

# Virtualist Representation (and the heterogeneous vehicles of thought)

Robert Clowes

Kazimierz

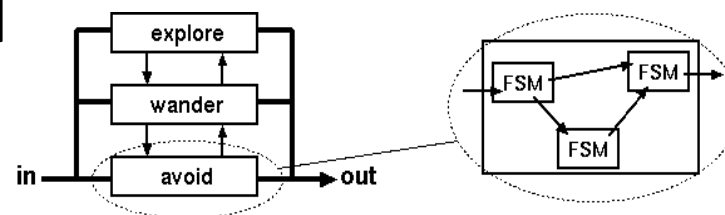
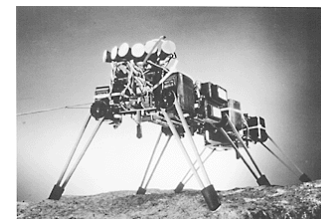
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IFL – New University of Lisbon



# Do we need the concept of representation?

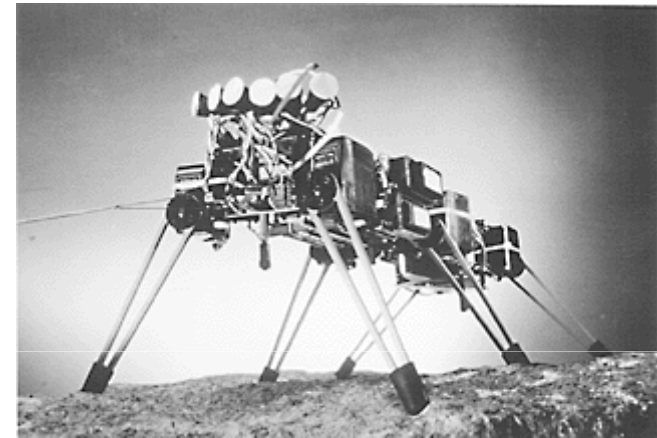
In the context of the (1990s) discussion of Brooks' mobots and Beer's robot controllers an argument was begun to the effect that representation - as a basic element needed to theorize, explain and construct minds - might not be needed



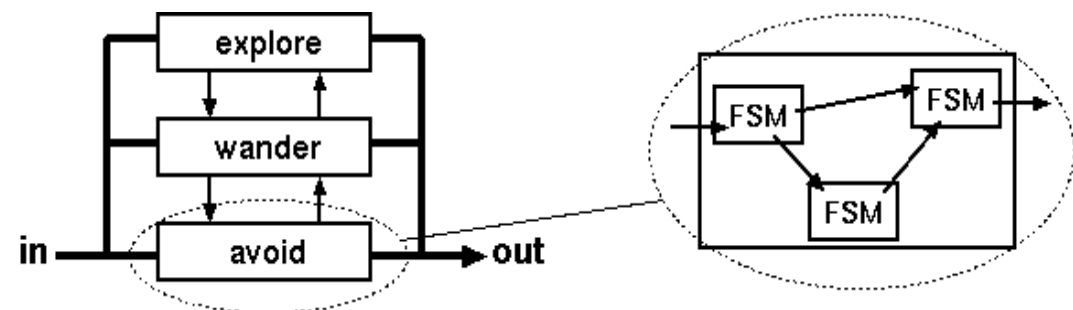
Clark, A. and A. J. Toribio (1994). "Doing without Representing." Synthese **10**: 401-431.

# Recap: Mobots and the Representation

Some control systems seem to be able to act effectively without significant integration of information, e.g., Genghis.



Clark and Toribio claimed the sorts of problems Genghis and friends confronted were not sufficiently *representation hungry*.



Brooks, R. (1991). "Intelligence without Representation." Artificial Intelligence(47): 139-160.

# The Hunger for Representations

Clark and Toribio (building on the work of Haugeland) argued to be a properly representational agent:

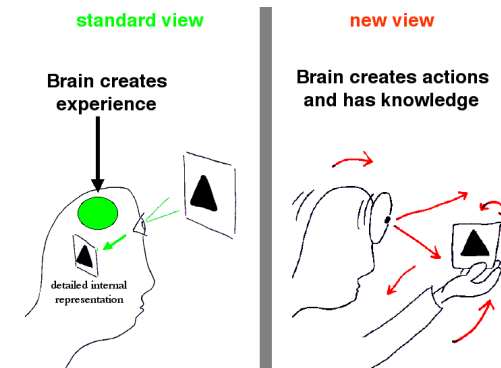
- (1) It must co-ordinate its behaviours with environmental features that are not always 'reliably present to the system' via some signal.
- (2) It copes with such cases by having something else (other than the signal directly received from the environment) 'stand in' and guide behaviour in its stead.
- (3) That 'something else' is part of a general representational scheme which allows the 'standing in' to occur systematically and allows for a variety of related representational states.

On these grounds robots do not represent they claimed, nor need they. But, more mindful agents likely do!

# Perception Without Representation

One of the most interesting anti-representational approaches of recent years is the enactive theory of perception.

It holds that perception is a mode of active world exploration mediated by sensory-motor knowledge.



## *It offered a theory of perceptual content*

O'Regan and Noë argued: “The central idea of our new approach is that *vision is a mode of exploration of the world that is mediated by knowledge of what we call sensorimotor contingencies.*” (later expectations)

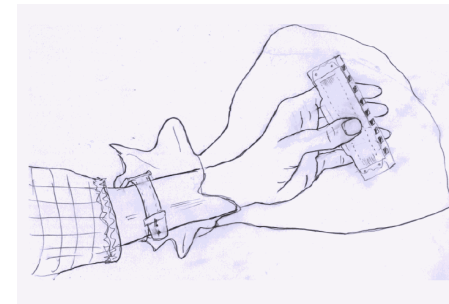
SMCs are “the structure of the rules governing the sensory changes produced by various motor actions”

Perceptual content was given just in the active exercise of knowledge of sensorimotor expectations.

O'Regan, J. and A. Noë (2002). "A sensorimotor account of vision and visual consciousness." Behavioral and Brain Sciences **24**(05): 939-973.

# Which rethought perception and made expectation central

Perception is a form of *active explorations*. Touch rather than vision might be its paradigm case.



To perceive in a given modality is to exercise an occurrent mastery of the laws of sensory *expectations* of that modality.

# The Snapshot Model

Building on evidence from inattentional and Change O'Regan and Noë argued these anomalies of perception were better explained by an *enactive* rather than a *snapshot* model of representation.

Yet problems accrued about other cases they should explain:



# Can enactivists explain dreaming?



Dreams seem to be particularly problematic for the enactive viewpoint. They don't seem to be active environmentally involved in any straightforward synchronic way, and yet they seem to be experiential, even quasi-perceptual.

There is something it is like to be a dreamer, even if what it is like is not the same as being a fully awake and engaged subject.

Enactivists seem to need to say something about dreaming, but what?

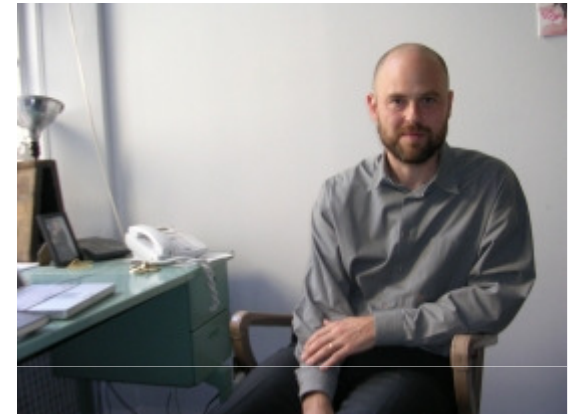
# Trouble with dreams

Block argues Noë is in some trouble in his argument with the putative internalist, for, either Noë has to say dreams aren't experiences, or else say that neural activities are sufficient for some sort of experiences and not others.

One response is Disjunctivism, but this seems very unsatisfactory ...

**Review of Alva Noë, *Action in Perception*<sup>1</sup>**

Ned Block



Ned Block

# But Dreams are Experience-Like

For as Leonardo Da Vinci once asked:

“Why does the eye see a thing more clearly in dreams than when awake?”

At least in structural terms, dreams seem to be similar enough to some visual experiences to be claimed to be paradigm cases.



# Trouble with Dreams (from Prinz)



As Prinz remarks:

“Some people have richly detailed dreams, and eidetic dreamers claim that, for them, dreaming is just like seeing. Of course, dreams have fanciful and incoherent plots, but that shows that rational thought depends on being awake, not that qualitative character depends on external inputs.”

The problem is enactivism is weak precisely where it should be strong. Occurrent activity seems not to demarcate perceptual character.

# Rethinking Skills and Expectation

If you are not a committed anti-representationalist it seems natural to attempt to rebuild these theories along more modestly representational lines:

Perceptual modalities are still understood as knowledge or skill mediated. This – ability style - knowledge is still of changes in sensory patterns which are generally explored through contact. However the skills or expectations can continue to function *virtually* in dreams, hallucinations etc.

However, rather than an anti-representational approach, this now starts to look like an unorthodox *representationalist* approach.

# Still Hungry for Representations

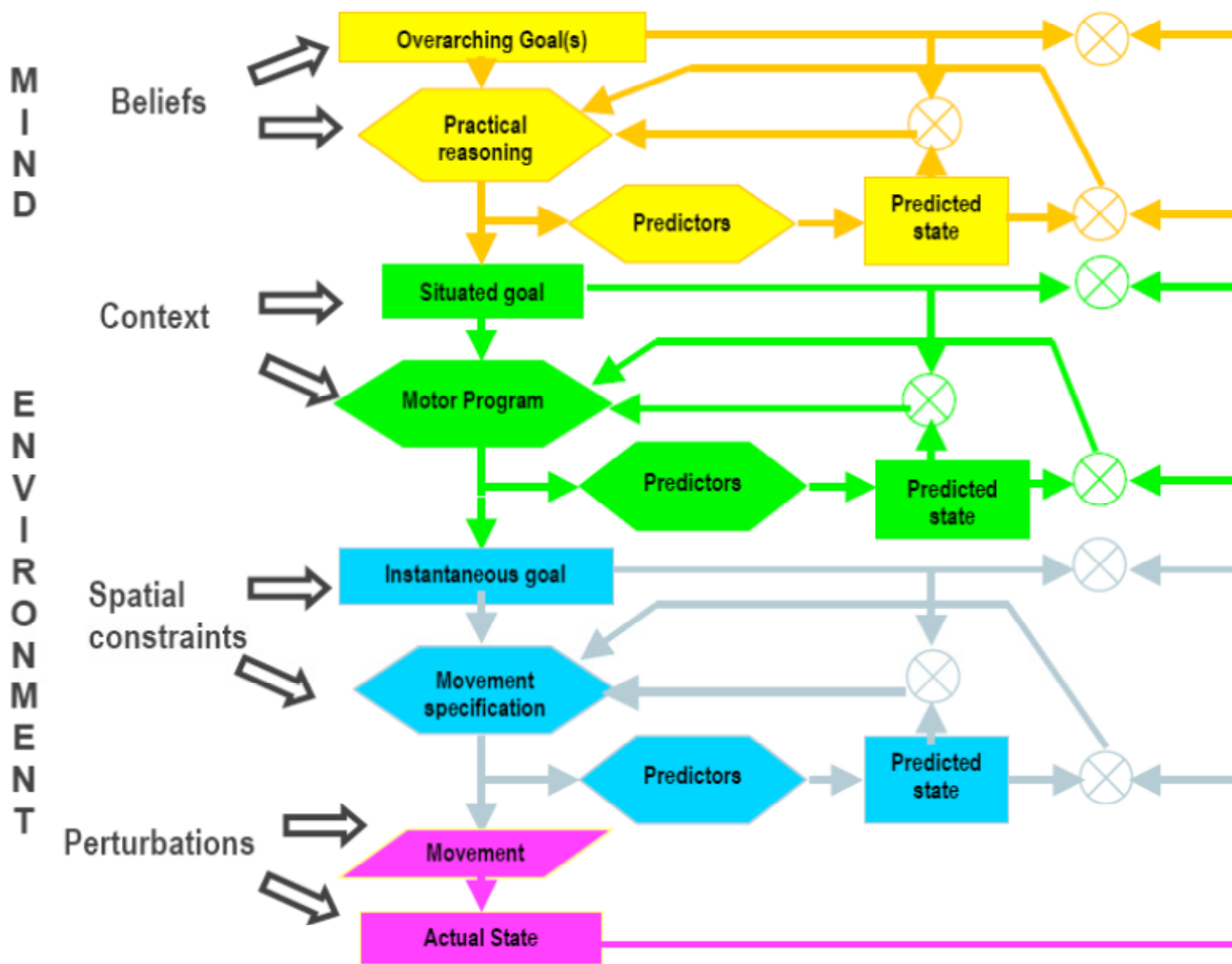
Let's look again at the Haugeland (Clark and Toribio's) conditions for what a robustly representational system requires.

- (1) It must co-ordinate its behaviours with environmental features that are not always 'reliably present to the system' via some signal.
- (2) It copes with such cases by having something else (other than the signal directly received from the environment) 'stand in' and guide behaviour in its stead.
- (3) That 'something else' is part of a general representational scheme which allows the 'standing in' to occur systematically and allows for a variety of related representational states.

# The Experienced Body

The Body and its extended spacialization seem to have a variety of representational systems that work together.

- Egocentric and Allocentric Representations.
- Spatized, mutable, multi-modal nature of body representations.
- Composed of multiple dimensions and reality connection points.
- At the level of the body-schema motor models seems to be everywhere, e.g. accounts of agency ...



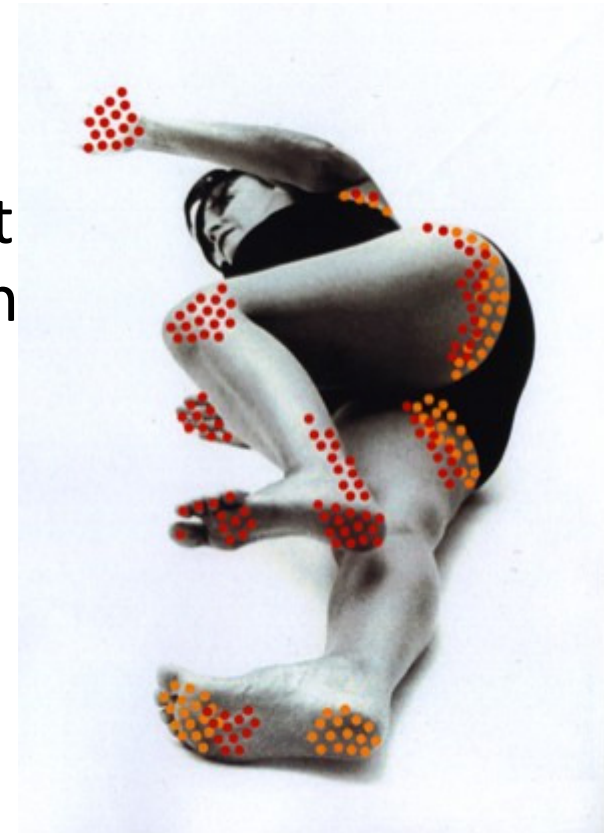
Pacherie, E. (2007). The Sense of Control and the Sense of Agency. *PSYCHE*, 13(1).

# Does the body represent in a moderately strong sense?

- **Does the body coordinate its behaviours with features which are not always reliably present?**
  - Yes! Its content is in several ways virtual: based on the ongoing best guess of the brain (e.g. Phantom limbs, rubber hand illusion).
  - It may be able to use simulations for other purposes too, such as Damasio ideas about “as if” loops and the experience of emotions
- **Does the body cope with problematic cases by having something else stand in?**
  - An emphatic yes seems to be in order here. The brain seems to make use of a host of models of itself in order to accomplish timely self-control. These are not best understood as close-couplings but rather as a complex system of inner models (e.g. the experience of agency).
- **Does the body represented form part of a general representational system?** Not in the traditional sense but:
  - Body representation is certainly structured (we’ll say more on this).
  - It can be flexibly extended to incorporate tools (see Iriki, et al (1996)).
  - It can often be adjusted to deal with non-standard or damaged configurations.
  - The body it is argued by many is involved in more general representational systems , e.g. in language metaphor and in reasoning: Lakoff and Johnson (1980).

Taking a look at the body again from this unfamiliar angle there seem good reasons to hold the body is at least weakly representational. Even strongly representational but in a style which is very different from the Language of Thought.

I think we can say more about the style of body representation if we consider it *virtualist*.



Fodor, J. A. (1975). *The Language of Thought*.  
New York.: Harvard University Press.

# 3 Theses on (Virtualist) Embodied-Representation

Higher animals act and think through Embodied Representation. Embodied representation is I claim virtualist in the following respects:

1. (V) Embodied representation is expectation based.
2. (V) Embodied representation is actualizing.
3. (V) Embodied representation essentially establishes a sense of presence.

# 1 – Expectational / Projectional

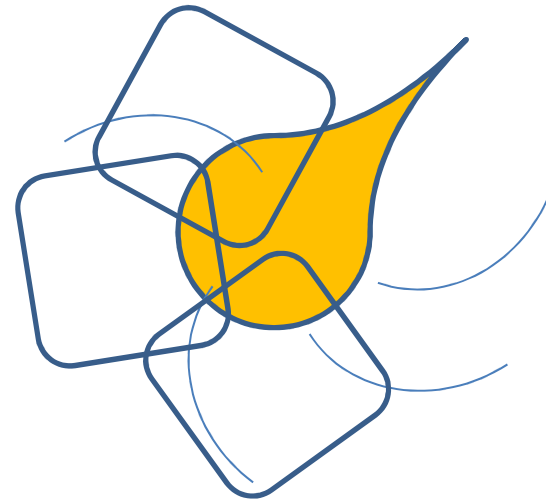
The perceptual scene is continually produced by the projection of certain expectations about the content of sensory (or quasi-sensory) channels.

Perceptual content is composed from expectations about sensory content (or contact) which typically anchor and constrain projected presence through worldly contact.

What we perceive is not what is currently in our sensory channels but what sub-personal systems project, based on the most coherent structure they can produce.

# Roughly

Perceptual content is composed of experiential dimensions projected around a sensory core. The character of the projection is based on expectations. Sensory contact merely fill out the projections.



# Why Expectational?

The idea behind expectational account builds on evidence and intuition which drove the *skill* or enactive theory of perception.

With one crucial amendment: current action is not needed in order for the system to project content. **Sensorimotor expectations give the structure to perceptual experience, but they can operate without occurrent sensory contact.**

## 2 - Actualizing

Second, **virtual**-representation always has an **actualizing** flavour.

It is poised to fuse a coherent overall gestalt: the most coherent sense of presence possible, *even when sensory contact fails*.

While much of its constituent structure is virtual (as-if content) *an actual* world is still always posited. This acts as a reference frame against which further simulation and extension takes place.

# Actualizing with Sensory Deficit

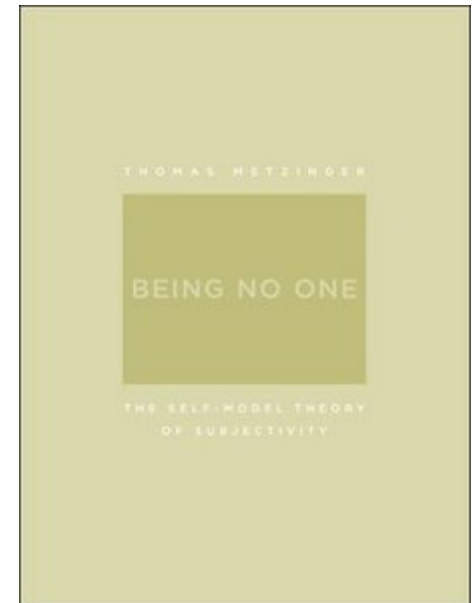
**Consider Anton's Syndrome:** Subjects are blind but, as a sort of inverse of blindsight, steadfastly claim to see a detailed and present world. Such florid confabulations (like dreams and hallucinations) are interesting evidence of the actualizing character of perception. Perceptual fusion can happen in the absence of good sensory contact.

# A further sense of actualizing

The body as represented may rely on a system of simulational forward models. But, the body as presented is one and unified.

Imagined movement takes place against this background.

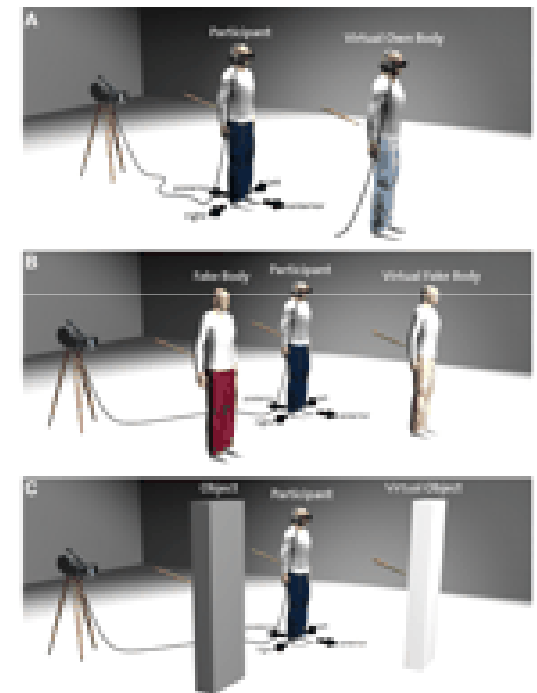
Metzinger calls this a zero-order hypothesis. This leads to the third principle: presence



Metzinger, T. (2004). *Being No One: The Self-Model Theory of Subjectivity*: Bradford Book.

# 3 - Presence

Minds like ours always tend to present complex holistically structured worlds with multi-dimensional contents that tend towards the spatial / perspectival fusion of a sense of presence (in time and space). The core of mental-representation is the production of a fused sense of a body spatialized in a world and present in a moment of time.



Lenggenhager, B., Tadi, T., Metzinger, T., & Blanke, O. (2007). Video ergo sum: manipulating bodily self-consciousness. *Science*, 317(5841), 1096.

# Why Presence?

Subjects— except in some pronounced pathological conditions – experience themselves as embodied and embedded in a particular scene. The scene has structure, one of the most basic elements of which is the agent / world set of relations. Another the spacialization of the body. A third the time structure of a composed present.

The projection of an agentive self within a world appears to be a basic and default configuration of this representational space. Representation on this model is not figured as a sort of internal mirroring of the world but the presentation of a **structured fusion** of an agent located in an immediate environment. This conjunction is the core of the sense of presence.



# A Fourth thesis on (Virtualist) Embodied-Representation

Higher animals act and think through Embodied Representation. Embodied representation is, in the sense I have just developed, virtualist.

1. (V) Embodied representation is expectation based.
2. (V) Embodied representation is actualizing.
3. (V) Embodied representation essentially establishes a sense of presence.

This makes possible a rethinking of language, namely:

- 4. Language is a complementary representational resource which introduced new cognitive equipment. Understanding the cognitive role of language is greatly aided by understanding its backdrop.**

# Loosening the Bonds (with language)

Andy Clark has held that: “The symbol loosens the bond between agent and world”. Given what has been said so far about virtualist representation we have some indications of why this may be useful.

V Representation is geared toward action, the immediate context and gestalt world presentation.

*Symbolic* representation provides resources for:

- Interrupting action.
- Foregrounding and structuring the immediate context.
- Picking apart or adding structure to the global gestalt.

A theory of V representation provides an interesting basis for how this may be so.

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