



Minds and Machines (Lecture 2): Extending the Mind

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Externalism about the Mind

A variety of externalist views

- There are several ways to be an externalist vis-à-vis the mind. In what follows, we discuss 3 out of 4 such externalist views:

- * **embodied cognition**
 - * **extended cognition**
 - * enactive cognition
- } Constitutive views
- * **embedded cognition**
- } Non-constitutive view

- The above share the claim that the brain is not the only structure when accounting for cognition.

The mental vs. the cognitive

- A useful distinction to keep in mind when engaging with this literature is that between mental and cognitive.
- Roughly speaking, one can think of the mental as a broader category and thus as encompassing the cognitive.
- For example, it may be argued that the cognitive excludes experience and emotion.
- Any view that seeks to extend what goes on inside our heads needs to delineate exactly what gets extended.

Embodied cognition (or mind)

- **Thesis:** The mind (or cognition) consists of brain structures and body structures (particularly sensorimotor capacities).

Example:

Our bodily abilities to climb stairs seem to feature into our estimates of what heights of stairs are easiest to climb.

- Prominent advocates: R. Brooks, M. Heidegger, G. Lakoff, M. Merleau-Ponty, E. Rosch, L. Smith, E. Thelen and L. Vygotsky.

Extended cognition (or mind)

- **Thesis:** The mind (or cognition) consists of brain structures and external structures.

Example:

A calculator that we use is literally part of the cognitive chain that produces a given quantitative belief.

NB: Hereafter, we'll use the acronym 'EMT' for this view.

- Prominent advocates: D. Chalmers, A. Clark, D. Dennett, S. Hurley, J. Krueger, R. Menary and M. Rowlands.

Shifting some of the burden to the world

- EMT theorists like to emphasise the fact that we have evolved ways to lessen our cognitive load:

“our habit of offloading as much as possible of our cognitive tasks into the environment itself—extruding our mind (that is our mental projects and activities) into the surrounding world, where a host of peripheral devices we construct can store, process, and re-represent our meanings, streamlining, enhancing, and protecting the processes of transformation that *are* our thinking. This widespread practice of offloading releases us from the limitations of our animal brains” (Dennett 1996: 134–135).

Two qualifications

- First, EMT can be divided into two types via the distinction between mental/cognitive *states* and *processes*.

State-based views: Only cognitive states are extended.

Process-based views: Only cognitive processes are extended.

NB: Needless to say, the two can be, and have been (e.g. Clark and Chalmers 1998), combined.

- Second, EMT is intimately tied to functionalism:

Pro-EMT arguments typically rely on the functional similarity between internal and external states/processes.

Embedded cognition (or mind)

- **Thesis:** The mind (or cognition) consists of brain structures but also involves (but does not consist of) external structures.

Example:

A calculator that we use is not literally part of the cognitive chain but it is a method to offload some processing to the environment.

- Prominent advocates: J. Haugeland, D. Kirsh, P. Maglio and D. Rumelhart.



Arguments for the Extended Mind

External mental states: Otto the Alzheimer patient

- Otto suffers from Alzheimer's. He hears about an exhibition at MoMA (NY) and uses his notebook to retrieve the address.
- Inga also hears about the exhibition but uses her memory to retrieve the address of the museum.
- According to Clark and Chalmers, Inga's belief and the relevant sentence in Otto's notebook play the same role.
- As such, they both qualify as beliefs – recall the functionalist approach – and are indeed tokens of the same natural kind.

A more nuanced version

- Inga has a *non-occurrent* belief, residing in her memory, that MoMA is on 53rd street.

NB: An occurrent belief is one that occurs in the present. A non-occurrent belief is one that occurred in the past.

- Otto also has that non-occurrent belief. It could not reside in his memory, but it must be somewhere, viz. in his notebook.
- Just like Inga's memory, the information from the notebook is central to his actions.
- And just like Inga's non-occurrent belief, it is there (in the notebook) even when he is not conscious of it.

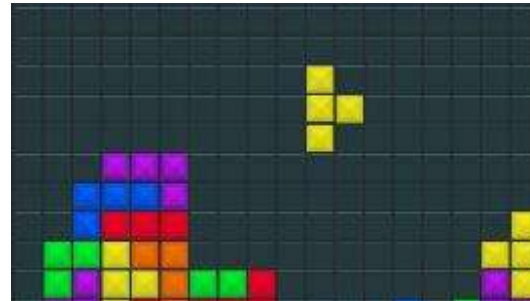
Superior explanations

- EMT is advertised as providing superior (in particular simpler) explanations of actions.

“We are happy to explain Inga’s action in terms of her occurrent desire to go to the museum and her [non-occurrent] belief that the museum is on 53rd street, and we should be happy to explain Otto’s action in the same way. The alternative is to explain Otto’s action in terms of his occurrent desire to go to the museum, his [non-occurrent] belief that the Museum is on the location written in the notebook, and the accessible fact that the notebook says the Museum is on 53rd Street; but this complicates the explanation unnecessarily... we must also do so for the countless other actions... It is pointlessly complex” (13).

The essential ingredients argument

- Some extra-cranial processes extend cognition as they have all of its essential ingredients (Clark and Chalmers 1998):
 - * the internal and external parts *causally interact*
 - * the internal and external parts *jointly govern behaviour*
 - * the *removal* of external parts *leads to a performance drop*

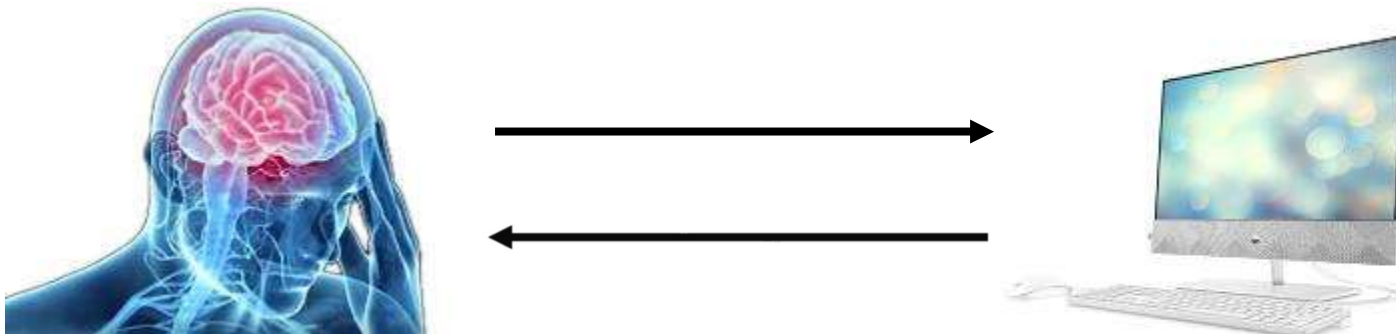


- Physical rotations are faster and not just used to position blocks but also to determine fit (Kirsch and Maglio 1994).

The computational argument

- If the coupled internal and external processes both compute, then there is every reason to count them as one system.

“From this suitably abstract computational perspective, it is argued, there does not seem to be a huge amount of difference between internal processes performed by the brain on information-bearing structures and external processes performed by the organism on information-bearing structures. They have the same abstract computational profile and purpose” (Lau and Deutsch 2020).





Arguments against the Extended Mind

Ontological overabundance

- If sentences in a notebook and elsewhere qualify as beliefs, then EMT commits us to an unnecessarily excessive ontology.

NB: The objection is also known as ‘cognitive bloat or ooze’ – see, for example, Allen-Hermanson (2012).

- Clark and Chalmers (1998) try to pre-empt this kind of objection by demanding that:

“the information [is] endors[ed]... [and potentially] has been consciously endorsed at some point in the past” (17).

- The reply has counters, e.g. functionalism is under-mined, but a pure process-based EMT may do better.

Conflating coupling with constitution

- Adams and Aizawa (2001) point out that the coupling of internal and external systems does not imply EMT.

“... the mere causal coupling of some process with a broader environment does not, in general... extend that process into the broader environment.” (56).

Example: The kidneys are coupled to blood vessels and the heart; yet blood filtration occurs only in the kidneys.

- Aware of Clark and Chalmers' requirement that the processes must be *similar*, Adams and Aizawa add that:

No actual cases satisfy that requirement because cognitive processes involve non-derived mental representations.

The mark of the cognitive

- Adams and Aizawa list 2 necessary conditions for cognition:

Condition 1: Cognitive states require intrinsic, i.e. non-derived, content.

Result: Internal states, e.g. beliefs, have intrinsic content but external states, e.g. symbols on a page, have derived content.

Condition 2: Cognitive processes form a natural kind individuated by causal relations.

Result: Turing test success achievable through a vast look-up table but that wouldn't mean it's a cognitive process.



The End