Neuro-philosophy as both exposition and critique of cognitive neuroscience

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- Prologue: failed attempt at self-elimination of philosophy
- Methodological considerations: mechanistic explanation
- Example: action intentions
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A peculiar vision for (neuro-)philosophy: self-elimination

Churchland:
- Both perception and concepts are products of sub-linguistically operating neural networks
- Philosophical problems depend on those products
- Redefine the problems in neural terms

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Into the brain: where philosophy should go from here

Paul M. Churchland
Moral philosophy – refer to moral skill learning?

“A person’s unique moral character is just the individual profile of his perceptual, reflective, and behavioral skills in the social domain.

(Paul Churchland, 1998, 89)
‘Ethos’ or ‘second nature’: Aristotle on learning ethical habits or skills

“We become just by doing just actions, temperate by doing temperate actions…. A state of character results from the repetition of similar activities”

(Arist. Eth. Nic. 1103 a 35- b 22)
Complication: category and skill learning occur in (at least) two forms

- multi-dimensional, incremental prototype learning
- mono-dimensional rule learning

(Lea & Wills, 2008 Comp. cogn. behav. rev. fig. Ashby & Ell, 2001 TICS)
Even in ‘early’ perception an interaction between multiple & feedback/feedforward processes

Feature-based attention influences perceptual grouping: frontal cortical feedback on V1 etc.

(Roelfsema, TICS 2009)
Embodied habitual/skilled action interact with rational rules in Aristotelian ethics.

“The part [of the soul] with appetites, and in general desires, shares in reason in a way…. in the way which we are said to ‘listen to reason’ from father or friends”

(Eth. Nic. 1102 b 30-34)
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Interim conclusion: complex phenomena require a theoretical pluralism

- Relative significance of theories
- Pluralism between theories can be:
  - compatible
  - competitive

(Beatty, PoS 1997; Mitchell, Bio & Ph 2002; fig. Bermudez 2010)
Many types of explanatory questions

Explanations answer questions re ‘intention X’:

■ What is X?
■ What function has X for Y?
■ What causes X?
■ Why did agent Y at t intend X?
■ Why did agent Y and not Z intend to X?
■ What situation triggers X?

Figure 50.1 Sketch of a multilevel mechanistic explanation of why Romeo fell in love. A full causal picture would have more arrows.
Integrating theoretical pluralism by way of mechanistic explanation

- **Definition** of a function etc.
- **Decomposition** of that function into components
- **Localization** of (sub-components of) that function

- Reiteration of this process (including re-constitution of the phenomenon)
Mechanistic explanation: integration along multiple dimensions

- Levels of mechanism (systemic dimension)
- Levels of processing (temporal dimension)
- Levels of analysis (theoretical dimension)

(fig. Kallio & Revonsuo, 2003)

Figure 1. General scheme of multilevel framework of biological explanation.
Environmental information can become ‘entrenched’ in dynamical mechanisms

‘Generative entrenchment’ of environmental information in adaptive, dynamical mechanisms

(William Wimsatt, 1986 etc.)

Cf. ‘Open’ versus ‘Closed’ programs

(Ernst Mayr, 1971)
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Decomposing intentional action: a pluralist & multi-level account

Multiple theories converge on distinctions between:
- distal (future oriented) intentions
- proximal (situated) intentions
- motor (implicit) intentions

(Model from Pacherie, Cognition 2008)
Motor intention: complex and dynamical

- motor representations contain both affordances and motor responses
- changing functional anatomy during skill learning:
  1. increasing neural efficiency
  2. increasing additional connectivity

(Petersen e.a. 1998)
Proximal intention: mediating between distal & motor intentions

Component tasks of proximal intention:
- how to anchor or specify a distal intention?
- when to inhibit a habitual motor intention?

(~ Bratman, Intentions, plans… 1987; fig. Pacherie & Haggard; Tribute to Libet, 2010)
Distal intentions and plans: the need for organizing and coordinating multiple intentions

Methodological priority of distal intentions:
- avoiding resource-consuming deliberations
- avoiding counter-productive actions

(Bratman, Searle, a.o.)

“However, almost nothing is known about how these long-range, prospective intentions connect to immediate, short-term intentions. Indeed, experimental studies of voluntary action deal hardly at all with the concept of prospective intention.”

(Pacherie & Haggard, 2010)
Thickening the plot even more: narrative ‘simulation’ of distal intentions

Hermeneutic analysis of intention simulation:
- socio-cultural ‘paradigms’ for these simulations
- simulations are both sedimented & innovative

(Ricoeur, Oneself ... 1992; fig. Schachter e.a. Annals 2008)
Given this, what is the implication of ~ 90% psychological & neuroimaging studies coming from the West?

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Neuro-philosophy: Darstellung und Kritik?

- conceptual analysis
- methodological clarity
- interpretation of results
- reflection upon (ethical etc.) implications