Enactive Psychology(ies)

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Psychology(ies) and its (their) object(s)

❖ The (human) subject
❖ The (human) behavior
❖ The (human) cognition
❖ The (human) consciousness
❖ The (human) psychism/spirit/mental state
❖ The physical or biological processes described by language

Psychology(ies) in the enactivist paradigm

❖Non objectivist and non subjectivist
❖Non representationalist (hypothesis of the two worlds)
❖Towards a genetic constructivism: coupling and emergence

Enaction: a definition

« We propose as a name the term enactive to emphasize the growing conviction that cognition is not the representation of a pregiven world by a pregiven mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs. »

Varela, Thompson and Rosch, 1991, p.9

Enaction: what is at stake

❖ Enaction defines an unprecedented causal principle (conjoint coming-forth of subject and object), and thus constitutes a major scientific innovation in the characterisation of cognitive dynamics.

❖ This causal principle concerns the order of living and thinking phenomena.

❖ An enactive psychology is thus inscribed in the project of a "naturalisation" of intentionality, i.e. a science of intentional acts as a relation of subjects to objects.

❖ However, is enaction not merely another form of reductionism that is unsatisfactory for psychology?

Enaction: a living process

Since it is a biological theory of cognition, enaction does not limit cognition to human beings, and does not seem to accord cognitive phenomena a level of functioning ontologically heterogeneous with biological phenomena in general.

What is cognition?

« Productive action: the history of structural coupling which enacts (brings-forth) a world. »

Varela, 1988

How does it function?

« Through a network consisting of multiple levels of interconnected, sensorimotor subnetworks, which can undergo structual changes in the course of an uninterrupted history. »

Varela, 1988

How do we know that a cognitive system is functioning adequately?

« When it becomes part of an ongoing existing world (as the young of every species do) or shapes a new one (as happens in evolutinary history). »

Varela, 1988

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Cognition and viability

❖ Viability as a proscriptive (and not prescriptive) constraint
❖ Supporting the autonomy and not heteronomy
❖ Staying alive and self production

      inspired from Stewart, 1995

Circularity and emergence: Levels of cognition

❖ Level 0: self maintenance without active assimiliation

❖ Level 1: self maintenance as an active assimilation (maintaining the identity and implying dynamical interactions)

❖ Level 2: modification (accommodation) of the network of the autopoietic processes which become permanent and define a new co-adaptation (unit/environment). Memory-like structures.

❖ Level 3: Complex types of accomodative changes. Representation-like structures.

❖ Level 4: Social construction of intersubjective invariants and predictive rules.

inspired from Bitbol and Luisi, 2004

Low and high level cognition

Elementary cognition

Perception   Communication

Language and meaning

Inspired by Stewart, 1995
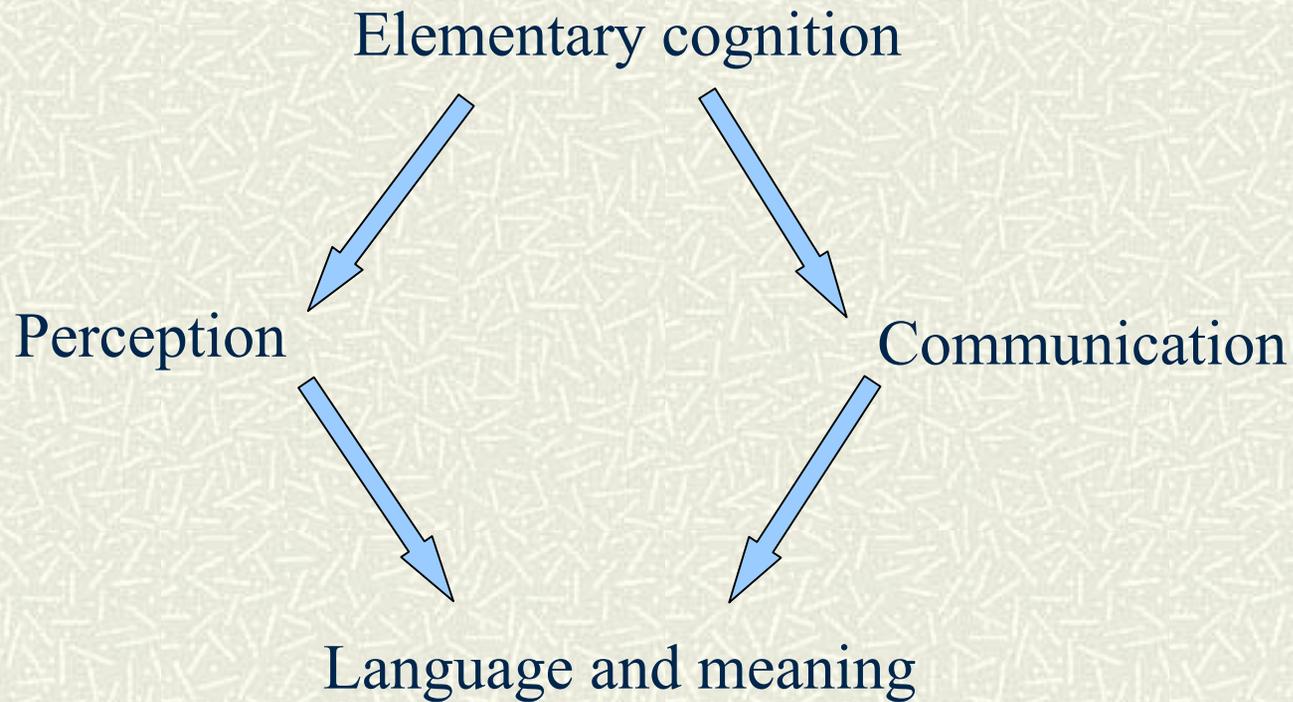
The subject in enactive psychology

The subject in enactive psychology is considered as being :

❖ Living
❖ In development (phylo, onto et microgenetic)
❖ Bodily engaged (As a point of view/action)
❖ Situated in and coupled to the natural and cultural environment
❖ Intrinsically (from within) oriented (strong autonomy)
❖ Making and evolving in his/her own specific trajectory
❖ In relation to other subjects

Four main points for an enactive psychology

❖ Circularity
❖ Embodiment
❖ Knowing-how
❖ Consciousness

Circularity

The first act

Circularity/Reflexivity (1)

❖ Human beings reflect, think, experience a world which is not independent of them.

❖ In other words, we reflect upon the world on the basis of our own structure, and with that structure

❖ Again, we think about a world that we construct in the very act of thinking.

Circularity/Reflexivity (2)

❖ Recognizing and accepting this circle defines a *middle way,* an *in between* which makes it possible to overcome the illusion of a world which is either pre-given or invented.

❖ Perception appears as primary cognitive act, where the subject and the world meet and continually constitute each other.

❖ Thinking, and the whole set of secondary cognitive acts, are constructed on the primary basis of perception.

Circularity/Reflexivity (3)

❖ In the case of the research in cognitive science, this reflexive circularity is redoubled because the scientist is herself engaged in cognitive activity.

❖ This poses the question of self-understanding, and a science of lived experience. Reflexivity is a challenge to be taken up.

Circularity/Reflexivity (4)

"From the standpoint of enactive cognitive sciences, this circularity is central; it is an epistemological necessity. In contrast, the other more extant forms of cognitive science start from the view that cognition and mind are entirely due to the particular sructures of cognitive systems."

Varela, Thompson and Rosch, 1991, p. 9

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Circularity/Reflexivity (5)

« The fundamental insight of the enactive approach ...is to be able to see our activities as reflections of a structure without losing sight of the directness of our own experience. »

Varela, Thompson and Rosch, 1991, p. 12

Cycle or coupling (1)

Cycle, or better, spiral

Cycles of operations include organismic regulation, ongoing sensori-motor coupling, cognitive acts and inter-individual interactions.

Inspired from Thompson and Varela, 2001

Cycle or coupling (2)

Cycle, or better, spiral

❖ Circular reactions (Baldwin)
❖ Gestaltkreis (Von Weizsäcker)
❖ Schemes (Piaget)
❖ Functional Circles (Von Uexküll)
❖ Retroaction/Feedback (Cybernetics)
❖ Dynamical invariant coupling (Thelen)
❖ Transductive relation (Simondon)
❖ Structural coupling/cycles of operations
(Maturana/Varela/Thompson)

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Cycle or coupling (3)

Cycle, or better, spiral

❖ Circular Reaction: a reaction which tends to prolong, to repeat, to reproduce its own stimulation. Baldwin, 1906

❖ A cyclical chain of processes which aim at stability. To the extent that the cycle functions, this has a structuring effect.

❖ Organism: cycles of physico-chemical and kinetic processes which, in constant relation with the environment, engender each other. Piaget, 1936.

Inspired from Salvador, 1997

Cycle or coupling (4)

Cycle, or better, spiral

❖ Detecting regularities : construction and inscription in the cycle.

❖ The cycle is a third term which encompasses subject and environment; it is *not* the coupling of two pre-given entities.

❖ The cycle is a unity which has an ontological status in its own right.

Inspired from Salvador, 1997

Cycle or coupling (5)

Cycle, or better, spiral

The main scientific aim of psychology, in this perspective, is thus the study of the morphogenetic processes of the cognitive/phenomenological flow which emerge through the activity of the dynamical cyclical structure/organisation (the subject/world coupling).

Cycle and causality

❖ Simple Causality
❖ Multiple Causality
❖ Circular Causality
  • Feedback
  • Constitutivity (autopoïesis/enaction)
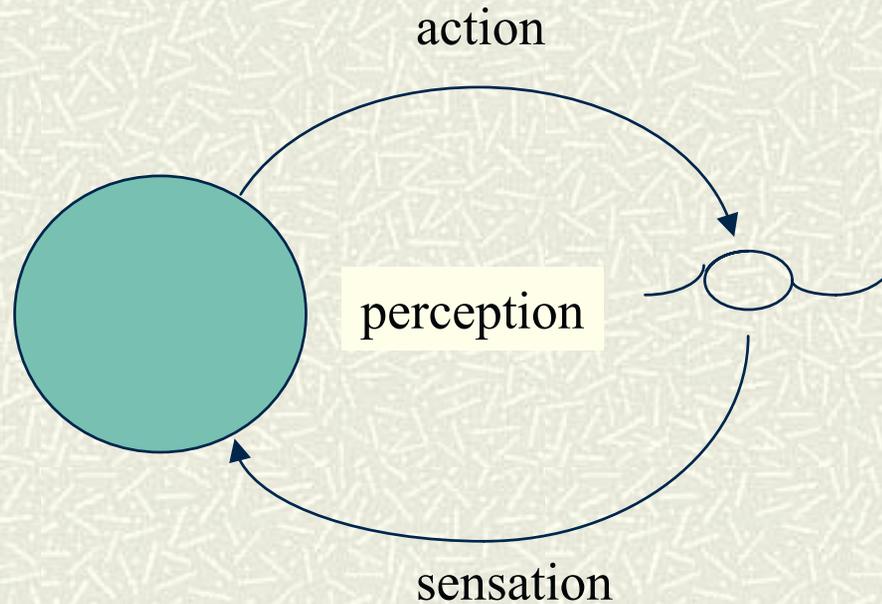❖ Evolutionary causality

Embodiment

The second act

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The body and embodiment

The body and its means of coupling with the environment define a cyclic organisation (morphocycle) which itself defines a specific cognitive domain.
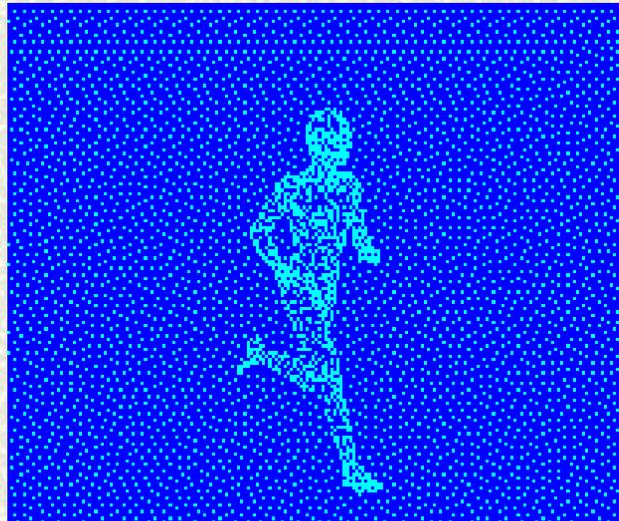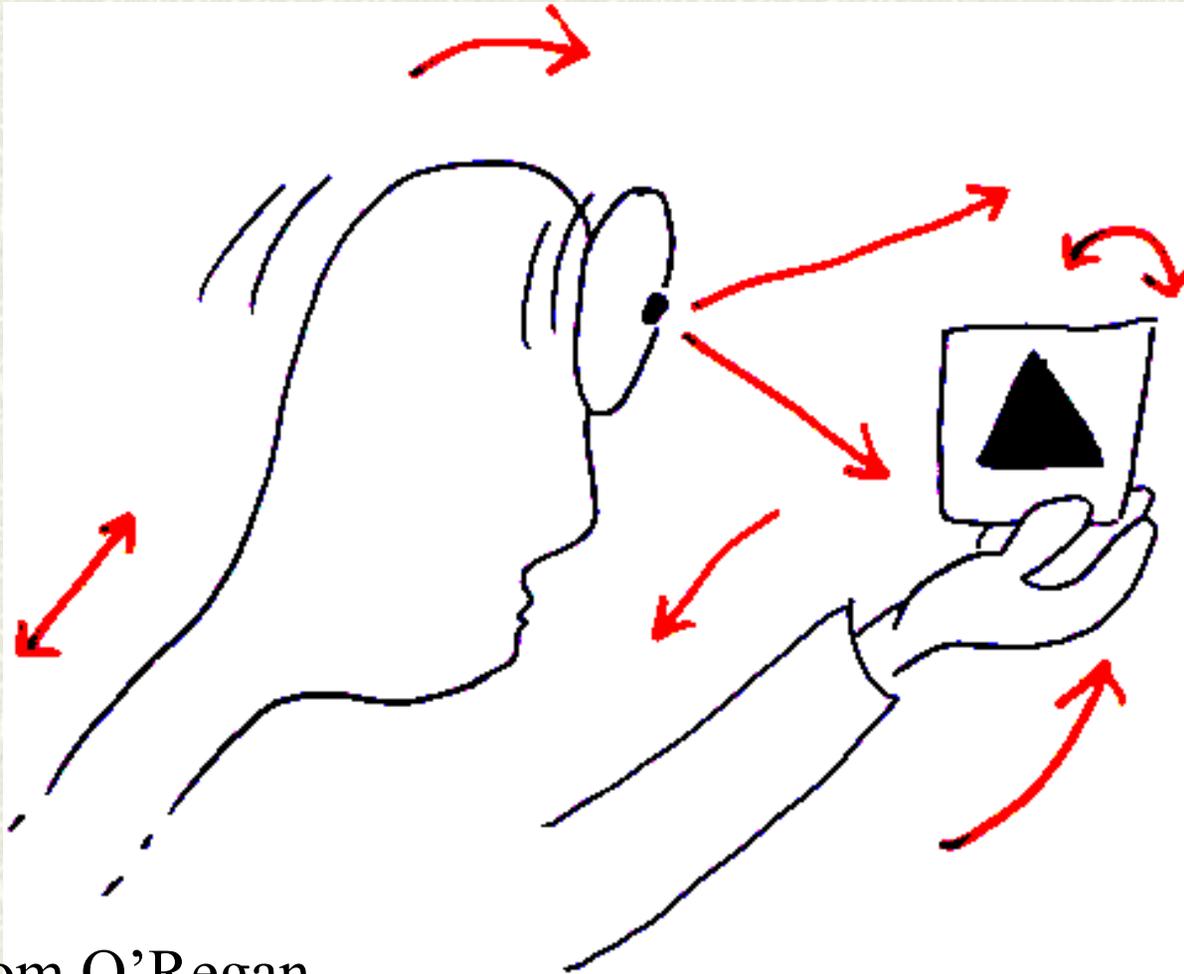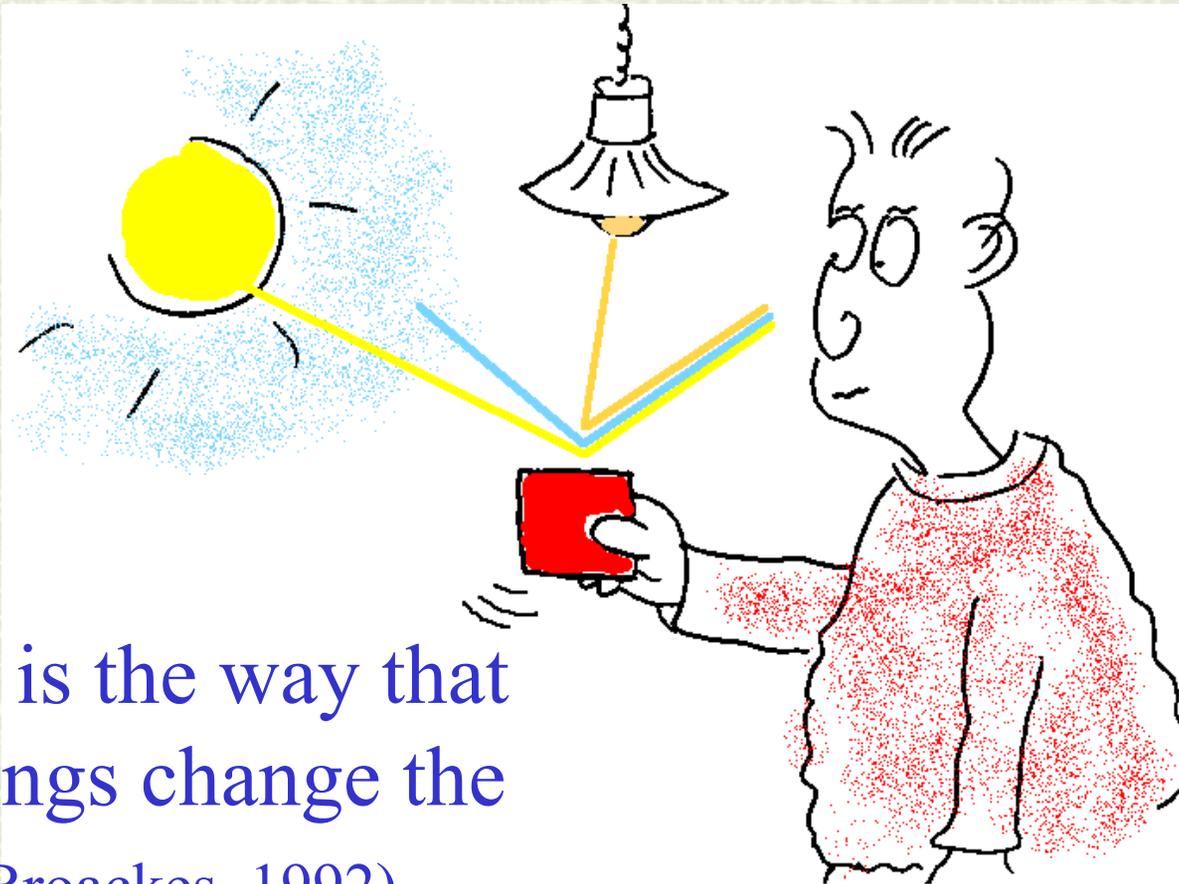
A special cycle : the action-sensation loop

action

perception

sensation

Knowing how

The third act

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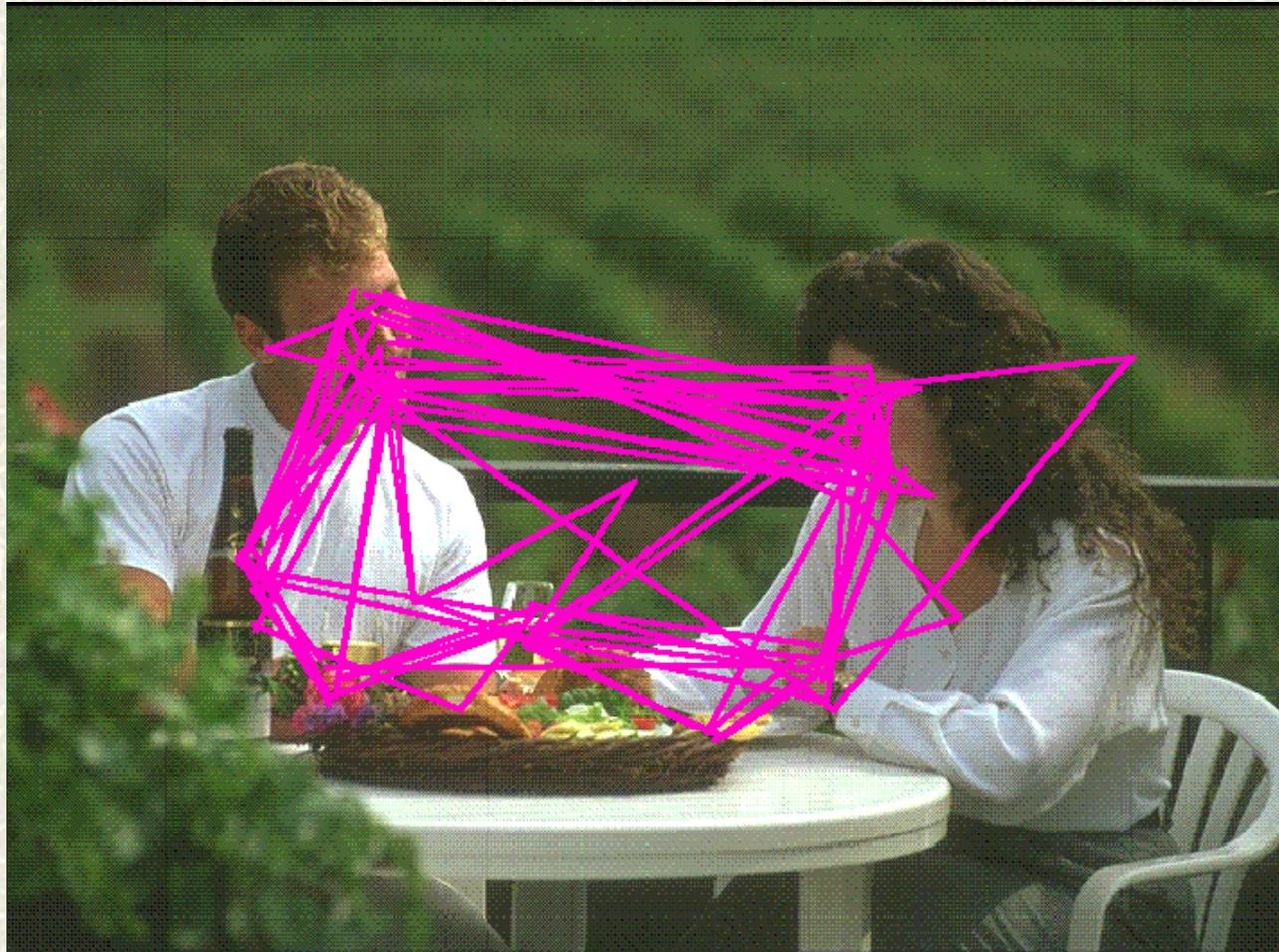# Seeing is knowing the sensorimotor contingencies

Inspired from O'Regan

Seeing is knowing the sensorimotor contingencies

"Red" is the way that red things change the light (Broackes, 1992)
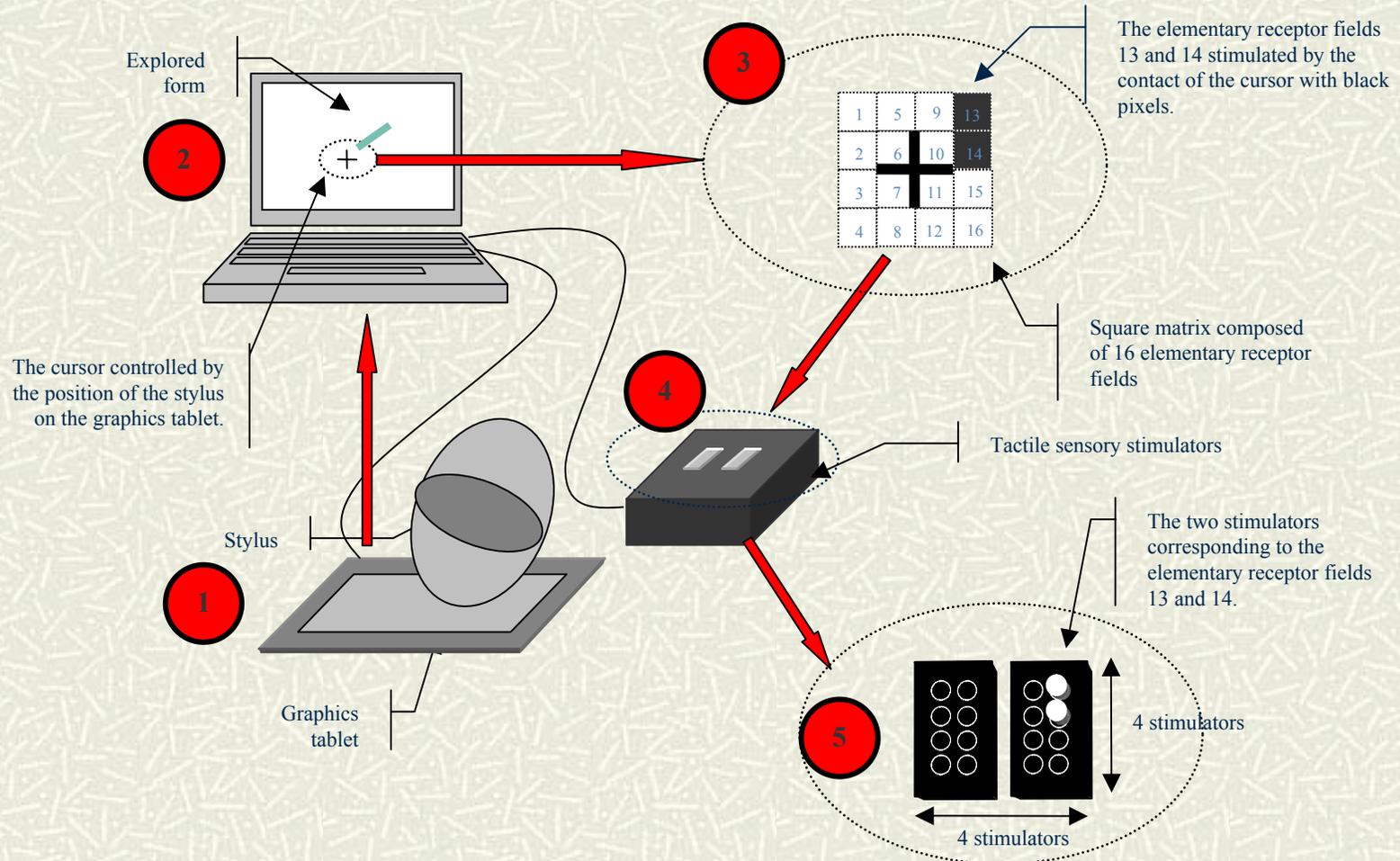
Change blindness

Active perception

TACTOS device

2 adjacent Braille cells (16 points)

The functional scheme of Tactos

Explored form

2

The cursor controlled by the position of the stylus on the graphics tablet.

1

Stylus

Graphics tablet

3

The elementary receptor fields 13 and 14 stimulated by the contact of the cursor with black pixels.

1	5	9	13
2	6	10	14
3	7	11	15
4	8	12	16

Square matrix composed of 16 elementary receptor fields

4

Tactile sensory stimulators

The two stimulators corresponding to the elementary receptor fields 13 and 14.

5

4 stimulators

4 stimulators

Example of an exploratory trajectory

Variability and developmental convergence(s)

❖ Variability in psychology (Lautrey)

❖ The development of reaching (Thelen and coll.)

❖ From the epistemic subject to the psychological one (Inhelder and Cellérier)

❖ Typology of subjects /clinical approach

Consciousness

The fourth act

Consciousness : its levels

❖Reflexive consciousness
❖Direct (or in act) consciousness
❖Pre-reflective consciousness

Inspired from Vermersch

Consciousness : a structuralist approach (1)

"From a structural perspective, consciousness is, essentially, a cognitive system governing human subjective experience. The system is defined by a series of parameters that can take different values. Changes in these values result in different states of consciousness. The task of the phenomenological psychologist is to define the structural parameters of this system, specify the values they can have, and spell out the dynamics of their change."

Shanon, 2003

Consciousness : a structuralist approach (2)

"The great potential contribution of the study of the non-ordinary states of consciousness to the scientific understanding of the mind lies precisely in its rendering the parameters of the cognitive system apparent and in its revealing the various possible values that these parameters may take."

Shanon, 2003

Phenomenology and psychoanalysis
Their limitations

The limits of phenomenology
The limits of psychoanalysis

Towards another way/method

Phenomenology as an attentive practice

It is interesting to note that the most commonly used conceptions of meditation define it as a modified state of consciousness. However, as noted by Varela, Thompson and Rosch (1991, p. 23), the method of mindfulness/awareness is precisely the opposite of such conceptions.

Towards a phenodynamics

Phenomenological psychology and biology

Brentano
Psychology of the act

Stumpf
Meinong
Gurwitsch
Lewin
Michotte
Simondon

Sherrington
Von Weizäcker
Von Uexkull
Buytendijk
Goldstein

Inspired from Thines 1971

Intentional act or Intentionality

"The intentional observer is the true starting-point for psychological theory, insofar as the latter has an empirical basis, because this observer represents the only real possibility for defining what the term « object » might mean." Thines, 1977, p.72 (in reference to Brentano)

An empirical and genetic epistemology

Metaphors for consciousness ? Jaynes via Stewart (2001)

❖ A copy of experience
❖ Concepts
❖ Learning
❖ Judgements
❖ Reason
❖ The location of consciousness
❖ Does consciousness "do" something?

Metaphors for consciousness ? Jaynes via Stewart (2001)

❖ Reflexive consciousness is irremediably blind to itself, it can only be radically original.

❖ There can be no consciousness of what we are not conscious of (!)

❖ Consciousness of the world/of the self is the same problem

❖ The question of the conditions of possibility of reflexive experience, and the problem of their study.

Conclusion (1): The project

Let there be no mistake: the paradigm of enaction is a (non-nihilist) enterprise of transformation which aims at modifying the relation of consciousness to itself (e.g. Varela, Thompson & Rosch, 1991, p.130).

Conclusion (2): the object

Phenomenology

World   Nervous system   Behavior   …?
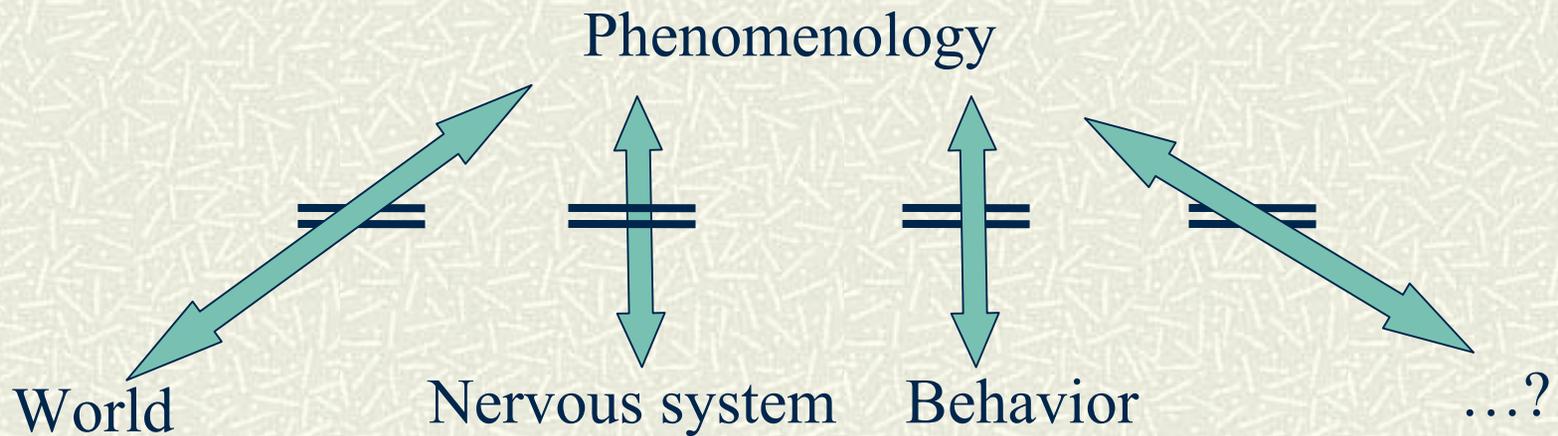
And cognition?

Conclusion (3) : the hypothesis

Moreover, there is not just a **similarity** between psychical activity and biological activity; according to Piaget, there is an **exact coincidence**. There is not just a common ground, or a repetition of the type; there is really a unity of the elements and the laws. This is why Piaget considers that it is superfluous to show how it is possible to cross the threshold between motor schemes and the person, between motor activity and intellectual activity.

Wallon, 1970, p.24

Conclusion (4): the methodology

Phenomenology/Cognition

?

Science/behavior ⟷ Science/experience
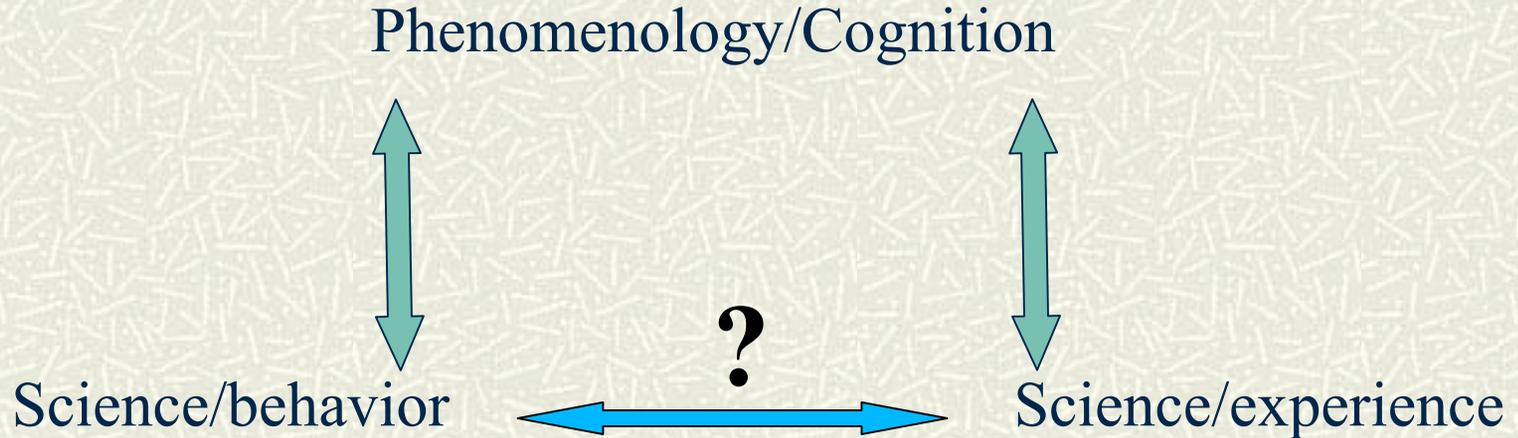
Conclusion (5): elements that are absent but necessary

❖ Languages
❖ The Others
❖ Tools
❖ Cultures

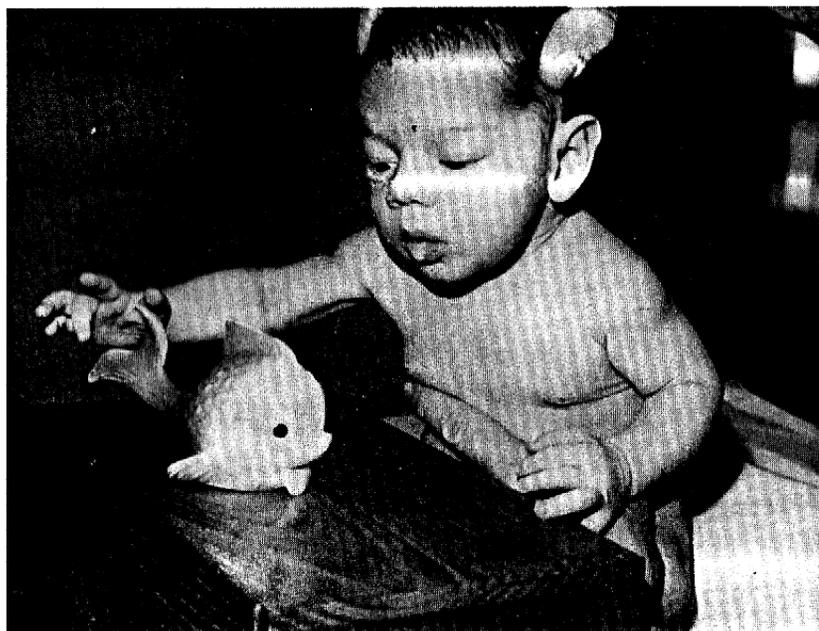Interactionism, transactionism, culturalism, ecologism, praxeology, technology…

END

Figure 1 : Apprentissage du tournage.

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