

December 4–6, 2014

Embodiment in Evolution and Culture

ABSTRACTS

Der Leib als Umschlagstelle von Natur und Kultur

Bernhard Waldenfels (Bochum)

Leibliches Verhalten, sei es Gehen, Wahrnehmen, Sprechen, Hantieren, Essen oder raumzeitliche Orientierung, entspringt diesseits von Natur und Kultur in einer Lebenswelt, in der alles mehr oder weniger natürlich vorgeprägt wie künstlich geformt ist. Es vollzieht sich in zwischenleiblichem Verkehr mit Anderen. Es verkörpert sich in einer Zwischensphäre von Werkzeugen, Apparaturen, Medien und Symbolen. Es zehrt von einer natürlichen Vorgeschichte. Die Natur fungiert innerhalb der Lebenswelt, bevor sie sich in Form alltäglicher Störungen, methodisch und technisch herbeigeführter Eingriffe oder pathologischer Spaltungen absondert. Unser Leib ist nicht aus einem Guss. Reine Natur und reine Kultur sind Konstrukte der Moderne, die aus einer naturalistischen oder kulturalistischen Leibvergessenheit resultieren.

The Philosophy of Embodiment:
Principles, Problems and Prospects

Markus Wild (Basel)

Embodied Cognition understands cognitive systems as systems, which become established in the interaction between an embodied agent and its environment. Is the relation between cognitive abilities and embodiment causal or constitutive? The problem that lurks here is the causal-constitution fallacy. The problem arises from the usual bottom-up-approach. I want to plea for a top-down approach and illustrate this stance with Polanyi's argument for Tacit Knowledge.

The Creation of Body Knowledge in Mimetic Processes

Christoph Wulf (Berlin)

Mimetic processes are principally orientated towards other people. Infants and small children assimilate the people with whom they live: parents, elder siblings, other relatives and acquaintances. In mimetic processes they also incorporate their cultural environments. In the course of these processes, children assimilate aspects of their home, such as rooms, particular corners, objects and atmospheres. People and objects of their environment are incorporated as "imprints" and stored in the body and in the imaginary world, where they are subsequently transformed into new images and memories that help gain access to people and culture. Culture is handed on by means of these processes of incorporating and making sense of people and cultural products. The mimetic ability to transform people and the external material world into images, transferring them into the internal worlds of images and making them accessible to others enables individuals to actively handle the relationship with other people and shape cultural realities. These processes encompass our modes of dealing with the material products of culture and with the social relationships and forms of activity and the way social life is staged and performed. In particular this involves forms of practical knowledge that are learned mimetically in body-oriented, sensory processes and enable us to act competently in institutions and organizations. Ritual knowledge, for example, is an important area of this practical social knowledge, and this is the means by which "imprints" of people and institutions become rooted in the human body, enabling us to orient ourselves in social situations. Images, schemas and movements are learned in mimetic processes, and these render the indi-

vidual capable of action. Since mimetic processes involve other human beings and products of history and culture, scenes, arrangements and performances, these processes are among the most important ways of handing down culture from one generation to the next.

The Upright Posture: Its Current Standing

Shaun Gallagher (Memphis)

In 1952 the phenomenological psychologist Erwin Straus published an essay entitled 'The Upright Posture'. He made a number of insightful claims, both about the evolutionary theories of attaining the upright posture and its cultural implications, noting consequences, not only for perceptual abilities, but also in regard to moral values and judgments. His more general claim is that 'the shape and function of the human body are determined in almost every detail by, and for, the upright posture'. As a way of updating Straus's essay, I'll look at these claims from the perspective of contemporary evolutionary views of bipedal locomotion, and I'll show the significance of the upright posture for embodied cognition.

Embodied Development of Language

Thomas Fuchs (Heidelberg)

The concepts of language prevalent in cultural and cognitive sciences regard it as a complex mental symbol system which is acquired mainly through maturation of suitable cognitive modules; social interactions play only a triggering role for this development. In contrast, from an embodied and enactive point of view there is no fundamental separation between sensorimotor and symbolic interactions of an agent with its environment. The acquisition of language is then conceived as resulting from embodied interactions with others, starting from expressive or interbodily resonance, then proceeding to iconic gestures and finally leading to symbolic modes of communication. This development is essentially based on understanding others as intentional agents, which is enabled by grasping their intentions as embodied in expressive, goal-directed and pointing gestures and as meaningfully embedded in the context of shared practices.

Stages of Embodied Articulation

Matthias Jung (Koblenz-Landau)

Human beings are embodied symbol-users. By performing bodily movements, they are capable of creating symbolic meanings which are intimately connected with the corporeal experience of living-in-the-world, but at the same time transcend the boundaries of the organism within its environment. The concept of articulation enables us to do justice to these two complementary aspects of the human

life form. After the concept is introduced, the semiotic of Peirce is used to show how the functional integration of different types of signs shapes our semiotic capabilities and with them our consciousness. Finally, the elaborated distinctions are tentatively put to the test by connecting them with the history of cultural evolution.

**The Scope of Neurodidactics:
Promises, Prospects and Limitations**

Andreas Draguhn (Heidelberg)

Neurobiology is one of the most dynamic, well-funded and publicly visible life sciences. One reason for this strong interest is that the brain is intricately linked to our nature as human beings – more than any other organ. Discoveries on the brain are, in this sense, discoveries on our nature as human beings, and manipulations of the brain affect our personality. With its increasingly powerful tools, modern brain research is now reaching out far into the classical humanities, claiming its importance for such divergent areas like legislation, arts, economy, religion and, not at least, didactics. In my presentation I will use the emerging field of “neurodidactics” to give a critical overview about typical patterns of arguments which are used to justify interdisciplinary claims of brain research. From there, we might reach a realistic account on the potential contributions of neuroscience to didactics, but also clarify its limitations.

**Didactics and Embodiment:
Historical and Philosophical Perspectives**

Steffen Schlüter (Koblenz-Landau)

For decades now, neurobiology has been producing innovative insights into brain processes as the basis of learning. Why then are such scientific contributions sometimes accepted by contemporary educational thought, but sometimes rejected? An answer could be sought in the traditional ways of thinking about pedagogical epistemology. The aim of educational action is to affect psychological dispositions. Success or failure are observed in overt behaviour and generalized from the observation. It is a classic assumption in pedagogical epistemology, and also an inherited occasionalist problem of brain research, that a decisive difference exists between psychic and physical factors of learning, as well as between their interactions.

**Between Claim and Reality of Neurodidactics
Comments from the History of Science**

Cornelius Borck (Lübeck)

What can the historian of the neurosciences add? If “history is life’s teacher” (Cicero), reflexive distance to the prevailing excitement about current progress in the neurosciences may be helpful for evaluating its significance: Attempts to adapt teaching regimes to results from experimental research have a long, but often futile or dubious history. The deep sociocultural embedding of learning questions the exact advantage of data from experimental research over accumulated empirical evidence. Finally, the historical

distance brings the continuing plasticity of brain research to the fore. Before neurodidactics adapts to allegedly latest insight, it should conceive of ways to strengthen research by pedagogical experience.

**Language – Action – Meaning:
Can Brain Science Contribute to the Understanding
of Social Communication?**

Friedemann Pulvermüller (Berlin)

According to recent action-oriented perspectives in cognitive neuroscience, brain mechanisms of cognition and language are built from those for action and action perception. Whereas traditional approaches have attributed specifically-human cognitive domains to genetic endowment and encapsulated processes, modern brain science has shown that mechanisms for speech sounds and symbols emerge as a result of sensorimotor functional interaction in the brain. Correlational Hebbian learning in anatomically prestructured network architectures binds articulatory-motor to auditory-perceptual (phonological) knowledge, and explains important aspects of the storage of (lexical) whole forms as symbols or constructions, combinatorial (syntactic, grammatical) linkage between stored forms, and context-dependent flexible (semantic, pragmatic) binding between forms, their meaning and interactive function. Therefore, it becomes possible to ‘spell out language in terms of neurons’. For example, when words become meaningful, their distributed neuronal assemblies link up with other networks processing ‘brain-embodied’ information about objects and actions. Similar learning can also emerge at the level of phrases and

whole constructions. In the case of idioms (for example: ‘She grasped the idea’), neuroimaging data suggest that semantic processes take place at the word level at the same time as at the construction level. For understanding the communicative function of words and constructions, predictions on future actions and goals are calculated based on linguistic utterances and their action context (for example, the word [ti:] in front of a tea pot may be understood as a request). Neuroscience research has recently shown how communicative function and action prediction is reflected in brain responses, where it engages action systems. The new action-centered perspective on language and communication has not only led to a better understanding of the interplay between language, action and cognition, it also carries translational fruit, for example in the context of novel approaches to language rehabilitation after stroke.

**The Roots of Human Morals and
Culture in Pre-Human Sympathy –
Charles Darwin’s Natural History of Morals**

Eve-Marie Engels (Tübingen)

The human being was a subject of Darwin’s revolutionary theory of descent from the very beginning on (1838). Not only was the explanation of our bodily structure included in his evolutionary anthropology, but also the origin of our emotions, of conscience and of the moral sense. For Darwin “sympathy” is a fundamental element of the social instincts in animals as well as a basic element of our moral sense which links us to our nonhuman predecessors. At the same

time Darwin adheres to the idea that morality is a unique trait of humans, not reducible to animal instincts. However without traces of such sympathetic instincts, embodied in our nature, a human being would be an “unnatural monster”. In accordance with his general theory of descent Darwin emphasizes the continuity between humans and other animals as well as unique new traits of humans: self-consciousness, verbal language and morality. This distinguishes him from some of his current adherents.

**On Human Becoming:
Creative *Thinging* and Incompleteness**

Lambros Malafouris (Oxford)

Humans can be described as deep time creative *thingers*. That is, we are embodied and self-conscious beings able to influence our developmental paths by changing our means of material engagement. In short, we create material things and assemblages which scaffold the ecology of our minds and shape the boundaries of our thinking. This openness of the human mind to creative evolution is one of the distinctive features of our species. It also indicates that the nature of human intelligence is to remain amenable to deep reorganization and reconstitution, thus, to remain incomplete. This paper will explore what exactly are the major implications of this ongoing dialectic of co-constitution of people and things for the traditional (neo-evolutionary) ways we understand the importance of embodiment, plasticity, and material culture in human evolution.

Hyperplasticity:

Material Engagement Meets Mutational Enhancement

Duilio Garofoli (Tübingen)

Material engagement theory rejects the idea that human cognitive evolution is the result of a passive process of natural selection. Cognitive capabilities and behavioral outcomes do not stem from hard-wired neural substrates as the most appropriate solutions to adaptive problems. In contrast with these neurocentric tenets, cognitive evolution is explained as an inactive process, according to which humans bring forth new meanings and cognitive abilities by means of embodied engagement with artefacts. Human minds thus emerge from a bio-cultural transformative process driven by the plasticity of culture in relation to the plasticity of the brain (i.e., metaplasticity). However, material engagement theory is threatened by a critical risk of misuse in cognitive evolution theory. Neuroplasticity, in fact, does not warrant that every human biological system, provided with the right conditions of cultural engagement with artifacts, can bring forth any potential cognitive function. The enactive/transformative process of material engagement is actually limited by native constraints within human biological systems. Thus, the emergence of new cognitive properties could still require mutational enhancement and selective mechanisms in order to be brought forth. This evolutionary dynamic differs from the aforementioned passive one in that material engagement actively creates selective constraints for the rise of cognitive augmentations in archaic human beings. Mutational enhancement, at the same time, demands flexibility in order to be accommodated within pre-existing biological systems. This adds a new dimension of structural flexibility to the levels of cultural

and neural plasticity, which allows us to define the concept of hyperplasticity. Such a notion bridges the enactive emergence of cognitive abilities with the more traditional selection of adaptive neural substrates in cognitive evolution.

Bodily Changes during the Protocultural Period and Their Ongoing Impact on Culture

Wolfgang Welsch (Jena)

The paper focuses on the importance of the protocultural period of humankind. During this period – extending roughly from 2.5 million years ago to 40,000 years ago – homo sapiens attained his characteristic constitution as it still persists today. In our present basic bodily, emotional, affective and even cognitive setup we are still much the same as our ancestors were at the end of the protocultural period and at the beginning of the subsequent take-off of cultural evolution 40,000 years ago. The protocultural period has brought about “the innate, generic constitution of modern man” (Clifford Geertz). This will be explained with respect to bodily, practical, and social changes during that period. Our protocultural setup sustains, on a general level, all our subsequent cultural evolution and, in specific cases, directly inspires cultural creations

Inside Out: The Inner Human Being in Ancient Medical Literature and in the New Testament

Annette Weissenrieder (Berkeley)

The notion of the inner human being and its relation to the body is of central importance in antiquity and early Christian epistolography, especially the New Testament epistles of Paul. In this paper, I take issue with recent arguments that Paul’s concept of “inner human being” has a background in ancient philosophical treatises as a metaphor of the soul. The primary focus in this discussion is first whether one understands the human being’s orientation communion with God as a relationship anchored in the soul, and secondly what the importance of body and flesh of a person is. I want to show that the language of inner and outer self also has a place in ancient medicine and natural philosophy. Ancient medical-philosophical texts did not focus on the core or center of a person, but rather sought a deep understanding of his or her inner aspects. It sought to understand how it is that we can discover bodily information about this inner person and to what degree the relationship between the inner and outer person can be interpreted. I argue that its Greco-Roman physiological meaning was decisive in its adoption by Paul. Paul’s definition of the inner human being corresponds to recent anthropological concepts of embodiment insofar as the visible outer human being has an inside which, according to Paul, is not detached from the body, but must be grasped from a physical perspective.

The Objectivity of Subjective Truths*Semir Zeki (London)*

In his book on colour vision, the philosopher Arthur Schopenhauer wrote that “A better understanding and a firmer conviction of the wholly subjective nature of colour is a very good introduction to the Kantian doctrine of the likewise subjective, intellectual forms of all knowledge”, including emotional knowledge. The theme of my lecture will be that the only truths that we can be certain of are subjective truths, be they of colour, or of love or beauty. I will begin by describing how the brain constructs constant colours through which we stabilize our world and thus obtain knowledge about it. I will then discuss the aims of neuroesthetics, which is not to explain beauty but to learn something about the neural mechanisms that allow us to experience it, just as we aim to learn something about the neural mechanisms that allow us to experience colour. In this endeavour, neuroesthetics is inspired by questions and formulations framed by philosophies of aesthetics just as it is inspired by colour theories in framing its questions about the brain mechanisms that enable us to experience colour. I will show that, just as the experience of colour correlates with activity in specific areas of the brain, so aesthetic judgments and experiences correlate with activity in distinct parts of the emotional brain, and that the intensity of the activity there is proportional to the declared intensity of the aesthetic experience. I will continue by describing the strong relationship that exists, in terms of neural activity, between experiences that have been linked in the world literature of love and in philosophy, namely the experiences of beauty, desire and love.

**Towards an Empirical Aesthetics
of Language and Literature***Winfried Menninghaus (Frankfurt)*

The lecture outlines a theoretical model of rhetorical and poetic diction and of its importance for the aesthetic perception and evaluation of linguistic utterances. It also presents experimental studies that empirically investigated the effects selected rhetorical and poetical devices exert on cognitive processing, memory, aesthetic liking, and affective impact.