Technology Introduction as a Time-Extended, Social Process: Key Articulations in the Literature

General Track

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What happens after new technologies have been rolled out in organisations? This question has motivated a wide range of academic works in diverse intellectual communities, such as HCI (Bannon and Bodker, 1989), STS (Mackay and Gillespie, 1992), Organisational Studies (Lewis and Seibold, 1993) and IS (Lamb and Kling, 2003). This issue has assumed increasing importance in light of recent proliferation of new malleable technologies. Different notions such as ‘post-implementation participation’ (Wagner and Newell, 2007), ‘post-adoptive behaviours’ (Jasperson, Carter and Zmud, 2005), ‘ICT appropriation’ (Hussenot, 2008) and ‘mutual adaptation’ (Bansler and Havn, 2006) have been put forward to answer this question. What these notions have in common is an acknowledgement of the limitations of dominant decision-oriented approaches to IT implementation (Swanson, 1974), technology acceptance (Davis, 1985), and task-technology fit (Goodhue and Thompson, 1995).

In response, scholars have increasingly employed time-extended approaches to study, what we refer to here as ‘technology introduction’ (TI). That is, while they recognise that critical events in which important decisions are made leading up to roll-out of technologies, they go beyond these decision-oriented events and consider the ‘processes’ (Tsoukas and Chia, 2002; Langley et al., 2013) by which organisational actors respond to these technologies over extended periods. Highlighting the social aspects of this time-extendedness, some authors go further by conceptualising technology introduction as a process of collective sense-making (Orlikowski and Gash, 1994) and social learning (Williams, Stewart and Slack, 2005). However, while the literature with this orientation is growing, there are diverging and sometimes contrasting accounts of the time-extended and social aspects of the TI process. Thus, our research question is: What are the key ways in which the process of technology introduction (TI) is understood in the literature?

To address this question, we performed an in-depth literature review primarily utilising a hermeneutical approach (Boell, 2014) but also incorporating insights from grounded theory (Wolfswinkel, Furtmueller and Wilderom, 2013). First, we constructed selection criteria derived from our research question and underlying hermeneutic principles. Second, using these criteria, we selected 20 papers fitting our selection criteria. This corpus represents diverse intellectual orientations towards the TI process. Third, through a careful reading of the selected papers, we highlighted excerpts relevant to our research question, in particular how the social and the time aspects are understood. Fourth, the papers and the excerpts were thematically compared to uncover a set of basic ‘classificatory concepts’ (Table 1, Column 1) to be employed for a deeper analysis of the papers, not only to better understand the logic but also to be able to identify the relative theoretical standpoint of each paper. Fifth, by keeping a hermeneutic dialogue between the generated classificatory concepts and the selected papers, we were able to understand and
identify the diverse positions between the papers on each classificatory concept. Sixth, we undertook an iterative re-coding process to refine and eventually reduced these diverse positions to two extremes for each classificatory concept (Table 1, Columns 2 and 3). Finally, we compared each paper on the basis of the positions it took on each bipolar classificatory concept in order to determine if the papers clustered into a small number of groups. Throughout the process, a textual analysis tool (Qiqqa) was employed to support our hermeneutical reading and interpretive coding of the papers.

While our hermeneutical exploration of classificatory concepts and their spectral positions is still progressing, we present preliminary results (Table 1) that will be finalised for the conference presentation. The six classificatory concepts generated so far appear to be satisfactorily robust to distinguish the dominant TI approaches among the selected papers. However, the classification of the papers will be finalised, validated and reported when: first, the classifying of the papers results in theoretically-intense smaller groups; second, the classificatory concepts, the range of positions, and the resultant groupings is sufficiently parsimonious; and finally, inter-coder agreement among the three researchers confirms the theoretical diversity of the papers is adequately captured by the final classification.

Table 1: Provisional Classificatory Concepts and their Extreme Positions

<table>
<thead>
<tr>
<th>Classificatory Concepts</th>
<th>Extreme Positions</th>
<th>Description of Each Position</th>
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<tbody>
<tr>
<td>How is the collective aspect of the TI process conceived?</td>
<td>Nominal</td>
<td>Collective refers to a set of persons or objects</td>
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<td></td>
<td>Pivotal</td>
<td>Collective is the source of meanings and actions</td>
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<tr>
<td>How do managers act toward the TI process?</td>
<td>Methodical</td>
<td>Managers are brought into the emergent problems, and their interventions are punctuated and specialised</td>
</tr>
<tr>
<td></td>
<td>Vernacular</td>
<td>Managers are embedded within mundane routines and emergent problems, and their involvement is reciprocal and common-sense</td>
</tr>
<tr>
<td>What is the role of technology in human action?</td>
<td>Instrument</td>
<td>Technology is a physical or symbolic instrument for human action</td>
</tr>
<tr>
<td></td>
<td>Condition</td>
<td>Technology is an essential condition for human action</td>
</tr>
<tr>
<td>How are the effects of technology understood?</td>
<td>Distinct</td>
<td>Technology and its effects are distinct</td>
</tr>
<tr>
<td></td>
<td>Co-Defining</td>
<td>Technology is the manifestation of its effects</td>
</tr>
<tr>
<td>How is expertise related to human action?</td>
<td>Individual</td>
<td>Expertise is an individual capacity for action</td>
</tr>
<tr>
<td></td>
<td>Situated</td>
<td>Expertise is a situated backdrop to action</td>
</tr>
<tr>
<td>What is the primary mode of human interpretation?</td>
<td>Mental</td>
<td>People understand the world via mental images shaped by individual or collective reflection</td>
</tr>
<tr>
<td></td>
<td>Practical</td>
<td>People understand the world via practical intelligence gained through exploration and action</td>
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At the completion of this research, we will be able to elucidate different interpretations of time-extended and social nature of the TI process and to offer a robust, empirically-validated conceptual account of the main process-oriented approaches towards technology introduction. This account will, therefore, provide a crucial contribution for future explanatory and normative studies of the TI process, in particular given the emerging managerial challenges associated with new malleable technologies (Richter and Riemer, 2013) and flexible work arrangements (Barley, Bechky and Milliken, 2017).

There is a consensus among most TI studies that the process of introducing new technologies is principally spontaneous and emergent. As some researchers have already flagged the limitation of managerial notions of control (Ciborra, 2002) and planning (Johnston and Brennan, 1996), there is a serious question about the applicability of classic, decision-oriented management theories in the domain of TI process. Nevertheless, organisational stakeholders still seek ways of managing this process to justify and achieve the advantages of new technologies. This nascent concern gives rise to the question of what approach to management might be compatible with each of the differing conceptual accounts of the TI process. That is, we need to seek a theoretical fit between the specific TI processes identified and appropriate conceptions of managerial intervention. Such a comparative analysis of the assumptions underlying both existing management theories and TI approaches will then allow us to evaluate the theoretical adequacy of prevailing managerial theories and to identify potential shortcomings in relation to stewarding these largely emergent technology introduction processes.

References


