Representations, Symbols, Icons, Concepts...

...And why there are no (ontologically distinct) *mental* representations!

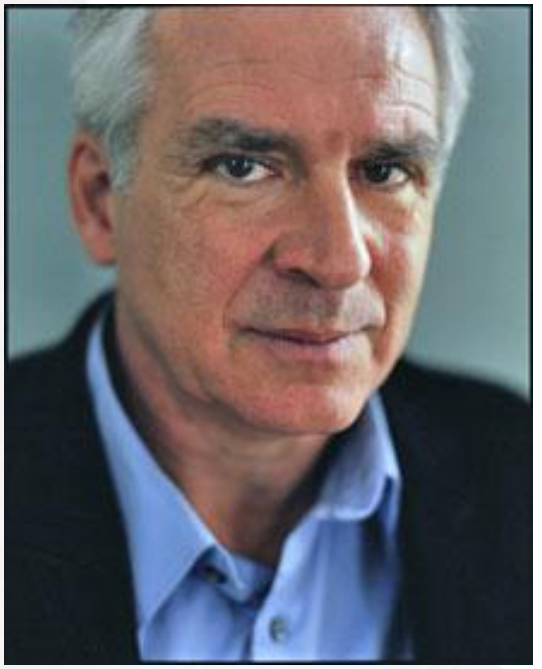
The "problem" of experience

- On the one hand, we cannot step outside our (personal or intersubjective) experience.

- For most practical purposes, the world *just is* the world we experience.

- On the other hand, we can for good logical reasons conclude that some things lie even in principle outside our experience.

"The prime problem is that the information received by the receptors is too rich and too unstructured. What is needed is some way of transforming and organizing the input into a mode that can be handled on the conceptual or symbolic level. This basically involves finding a more **economic** *form of representation: going from the subconceptual to the conceptual level usually involves a* **reduction of the number of dimensions** *that are represented...."*



Concepts

- Basic units of our structured thought.
- Exhibit the properties of:
  - Systematicity & productivity (Generality Constraint).
  - Brentano-type intentionality.
  - Kantian spontaneity (Prinz: “endogenous control”).
  - Compositionality (upwards or upwards and downwards).
  - Ability to change.

"The heart of a cognitive science **[and of a cognitive semiotics?]** ***is its theory of concepts. And I think that the theory of concepts that cognitive science has classically assumed is in a certain way seriously mistaken."***

Conceptual Relations

- **Concepts bear a close relationship to representations.**

- **Concepts bear a close relationship to signs.**

- **For *certain* conceptual agents, (nearly) all concepts can be understood as representations.**

- **But no concept can be understood solely as a representation!**

"If the animal is present in the world, with access to environmental detail by movements.. . then why does it need to go to the trouble of producing internal representations good enough to enable it, so to speak, to act as if the world were not immediately present? Surely we sometimes need to think about the world in the world's absence (when it's dark, say, or when we're blind, or not at the location we're interested in), and for such purposes we must (in some sense) represent the world in thought. But what reason is there to think that this is the case in standard perceptual contexts?"

Representationalist vs. Anti-representationalist

- **On the one hand, concepts are meant to stand or *stand in* for aspects of the world.**

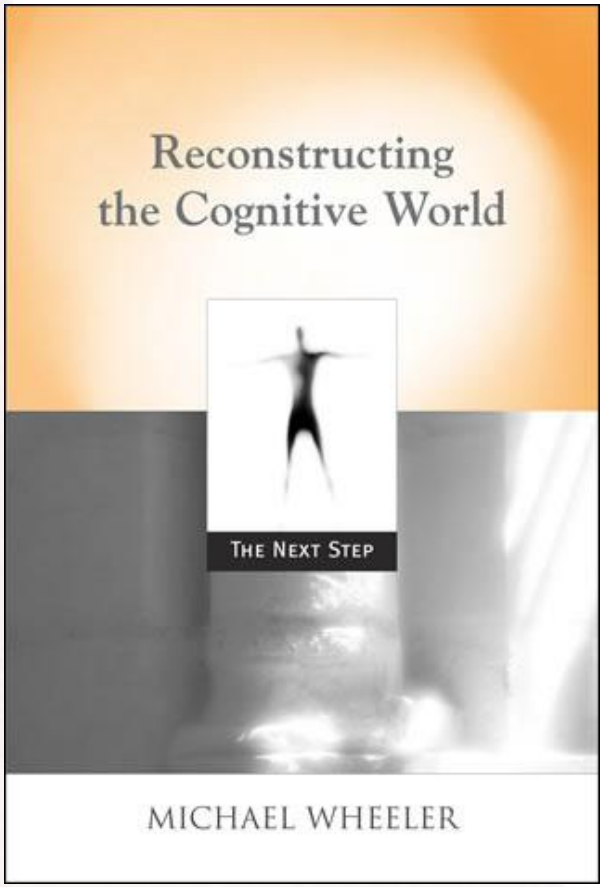
- **On the other, such talk is taken as an illegitimate and misguided stepping back from the world: agents are always *in* the world and directly engaged with it.**

"[Concepts] ***are like the scale models that stand in for objects during courtroom reenactments. They allow us to reexperience past events or anticipate future events. Possessing a concept, on this view, involves an ability to engage in such a simulation....***"

Symbols & Symbolic Representations

- Something that by virtue of convention stands in for something else.
- Must be readily re-identifiable.
- Normally must involve visual modality.
- Manipulated according to "purely syntactic" rules.

"In classical cognitive science a representation is either an atomic symbol or a complex molecular structure constructed through the systematic recombination of atomic symbols according to syntactic rules. The content of a molecular representation is a function of the contents of the constituent symbols plus the syntactic structure of the complex formula. In other words. . . classical representations, in a manner familiar from natural and artificial languages, feature a combinatorial syntax and semantics."



Symbol Checklist

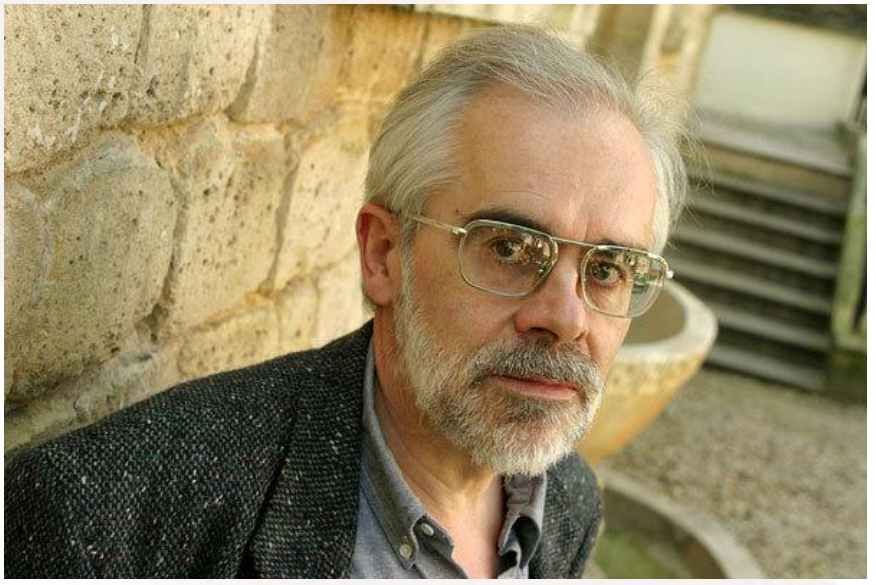
- Amodal.
- Context-free; “purely” syntactic.
- Discrete (individuable), not continuous.
- Fully arbitrary.
- Observer independent.

“A symbol in a model is arbitrary if there is no obvious relation between the mark or sound we use to designate that symbol and the things represented by implementations of that symbol (or realizers of it, or objects onto which that symbol is mapped during modeling, etc.).”

Mind as Machine

- **Image of computer applying purely syntactic rules to strings of meaningless symbols to generate new strings of symbols.**
  - **Turing test *as popularly understood.***
  - **John Searle's Chinese room thought experiment.**
  - **Douglas Hofstadter: Typographical Number Theory (TNT).**

"The answer is that the machine manipulates formulas, but our interpretation gives them the status of symbols: not the symbols of a machine language, but symbols in a system that is our own. Those who insist that intellectual activity is symbolic activity are right: to think, for a subject, is to use symbols. But whose symbols? Symbols in someone else's language or symbols in a language effectively used by the subject?



Symbol Problems

- **Symbols have to be grounded *somehow*.**
- **Symbols are only ever meaningful with respect to *some* context.**
- **Symbols evolve: consider the Sanskrit *svastika*.**
- **The relationship between syntax and semantics, form and meaning, is often *non*-arbitrary.**

***"The underlying assumption of many is that a real world exists independently of any observer; and that symbols are entities that can 'stand for' objects in this real world in some abstract and absolute sense. In practice, the role of the observer in the act of representing something is ignored.... The gun I reach for when I hear the word* representation *has this engraved on it: 'When P is used by Q to represent R to S,* who is Q and who is S?"**

Symbol Solutions

- **Modally grounded, but not beholden to any *particular* modality.**
- **To greater or lesser extent, sensitive to context.**
- **Individuable yet continuous.**
- **Requiring only an *apparent* arbitrariness.**
- **Deeply observer-dependent!!!**

"The sign is the part of the symbol perceptible by the senses. Two different symbols can therefore have the sign. . . in common – they then signify in different ways. . . . In the language of everyday life it very often happens that the same word signifies in two different ways and therefore belongs to two different symbols or that two words, which signify in different ways, are apparently applied in the same way in the proposition."