

**KOSMOS Summer University September 1-14, 2013**  
**"Human sociality and the brain. Decision making in social contexts"**

Schedule WEEK 1				
Time	Title	Abstract	Lecturer	Venue
<b>Sunday, September 1, 2013</b>				
17.00-18.00	<i>Arrival of the participants and registration</i>			
18.00	Welcome and introduction	Welcome and introduction to the Summer School by Michael Pauen and John-Dylan Haynes	Michael Pauen, John-Dylan Haynes	Humboldt Graduate School (HGS), Festsaal
20.00	<b>Welcome reception</b>		<b>All</b>	Room 144, Foyer
<b>Monday, September 2, 2013</b>				
09.00-12.00	<b>The problem of other minds. Main (neuro-scientific) approaches to intersubjectivity</b>	Social life rests in large part on the capacity to understand the behavior of others. Which are the neural mechanisms underpinning this capacity? The neuroscientific approach to social cognition has been strongly influenced by cognitive theories of the human mind. Some of these theories will be briefly presented and discussed together with the epistemological problems related to their translation into a neuroscientific research agenda. Neural mechanisms related to our relationship with space, objects and actions will be introduced and discussed. Finally, an embodied, bottom-up approach to social cognition will be introduced.	<b>Vittorio Gallese</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Presentation of projects A	Group 1-4	Gallese, Bar, Dziobek, Haynes	
	Workshop grant writing B	Group 5-8	Grant proposal trainer	

Tuesday, September 3, 2013				
09.00-12.00	<b>The proactive brain: Predictions in visual cognition</b>	It is proposed that the human brain is proactive in that it continuously generates predictions that approximate the relevant future. Building on previous work, this proposal posits that rudimentary information is extracted rapidly from the input to derive analogies linking that input with representations in memory. The linked stored representations then activate the associations that are relevant in the specific context, which provides focused predictions. These predictions facilitate perception and cognition by pre-sensitizing relevant representations. In the talk I will concentrate on top-down predictions particularly in visual object recognition and in the application of contextual knowledge in the human brain. This cognitive neuroscience framework provides a new hypothesis with which to consider the purpose of memory, and can help explain a variety of phenomena, ranging from recognition to first impressions, and from the brain's 'default mode' to a host of mental disorders.	<b>Moshe Bar</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Presentation of projects B	Group 1-4	Grant proposal trainer	
	Workshop grant writing A	Group 5-8	Walter, Pauen, Brass, Johnstone	
<b>18.00</b>	<b>Future memory</b>	Our subjective intuition about memory is that, like a photo-album, it is there to help us reminisce on things past. However, recent theoretical and empirical developments indicate that memory has a more profound role in our lives, which is to prepare us for the future. Indeed, there is a striking overlap between the brain structures that are active when thinking about the past and when imagining the future. After overviewing the different types of memory, and the brain networks that subserve them, the talk will describe the idea of 'memory for the future' and present recent evidence to support it. The role of mental simulations will also be discussed in this context. With this framework in mind, it becomes clearer what determines the information that remains in memory and, perhaps more interestingly, why do we daydream.	<b>Moshe Bar [Host: Michael Pauen]</b>	

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Wednesday, September 4, 2013				
09.00-12.00	<b>The neural basis for a balanced emotional system</b>	Emotions serve important roles in guiding our decisions and preparing us for action, particularly in contexts of great personal relevance. Yet an emotion system that dominates can disrupt behaviour and ongoing cognitive activities. The human brain has thus evolved to support control systems that allow us to fine tune the balance between emotion and cognition. In this lecture I will review the different experimental approaches that have been used to investigate the interplay between emotion and cognition. Mechanisms of emotion regulation, from the highly automatic, largely unconscious example of extinction learning, to more controlled processes such as those examined with flanker and modified stroop tasks, through to cognitively elaborate reappraisal of emotional stimuli will be compared. Several possible common neural mechanisms will be discussed, along with promising approaches to unify sometimes disparate theory and research into emotion regulation, conditioning and extinction, and cognitive control.	<b>Tom Johnstone</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work on projects A	Groups 1-4	Gallese, Bar, Dziobek, Haynes	
	Group work on projects B	Groups 5-8	<i>(without lecturer)</i>	

Thursday, September 5, 2013				
09.00-12.00	<b>A cognitive neuroscience hypothesis on mood</b>	Mood has a direct impact on mental and physical health, but our understanding of the mechanisms underlying mood regulation is limited. We propose that there is a direct reciprocal relation between the cortical activation of associations and mood regulation, whereby positive mood promotes associative processing, and associative processing promotes positive mood. This relation might stem from an evolutionary pressure for learning and predicting. Research in my lab has identified a network of brain regions that mediate cognitive-associative processing in healthy humans. A critical insight that links our findings to studies of mood and depression concerns the fact that depression is associated with both structural and functional abnormalities in these same brain regions. The proposed framework has many implications, most notably for diagnosing and treating mood disorders such as depression; for elucidating the role of inhibition in the regulation of mood; for contextualizing adult hippocampal neurogenesis; and for a general, non-invasive improvement of well-being.	<b>Moshe Bar</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work on projects A	Group 1-4	<i>(without lecturer)</i>	
	Group work on projects B	Group 5-8	Walter, Pauen, Brass, Johnstone	
<b>18.00</b>	<b>Embodied simulation: a second-person approach to social cognition</b>	The discovery of a mirror mechanism for action, emotions and sensations suggested an embodied approach to simulation – Embodied Simulation (ES). ES provides a new empirically based notion of intersubjectivity, viewed first and foremost as intercorporeity. ES challenges the notion that Folk Psychology is the sole account of interpersonal understanding. Before and below mind reading is intercorporeity as the main source of knowledge we directly gather about others. By means of ES we do not just “see” an action, an emotion, or a sensation and then understand it through an inference by analogy. By means of ES we can map others’ actions by re-using our own motor representations, as well as others’ emotions and sensations by re-using our own visceromotor and somatosensory representations. ES provides an original and unitary account of basic aspects of intersubjectivity, demonstrating how deeply our making sense of others’ living and acting bodies is rooted in the power of re-using our own motor, emotional and somatosensory resources. The notion that a theoretical meta-representational approach to the other is the sole/main key to intersubjectivity will be challenged and a second-person approach to intersubjectivity will be proposed. Some wide-ranging implications of this model will be briefly discussed.	<b>Vittorio Gallese</b> [Host: <b>Michael Pauen</b> ]	HGS, Festsaal

<b>Friday, September 6, 2013</b>				
09.00-12.00	<b>Motor cognition: Mirror neurons and the actions of others</b>	The cortical motor system has been for decades viewed first and foremost as a dumb machine presiding over and controlling our movements. Three decades of neuroscientific research radically changed this picture, by showing that the cortical motor system in fact plays a crucial role in complex cognitive abilities such as the understanding of the intentions and goals of actions. In particular, the functional properties of the mirror neurons mechanism indicate that basic forms of action understanding may be primarily based on the motor cognition that underpins one's own capacity to act. The aim of this lecture is to concisely describe and motivate the pivotal role of such motor.	<b>Vittorio Gallese</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work A and B	All groups	<i>(without lecturer)</i>	
<b>Saturday, September 7, 2013</b>				
<i>Cultural program and working on projects (t.b.a.)</i>				
<b>Sunday, September 8, 2013</b>				
<i>Cultural program and working on projects (t.b.a.)</i>				

Schedule WEEK 2				
Time	Title	Abstract	Lecturer	Venue
<b>Monday, September 9, 2013</b>				
09.00-12.00	<b>Human volition: From high-level beliefs to motor cognition</b>	The human will has an enduring fascination for philosophers, psychologists and neuroscientists. Nevertheless, a deeper understanding of the cognitive mechanisms and functional-anatomical principles underlying human volition is still lacking. The aim of the current lecture is to highlight recent brain imaging work on intentional action, and to relate social psychological concepts of human volition to the functional neuroanatomy of intentional behaviour.	<b>Marcel Brass</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work on projects A	Groups 1-4	Vignemont (for Gallese), Bar, Dziobek, Haynes	
	Group work on projects B	Groups 5-8	<i>(without lecturer)</i>	
<b>18.00</b>	<b>Feeling another's pain</b>	There has been an ubiquitous and often confusing use of the term 'empathy' and its cognates in recent experimental investigation of social cognition. But what actually happens when you empathize with another individual? Do you merely perceive that the other is in pain? But there is an affective valence of the state you are in that is not found in mere perception. Does that mean that you literally feel pain? But you're not injured and you do not behave as if you were really in pain. Do you then hallucinate being in pain? But the content of a hallucination is clearly false while there is a sense in which your empathy can be accurate. It may then be that you imagine being in pain. But how can your pain imagery lead to the knowledge that another individual is in pain? In this talk, I will situate empathetic states in the architecture of the mind. To do so, I will assess the relationship between empathy, perception, imagination, action and mindreading.	<b>Frédérique de Vignemont [Host: Michael Pauen]</b>	HGS, Festsaal

Tuesday, September 10, 2013				
09.00-12.00	<b>Putting a positive spin on emotion regulation</b>	Humans have long had an ambivalent relationship with their emotions. Emotions are the inspiration for pinnacles of human art, literature and music. But emotions are also the driving force behind the worst examples of human behaviour. Are emotions to be celebrated, or feared? In this talk I will discuss the scientific evidence that our brains are constantly engaged in a delicate emotional balancing act. I will discuss the neural systems that serve to manage emotions and moods in such a way that they contribute to, rather than interfere with the richness of our daily lives. I will also talk about what happens when these systems are disturbed, and how the neuroscience of emotion regulation is helping us to create new interventions to restore the balance.	<b>Tom Johnstone</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work on projects A	Groups 1-4	<i>(without lecturers)</i>	
	Group work on projects B	Groups 5-8	Brass, Johnstone, Pauen, Walter *	

Wednesday, September 11, 2013				
09.00-12.00	<b>Mirror neurons: What do they really tell us about other people?</b>	Since their discovery first for action and then for emotion and bodily sensations, mirroring systems have been considered as the key of social cognition by many (e.g., Gallese, 2001; Gallagher, 2005; Goldman, 2006). For example, it has been shown that the motor system is activated not only when an agent executes a goal-directed action, but also when an observer perceives the same action performed by another agent (di Pellegrino et al., 1992; Rizzolatti et al., 1995; Grezes & Decety, 2001). On the basis of such results, it has been argued that we can directly perceive other people's intentions. Likewise, it has been shown that brain activity partially overlaps when one experiences touch or pain and when one observes another individual receiving a tactile or a painful stimulus (e.g., Singer et al., 2004; Keysers et al., 2004). These shared networks have conceived as the neural basis of empathy. All together, these results have been taken as evidence that our understanding of other people is "embodied". However, the interpretation of mirror neurons raises many questions. In what sense is social cognition embodied? Is it true that we can directly access other people's mental states? And more importantly, what information do mirror neurons carry about other people? What do we learn by mirroring others that we could not learn otherwise?	<b>Frédérique de Vignemont</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work on projects A	Groups 1-4	<i>reciprocal feedback on proposals - all groups</i>	
	Group work on projects B	Groups 5-8	<i>reciprocal feedback on proposals - all groups</i>	
18.00	<b>Shared representations of perception and action</b>	There is strong evidence that action observation leads to an activation of an internal motor representation in the observer. Such shared representations of perception and action are assumed to form the basis for imitation, action understanding and mentalizing. However, when we represent other people's behaviour in our own motor system is still poorly understood. Furthermore, the question arises how we can distinguish between our own motor intentions and externally triggered motor representations. In the first part of my talk, I will outline pre-conditions for shared representations. In the second part, I will review evidence for the important role of self-other distinction when observing other people's behaviour. Furthermore, I will present evidence that self-other distinction is also crucial for social cognitive skills such as mentalizing and action understanding. These data call for a revision of the standard view on how shared representations are related to action understanding and metalizing.	<b>Marcel Brass</b> [Host: <b>John-Dylan Haynes]</b>	HGS, Festsaal



Thursday, September 12, 2013				
09.00-10.20	<b>A dual system for mindreading?</b>	In the nineties, the debate seemed simple. It was framed in either/or terms either mindreading results from theorizing or from simulating. Since then, several hybrid views have been proposed and the data have become more complex. With the new hybrid views emerges what we might call the multiple routes hypothesis. On this view, there is more than one route leading to mindreading. The multiple routes hypothesis may then be in a position to account for new results both in neuroscience with the discovery of mirror systems and in developmental psychology with the new implicit versions of the false-belief task, which are successfully passed by infants as young as 13-month old. The multiple route hypothesis is then declined in many ways: low-level and high-level simulation, implicit and explicit mindreading, minimal and full-blown theory of mind, system 1 and system 2, and so forth. These distinctions raise a number of questions. In particular, along what the dimension(s) should mindreading processes be distinguished? Their automaticity? Their availability to consciousness? Their efficiency? Their flexibility? The conceptual apparatus they require? Or the types of mental states they target?	<b>Frédérique de Vignemont</b>	HGS, Festsaal
10.40-12.00	<b>The functional neuroanatomy of cognitive control</b>	In our daily life we permanently have to adjust our behaviour to changing environmental demands. This flexibility requires cognitive control processes and has been related to a set of brain regions within the frontal and parietal cortex. The aim of my lecture is to give an overview of current cognitive control theories. Furthermore, I will outline fMRI research on cognitive flexibility and how we implement instructions to guide our behaviour.	<b>Marcel Brass</b>	HGS, Festsaal
12.00-14.00	<i>Lunch break</i>			
14.00-16.00	Group work on projects A	Groups 1-4	Grant proposal trainer	
	Group work on projects B	Groups 5-8	Grant proposal trainer	
<b>18.00</b>	<b>Emotion: friend or foe? Examining the brain's delicate emotional balancing act</b>	Humans have long had an ambivalent relationship with their emotions. Emotions are the inspiration for pinnacles of human art, literature and music. But emotions are also the driving force behind the worst examples of human behaviour. Are emotions to be celebrated, or feared? In this talk I will discuss the scientific evidence that our brains are constantly engaged in a delicate emotional balancing act. I will discuss the neural systems that serve to manage emotions and moods in such a way that they contribute to, rather than interfere with the richness of our daily lives. I will also talk about what happens when these systems are disturbed, and how the neuroscience of emotion regulation is helping us to create new interventions to restore the balance.	<b>Tom Johnstone</b> [Host: <b>Henrik Walter</b> ]	HGS, Festsaal

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Friday, September 13, 2013				
09.00-12.00	Final presentations	Groups 1-8	All	Room 144, Foyer
12.00-14.00				
14.00-16.00				
20.00	Farewell party		All	
Saturday, September 14, 2013				
Departure				

Date: June 18, 2013

All rooms for the Summer University are located in the Humboldt Graduate School.

Address: Luisenstraße 56, 10117 Berlin

\* Group work with Henrik Walter has to be rescheduled and will take place Wednesday or Thursday - the group will work on their own on Tuesday