the interplay between autonomy (dynamics that are intrinsic to a system's organization) and relation (collective dynamics that emerge from the interaction of coupled systems or components). I do so by linking phenomenology, the enactive approach and dynamical systems theories. I then verify this hypothesis in both laboratory settings and the more ecological context of music pedagogy.
More specifically, I first point out that behavioral temporality is not linear but rather multiplicative.This reflects a dynamical background, which emerges from both the interactions between internal processes at multiple timescales, and the relational dynamics between the system these interactions form and the environment's temporality. In this sense, autonomous and relational dynamics co-constitute each other.
Next, mutuality of interaction is shown to add further complexity. I demonstrate empirically that interacting autonomous behaviors get entangled in collective dynamics. As a result, the very complexity of these behaviors is coordinated in the interaction process itself. By regulating autonomous-relational patterns of behaviors co-actively, interacting partners can thus share lived experiences.
I then confront this framework with real-world, ecological situations. I present dynamical analyses of free, interactive improvisations between teacher and learner, in the context of the Kaddouch music pedagogy. This context is privileged to link first-, second-, and third-person perspectives: it allows to experiment and experience the autonomous constitution of relational dynamics, and the relational constitutivity of autonomy. Indeed, the interaction process is shown to help the learner to reach regions of behaviors he

cannot enact when he is isolated. Here, asymetries and symmetry breakings play a fundamental role. They allow coordination to acquire a shared meaning, and they help the learner to escape and to emancipate on his spontaneous tendencies. In sum, autonomy of behaviors individuates interpersonal relations, while relational dynamics favor individuation and increase individuals' autonomy.

Jakub LIMANOWSKI & Felix BLANKENBURG, Berlin (Germany)

Evidence for hierarchical inference during illusory body ownership: An fMRI study using dynamical causal modeling

Much recent effort has concentrated on explaining perception and action within predictive coding approaches as emphasized by the free energy principle (FEP, Friston). These approaches are built upon the assumption that the brain entails hierarchical generative models that constantly predict the causes of its sensory input, with the aim of reducing overall prediction error across the current model's hierarchy. What might render such accounts also interesting for philosophers is the fact that they emphasize the interaction of the embodied agent in the world and explain it mechanistically via the bidirectionality of information flow across the model's hierarchy.

In this contribution, we will present novel fMRI results from a yet unpublished study using a well-known body ownership illusion—the "rubber hand illusion" (RHI)—as support for this argument. We induced illusory arm ownership via congruent touch to the participants' real arm together with a realistic fake counterpart. Congruent versus incongruent co-stimulation induced the RHI and activated a network comprising regions in the premotor, intraparietal, and extrastriate cortex. Crucially, using dynamic causal modeling, we show an enhanced information flow from lower-level somatosensory and body-selective visual areas to higher-level intraparietal cortex during the RHI. These results can be accounted for in terms of a propagation of forward-flowing prediction error, which results from the mismatch between the body model's predictions about one's limbs position and the ambiguous sensory input provided by the RHI. We will argue that the RHI is hence one particular example where predictive coding may formally account for the multisensory mechanisms underlying the brain's hierarchical inference about one's body.

Martin LUGER, Christine IRRAN & Michael KIMMEL, Vienna (Austria)

Where systemic, embodied, and enactive skills meet: Participatory process management in Feldenkrais and Shiatsu

The bodywork practices Feldenkrais and Shiatsu aim to progressively reconfigure a client's embodied *attractor landscape*, i.e. systemic dispositions. Micro-ethnographic case studies we did indicate that practitioners enable somatic learning through continuous tactile coupling within a real-time dynamic that unfolds in a safe dyadic "bubble". Expressed in dynamic systems parlance, both disciplines stimulate resilience understood as "context-savvy" differentiation, metastability, adaptivity, and self-organization capabilities. To this end, bodywork practitioners extensively train intersubjectivity skills and good somatic habits, refine their senses, and acquire a repertoire of micro-skills like grips or stretches. At the same time, practice is infused with awareness for systemic process management. The learning trajectory of apprentices bears witness to this: They initially learn to observe the client and explore anatomical structures in their *eigen*function (joints, bone contours, muscles, fascia), later discriminate relational organization in smaller ensembles, before monitoring large-scale ensembles in their dynamic functional interplay. This nesting hierarchy eventually encompasses a dyadic resonance loop within which the bodyworker's "extended body" reaches forth into the client's. In a typical treatment session all levels of somato-systemic order matter: In the process of restoring functional integrity to the client, practitioners navigate the hierarchical architecture by (a) constantly gauging it through micro-enactive skills and (b) stimulating it with a mix of perturbing and stabilizing interventions that oscillate between *eigen*functions and integration in functional ensembles. When practitioners sensorially chart the client's somatic states they (implicitly) re-map these onto their systemic under-standing. This allows them to continuously stay apace of emergence, to respond to minute changes, and to customize reactions with dynamic immediacy, thus respecting both immediate embodied and systemic needs. Furthermore, practitioners acquire refined skills for "soft-assembling" non-linear synergies, either in bottom-up fashion or by having high-level functions "slave" the system.

Wolfgang LUKAS, Innsbruck (Austria)

First-, Second- and Third-Person Perspectives and the Mind-Body Relationship in Neurophenomenology, Buddhism and General Semantics

Human experience and evaluation are being found to consist of self-reflexive feedback mechanisms that inherently involve observer biases and hidden assumptions, embodied cognition and mutual organism-environment inter-

actions. As a result, it becomes impossible to adopt a purely objective third-person view without taking into account first- and second-person perspectives. This has far-reaching consequences for science and our understanding of the world, and calls for practical methods to increase our awareness and accuracy of first- and second-person evaluations.

Neurophenomenology accounts for the first-, second- and third-person perspectives and mind-body integration in theory-and-practice. It advocates the mutually informing application of introspection-and-dialogue-based phenomenological approaches and the precise methods of experimental science, suggesting that our systematic biases can be reduced by training methods which emphasize direct first-person experience, embodiment, introspection, metacognition and evaluation processes. For this purpose, two practical systems with different origins and striking parallels are identified:

(1) Buddhist philosophy-and-practice, a 2500-year-old "mind science" of high pragmatic and theoretical refinement. Mind and body are viewed as an interconnected, mutually dependent whole. The self-reflexive nature of experience is highlighted in "dependent co-arising" (paticca samuppada), a complex non-linear system with nested causal feedback loops that facilitates the deconstruction of systems. Practitioners are advised to attend directly to processes and causal relations, impermanence and non-identity, thereby reducing habitual reification (papañca).

(2) General Semantics, introduced in 1933 as a secular, practical, self-updating, interdisciplinary "non-Aristotelian" system which applies modern scientific thinking to human evaluation, emphasizing "consciousness of abstracting" and immediate interactions of the organism-as-a-whole-in-its-environment. Through its non-elementalistic orientation, 'mind' and 'senses' are regarded as parts of an interdependent whole, while 'thinking' and 'feeling' become indivisible on a process level. One key principle is non-identity ("the map is not the territory", covers not all territory, is self-reflexive). Practical training enhances verbal, sensory and behavioral awareness.

We show that the conceptual and practical parallels between General Semantics and Buddhist philosophy-and-practice have a common denominator in their scientific orientation, calling for a detailed investigation to understand (a) whether both systems provide similar and/or complementary routes towards enhanced verbal and sensory awareness of mental and physiological processes, and (b) how they can be applied together for mutual benefit. To launch this investigation, we propose a roadmap for studies comparing the effects of General Semantics practice and Buddhist mindfulness practice, including neuroimaging (e.g. default / executive networks), psychology (e.g. attention, perception, mind-wandering) and physiology, using principles and techniques from Neurophenomenology.

We further explain how these systems extend beyond the currently prevailing scientific third-person paradigm by naturally integrating the first-second-and-

third-person perspectives as well as mind-and-body, thus providing a route towards an essential meta-paradigm shift in which the sciences, contemplative traditions, humanities, etc. become "interdependent magisteria", accompanied by the emergence of trans-disciplinary second-order sciences.

Eszter NYULI, Zürich (Switzerland)

The Body Mind Circularity through the Arts (Expressive Arts)

Many methods that offer what we call decentering (helping the client to focus away from a problematic situation) engage imagination where the client is invited to experience an alternative world experience (vs. habitual world experience).

In the expressive arts approach, imagination can be made 'visible'. The specific act, like a dance, a play or an 'object' like a sculpture or a poem leaves a trace. This process, as well as the emerging object itself can be witnessed by both the client and the observer (therapist, coach).

In our terminology what we call the 'third' (e.g. the emerging object/process) opens up for a discourse on the basis of an embodied emergence that may lead to "explanatory interpretations". Grounded for example in the psychodynamic, bioenergetic and spiritual schools may lead to "answering interpretations" such as focusing on existential, humanistic and solution focused approaches.

In the process of an expressive arts intervention, the creation phase is concrete and explicit in a sensorimotor mode engaging the body and the senses. The discourse phase, however, is engaging reflection and therefore the mind. The connection of mind/body is explicit during this reflection phase where we conduct the so-called "aesthetic reflection", discussing the emerged object adopting a phenomenological approach and staying within the context of the art tradition. After this reflection (alternative world experience), a bridge to the habitual world experience is made, identifying possible ideas to build a solution and specific resources that the client may focus on in the future.

In addition, during the art-creating process, the client implicitly engages the mind constantly, by reflecting what works, what interests him/her, e.g. in the music, in the painting or the performance. During this process the client is involved in a mind/body mode checking his/her level of satisfaction with the painting or whatever art modality the client works with.

In the presentation of my inquiry, I will give practical examples of how expressive arts concepts can be applied in different contexts (working with managers, in supervision, in coaching). In addition, I will elaborate on how to design expressive arts interventions. Also, I will present how we motivate clients for a phenomenological reflection and conclude the presentation with an outlook on arts-based research.

Juval PORTUGALI & Hermann HAKEN, Tel Aviv (Israel)

Information Adaptation and Embodied Cognition

The two themes that run through the series of Herbstakademie meetings are *embodiment* and *complexity.* Their conjunction implies that organisms' body, mind and environment form a complex, adaptive, interactive system. In this interaction, the system's elements exchange matter, energy and *information*. But what does it mean that the system's elements exchange information? In our talk we answer this question by reference to the recently introduced notion of *Information adaptation* (Haken and Portugali, 2015). From the latter follows that the exchange of information as above involves a circularly causal interplay between two forms of information – Shannon Information (SHI) which is information with meaning exorcised and Semantic Information (SI) which is information with meaning. In this interplay SI participates in the determination of SHI while the latter generates SI. In our talk we illustrate this interplay by reference to pattern recognition, behavior and fabrication, as well as to social and communicative processes as they take place in the context of cities. Finally, we conclude by showing how these examples shed new light on embodied cognition in general and on the implied Circularity of Mind and Body, in particular.

Robert PRENTNER, Zürich (Switzerland)

Philosophy, Embodiment, and Mereology

The embodiment of mind promises to bring philosophical and scientific accounts of cognition and experiencing closer together, thereby challenging traditional ideas about the relation between mind and matter.

Mereology is the formal study of how parts (individuals) make up wholes (systems) and seems highly relevant in this context. In this contribution some positions from the philosophy of mind shall thus be interpreted in terms of their mereological structure. This has two consequences: First, scholastic discussions about the nature of substances are discarded in favor of structural inquiry that relates more closely to science. Secondly, it shall become intelligible how a philosophically informed account of the circularity of mind and body could contribute to emerging new theories of the mind.

For example, discussions about mind-body-interaction usually focus on the notion of causation, asking how the mind could possibly cause any effect in the body (and vice versa). This leads many philosophers to consider the possible essences of mind and matter which in turn quickly lead to subtle metaphysical discussion. Instead, a closer look at embodiment and related ideas suggests that we first have to understand how an organism comprises both mind and

body without a priori assuming that there is a self-contained world of minds and a world of bodies which stand in direct causal relation. To evade reductionist arguments, however, it is necessary to elucidate the mereology of mental and bodily properties, in particular for situations that are typically considered as psycho-physical interaction.
A way to approach this and similar issues is to consider different mereological models and ask which of them best fit the empirical data gathered by biology, neuroscience or psychiatry. Models of this kind shall be presented here.

Ingo RENTSCHLER*, Martin JÜTTNER, Markus GSCHWIND*** & Terry CAELLI****,** *Munich (Germany), **Birmingham (UK), ***Geneva (Switzerland), ****Melbourne (Australia)

Embodied Qualities of Gestalt

The similarity of complex (visual or auditory) shapes that have no elements in common was evidence to Ernst Mach (1865) and Christian von Ehrenfels (1890) for the existence of qualities of Gestalt (Gestaltqualitäten). Mach attributed them to corresponding muscular sensations. Ehrenfels argued that they are caused by an »activity of the mind directed specifically towards them«. The latter provided a key for settling this issue by stating that »*we recognize the relatives in a family in a resemblance manifested in their whole physical nature and bearing, a resemblance which often stubbornly resists analysis into relations of identity between individual constituent parts*«. »Family resemblance«, further discussed by Wittgenstein (1945/46), enables the deployment of formal procedures of Syntactic Pattern Recognition and Machine Learning (King Sun Fu, 1974, 1976; Caelli & Bischof, 1996) to cognition. »Family« can be conceived in terms of homologies - communalities between structures with shared evolution. Structures are defined by their parts and relations, and the definition of mappings between elements of common families (categories) makes them homologous. Categories are equally defined syntactically by a common set of part and part-relational attributes. To explore the potential of this approach, we studied how humans learn via haptic exploration of physical models and supervised learning the classification of 3D-objects from 2D-views (Rentschler et al., 2008, 2009). Behavioural data were analyzed using machine learning principles based on inductive logic programming and graph matching (Osman et al., 2000; Osman, 2008). Results confirm Mach's position in that observers use critical part-relations, acquired earlier by motor activity, for understanding 3D-structures. These findings support the view that Gestalt embodiment involves perceptual/cognitive processes that, via learning and motor activity reinforcement, enable the encoding of structures in terms of their defining parts and part-relations.

Roger RUSSELL, Heidelberg (Germany)

Developmental Learning and Dynamic Systems in the Feldenkrais Method

Infants…are born with much movement and few ideas and…
the link between the developing mind and the developing limbs
may be especially direct." Thelen and Fogel (pg. 23, 1989)

Esther Thelen's work in dynamic systems in development provided a means to understand how infants discover themselves and their world. Self-organized movement provides means for the emergence of the infant's sense of self. I will show how the Feldenkrais Method enables any person of any age to utilize this same discovery learning process, which they mastered in infancy, to enhance their sense of self. Paraphrasing Thelen and Smith (1994) I will look at how a Feldenkrais movement lesson can be structured in order to:

- Map the dynamics of the system.
- Find the elements of the system that can be agents of change.
- Identify when the system is stable (habit) with low variability and low sensitivity to disturbances.
- Identify when the system becomes unstable and when it shifts to new patterns.
- Explore variations to test for system change.
- Recognize subjective criteria for evaluating new movement patterns which are more efficient, effective and enhance self-image.

This will include theoretical considerations in developmental psychology, video analysis of infants learning to self-organize their actions, a discussion of the neurology of habits and of discovery learning and video examples of some unusual Feldenkrais lessons.

Rosemarie SAMARITTER, Maastricht (Netherlands)

Kinaesthetic ways of knowing - embodied reflexivity in psychotherapy

Processes of interpersonal relating in dance can contribute to our understanding of reflexive potentials of embodied intersubjective relating in psychotherapy. The experiential quality of moving and being moved is at the heart of dance as an art form. Dancers feel and understand their partner in shared kinetic patterns and qualities. A dancer directly reflects upon and within the movement qualities s/he shares with a partner through own movement impulses that are coming from direct perception through the kinaesthetic senses (Rouhiainen, 2003; Tufnell & Crickmay, 1990/93). In this process chains of kinaesthetic experiences are formed that contribute to the self-organisation of the moving dynamic system (Varela et al, 1991; Goudsmit, 1989). From shared kinetic qualities a sense of intersubjectivity develops that is not

informed by conceptual or representational structures, but by directly perceived as moved aspects of space, time and weight. Through embodied mutual responsiveness the movers co-create a dynamic system that De Ajuriaguerra (1962) described as, ‘dialogue tonique’.

Taken to psychotherapy these movement processes can support our understanding of the embodied attunement between therapist and client. The psychotherapeutic working alliance evolves from participation in the shared movement synchronisation and desynchronisation between therapist and client (Ramseyer & Tschacher, 2011). They contribute to each other's environment ("Umwelt") and at the same time they are companions in the shared environment ("Mitwelt").

Personal reflections and narratives are formed from and within the experiential qualities of enactive participation (De Jaegher & Di Paolo, 2008). Wittgenstein’s theorem that shared reflexive meaning develops through shared practices might serve as a fruitful concept to understand the hermeneutic engagement of therapist and client during (dance movement) psychotherapy. In this sense reflexive languaging develops from what is "known from" (Shotter, 1987) bodily perceptions.

This embodied perspective on therapeutic working alliance has shown especially helpful to develop a congruent self-reflexive attitude from embodied interpersonal experiences in patients with early disturbances and personality pathology (Samaritter & Maagdenberg, 2012).

Caroline SCHLINKERT*, Mattie TOPS*, Nicola BAUMANN & Sander L. KOOLE*,** *Amsterdam (Netherlands), **Trier (Germany)

In Control but Out of Touch: Priming Self-Control Disrupts Eating Behavior among Chronic Ruminators

Everyday observations suggest that people may ignore bodily states such as fatigue and hunger when they are striving for important goals. Such observations suggest that self-control may sometimes override bodily needs. As long as people are consciously engaged in self-control, overriding bodily needs is in line with what people want to achieve. However, ignoring bodily needs may sometimes persist unwittingly and might even become problematic when it becomes chronic. In line with these ideas, we recently proposed the somatic neglect hypothesis (Koole et al., 2014), which holds that self-control may lead people high in rumination to chronically ignore their bodily states, because ruminators have difficulties relaxing self-control.

To test the somatic neglect hypothesis, we investigated whether self-control indeed lowers the ability to detect bodily needs among chronic ruminators in a food evaluation task. In Study 1, all participants were placed under high self-

control by performing a thought suppression task. In Study 2, participants were randomly assigned to high versus low self-control priming conditions by planning either an aversive or a fun activity. In both studies, we measured individual differences in rumination and levels of food deprivation. Additionally, we measured participants' preference for high and low calorie foods (cheese crackers versus radishes), as indexed by subjective evaluations and consumption rates. We controlled for potential confounding factors such as neuroticism or dieting concerns.

The results of both studies showed that after priming self-control, ruminators no longer displayed a positive association between food deprivation and preference for the high calorie food. Non-ruminators displayed the opposite pattern, such that exerting self-control amplified the association between food deprivation and preference for the high calorie food. Together, these findings initially support the somatic neglect hypothesis and suggest that self-control may lead to disturbances in healthy eating behavior among vulnerable populations.

Wolfgang SCHMID, Karin MÖSSLER, Bergen (Norway)

***Shared Moments*: The quality of the therapeutic relationship as outcome predictor in improvisational music therapy with children with autism – an embodied perspective**

For the development of communication and interaction skills in early childhood, preverbal interaction on a bodily-emotional level, as well as the sharing and regulation of affects are crucial experiences for an individual. Children with Autism Spectrum Disorders (ASD) often show a lack of capacity and interest in interacting with others.

Research has shown that in music therapy the emotional as well as the communicative abilities of children with autism can be facilitated. In joint musical improvisations of child and music therapist moments of synchronicity, shared attention, intention, and emotions can arise, supporting the development of their relationship. On this background improvisational music therapy is seen as an enactive, embodied approach for children with autism, providing room for crossmodal as well as intersubjective and interaffective experiences.

The present predictor study examines associations between the quality of the therapeutic relationship and generalised outcomes in autism like social communication and interaction skills. The study builds upon an international multi-centre randomised controlled trial in music therapy with 150 children diagnosed with ASD, attending music therapy sessions over a period of five months. The standardized instrument for the *Assessment of the Quality of the Relationship in Music Therapy* (AQR), as well as the standardized *Autism*

Diagnostic Observation Scale (ADOS), and the *Social Responsiveness Scale* (SRS) for assessing changes in outcomes are used.
As this is an ongoing study (2013-15), preliminary results will be presented, including the microanalyses of video episodes to illustrate the investigation of shared moments in improvisational music therapy.

Stefan SCHMIDT*, Han-Gue JO*, Marc WITTMANN, Thilo HINTERBERGER*****,**
***Frankfurt an der Oder, **Freiburg, ***Regensburg (Germany)

Surfing the waves of the slow cortical potentials – new aspects in the neurophysiological study of free will

In the famous Libet experiment it is demonstrated that an indicator of motor preparation, i.e. the readiness potential, is starting earlier than the subjective decision to act in a self-initiated movement paradigm. This finding was often used to argue that there is no free will from a neuroscience perspective, since the brain reacts before conscious experience. However, this interpretation relies crucially on the fact that the readiness potential is really an indicator of motor preparation. Recent findings cast a doubt on this interpretation. Especially the early readiness potential ranging from approximately -1,500 ms to -400 ms before the self-initiated movement seems to be susceptible to many factors not related to motor preparation. In 2012 a theoretical contribution by Schurger et al. argued that the early readiness potential could be a product of averaging trials in which participants initiated their movements systematically at time points in which the slow cortical potential (SCP), a global slow changing potential in the brain, changed towards negativity. This makes sense as a negative SCP is associated with a lower firing threshold for pyramidal cells. So far the readiness potential was always displayed as an averaged signal over many single trials due to the low signal-to-noise ratio. In our first study (Jo et al., 2013) we assessed the hypothesis by Schurger et al. empirically by analyzing the single trials of a Libet experiment and sorting them to their overall slope. We could demonstrate that the readiness potential is not present in all trials but stems from an unequal distribution of trials with negative and positive slope. In a control condition where participants had to listen to a tone no such uneven distribution was found. We performed a second study (Jo et al., 2014) in which an experienced meditator was asked repeatedly for introspective reports of the very moment of movement initiation in the Libet experiment. He reported an ‘upcoming urge’ which was related to changes in SCP. Several trials in which he either ignored this urge or withheld it for some seconds could demonstrate meaningful changes in the readiness potential. Based on these studies we conclude that the early readiness potential is not an indicator of motor preparation but a product of

participants starting more likely a self-initiated movement in moments of a negative SCP. This finding sheds new light on the interpretation of the Libet experiment. By the continuous change of the SCP the brain provides periodically periods of higher and lower reactivity. This allows for a random process within a deterministic framework. The fact that some people are able to influence the SCP by the means of neurofeedback demonstrates also the existence of a conscious feedback circle on this system.

Holger SCHNÄDELBACH, Nottingham (UK)

Embodied Adaptive Architecture – An overview of research conducted at the Mixed Reality Lab Nottingham

Buildings are becoming adaptive. They adapt to their environments with the aim to be more sustainable and to provide more comfortable conditions for inhabitants. They adapt to inhabitants to make spaces more convenient, information rich and more useful in different circumstances. Adaptivity is typically achieved through the combination of ubiquitous computing technologies and the building fabric. There are many adaptations that would be described as mainstream, for example those that control the climate or lighting. There are also much more radical ideas, suggesting that buildings become mobile, change form or that they become affective. Over recent years, a proportion of the research conducted at the Mixed Reality Lab has focussed on exploring the emerging space of Adaptive Architecture, conceptually, technically and interactionally. Most importantly, we have started investigations into embodied adaptive architecture, where our bodily interactions are integral to the 'behaviour' of a building, and where that behaviour feeds back on us in circular feedback.

This presentation will present ExoBuilding as the main research vehicle for the above. ExoBuilding is a room-sized, mechanically actuated fabric structure, which can respond to people's physiological behaviour, for example their respiration, their heart rate or skin conductance. In a first study, we have indicated how this biofeedback environment triggers reductions in respiration rates of participants. A second study has shown how experiencing respiration mappings from the inside triggers much more strongly felt experiences, than experiencing the same mappings from the outside. A third study (currently unpublished) demonstrates a method to influence people's physiology through regular oscillations, raising a number of ethical concerns for more wide-spread use. In participatory design work we have then set out to explore how this approach can be used for the teaching of yoga, which draws on respiration as a core element. The presentation will conclude with a reflection on the more generalised feedback loop that is created in embodied adaptive architecture

between occupants and the building, and how we begin to see the two as interaction partners.

Wolfgang SCHOLL, Berlin (Germany)

A new look on the body-mind-problem: Feelings as mediators and guideposts

Most scientists agree that there are no thoughts and other mental processes without some bodily physical processes, mainly in the nervous system. Yet, mental processes seem to have emergent properties of conscious emotional qualities (qualia) which cannot be reduced to physical processes alone. Physicalists deny that, others see these as mere epiphenomena, and still others accept this statement but have no convincing explanation (Gadenne, 2007, 2009). Progress in this debate should take human sociality properly into account.

Firstly (Scholl, 2013), human (ap)perception of nonverbal impressions and expressions, verbal communication, behavior and personality is guided by the three universal feeling dimensions of valence/evaluation/communion, control/potency/agency, and arousal/activity/affect-intensity. These feeling dimensions represent the subjective experience of emotions and are most probably evolutionary accomplishments for solving the coordination problems of humans as a social species of relatively selfish individuals, because these three dimensions are inherent properties of any game matrix.

Secondly, Affect Control Theory (Heise, 2007) shows that language not only conveys the experiences of generations in the emotional (connotative) meaning of its words (Osgood et al. 1975). Language use is guided by a socio-emotional consistency principle along these three dimensions which assigns a specific probability for any social event making it understandable and predictable. Thus, the contents of “mind” are largely socio-emotional products of mutual construction and the involved feeling qualities are guideposts for social understanding and action.

It follows that mind has always socio-emotional qualities whereas its neural processes reside only in individuals.The physical processes of the neural system and the reality assertions of language are tied together by feelings, embodied on the one side and socially transmitted through (non)verbal communication on the other, which substantiates the three-world-model of Popper (1968).

Frank SCHUMANN* & Dav CLARK, ***Paris (France), **Berkeley (USA)

Mindful movement and skilled attention

Recent findings on neural connectivity changes via mindfulness practices imply a mind-body connection (Vago & Silbersweig, 2012; Kerr et al., 2013), however, many forms of meditation training entail only direct *attention* to parts of the body, as in a "body scan." Here, we propose that movement practices such as Tai Chi or Feldenkrais exploit the mind-body relation more profoundly by situating mindful awareness directly within the sensorimotor loop. We present the hypothesis that mindful executing and observation of actual movements provides conditions for profound sensorimotor learning that can shape joint co-organisation processes between volitional movement, skilled attention and body awareness (Clark, Schumann & Mostofsky, 2014).

In particular, we argue that (1) in the short term, mindful movement trains the twin capacities of inhibition and selection. Selection/inhibition of relevant and irrelevant affordances is central both for premotor planning of volitional movements (Cisek & Kalaska, 2010) and refocusing of attention during meditation (Hasenkamp et al., 2012). (2) Movement practices provide a rich variety of complex configurations for actual movement. Prolonged exploration of this variability can 'de-correlate' habitual inner-body motor schemes and 'update' this motor repertoire by introducing novel functional patterns of body coordination. (3) Following premotor theories of attention, changes to motor planning should transfer to the deployment of attention. Hence long-term practice should change procedural schemas of deploying attention. (4) Further, in most concepts, a minimal phenomenal bodily self arises when motor control functions compare actual sensory consequences of movement against the sensory consequences that are expected from the procedural schemas involved in planning the movement (Gallagher & Gallagher, 2000; Neisser, 1988; Christoff et al., 2011). Hence, a structural updating of schemas via prolonged training of inner-body motor coordination has the potential to differentiate awareness of the bodily self.

We sketch a research program on effects of mindful movement on attention and body awareness with motor paradigms such as motor overflow, cortical excitability, resting-state connectivity, structured motor model updating, skill acquisition or motor sequence learning.

Marc SOLMS, Capetown (South Africa)

Why do we need to play?

The need to play is built into the mammal brain. It is a basic instinct. The question is: why? It is far from obvious why play should enhance survival and reproductive success. This presentation will attempt to provide an answer to the question: why do we need to play?

Christian TEWES, Heidelberg (Germany)

Mental Causation in the Light of the Dynamical Systems Theory

It is common ground in contemporary action theory to conceive of *mental causation* as a causal pairing of mental events and bodily movements. Thus, in order to explain how the former can be described as causes of the latter, one needs to specify the respective believes and desires as the causal antecedents of the action. If one wants to know why John is heading to the bus, one has to describe, for instance, John's desire to drive to another town district together with his belief that by taking the vehicle, he can realize his goal.
I will challenge the view that this picture of mental causation is satisfying and exhaustive. How John will act is constrained in important respects by his mental states. But if we are right to ascribe the entire realization of the action to John as a person and not to disembodied mental events, then we need to spell out why we are entitled to refer to him *as the source* of his actions in the first place. In order to make headway here, I will argue that the ascription of actions requires a dynamical system approach that enables us to see how motives, decisions and the movement of the body are dynamically shaped by the entire person as an enculturated multicomplex system. This leads to two major advantages over the standard approaches of action explanation: First, one can specify *at different levels of description* (for instance, the neurological and psychological one) how actions are dynamically constituted by reciprocal (circular) causal relations. Second, it enables one to make sense of the idea that *the person himself* causes his action, if one refers by this term to the non-linear dynamics of the entire system.

Sascha TOPOLINSKI, Cologne (Germany)

Onomatokinesia – The mouth movement makes the meaning

The mouth serves two of the most important functions of human life, the evolutionarily older function of food ingestion, and the more recently developed function of speech. Because speech with its prime process of

articulation using oral motor mechanics is scaffolded onto the earlier ingestion function, I predict that ingestion-related responses can be triggered by articulatory means. Specifically, I tested matching effects between the mere movements during articulation of the name of an object and the oral response that is associated with the denoted object. In Experiments 1-4, I used ostensible brand names of ice-cream, an object associated with a consummatory response of licking. These names involved either consonants that are articulated with licking-like (D, N, L, T) or non-licking like tongue movements (B, P, S, V). As non licking-associated control object, gummy bears were used. Across four experiments licking-like names were rated as fitting the denoted object better and were preferred over non-licking like names - particularly much more so for ice creams than for gummy bears. In Experiment 5, this effect also occurred when the letter L (which is phonotactically related to the denoted oral action “licking”) was eliminated from the stimulus list. Experiment 6 examined a matching between vowel articulation (open vowels such as A vs. closed vowels such as O) and the oral affordances of mouth opening (e.g., during eating large fruits) vs. lip pursing (e.g., during sucking on straws). Participants preferred names with opening over closing vowels when these names denoted fruits (because articulation of the name already induces mouth opening similar to biting into the fruit), but preferred closing over open vowels when the names denoted juice boxes (because the name already triggers the lip-pursing response to suck from a straw). Implications for language evolution and body-language interaction are discussed.

Suzi TORTORA, Garrison (USA)

The Unspoken Dance of Analysis: The intersection between the Creative Arts Therapies and Psychoanalysis

Affective neuroscience has moved towards a view of emotion as embodied bringing us back to contemplating both Freud’s dictum that the ‘ego is first and foremost a body ego’ and Winnicott's notion that 'The self finds itself naturally placed in the body'. A heightened attunement to the nonverbal realm of experience in the context of embodied emotion presents compelling therapeutic possibilities for the psychoanalyst open to engaging body psychotherapists in a conjoint treatment. Dance movement therapy (DMT) is a discipline deeply informed by advances in embodied emotion research and offers a modality that can be of particular help for patients with traumatic histories. Using clinical material this presentation will illustrate the collaboration between a psychiatrist and a dance/movement psychotherapist over many years with a patient who are simultaneously engaged in intensive psychoanalytic psychotherapy and dance movement therapy.

Felix TRETTER, Munich (Germany)

Towards a methodology of an "integrative human neuroscience"

The boom of "neuroscience" is technology- and data-driven. Results of brain research claim to be able to read the mind, to identify determinants of decision making, to manage empathy etc. All these claims are fascinating but several shortcomings in methodology divide fiction from facts: (1) there is not enough awareness of the brain-mind problem, the priority of subjectivity in this field and the problem to explain "qualia" by neural mechanisms, (2) there is a lack of a proper psychology, especially process-related concepts and appropriate theoretical models, (3) there are intradisciplinary deficiencies within neuro-biology, mainly regarding gaps between different methods (e.g. electro-physiology / nuclear resonance tomography), (4) there is no field that could be called "theoretical neuroscience" that is more than pragmatic modelling "computational neuroscience" or data compiling "neuroinformatics" but that is concept-driven and that regards the brain as a complex dynamic system such as "systems science". Finally (5), philosophy should be integrated as a companion for reflection in neuroscience (e.g. epistemology, philosophy of mind, phenomenology, neurophilosophy, philosophy of science, anthropology, ethics).

Wolfgang TSCHACHER & Fabian RAMSEYER, Bern (Switzerland)

Nonverbal synchrony: Embodiment of mental and communicative process

Mental processes, social interaction and communication are embodied in nonverbal behavior. We performed a number of empirical projects on this 'embodied communication' background, addressing nonverbal behavior in dyadic interaction processes in psychotherapy (104 therapy sessions of 70 patients) as well as in healthy dyads discussing topics of general interest (the recent project included 84 dyads). Nonverbal synchrony was assessed objectively using an automated video-analysis algorithm (Motion Energy Analysis, MEA, www.psync.ch) developed in our laboratory. MEA provides a way to operationalize intercorporeal resonance (Thomas Fuchs). All participants were unaware of the synchrony measure being assessed.

In the initial psychotherapy project, we found the quality of the therapeutic alliance reflected by the degree of nonverbal synchrony between therapists and patients. In healthy dyads, synchrony was associated with the type of interaction and predicted the affectivity of the conversations. This suggested that beyond the mere amount of movement, the degree of nonverbal synchrony between people is a pivotal predictor of features of the interaction,

of individual emotional responses, as well as an objective and sensitive indicator of the severity of patients' problems.
A recent elaboration based on MEA concerned the definition of a duration measure of the social present ('nowness') in communicating dyads. We defined the social present as the extension of the temporal window within which the nonverbal motion streams of interactants were significantly correlated. A pilot study showed that this duration has an extension of around six seconds. Consistent with the previous results on embodied communication, we found associations of the social present with trait and state variables of the participants.
In general, social synchronization is an important, usually unattended, capacity that regulates communication and expresses the satisfaction with social exchange. Synchrony exemplifies the bidirectionality of embodiment, i.e. the circularity of mind and body. Its analysis provides valuable insights into embodied cognition, which in our view underlies processes of consciousness and nowness.

Katalin VERMES, Budapest (Hungary)

Moving bodies in consumer culture: cultural responsibility of dance movement therapy

This paper will attempt to delineate the cultural situation of dance movement therapy (DMT) in light of culture theoretical, phenomenological and psychoanalytical critiques. Dance movement therapy has the capacity of liberating people from the rigid cultural legacy of body-mind dualisms, releasing and reintegrating their vital forces. But in the ambivalent age of “corporeal” and “therapeutic turn” regression to the body feelings - a central element of DMT - is overwhelmed and distorted by a cultural dynamics. Excessive care of the body’s well-being and fitness signals a narcissistic obsession with corporeity in the era of consumer society. Reflection on cultural dynamics helps dance movement therapists to dissolve cultural idealization and narcissistic obsession of the body, hence changing malignant cultural regression benign. Thus the cultural function of DMT is more a creation of new cultural patterns than a mere compensation for cultural alienation. By the way of cultural self-reflection, DMT strengthens its own resources to assume cultural responsibility: it enables people to notice and understand the flesh and blood dynamics they create in everyday group situations as well as in social life. The last part of the presentation illustrates how Hungarian psychodynamic movement and dance therapists work in “Civil Group Process”, how they use therapeutic forces of movement and body-work for healing cultural injuries and promoting democratic maturity.

Evi Maria WEIGL, Munich (Germany)

From Body orientation to living ethos

This presentation examines phenomenological theories and empirical findings on the overlapping topics of space perception. It also considers the implications of these findings for personally lived ethics. The phenomenological view of Lebenswelt refers to the human subject itself as it experiences the world. This personal experience is the foundation of reality, lying beyond any modern rational world view.

The phenomenon of phenomena, according to M. Merleau-Ponty, is the body. In his view, physical existence means being in perspective as well as being in situations. Every situation has a structure of meaning which can be experienced physically. Merleau-Ponty observes that our fundamental capability of being the subject of all experience is linked to our situational existence in the world. By means of experience, man opens up towards the other, the world and his fellows without being strictly determined. In his physical existence, man has always been subject to the interdependence of the ethical and the pragmatic.

The world in which humans act physically is a reality that is culturally and historically formed and is still to be formed. Insofar as it is already formed, it does not command, yet advises us what to do. Insofar as it is still to be formed, it absorbs whatever humans are doing. Thus, physical action and Lebenswelt are inseparably connected.

The bodily countenance corresponds to an inner attitude. Together, they are the embodiment of practical wisdom in an inner and physical mediocrity. Scientific research with the method 'Rolfing – Structural Integration' has shown how changes in bodily reality trigger changes in the inner orientation and the potential of living powers respectively, which also belong to the ethos. The body is the system of potential actions, determined by its situation and its functions in the world. Being the substance of practical ethos, it is constantly linked with personally lived ethics.

The concept of a structure of meaning as described by M. Merleau-Ponty suggests that norms are inherent in things and preformed by these things. Following empirical findings humans possess an a priori knowledge of ethics, values thus being not only developed, but continually rediscovered. Living ethos demands an incessant actualising confrontation with reality and an ongoing communication with a world whose structures we are already familiar with.

Tobias WIDDRA, Bad Kissingen (Germany)

Embodiment in Practice: Process Oriented Psychology as a Phenomenological Approach for Working with Psychosomatic Symptoms

Process oriented psychology (POP) is a phenomenological psychotherapeutic approach, which supports the unfolding of concrete, sensory based experiences including body symptoms and movements to develop new meaningful insights. The physicist and Jungian analysist Arnold Mindell developed POP out of Jungian Psychology by expanding the work with inner experiences like dreams and fantasies to body sensations and spontaneous movements. He was keen to grasp “the unconscious“ by something directly phenomenologically observable. In a way, POP can be regarded as adding more embodiment to Analytical Psychology.

Essential is the phenomenological approach. Concepts and verbal descriptions (e.g. of symptoms or body sensations like “pain”) are starting points to look for differentiated, momentary experience, i.e. sensory based information. POP assumes that especially unintended and disturbing experiences contain valuable information for the person *at this sensory based level*. These phenomena can be picked up, amplified and unfolded to get a new understanding for a problem or question at hand. Assuming that the relevant information is similar in different sensory channels, one can switch channels while working on the same topic. For instance, start with the experience of a body symptom, switch to, for example, inner images, work with the belief system at the conceptual level and, when more cognitively understood, switch back to the initial body sensation for a new embodied understanding.

POP does not provide a general, given set of interpretations for the meaning associated with specific symptoms, movements or body-parts. Instead, it provides an elaborated procedure that allows to develop meaningful insights which are not merely at a conceptual level but understood in the sense of a new experience including body and movement.

I will present core elements of the theory of POP as well as clinical examples to illustrate the contribution of POP in the context of embodiment and phenomenology.

POSTER SESSIONS

Thursday March 26th, 15.45 – 16.55

Session A (Senatsaal)

A1. Patricia CELIS BANEGAS & Diana FISCHMAN: Prochronism: a necessary concept in the study of human interaction

A2. Sergio CERVERA TORRES, Susana RUIZ FERNANDÉZ, Martin LACHMAIR & Peter GERJETS: The effect of arm movement direction on valence and arousal judgment of emotional pictures

A3. Michael GAEBLER: Measuring the embodied mind in psychophysiological research: a practical perspective

A4. Eleana GEORGIOU & Olga POLLATOS: The role of interoceptive sensitivity, body illusion and empathy among teenagers

A5. Thilo KELLERMANN: The circularity of scientific mind in the claim to explain the body

A6. Berit LINDAU & Sascha TOPOLINSKI: Onomatopoeia: The effects of word-sound word-meaning congruence on memory

A7. Sandra MAI & Olga POLLATOS: Interoceptive sensitivity and emotion: Evidence from heartbeat evoked brain potential

A8. Juval PORTUGALI & Egbert STOLK: Urban planning and design as a link between embodied cognition, construal level theory and information adaptation

Session C (Hallway HS 15)

B1. Joan DE WIT, Ruurd VAN SCHUIJLENBURG & Freerk YKEMA: Rock and Water Programm

B2. María Isabel GAETE, Elisa VOLANTE, Daniel PUMARINO, Stephanie VACCA-REZZA & Javier CARRASCO: Attentional Focus on the Body and Eating Disorder Symptoms - The Role of Alexithymia Traits

B3. Christoph KUHN, Cornelius BÜCK & Thomas MÜLLER: Modeling Schizophrenia as an Inhibition Failure of Feedforward & Feedback Reverberations in Recursive Bayes

B4. Lily MARTIN, Sabine KOCH, Thomas FUCHS & Anna AUCKENTHALER: The Effect of Dance and Movement Therapy on Negative Symptoms of Patients with Schizophrenia

B5. Laura E. MÜLLER, André SCHULZ, Andrea GÄBEL, Dorothee GESCHER, Angelika SPOHN, Sabine HERPERTZ & Katja BERTSCH: Neural correlates of disturbed bodily awareness – a prerequisite for emotional dysregulation in borderline personality disorder?

B6. Markku PENTTONEN, Virpi-Liisa KYKYRI, Anu KARVONEN, Jukka KAARTINEN, Jarl WAHLSTRÖM, Juha HOLMA & Jaakko SEIKKULA: Relational Mind in Events of Change in Multicator Therapeutic Dialogues

B7. Sabine C. KOCH, Jessica GAIDA, Elisabeth MANDERS, Maik SIEBER, & Thomas FUCHS: Dance Therapy for Autism: Effects on Body Image

ABSTRACTS – POSTER PRESENTATIONS

(in alphabetical order)

Patricia CELIS BANEGAS* & Diana FISCHMAN,** *La Plata (Argentina), **Buenos Aires (Argentina)

Prochronism: a necessary concept in the study of human interaction

Social interaction can be understood as any process in which human beings communicate and influence each other. The exchange and reformulation of meanings are developed in verbal and non-verbal dimensions such as words, looks, gestures, physical contact, and the use of inter-individual space, clothing and ornamentation. These ways of communication can be analyzed from their biological, subjective and sociocultural complexity.

Studies of human interaction investigate recursive processes in which human beings interact and modify their future actions in accordance with other people and their contexts.

This paper proposes to work on a new concept developed by Gregory Bateson, called prochronism. This notion comes from biology and its special feature is that of being a linking concept between human beings and the history of their interactions in the world. It states that all organisms have in their shapes evidences of previous growth. There are many biological examples: mollusk shell drawings or tree rings which indicate the environment where they grew up, etc. In these examples, circumstances are part of living beings; they form part of their biology.

We, as human beings, embody and express traces of our history of experience. Every experience is embodied and leaves traces; it is embedded in our skin, in our way of walking, in our postures.

Those traces, those marks are always enactive because they emerge from our actions in the world and with the world. If we accept this concept, we assume that our movements are parts and witnesses of our links with other people, which constitute us in the here and now.

Sergio CERVERA TORRES, Susana RUIZ FERNANDÉZ, Martin LACHMAIR & Peter GERJETS, Tübingen (Germany)

The effect of arm movement direction on valence and arousal judgment of emotional pictures

Several studies have shown that the space surrounding the dominant hand is associated to positive valence, whereas the space surrounding the non-

dominant hand is associated to negative valence (Casasanto, 2009). Further studies examining whether this association is related to hand or to side suggest a hand-valence association rather than a side-valence association (de la Vega et al., 2013). Based on these findings, the present study examines whether horizontally performed arm movements on a multi-touch device may influence valence and arousal judgment of affective IAPS-pictures (Lang et al., 2008). Two groups of right-handed participants were presented positive, negative and neutral IAPS-pictures. One group moved the pictures with their right hand from left to right; another group moved the pictures with their left hand from right to left. Participants rated the presented pictures before (time 1) and after the movement (time 2). Preliminary results suggest that positive, negative and neutral pictures are rated more positively at time 2 than at time 1 independently of movement direction. Results also suggest that arousal rates of positive, negative and neutral pictures varied between time 1 and time 2 in dependence of movement direction. Specifically, when participants moved the pictures to the right the arousal estimation is higher in time 2 than in time 1 than when they moved the pictures to the left.

Joan DE WIT*, Ruurd VAN SCHUIJLENBURG & Freerk Ykema***,** *Baldham (Germany), **Bunde (Germany), ***Schagen (Netherlands)

Rock and Water Programm

History: Rock and Water was initiated in the 90's by Freerk Ykema, Sports-and remedial teacher, and was originally creatad as an anti agression programm for boys. Working with the programme in a highschool in Schagen (Netherlands) it was obvious that the psycho-physical approach was suitable for girls also. Nowadays, the program developed successful ways to work with ADHD and autistic children as well. The Rock and Water principles also can lay a basis for effective therapy of traumatised patients.

Operation basis: In life we have 2 basic attitudes: (1) Rock: strong, unmovable, hard, solid; (2) Water: fast, moving, flowing. These attitudes are transferable in 3 levels. First the physical level:

rock:	water:
* standing strong	* flowing movements
* breathe deeply	* breathe deeply
* concentrate on the inside	* concentrate on the outside

By exercises and games the body awareness is trained. By bodywork and games with partners or in a group, the just learned feature is immediately sensed and experienced by the participants. In this way, the way the connection between what I feel (physically) and the causality between what I do and what the consequences of my actions are, gets clear immediately.

Second, the psychological level:

rock:	water:
* seek and set your boundries	* accept boundaries from others
* stay to your opnion	* listen to others, get informed
* stay to yourself and your needs	* open up, make contact to others

The transformation from body language to verbal language, while keeping your body awareness, is trained by exercises and games. In this way you create a possibility to open up and communicate your feelings and needs and in the same time understand and listen to others and their needs.

Third the spiritual level: In our society, family, work or school setting, both qualities, rock and water, are equivalent important. We as human beings are connected to one another and this connection is based on rock and water principles. They are to be seen and experienced as a whole, so is our personality. They are working tools, to learn to be aware of one's own possibilities and needs.

Michael GAEBLER, Leipzig (Germany)

Measuring the embodied mind in psychophysiological research: a practical perspective

While the cognitive turn emphasized the brain's role for the human mind, the affective turn extended the focus towards the rest of the body. Furthermore, in recent years it has been increasingly acknowledged that mental processes are situated, that is, they are embodied and interact with the natural, technological, and social environment. The "4Es" of the embodied, embedded, extended, and enactive mind promise to fill the gaps between the brain and the mind that cognitivism couldn't fill – especially also with respect to psychopathologies, which almost always involve bodily disturbances and affect the patients' environments.

Despite a lively *conceptual* debate in philosophy of mind and other brain and mind, the assessment of brain-body-environment interactions in neuroscientific experimentation has been rare. Reasons are that complex environments are hard to experimentally control and that brain activity is commonly acquired in very restricted setups, in which movement usually decreases data quality.

Recent technological developments may change this shortcoming:

1) While the acquisition of brain activity in freely-moving subjects in real-world environments is limited (but cf. Pieper et al., 2014), physiological parameters in the periphery of the body can indeed be measured in subjects' everyday lives. Ambulatory assessment of motion patterns and

physiological measures can be more easily combined and coupled with subjective reports acquired via experience sampling.

2) Between the simplicity of lab settings and the infinite complexity of real-world environments, fully immersive virtual reality environments have become more easy to set up. They not only enable complete control over sensory stimulation and enable interaction but also facilitate the measurement of physiological data (e.g., Spanlang et al., 2014).

I will present these recent developments (together with preliminary data) and attempt to evaluate their practical relevance for psychophysiological research on the embodied mind.

María Isabel GAETE* & **, Elisa VOLANTE, Daniel PUMARINO**, Stephanie VACCAREZZA** & Javier CARRASCO**,** *Heidelberg (Germany), **Viña del Mar (Chile)

Attentional Focus on the Body and Eating Disorder Symptoms - The Role of Alexithymia Traits

Even though the attentional focus on the body is part of the described symptoms for eating disorders (EDs) such as body image disturbance, concerns about eating, body weight and shape; its study has been restricted to the symptomatic expression as the attentional biases for body image and food issues, setting aside the attentional focus on the body as expression of an 'embodied defense' of the *emotional bodily experience* (Gaete & Fuchs, in review). The present study is aimed to explore the role of alexithymia in the association between attentional focus on the body and eating disorder symptoms. By means of a self-reported set of questionnaires, 227 adults (ages 18-45) from a non-clinical Chilean population were asked about levels of attention to their bodies through different bodily conditions (sensorial, relational, sexual and emotional), about eating disorder symptomatology (EDEQ), and about alexithymia traits (TAS20). Results show that there is a positive significant relationship between the *global level of attention to the body*, through different conditions, (GAB) and ED symptomatology (r = .217, p < 0.01), and between *levels of attention to body at negative feelings of anger and sadness* (ABNF), and ED symptomatology (r = .179, p = 0.01). Both the relationship between GAB and ED symptoms, and between ABNF and ED symptoms, are moderated by levels of alexithymia, b = 0.050, 95% CI [0.72-0.938], t = 2.301, p = 0.022, and b = 0.329, 95% CI [0.62-0.597], t = 2.423, p =0.016, respectively. It shows that significant association between levels of attention to body (both global or at negative feelings) and ED symptoms only emerges in people with average or higher levels of alexithymia traits, but not

with low ones. Clinical implications of alexithymia traits as part of an embodied disturbance of emotional bodily experience are discussed.

Eleana GEORGIOU, Olga POLLATOS, *Ulm (Germany)

The role of interoceptive sensitivity, body illusion and empathy among teenagers

Interoceptive and exteroceptive processes might interact with each other in order to form the holistic state of body-awareness. Previous studies on adults have demonstrated that not only interoceptive sensitivity but also body illusion plays an important role of one's empathetic state/ability. However while this raises lots of questions, there is still a lack of research regarding the developmental processes of interoceptive sensitivity and embodiment and moreover their interaction with empathy. The scope of this study is to investigate the neural processing of these mechanisms and their interrelation among teenagers. For this reason 57 teenagers aged between 12 to 17 years were recruited to participate in this EEG study. Results highlight the importance of body awareness, which is a multisensory process, in regulating empathetic emotions in adolescence.

Thilo KELLERMANN, Aachen (Germany)

The circularity of scientific mind in the claim to explain the body

This poster deals with a rather old problem in the natural sciences which revives permanently in different guises. In the pursuit of finding the ultimate laws which govern the experientially accessible world, some protagonists of the natural sciences reverse the onus of proof when insisting on the existence, validity and observability of global, all-embracing, mechanistic laws. A clear conceptual distinction between descriptions of empirical data and their meaningful interpretations is a scientific value which can hardly be overestimated. The supremacy of the so called "hard" natural sciences forces its members to exclusively rely on quantitative, observable measures. The empirical life sciences sometimes perform a balancing act by trying to subsume empirical facts under an explaining theory while denying any additional assumptions at the same time. This balancing act yields counterintuitive and contradictory conceptions of biological systems which have to be "explained" by pure randomness which is assumed to underlie formation history of life as well as phylogeny. Such tensions between assumed a priori deterministic principles and post hoc explanation by chance within the empirical sciences have to be unmasked and disputed thereby lifting the debate out of the

empirical sciences to humanities in general and philosophy and epistemology in particular. These different perspectives of the involved disciplines in turn reside in an area of conflict which might be characterized as diverse or incongruent concepts of causality, function or purpose (teleology vs. teleonomy), mind, cognition and embodiment. In this sense this work can be regarded as an invitation to philosophers to object to any claims of so called theories of everything or related pretensions.

Sabine C. KOCH, Jessica GAIDA, Elisabeth MANDERS, Maik SIEBER & Thomas FUCHS, Heidelberg (Germany)

Dance Therapy for Autism: Effects on Body Image

Christoph KUHN, Cornelius BÜCK & Thomas MÜLLER, Bern (Switzerland)

Modeling Schizophrenia as an Inhibition Failure of Feedforward & Feedback Reverberations in Recursive Bayes

In order to describe the brain's processing of a sequence of data we propose the implementation of a simple recursive Bayes, whereby the posterior (the conception assigned after the evidence is taken into account) is set to be the prior (the conception before the evidence is taken into account) for the next data point represented by its likelihood. Moreover, we include both feedback connections augmenting a small amount of likelihood to the prior and feedforward connections augmenting a small amount of prior to the likelihood. By variation of augmentation levels, we observe the following reverberation patterns:
(i) a considerably slow self-adjusting process of the pure recursive Bayes,
(ii) an increase in speed and accuracy by a tiny augmentation,
(iii) the destabilizing effect of a too-strong augmentation of likelihood, and
(iv) the fixation on the wrong spot of a too-strong augmentation of prior.
We then highlight the connection of pattern (ii) to the physiology of the normal brain and the connection of patterns (iii) and (iv) to the pathophysiology of schizophrenia as an inhibition failure in its states of generating respectively strong perceptions (hallucinations) with jumping to rash conclusions and holding to "unshakable" - but false - preconceived cognitive beliefs (delusions).

Berit LINDAU & Sascha TOPOLINSKI, Cologne (Germany)

Onomatopoeia: The effects of word-sound word-meaning congruence on memory

The characteristic of onomatopoetic words is that their articulation produces the sound of the denoted object or action. Articulating the verb “to hum”, for example – as well as its German equivalent “summen” – creates a similar sound as the one we want to describe when talking about a humming bee. It is therefore probable that reading an onomatopoetic word does not only lead to a semantic activation, but also activates the modal acoustic information associated with it. Onomatopoetic words should consequently entail a stronger multimodal encoding and thereby lead to memory advantages compared to non-onomatopoetic words. To test this hypothesis, we presented participants with onomatopoetic German verbs and matching non-onomatopoetic synonyms. The frequency with which these words occur in the German language did not differ between conditions, and all words were pretested for their onomatopoetic quality. After the stimuli presentation and a break of either one or two minutes, participants were asked to recall the words they had just read. First results showed a memory advantage for the onomatopoetic words over the non-onomatopoetic synonyms, but only in the condition with a shorter break before recall (60 seconds), not when recall started after 120 seconds. This result might indicate that the memory advantage of the onomatopoetic words by activation of their acoustic association is only a short term effect and does not last for a longer period of time. In both groups of words, words used more frequently in the German language were remembered better than less frequent ones. This was especially true for the recalled non-onomatopoetic words which had a significantly higher average frequency of occurrence in the German language than the recalled onomatopoetic words. Future studies are outlined.

Sandra MAI & Olga POLLATOS, Ulm (Germany)

Interoceptive sensitivity and emotion: Evidence from heartbeat evoked brain potential

Theories of emotion highlight the importance of self-perception of physiological bodily signals in emotional experiences. This study investigated the relationship between interoceptive sensitivity and both the neural processing of interoceptive signals and the subjective emotional experience of affective, empathic and food pictures in adolescents. We used the heartbeat-evoked potential (HEP) as a neural indicator of interoceptive processing. The HEP is a brain wave that appears contingent on the heartbeat and is assumed to reflect cortical processing of cardiovascular signals. Fifty-seven healthy

adolescents (age 12-17 years) performed a heartbeat perception task and subjects were subdivided according to their results into good and poor heartbeat perceivers. EEG and ECG were recorded while subjects viewed pictures of emotional faces (Karolinska Directed Emotional Faces, KDEF), of food (food pics) and of unpleasant, painful and neutral IAPS stimuli. Classification performance of emotional faces as well as ratings of valence and arousal of IAPS and food stimuli were assessed. We want to investigate whether the HEP amplitude is modulated by heartbeat performance, emotional stimuli and self-reported affective ratings and want to test for possible interactions. In addition we want to examine possible relationships between the HEP and self-reported scores of alexithymia, interoceptive awareness and eating disorder specific features. We expect to shed further light on the relationship between interoception and emotion with regard to interoceptive cortical processing.

Lily MARTIN*, Sabine KOCH, Thomas FUCHS** & Anna AUCKENTHALER***, *Berlin, **Heidelberg (Germany)

The Effect of Dance and Movement Therapy on Negative Symptoms of Patients with Schizophrenia

Negative symptoms of patients with Schizophrenia, such as flat affect or impoverished speech, language and movement, are found to be mostly resistant to change through medical treatment or conventional group therapy (Arango, Buchanan, Kirkpatrick & Carpenter, 2004; Erhart, Marder & Carpenter, 2006; Vauth, 2012). Apprehending Schizophrenia as a form of *Disembodiment* of the self, a number of scientists have hypothesized that the approach of *Embodied Cognition* and its associated treatment methods might be more suitable to explain the psychopathology underlying the mental illness and address its symptoms (Fuchs, Sattel & Henningsen 2010; Fuchs & Schlimme, 2009; Koch, 2011; Koch & Fishman, 2011; Koch & Fuchs, 2011). Hence the present study amongst other things aimed to examine the effect of body oriented psychotherapy on negative symptoms of patients with schizophrenia. Specifically increase in affect expression and changes in experience of self in interaction were investigated. In a randomised controlled cross-over design a sample of 60 patients diagnosed with schizophrenia after DMS-IV criteria was treated with Body Oriented Psychological Therapy (BOPT) (Röhricht, 2010). Patients being in a state of acute psychosis were excluded. Negative symptoms of schizophrenia and their potential reduction were quantified by the Scale for the Assessment of Negative Symptoms (SANS), (Andreasen, 2005). Differences between treatment and control groups as well as inter- and intraindividualchange of affectexpression over timewill be investigated.

Laura E. MÜLLER*, André SCHULZ, Andrea GÄBEL*, Dorothee GESCHER*, Angelika SPOHN* & ***, Sabine HERPERTZ* & Katja BERTSCH***, *Heidelberg (Germany), **Luxembourg (Luxembourg), ***Mannheim (Germany)

Neural correlates of disturbed bodily awareness – a prerequisite for emotional dysregulation in borderline personality disorder?

One of the core symptoms of the borderline personality disorder (BPD) is emotional dysregulation. Fundamental for the understanding and regulation of emotions is a good body perception (interoceptive sensitivity, IS). A better IS leads to a better ability to perceive and regulate own emotions. The aim of the study was to analyze the cortical representation of bodily signals with the heartbeat-evoked potential (HEP) and the association with emotional dysregulation and depersonalization from N = 34 BPD patients, N = 31 healthy controls and N = 17 remitted BPD patients. Furthermore, we analyzed the neural correlates of the HEP. After an 5-min-resting stated EEG/ECG (closed eyes), a high resolution T1 was obtained. The HEP was compared between the groups and was correlated with the gray matter volume in the whole brain and in predefined regions (AIC: anterior insular cortex, ACC: anterior cingulate cortex). Compared to heathy controls the HEP of the BPD patients was reduced; the HEP of the remitted BPD lay in between the two other groups. Furthermore, the HEP correlated significantly with the gray matter volume in the AIC and the ACC and with the emotional dysregulation and depersonalization of a participant. A reduced cortical representation of bodily signals might explain why BPD patients have difficulties to understand their subjective feelings, to regulate their emotions and report experience of estrangement from the own body. The HEP correlated significant with two important regions that have been associated with the ability to perceive the own heartbeat (AIC, ACC). The HEP of the remitted BPD points to a better cortical representation of bodily signals with symptom remission.

Markku PENTTONEN, Jaakko SEIKKULA, Virpi-Liisa KYKYRI, Anu KARVONEN, Jukka KAARTINEN, Jarl WAHLSTRÖM & Juha HOLMA, Jyväskylä (Finland)

Relational Mind in Events of Change in Multiactor Therapeutic Dialogues

In our view human mind is relational and embodied. Couple therapy with two therapists provides a good opportunity to study the embodied nature of therapy.

This project is unique in two respects. First, no comprehensive studies have been performed on the mutual synchronization and attunement of psychotherapist and clients that encompasses (a) biological (b) psychological and

(c) social aspects. Secondly, this study will include both therapists and clients as participants.

In all therapy sessions clients and therapists are video recorded with two cameras to show postures and bodily gestures, and with four cameras to show facial expressions. In the beginning of therapy and towards the end of the process autonomic nervous system measuring sensors are attached to each participant to record skin conductance, respiration and heart rate. The clients' well-being and psychological symptoms are monitored throughout the therapy with questionnaires. The participants also fill out a questionnaire about the content and interaction of each session.

As far as we know, this project is the first to conduct an analysis of embodied attunement within dialogical psychotherapy practice in a real-world situation. Data gathering is in process, but so far we have 11 different couple therapy cases with 10 different therapists and 22 clients.

Initial findings are in line with our basic hypothesis concerning embodied attunement taking place in couple therapy sessions, but attunement seems to be more complex than we expected.

Measuring sessions provide enormous amount of detailed information. We need to integrate all the measured information to make more precise hypotheses and analysis about the ways in which the therapists and clients synchronize their embodied reactions in dialogue.

Juval PORTUGALI*, Egbert STOLK,** *Tel Aviv (Israel), **Delft (Netherlands)

Urban planning and design as a link between embodied cognition, construal level theory and information adaptation

Planning and design as two basic human activities are related to *embodied cognition* as well as to several other cognitive domains. In this paper we focus on urban planning and design and its relations to three such domains: embodied cognition that treats the mind, body and environment as a single system, Trope and Liberman's *construal level theory* (2010) that deals with psychological distance and its role in processes of abstraction and the notion of *information adaptation* recently introduced by Haken and Portugali (2015). We first examine separately the relations between urban planning and design and each of the above three domains and then their interconnections as a complex adaptive system.

LIVED EMBODIMENT PROGRAM

WORKSHOPS, BODYMIND WAKE UPS, CONFERENCE PARTY – ABSTRACTS

Pre-conference workshops - Wednesday, March 25th, 14-18h

Thomas HEIDENREICH, Esslingen (Germany)

Embodiment in mindfulness-based interventions

Mindfulness-based interventions (MBI) such as mindfulness-based stress reduction and mindfulness-based cognitive therapy (MBCT) have become prominent in both clinical and prevention settings. While the main aim of MBIs is to enable participants to be more mindful (e.g. intentionally maintaining an attentional focus on the present moment without judgment), embodiment exercises such as the body scan, walking meditation and yoga postures play an important role in teaching. The workshop gives an overview of MBIs, their foundations as well as the empirical status regarding efficacy and possible mechanisms of action. Embodiment exercises that are part of MBIs are introduced experientially in the workshop.

Miriam KYSELO, Amsterdam (Netherlands)

Enacting the Self - A Bodily Exploration of Self with Others

This workshop offers an opportunity to explore the dynamics of self-construction in interaction with others at the embodied level of self-experience. Through movement, stillness and touch we will discover in individual and group exercises how feelings of distinction and separation and of openness and connectivity that form part of our everyday social existence find expression in our bodies. In a playful manner we will raise awareness of our role and position as an individual in a social context that at times aims to engage with but at others also to disengage from others. The exercises will be based on a mix of guided and improvised activities derived from Yoga, Vipassana meditation practice, and contact improvisation dance.

During the practical session participants are invited to bracket scientific or reflexive judgment allowing them for a short period of time to simply be (bodily). After the practical session we will have a feedback-discussion round in which the workshop participants are then invited to share and reflect on their previous experiences.

BodyMind Wake Ups – Friday & Saturday, March 27th & 28th, 8.15-9.00h

Sandra ADIARTE, Heidelberg (Germany)

Continuous dimensions

Stabilizing the body through the concepts of Laban Movement Analysis / Bartenieff Fundmentals (LMA/BF) to facilitate equilibrium for a creative body and mind.
This workshop invites movers of all levels to participate in an experimental journey around movement creation and observation. Rudolf von Laban´s concepts and theories will guide us in our search for expressive pathways within our body and mind aiming to enrich our versatility in our creative, explorative practice. Starting from a breath- and alignment-based warm up we will bring attention to our body and will get in touch with our personal creational core. Observations, tasks and conceptual pinpoints around Laban´s definitions of Space Harmony and his Effort Theory are going to support our explorations in free movement improvisation.

Jana BERG, Heidelberg (Germany)

Awakening in motion

Welcoming the body from the beginning of the day, we will start with an awakening workshop for body and mind in which we choose different practices to focus our attention to the body and integrate it through a warm up in movement.

Angela GUERREIRO, Heidelberg (Germany)

Moving Intelligent Bodies

The warm-up unfolds slowly and gradually. A guided warm-up incorporating somatic practices (release technique and Body Mind Centering) and an embodied movement approach will be applied. Softly and respectfully we will perceive, think, feel and explore walking patterns, imagery, awareness of bodily systems and the action of touch and being touched. These physical experiences based on somatic practices are the core of the class, providing content for guided individual and group improvisations, encouraging participants to observe their naturally intelligent bodies in motion.

Nicole HARTMANN, Heidelberg (Germany)

Playing with strength and resistance

In this morning Wake-Up we will play with supporting and constraining each other's movements in different ways. Giving in, going against or letting go – we will explore the variety of communication possibilities in movement, finding our strength and our effortlessness! Elements of contact improvisation, body work and the martial art Aikido are integrated in this morning training. You do not need to have any dance experience, just come and move!

Conference Party – Friday, March 27th, 20.30-00.30h

Sandra ADIARTE, Jana BERG & Angela GUERREIRO, Heidelberg (Germany)

Introduction to Dance Night (Conference Party) with Laban Movement Qualities

Three dancers and dance movement therapists in training at SRH University Heidelberg will accompany you into the movement qualities at the beginning of the joined dance night. Have fun!

Post-conference workshops - Saturday, March 28th, 15-18h

Diana FISCHMAN, Buenos Aires (Argentina)

Transcontextual Metapatterns in Dance/Movement Therapy

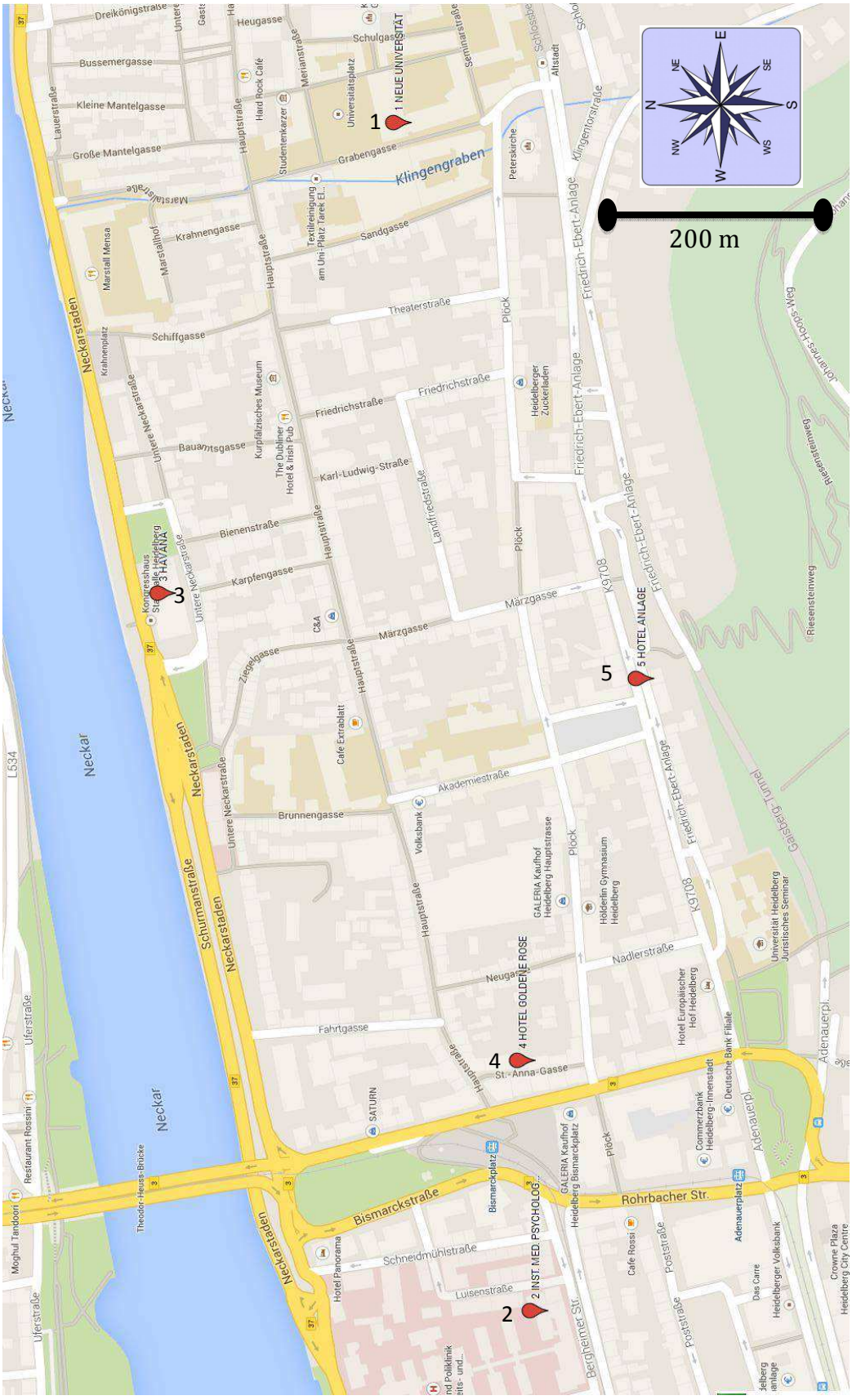
This workshop is an invitation to observe metapatterns (Volk, 1995; building on Bateson) in its relation to transmodality (Stern, 1985, 2004), forms of vitality (Stern, 2010), and metaphor (Lakoff& Johnson, 1980, 1999) as embodied in human experience and understanding. We explore meaningful movement patterns of group dynamics (Schmais, 1998) embedded in our ways of relating, and how the theoretical concepts can apply to Dance Movement Therapy. We discuss movement symbolic efficiency (Levy Strauss, 1963; Schott Billmann, 2009) as imbued in movement patterns from an embodied enactive perspective (slides, movement experience and video).

Suzi TORTORA, New York (USA)

The Dancing Dialogue: The Felt-Experience of Embodied Implicate Knowing and Its Role In the Development of Self, and Self - Other Relationships

There is growing interest in the infant's experiences that occur outside of verbal conscious awareness. These nonverbal experiences have been analyzed to explain the infant's experience of self and other in the developing attachment relationship; how the infant learns to process information in her developing sense of self; infant memory; and infant psychotherapy. "Implicit knowing" (Stern), "moment-to-moment implicit processes" (Beebe and Larchmann), "intersubjectivity" (Trevarthen), "body to body-biology to biology" (Pally), and "perceptual-cognitive-affective- sensory-motor schemata" (Gaensbauer) are some of the current terms that describe these nonverbal processes. Through experiential explorations this workshop will highlight the imperative role of body/movement experience, nonverbal understanding, and nonverbal expression play in the development of self and self and other.

LOCATION PLAN: HEIDELBERG



1 = **Neue Universität, Universitätsplatz (Foyer, HS14, HS15, Senatsaal)**

2 = Institute of Medical Psychology, Bergheimer Str. 20 (Conference Party & workshops)

3 = Havana, Neckarstaden 24 (Informal Get-Together)

4 = Hotel Goldene Rose, St.-Anna-Gasse 7

5 = Hotel Anlage, Friedrich-Ebert-Anlage 32