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# Implications of the Embodied, Enactive Mind on Theorizing About Information Experience

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## ABSTRACT

Information Experience is a recent and growing concept in Information Science that is proposed as a holistic approach to explicitly examine the human experience of information interactions, including an individual's perceptual, cognitive and embodied experience. Valuable to this discussion is setting out a suitable philosophical position about the conception of the mind. This paper proposes that the concepts of embodied cognition and the non-representational, enactive mind are necessary conceptions of mind for an adequate theoretical account of Information Experience. Furthering this discussion, the concept of information as an enactive cognitive phenomenon is explored, as constructed by the individual, embodied by their experience and contextually situated. These conceptions will provide a foundation for further development of the emerging field of information experience, and prove thought provoking for the Information Science field generally in the development of new approaches to the ways we use and share information in our communities and the future technologies we build for this.

## KEYWORDS

Information Experience; Theory of Information; Embodied Cognition; Enactive Mind.

## ASIS&T THESAURUS

Information Behavior; Information Use

## INTRODUCTION

Information Experience is a recent and growing concept in Information Science that is proposed as a holistic approach to explicitly examine the *human experience* of information interactions, including an individual's perceptual, cognitive and embodied experience.<sup>1</sup> Further examination of the underlying ontological and epistemological position is needed in order to clarify conceptual aspects and build towards a strong theoretical foundation of information

<sup>1</sup>For example, see Bruce et al (2014) and Gorichanaz (2019, 2015).

experience. This includes the need for understanding the implications of embodied cognition, challenging the assumption of the mind as being inherently representational and critically examining the concept of 'information' in relation to this. That is, examining information as a cognitive phenomenon.

As has been shown through a vast body of information behavior and information practice research, everyday human information experience is commonly rather irregular, messy and disordered, and incorporates multifarious ways that people interact with information as they seek, avoid, serendipitously encounter, share, collaborate, appropriate, synthesize and misunderstand. Conceptualizing these interactions from the perspective of information experience, enables a rich picture of how we as individuals live in the world, how we communicate with each other, and deepens the understanding we can build from these rich pictures. Valuing individual's information experiences, allows us to foreground understanding of these in the information technology we use and the communities we build.

Valuable to this discussion is setting out a suitable philosophical position about how the mind works. To this end, the concepts from Cognitive Science of *embodied cognition* and the *non-representational, enactive* mind are proposed as necessary conceptions of mind to provide the foundations for an adequate theoretical account of information experience.

## EMBODIED COGNITION

A growing interest in embodiment in the Information Science field has seen a range of aspects being explored with regards to embodied information and knowledge.<sup>2</sup> Extending this understanding, this paper focuses on embodied cognition and on the way people think, the workings of the mind as being fundamentally connected to a person's interactions with the world. This perspective frames the phenomenon of experience as being the *present, in-the-moment, human experience from an individual's perspective*. Conceptualising experience in this way fundamentally sets the scope of information

<sup>2</sup>Such as in the recent double issue of *Library Trends* (2018).

experience to be a phenomenon accessed from the individual's subjective perspective and manifesting in an embodied, cognitive state. Embodiment locates the mind as essentially and inherently enmeshed with the experience of the body, such that "knowledge depends on being in a world that is inseparable from our bodies, our language, and our social history" (Varela, Thompson, & Rosch, 2017, p. 149).

While our bodies are sensual and physical intermediators of our experience, and the *senses* are a primary interface through which individuals experience, the concept of embodiment conveys that this experience of the lived body is not that of a "passive receiver of sensory stimuli or the locus of mechanical reflexes ... [but that] from a first-person perspective, we *are* that body, and it is through our bodies that we are part of the world" (Aagaard, Friis, Sorenson, Tafdrup, & Hasse, 2018, p. xv). Perception is central to what and how we experience; it is the *means* by which we experience. The very concept of experience relies on the notion of something that is being 'experienced' (Bitbol, 2016, p.3). Conscious and unconscious perception of this 'something' then is the mechanism for this embodied experience, whether 'it' is external to the individual (such as the information objects, context, other people) or the individual's own body (physical sensations), or of the mind itself (its states, emotions, and thoughts).

Moreover, "the phenomenal character of experience includes both the *qualitative character of what we experience* (e.g., sensory qualities of the world and our body) and the *subjective character of the mental acts whereby we experience* (e.g., perceiving, remembering, and imagining)" (Thompson, 2008, p. 401). In relation to our perceptions, these also have both sensory qualities and subjective characteristics, as "the perceived object is always contextualized, not just by its physical surroundings, but by the particular ... perceiver" (Gallagher & Zahavi, 2012 p. 106).

Commensurate with the notion of the embodied mind, is that cognition is situated and contextual – in fact "it is situated because it is embodied" (Gallagher & Zahavi, 2012 p. 150). That is, what you experience you experience *here and now*, you experience wherever *you* are and that experience is specific to that context. Even if you are thinking about another place (by looking over holiday photos, or reading a historical drama), you are doing this, experiencing this, from the comfort of your armchair/train/office/place where you are. Similarly, embodied experience has a temporal dimension and is situated in the present. Experience is only now: "what we perceive, we perceive as *present*" (Le Poidevin, 2015).

As described above, the notion of embodiment is inseparable from a notion of mind where experience is subjective, spacio-temporal and culturally situated. In this conception, traditional views of the mind as information processor will not hold.

## ENACTIVE MIND

Traditionally the mind is depicted as something like a computer processing information 'bits' in response to external stimuli (Lakoff, 2012). In this framework, these 'information bits' are thought to be the internal, objective representations the external world that the mind holds, and the mind essentially processes "computations of symbolic representations, and that these representations are physically realised in the brain in a form of symbolic code" (Varela et al., 2017, pp. 40-1). This cognitivist mental framework lends itself to a conventional model of communication (such as Shannon & Weaver, 1949), in which information is given and the mind is like a receiver that collects and processes this information. This view is suited to and underlies the traditional information interface design described by Lueg & Twidale, as presuming the information seeker to be a patient, logical, rational robot (2018, p. 409), and which relies on information being transferable as an objective commodity (Krebs 2014, p. 30).

There are however points at which this reductive, realist representational model fails us. As Thompson states, cognitivist representationalism "neglects the subjective character of experience" (2008, p. 401), and therefore is inadequate to explain experience. This can be shown for example, when accounting for contextuality and the "many different worlds of experience" (Varela et al., 2017, p. 9) that are evident across the range of human experience. If we assume that an information experience is an experience, then cognitive representationalism is inadequate to explain information experience too.

An alternative approach is the concept of the *enactive* mind which captures the sense that "cognition is not the representation of a pre-given world by a pre-given 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 et al., 2017, p. 9). The enactive mind is fundamentally embedded through embodiment in the perceptions of the world it inhabits, and also actively shapes that world through its actions and perceptions (Varela et al., 2017, pp. 172-3). In this way, it is a hybrid of interactions between the mind's intrinsic aspects and the extrinsic responses/interactions with external stimuli (Northoff, 2012, p. 356). Furthermore, the non-representational, enactive mind is characterised as being fundamentally non-reductive, and instead based in holism – that is, it is something different to and more than the sum of its parts.

Taking into account all these characteristics, the mind can be thought to operate as a complex, dynamic, self-organising system. "It is thought that mental phenomena arise from the brain's self-organised and spontaneous, pattern-generating activity, and not simply from stimulus-driven processing" (Fazelpour & Thompson, 2015, p. 223).

The question arises then of how information experience can be understood in relation to the embodied, enactive mind.

Of primary significance is conceptualising information within the enactive mind.

### **INFORMATION AS AN ENACTIVE COGNITIVE PHENOMENON**

As described above, human information experience is a phenomenon manifesting in an embodied, enactive cognitive state. It follows then that *information* is conceptualised as a phenomenon of human experience and cognition, and is instantiated within and arises as function of the human mind. This aligns well with Gorichanaz's depiction of information as needing to "be understood from the first-person perspective of the agent beholding that information, taking into account their lived situation" (2019, p.3).

This conception disallows the idea that information exists independently of cognition, such as espoused by an information-as-thing conceptualisation (Buckland, 1991). This is not to disregard that a range of documents and artefacts are commonly referred to as information in everyday life and in the field of Information Science. Instead, this conceptualisation recognises that an enactive mind experiences these artefacts in subjective ways, such that there is a variety of individual perceptions of what is actually informative (i.e. has the characteristic of 'being information'), or indeed what information a given artefact imparts.

This foregrounding of the individual experience firmly extends the characterisation of the information agent as the expert in their own life-world. Previously typified as a 'needy user' – that is, someone who has a preconceived information need attempting to solve it through a course of guided seeking (Olsson, 2005) – in the modified position, the ways the individual perceives and interacts with information is therefore examined from their perspective. This incorporates a conceptualisation of individuals as socially complex agents interacting in valid, multifaceted and sophisticated ways, as they sift through/evaluate/prioritise/discard/ignore information that is encountered by them through a variety of sources and contexts.

Furthermore, this enactive cognitive view of information enables a wide consideration of information sources without being constrained by socio-cultural preconceptions. That is, anything can be understood to be a stimulus for an information experience: from human generated symbols and communication, through to natural phenomena or individual thoughts, feelings, or beliefs (as has been explored, for example by Kari & Hartel, 2007). Also, it removes the privileging of formal information systems (e.g., books, reports, data systems) over informal sources (e.g., friends, co-workers) (Case & Given, 2016, p.59).

A consequence of the enactive mind is that, documents and information artefacts are not specifically information. They can be regarded as *representations* of information or *tools*, rather than information in and of themselves. Instead, it is

proposed that these 'tools' with which we record our information (books, webpages, databases) have so closely been assimilated with the phenomenon of our information experience, that we have come to equate these objects as 'being information'. If we instead consider that highly frequent use of familiar "tools and technologies are characterised by experiential *transparency* in the sense that they withdraw from conscious awareness" (Aagaard et al., 2018, p. xiv), then it can be seen that through the very process of creating and using these 'information tools' in information ideation, they become experientially transparent to the individual. In this way, we can divest ourselves of being tied to the notion of 'information' as a captured characteristic of the physical texts (whether these be printed text, webpages, databases, music scores, artworks, or any other artefact).

Furthermore, this assumption that information is essentially an enactive cognitive phenomenon points to a special quality of information – that it is inherently individually defined, at the moment of being information – *as it is experienced* as information. This definition at the point of experience (or through the experience), necessitates that information is construed as such, it is *constructed* as such by the individual, embodied by their experience and contextually situated.

This shift in perspective then opens up a new way of conceptualising an experientially-founded paradigm from the ways (behaviours/practices/activities) that we share and use information, the technologies we build for communicating and recording information, and the models we create to divine insights into the management and creation of data (systems architecture, process management and process mining, big data).

### **CONCLUSION AND FUTURE DIRECTIONS**

This paper has provided a novel exploration of an embodied and enactive, non-representational view of the mind and its significance for theorising about human information experience. It has argued that any theory of information experience needs to incorporate the notion of an enactive, embodied mind, rather than the more broadly received view of an object-oriented, representational mind founded on an assumption of realism, which is inadequate for holistically incorporating the subjective, situated and contextual characteristics of experience.

Furthering this discussion, this paper examined the significance of conceptualising information within the enactive mind and as constructed by the individual in the moment of information experience.

These conceptions will be useful in providing a foundation for further development of the emerging field of information experience, and prove thought provoking for the Information Science field generally in the development of new approaches to the ways we use and share

information in our communities and the future technologies we build for this.

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