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Reconceptualizing Information Systems from the Activity Modality Perspective

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The information system (IS) community has long debated the nature of ISs without reaching closure (e.g. Baskerville, 2012). This uncertainty may have contributed to spectacular IT project failures (e.g. Dalcher, 2003). Thus, there is a need to reconceptualize ISs from new and innovative positions. At previous NeuroIS retreats (2011, 2012), I have discussed the construct of *activity modalities* as a conceptual link between the brain and human action (Taxén, 2009). In this contribution I will pursue this line of inquiry into the IS area.

The activity modalities – objectivation, contextualization, spatialization, temporalization, stabilization, and transition – stand for fundamental dimensions by which we cognize the world in order to perform purposeful, coordinated and integrated actions. For example, it is necessary to conceive of the object of actions; that which is acted on. This is achieved by integrating afferent sensations from sensory modalities into an efferent, object permanence perception (objectivation).

Actions may be divided into the phases of *perception*, *manipulation* and *consummation* (Mead, 1938). In the perceptual phase the actor tries to comprehend the situation and what action possibilities it offers. In the manipulation phase the actor intervenes and changes something, and in the consummation phase, the actor assesses the results and effects of the action. These phases are intertwined, constantly evaluated, and modified during the action. This basic pattern is repeated in every situation the actor becomes involved in.

The perception phase will invoke at least objectification, contextualization, and spatialization, since these modalities are pertinent to the comprehension of the situation. The temporalization modality is involved in the evaluation of action possibilities. The stabilization modality is manifested by repeatedly carrying out the action cycle; gradually resulting in the establishment of relevant actions patterns. Transition, finally, is at play when a new situation is attended.

An IS is a means used to support the integration of actions in a certain situation. A tentative analysis of ISs from an activity modality perspective is as follows. A first observation is that the inherent “worldview” of the IS, i.e., the type categories from which item instances can be instantiated, needs to comprise all modalities and their interdependencies. Thus, the IS must be capable of managing information pertinent to the object in focus for

actions; the context formed around the object; relevant things in that context; the sequence of actions directed towards the object; rules, standards, norms, etc., expressing relevant actions; and the transition to other contexts. In addition, the IS must be easily modifiable as the situation stabilizes.

It can be noted that the perception phase may be associated with the constructs of perceived usefulness and perceived ease of use suggested by the Technology Acceptance Model (TAM; Davis, 1989). For example, perceived usefulness will be influenced by the IS’s expressiveness of the object and the context around it.

A central observation is that there is, in principle, no difference between individual or collective use of the IS. The activity modalities are grounded in our biological constitution, which means that they are at play in both situations. As a consequence, the problematic notion of “levels” (e.g. individual, group, organization, etc.) can be eschewed.

I will illustrate the activity modality conceptualization of ISs by some concrete examples. In general, extant ISs appear to lack several features that would enable a complete, integrated management of the activity modality percept. In particular, support for the contextualization modality seems to be absent. Also, an evolutionary way of working is usually not endorsed.

The gist of this contribution is that ISs are, in principle, no different from other means that mankind have employed in the struggle for survival. In order to be proficiently used, ISs should adhere to our innate predispositions for acting in the world, i.e. the activity modalities. Thus, the modalities may inform a biologically grounded design and implementation of ISs in organizations.

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