Aren’t the fundamental concepts of work systems mostly about actions?

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Abstract The scope of this paper is to ‘infuse’ the so called work system approach (WSA) with a suggested theoretical basis. WSA is a generic approach for understanding information systems in organizations with its aim set on high relevance. By relating the, so called, work practice approach the endeavor of the paper is to elaborate on actions as a theoretical and more rigorous basis for WSA. The results from this elaboration are then used to dispute some lines of criticism that has been raised against WSA. The study can be characterized as explorative and the results points out a direction that states that further cross fertilization between the two approaches would be fruitful.

1 Introduction

Alter [1-3] has proposed a analytical framework where the concept of ‘work-system’ is central. A IT reliant work system has been declared as the central unit of analysis when understanding information systems (IS) and their context [4]. The core of such a work system is a situated work practice in which participants utilizes technology and information. The work system approach (WSA) has been presented and penetrated in various scholarly articles on information systems e.g. [4,3,5-7]. WSA has been used as a conceptual backbone in general IS textbooks [8] and has an explicit pragmatic scope in the intentions to bridge the gap between research and practise:

"Business and IT professionals can apply this theory for understanding and analyzing information systems. Academic researchers can apply it for gaining a deeper appreciation of past research and for developing future research projects." [2, p. 2]

The WSA has however questioned for its lack of theoretical rigor and accused for merely rearranging terminology. In turn, WSA ideas have been defended with arguments stating that rigor in this case has to yield to relevance and applicability.
The point of departure in this paper is though that the earlier lines of criticism still are valid while presented defence against the critique somewhat misses the target. The assumption behind this departure point is to oppose the idea that theoretical rigor per se implies inapplicable constructs in terms of practical use. On the contrary a strong theoretical model might just be a necessity when looking to formulate prescriptions for practical use c.f. [9].

The aim is however neither to find more aspects to reprove nor to suggest new and more rigorous and “true” constructs. The conviction is rather that the work system approach already comprises an implicit rigor with a potential to be made more explicit. The purpose is therefore to obtain such an explicitation by infusing WSA with ideas from a co-existing approach for gaining IS understanding. This other approach is a work practice theory [10] with its roots in the so called language/ action perspective on information systems [11].

Both approaches aim at furnishing for a broad, contextual understanding of information systems in organisations and both evidentially draw upon work practices as the central unit of analysis. The work system approach has a distinct prescriptive touch while work practise theory (WPA) is more descriptive but comes with a more thoroughly theoretical underpinning.

2 Critique as a basis for reconsiderations

As mentioned in section 1 the work system approach outlines a set of constructs that can be used by both IT professionals and researchers to understand IS in organisations. Thus WSA aspirations would go well in line with the expressed call for both rigor and relevance when it comes to conducting research in IS. As in other fields of study there has been a debate regarding an eventual dichotomy between a rigorous research process and relevant results in IS c.f. [12]. The call for rigor addresses the need for theoretical rigidity (as well as process rigidity) while the call for relevance has to do with significance in contemporary practice [13].

Though to these commendable aspirations, or perhaps because of them, the work system approach has been criticised for aspects regarding to rigor. To be more specific, critique has been raised saying that the work system approach lacks a base of “established social theory of work” [14, p 455]. For me the consequences of such a proposed lack could be related to the interpretative research principle of ‘abstraction and generalization’ c.f. [15]. This principle has to with the need to alternate between ideographic details and theoretical assumptions. To put it simple, a good understanding of situated, IT related work might be even better when relating to theoretical notions on the relations between technology and work. Another line of criticism, or at least a
source for misunderstandings, has been the WSA delimitation between the IT artefact (as defined by [16]) and the work system concept itself [7]. This must also be considered as central since the soul purpose of the WSA is to broaden the scope and shift focus from technology to context [4].

3 Scope and methodology

The aim of this paper is to reveal and elaborate on a possible theoretical basis for the work system approach. The aim concerns infusing rigor in a prescriptive approach of high relevance by the help of a coexisting line of thoughts from the information systems field. The point of departure is two identified lines of criticism that has been directed at the WSA (c.f. section 2). To focus on these expressed lines of criticism is also a conscious delimitation to shed light on the possibility to use an infused WSA approach to dispute such statements.

A contribution with this scope can be described as explorative theory building. It must be characterized as explorative in the sense that the narrow delimitation (focusing the criticisms) is bound to exclude aspects important for a thorough theory grounding of a generic approach such as WSA. It is theory building in the sense as [17] discusses as a metatriangulation approach where theoretical assumptions from different paradigms can aid in developing new frameworks for understanding. The methodology in use is inspired by what has been referred to as ‘bracketing’ [17, 18]: “… brackets enable theorists to ignore certain aspects of complex phenomena and focus on facets and issues of particular interest”[17, p. 673].

4 Two approaches for understanding IS in organisations

The following outline is brief and aims at presenting a minimal foundation for obtaining the purpose of the paper. This means to deal only with approach elementals. A more comprehensive description of the WSA can be found in [2,19] and for a rich picture of WPA confer to [20,10,21].

4.2 Outlining the work system approach – WSA

A central part of WSA is the work system framework. The framework outlines a set of elements and their relationships forming a “super type” for worksystems. The framework’s nine elements is claimed to constitute a minimal set of concepts for understanding information systems in organisations [3].
“... a work system is a system in which human participants and/or machines perform work using information, technology, and other resources to produce products and/or services for internal or external customers.” [19, p. 10]

Figure 1 depicts the framework with and its elements. To be pinpointed and observed is that four elements are to be regarded as internal and constitute the core of a work system (the elements surrounded by a trapezoid in the figure). The explicit definitions of the four core elements can be found in appendix 1. The framework has an explicit pragmatic scope as it is suggested as analysis model for creating so called work system snapshots. Such a snapshot is a kind of time dependent business definition (and delimiter of the universe of discourse).

![Figure 1 The work system framework](image)

4.2 Outlining the work system approach - WPA

The work practice approach is based on a general notion work practice [20]. Here a practice is considered be a ‘doing’ that, just as in the WSA, is not necessarily limited by company borders. According to this approach a practice is defined as:

“*A workpractice means that some actors - based on assignments from some actors - make something in favour of some actors, and sometimes against some actors, and this acting is based on material, immaterial and*
financial conditions and a workpractice capability which is established and can continuously be changed.” [22, p. 3]

The core of a practice can be isolated as the part of the doing that involves refining some input into a desired kind of output. This process of transformation is central, but should also according to the notion of practice, be comprehended as highly dependent on various assignments as well as social norms. A common view on business processes suggests focusing external assignments to create customer value. According to WPA internal assignments should also be acknowledged as affecting the result for all practices. So-called role assignments are directed horizontally and concern the conditions under which different producers act. As depicted in figure 2 actors benefiting from the final product are called clients.

![Diagram](image)

**Figure 2** The work practice model (adapted from [21])

5 **Infusing rigorous relevance**

As mentioned in section 2 and 3 the concern of this paper is dealing with issues of criticism against the work system approach. The first issue regards theoretical underpinning for the notion of work and the other is about the relation between an IT artifact in use and its context. Using work system terminology presented in the last section implies primarily to elaborate on the two elements ‘work practice’ and ‘technologies’. This section presents such
an elaboration by using the WPA as a theoretical “lens” for outlining an infused WSA view.

5.1 Work practice as a nexus of actions

According to WSA, adopting work systems as the unit of analysis means to acknowledge that “participants perform work practices using information, technology, and other resources.” [19, p. 22]. As presented above a work practice is a most central element of any work system – it is within the reach of this element the actual work is taking place. Using a practice terminology could of course have different meanings, not at least when applied in IS research [23]. As I understand it Schatzkis notion of practice fits the work system approach quite well. Schatzki states that:

"Practices are interwoven activities in a given social domain ... Each is a spatial-temporal manifold of actions whose constituents form a nexus ...in existing only in conjunction with other members of the manifold” [24]

Performing practice in a work system context is therefore about performing actions. This observation could of course be regarded as obvious. But the following discussion will show that making the action aspect explicit might imply important clarifications. By taking actions as the point of departure it is possible to infuse the WSA approach with the sought for ‘social theory of work’ (see section 2). With actions as the ontological underpinning it is possible to relate the elements of WSA in a more rigid way. Using the conceptualisations of WPA gives that such an underpinning invites a view where the nexus of a work system could be understood as action relations [20]. In this view the two WSA elements ‘information’ and ‘technology’ become action prerequisites for the actions taking place inside the ‘work practice’-element (c.f. figure 1).

5.2 Technologies as prerequisite and performer of action

The WSA apprehension of the ‘technologies’-element draws attention to a broad understanding where IT as well as non-IT technology fits in. WSA is a way of thinking that opposes a socio-technical separation into realms of a technical- and a social system. A key idea is to claim for an integrated view where social and technical aspects must be understood as intertwined [19]. The question on how to apprehend technology to fit with this intertwined view is though not fully elaborated in WSA as I understand it. Alter states the following: "However, even the subdivision into nine elements leaves ques-
tions about boundaries, such as whether technology is part of the work practices rather than something used by the work practices..." [19, p.24] and further that: “Technologies include tools [...] and techniques [...] that work system participants use while doing their work” [19, p.51] (also confer to Appendix 1). I understand these statements as indications of the separation WSA stresses to avoid and thereby identifies somewhat of an inconsistency. Such a separation implies that ‘technologies’ gets a restricted meaning as an isolated system to be used only for supporting the work practice conducted.

From my understanding an explicit action focus sheds light on this issue too. By pinpointing that technology sometimes become irreplaceable as mediator and executor of human action, the integration of the social and technical systems of work can be better understood. The WPA view gives that in some situations it is appropriate to view the IT artifact as a tool (to be used by humans). In other situations it may be appropriate to foreground its agent capabilities; and hence its possibilities to interact with humans as other organizational agents. The notion of IT artifacts in WPA has been elaborated in relation the performance of actions. This implies that IT can set the scene as enabler in giving IT reliant prerequisites for action. IT can also be understood as bearing an inherent capacity to actually execute mediated actions and can thus not be viewed as restricted to supporting a work practice.

Even though these action aspects are not explicitly apparent in WSA presentations, I find them fully compatible with the line of arguments. I regard the discussion on IT reliant information systems as underpinning this view of mine. WSA acknowledge information systems as a specific type of work system e.g. [19]. Examining the definition of a work system again must mean that an IS in itself is about practising work activities. An IS work practice is thereby about performing actions and not just about supporting the job getting done:

“Human and organizational issues must be included because it views information systems as a special case of work systems in which people perform work using information and technology.” [19, p. 14]

6 Conclusions and future research

The aim of this paper has been to infuse the work system approach with a possible theoretical basis. This with the target set on disputing earlier WSA criticism by the help the infused approach. Section 5 presented such an endeavour by elaborating on the two work system elements ‘work practice’ and ‘technologies’. By discussing the implications of acknowledging actions as the ontological substance of practices I believe that the direction towards a basis in “established social theory of work” has been set out (c.f. section 2).
This issue was the first line of criticism targeted. Another aspect of acknowledging the action aspect is that it might shed some light on the issue of integrating the social and technical realms of work systems. The second line of criticism was namely about the distinctions of IT artefacts and the environment it affects. By appreciating technology as executor of actions, a seemingly contradictory notion of technologies can be elaborated and expanded towards a more evident integral understanding.

These conclusions should be understood as tentative and results from an explorative study of the character described in section 3. The contribution of the results is to set out a direction to follow for further theory grounding. The concluding remark is however that this exploration strengthens the idea that the language action perspective (section 1) in general and WPA in specific has a potential to put more rigor in to the work systems approach.

References

Appendix 1: Definitions of work system elements

The following section direct citation from [19, pp. 50-51]:

**Work practices.** The work performed within the work system can be summarized as one or more sets of work practices that may be defined tightly or may be relatively unstructured. Activities within these work practices may combine information processing, communication, sense making, coordination, decision-making, thinking, and physical actions. As workplace researchers point out repeatedly, the work that actually occurs often deviates from the idealized business processes that were originally designed or imagined. In
addition, different participants may perform the same business process steps differently based on differences in skills, training, and incentives.

Participants. People who perform the work practices are work system participants. Some may use computers and IT extensively, whereas others may use little or no technology. Whether or not particular participants happen to be technology users, when analyzing a work system the more encompassing role of participant is more important than the more limited role of technology user. (e.g., see Lamb and Kling [2003])

Information. Information includes codified and noncodified information used and created as participants perform their work. Information may or may not be computerized. Data not used in or generated by the work system is not directly relevant, making the distinction between data and information secondary when describing or analyzing a work system.

Technologies. Technologies include tools (such as cell phones, projectors, spreadsheet software, and automobiles) and techniques (such as management by objectives, optimization, and remote tracking) that work system participants use while doing their work. Even when substantially computerized, specific tools (such as cars) and techniques (such as use of checklists) may or may not be associated with IT in a particular situation. In terms of the work system framework, technologies are integral parts of the work system, and their affordances (such as a cell phone affording mobility) are evident to system participants. In contrast, technical infrastructure includes computer networks, programming languages, and other technologies shared by other work systems and often hidden or invisible to work system participants. In practice, the choice between treating something as technology versus as infrastructure should depend on what is most meaningful in the situation.