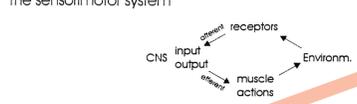
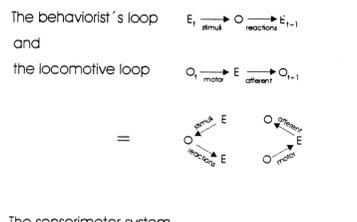
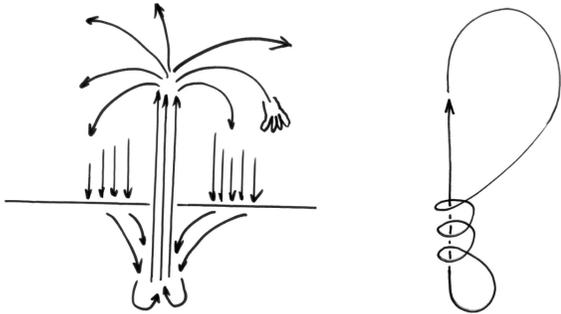


Towards an "eigen"-quality - sensorimotor changes from fish to hominids

How the senses "overwhelmed" motoric behaviour



Do humans have an „eigen“-quality?*

A suggestion: There might be an additional domain of self-control distinguishing the own body from all other things in our world – and this domain may appear in at least three sensory modalities.

In addition to the "sensorimotor continuum" animals live in we have got a "layer of perception" to be found (not yet...) in the double control (double afference) of self-generated movements.

The first place for double control can be experienced by waving the hand in the own visual field. This sensorimotor feedback circle happened so often since bipedality of hominids that it became anatomically and functionally distinguished: the eye-hand-complex.

Prehensile skills are researched worldwide, on rhesus macaques as well as on humans, but, being evolutionary and neurobiologically singular conditions, were not examined on their double re-afferences (proprioception from within and visual control from without - an "ex-afference").

The principle might run as follows: One afference helps to steer the movement, the other is quasi onlooking (or the other way round: the eye steers and proprioception runs "idle") – and a change of function (called "exaptation" by biologists) makes out of a concomitant "activity" a new quality of experience.

The elementary act of human cognition, the division in an actor and an observer may have started with the hands. Hands are subject and object in one: They appear again and again as odd/vivid and faithful/concomitant things in the environment and they behave as familiar as nothing before in evolutionary history.

But eyes alone cannot distinguish between the own and another's hand, there must be another mode of perception. This mode (also participating in prehension, but invisible) might be the second origin of the 'eigen'-quality.

The own body can unambiguously be distinguished from any other body by touching: only in the case of self touching there is a double 'tactile echo'. There is a mixture of touching oneself and touching a conspecific going on since primates times, during fending off parasites, biologists call that behavior 'auto-' and 'allo-grooming'.

And the third source of double afferences are the resonance phenomena during phonation. Besides the muscles of the larynx and the bony transmission, and in analogy to hand vision, the acoustical domain has also got an ex-afference (external feedback): except the deaf all vocal individuals hear themselves.

When and how the three modes (e)merged and led to a coherent notion of self cannot be said without empirical investigations in the indicated areas.

Motion phenomena in vision

A) Self produced movement

movement type	(subjective) effect
locomotion	shift of visual field
head'motion'	shift of visual field
eye'motion' (saccades) (attentional shift)	scan of visual field

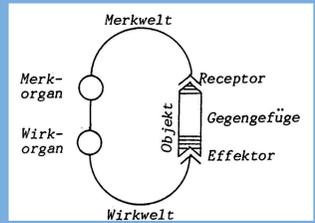
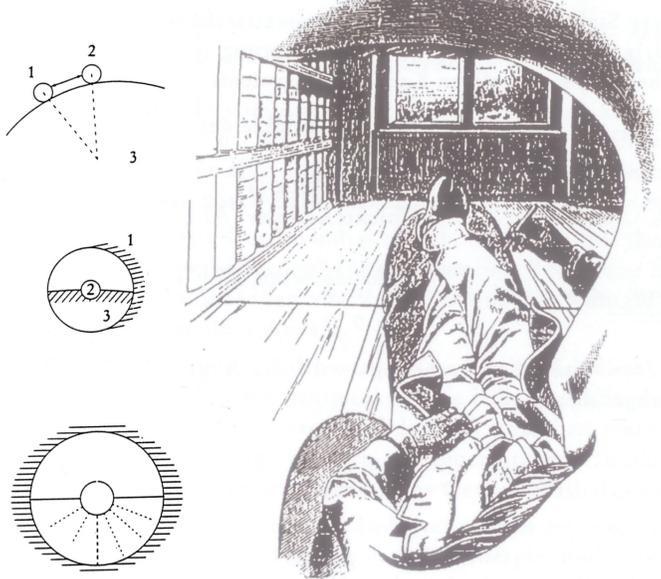
B) 'Eigen'movement: Only 'parts of the own body, self-moved, within the own visual field'. (mostly hands, arms)
Seldom in mammals, often in primates, typically for hominids.

C) Environment(al) movement for an immobile observer, classified by

causal origin	object categories	movement type/form
physical (gravity, wind, ...)	own body parts	translation
organismic: 'behavior' (selfproduced, see A)	conspecific	rotation (sphere, wheel, torus)
prey	predator, enemy,	expansion, contraction, 'flowing'
neutral things	'morphing' (changing form)	

for believers in evolution

The three-body-problem



MATTER WILL SURELY NOT MOVE ITSELF
(Aristotle)

What moves anyhow? Mesocosmic movement
(Radiation, warmth, electrical current – too quick to be seen)

Water: (Brown's movement too small to be seen), rain, river, steam, bubbles, clouds

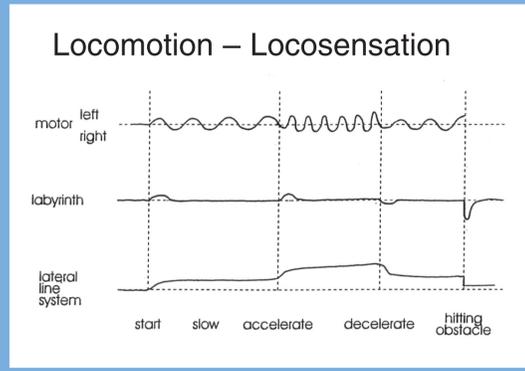
Wind

Fire, shadows

Earthquake, rolling and falling stones,

Organisms (plants too slow to be seen), animals and man: behavior

Machines, ball, (virtual behavior, AL)



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* (Translated from German), Anton Fuerlinger, from: Sensomotorisches Kontinuum und die Eigenart des Menschen, in: Organismus - Bewusstsein - Symbol, Perspektiven mentaler Gestaltungsprozesse, Edlinger K., W. Feigl & G. Fleck (Hrsg.): P. Lang - Europ. Verlag der Wissenschaften, 2002