

Chapter 1

Prelude: The Sociomateriality and the Legacy of Structuration Theory



Noboru Matsushima

Abstract What has the concept of materiality, the latest meta theories in the humanities and social sciences, brought to management studies? Recent management studies, which focus on materiality, try to overcome the dogma that postmodern management studies have fallen into, which looks for the beginning of the organizing process into subjective interpretation. Institutional organization theory focuses on the materiality on which the symbolism of institutions is inscribed. Organizational routine research seeks to unravel the material dimension of organizational performative practices. Organizational wrongdoing research critiques material measurement practice based on social constructionism. Critical management studies focus the material space as a way to counter the humanistic concept of time. Science based innovation challenges sociomaterialistic practices that originate from devices for MOTs that have not been able to penetrate into the workings of science and technology actually. In order to understand this issue systematically, it is necessary to understand how the studies referring to structuration theory, which had much significant impact on management studies as a whole around the 1980s–1990s, have each solved endogenously generated issues. Up-and-coming researchers in Japanese management studies conduct empirical researches that draw out the implications of the concept of materiality.

Keywords Sociomateriality · Structuration theory · Management studies

The concept of sociomateriality has recently become an object of dispute among researchers of information management research. In this chapter, we examine the meta theories to which proponents of the concept have referred in this debate. These meta theories must be examined because of the highly controversial nature of sociomateriality. Kautz and Jensen [8], taking on the role of court jesters, expressed criticism of the controversy that “newcomer organizations” were carrying on in the courts, where the doctrine of the relationship between technology and organization has been stated.

The idea of sociomateriality¹ is alleged to have been created by “Queen” Orlikowski [18, 21]. Orlikowski presented this concept in order to overcome the limits of the structural model of technology [17, 20] that had been published previously. The notion of sociomateriality emphasizes that technology and organization are fundamentally inseparable and has developed a relational ontology, which can be expressed by “the image of a lightly bound knot of two pieces of rope (entanglement)” [18, p. 1438].² On the other hand, young “King” Leonardi [9–13] has opposed the Queen by regarding representation ontology as an “imbrication” of functionally distinct elements while mutually influencing the relationship between technology and organization [13, p. 82].

This study will not treat the details of this Queen-King dispute thoroughly (refer to 15), but it is interesting that the same concept is presented in opposing and differing positions, which illustrates both its complexity and the fact that superficially, these opposing viewpoints may be regarded as mere confusion.³

In this study, we will consider this confusion by examining the meta theories that have given rise to the concept of sociomateriality. This concept was originally proposed to overcome the problems inherent in adopting Anthony Giddens’s structuration theory (e.g., Giddens, [3]) as a meta theory, as well as the latest meta theories, such as actor network theory, linguistic turn, social constructionism, spatial turn, and various realisms pertaining to the material turn, which have arisen in rapid succession.

It soon becomes clear that the complexity inherent in sociomateriality comes from the complications of the meta theories used; in other words, the complexity in sociomateriality is inherent in the referenced meta theories. Confusion in theories may also result in logical inconsistencies because the meta theories implanted have different assumptions; thus, the idea of sociomateriality may also have inherited the problems of the meta theories. This book examines the meta theories underlying sociomateriality. This examination will provide clues for identifying the theoretical implications in the concept of sociomateriality and for revealing any remaining problems as well.

In this book, these meta theories will be examined in order. This chapter, which provides a theoretical background to the information management research that gave rise to the sociomateriality concept, examines the research group that referred to Giddens’s structuration theory as the meta theory that dominated all aspects of management studies from the 1980s to 1990s.

At the core of information management research is this question: What impact does information technology have on organizations? Theoretical doctrines derived from a consciousness of this problem are nothing but a clarification of the relationship

¹ Orlikowski advocated the concept of sociomateriality in order to unravel the “recursive interplay between people and technology in practice” [18]. To clarify this problem, she provided the concepts of “constructive engagement,” “relationality,” “performance,” and “sociomaterial assemblages.”

² Orlikowski analyzed the IT industry and found materiality in the algorithms built into the program.

³ For example, Introna and Hayes [7] introduce Orlikowski’s argument on the assumption that technology and organization are presented as inseparable. Thus, if Leonardi’s argument means they are divisible, what is the implication of sociomateriality?

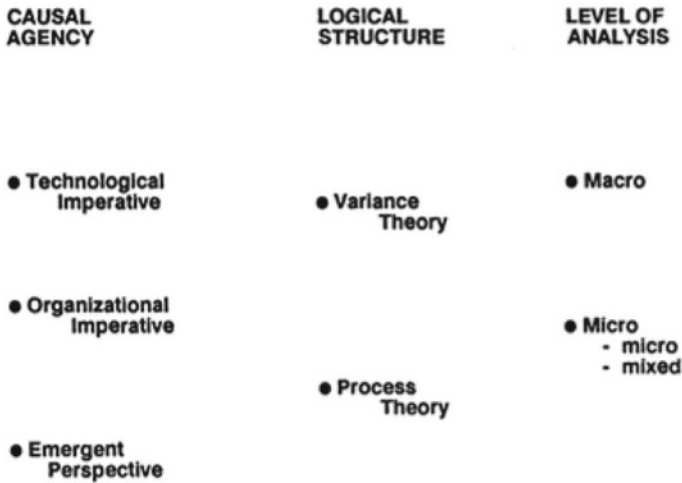


Fig. 1.1 Characteristics of an emergent perspective [14, p. 584, Fig. 1. Dimensions of causal structure]

between technology and organizations. However, we should not overlook the fact that information management research’s doctrine is neither the simple technological determinism that overestimates information technology nor the pessimistic organizational imperatives which exaggerate inertia and resistance of organizations; rather, it aims for an “emergent perspective” that foresees the interaction to generate new socio technology system [14]. In other words, it is no exaggeration to say that technology—organization interaction is formed as a doctrine for information management research. Markus and Robey [14] did not always provide theoretical support for this concept but developed a concept to supplement the content of the emergent process. In this regard, structuration theory by Giddens, which was attracting attention as a social theory at that time, was applied as a meta theory (Fig. 1.1).

The “structural model” proposed by Orlikowski is cited as an application of structuration theory for information management research, and it has become a reference point for subsequent discussions [17, 20]. The essential points of the structural model proposed by Orlikowski and others are well summarized in a figure shown in Orlikowski and Robey [20]. The theoretical essence of the structural model is the interdependence between institutions and actions, to simplify it very much. The interaction itself between institutions (organization) and actions (use of technology) does not contain anything more than what Markus and Robey [14] called process theory. However, “process” in “interaction” is a conventional phrase in the argument that has no logical clarity. The important point is to notice what theoretical content has been added to this interaction process by referring to Giddens’s structuration theory. It is the modalities that links between human action and institutional realm, and especially important for her was the exploration of how interpretive schemas influence the structuring process (Fig. 1.2).

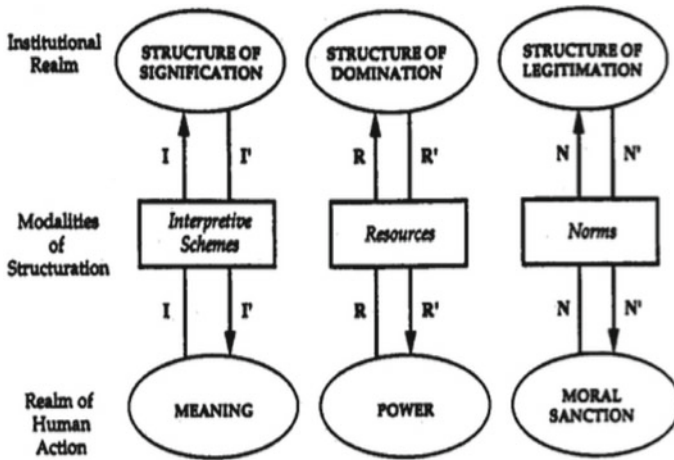


Fig. 1.2 Interaction model of institutions and actions presented in the structured model [20, p. 148, Fig. 1. The interaction of human action and institutional properties as mediated by the three modalities of structuration]

DeSanctis and Poole [2] proposed an “adaptive structuration theory” that focuses on the interdependence between institutions and actions in terms of a structural model. In their adaptive structuration theory, information technology (decision support system) is given structural characteristics that affect human actions while the structure emerges adaptively through the use of actual technology. In this explanation, the structural dimension of information technology is positioned within the different meanings of its technical and usage characteristics. However, considering the implication of the term “adaptive,” it can be considered as a soft technological determinism that assumes users will adapt to the technical structural characteristics.

To avoid being subject to technological determinism, Orlikowski focused on the interaction of institutions and actions in addition to concerns about unintended consequences from the use of technology. For her, technology is nothing but a factor that influences the dimension of practice, and the unintended consequences of using technology are supported by the knowledgeable ability of the actors who discover its potential uses. In fact, her case analysis describes the process by which technologies have various possibilities that allow for interpretation beyond the original plan—for example, new employee education in which a database is set up and shared to record daily activities (e. g., [19]).

However, this conceptualization by Orlikowski has led to much controversy since then. The criticism is directed partly at the structuration theory by Giddens, which emphasizes the knowledgeable ability of the actors in the same way, and partly at her argument, which overly stresses the capabilities of the actors and fails to capture the impact of technology. On the other hand, the essential characteristics of the technology that people should interpret are smuggled by researchers, an approach that is criticized as more meta technological determinism. This also constituted an

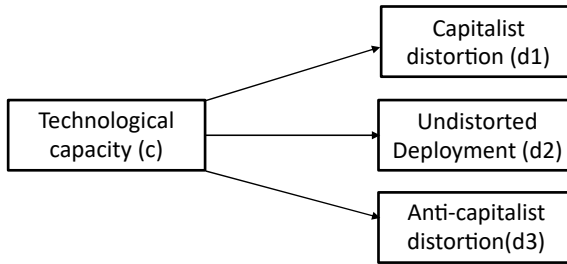


Fig. 1.3 Methodological trap of technological essentialism [6, p. 35, Fig. 1. Technological capacity and distorted deployment]

epistemological trap in which the researcher’s viewpoint entered into the judgment of what is essential and what is socially distorted, when the technical ability that was considered to be a cause was distinguished [6, pp. 21–23]. These criticisms of Orlikowski’s structural models have led to the incorporation of various meta theories, which have led to the creation of sociomateriality (Fig. 1.3).

Apart from information management research in a narrow sense, other management studies refer to Giddens’s structuration theory as well. First, the “sequential model of the structuring process” by Barley [1], who later became Leonardi’s mentor, positioned the technical concept as a script that “mediates” the interaction between institutions and actions based on extreme organizational changes (i.e., the centralization of young doctors and decentralization of radiologists) in hospitals where CT scanning was introduced. This technical concept leads to the idea of sociomateriality, which is both material and social, leading in turn to Leonardi’s [9] notion of “materiality without material.”⁴ (Fig. 1.4).

Pentland [22] focused on the “recursiveness” of social practice contained in the structuration theory. According to Orlikowski and Robey [20], institutions and actions are placed in different dimensions from which interdependent relationships are formed. However, if we focus on the implications of structuration theory by Giddens, which conceptualized the structure as a “mind trace,” human actions take a course over time that deepens from the visible or conscious level to the daily practical level and, finally, to the unconscious level. Pentland [22] described a recursively evolving reproduction process in which material, ceremonial, and even competence structures became routines such as those formed by people in a software support center when they handle telephone calls. That is, organizational routines are referred to by organizational members as abstract “grammars of action” [23, 25] (Fig. 1.5).

However, once reproduction begins, the image of recursion, which cannot be overlooked again, develops into a theory of innovation triggered by the action of following

⁴ Leonardi [9] focuses on changes in the development process owing to simulation technology, which has been introduced into the crash test section of automobile development, and discusses the materiality of simulation technology, which lacks physical characteristics and consists rather of the symbol of a program. Ultimately, he regards simulation technology as an organizational representation.

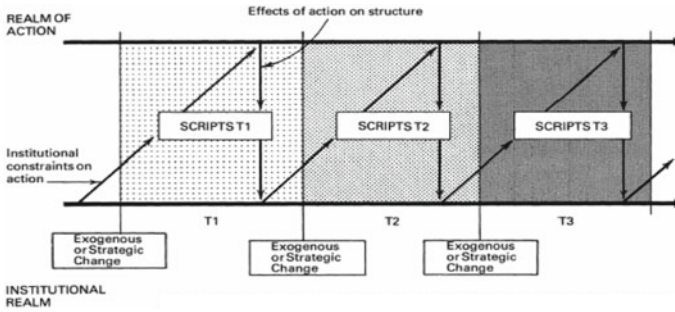


Fig. 1.4 Technology that mediates continuous structuring processes [1, p. 79, Fig. 1. Sequential model of the structuring process]

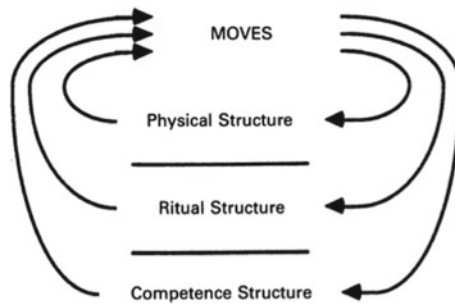


Fig. 1.5 The structured process that evolves recursively (reproduction) [22, p. 532, Fig. 1. Moves and structure]

a routine. In response to this theoretical limitation, Pentland and his colleagues shifted their research attention to performativity, which is the differentiating effect of organizational routine in concrete practice [24].

Finally, Ranson et al. [26] offered perhaps one of the earliest examples of structural theory applied in management studies. They focused on a category of institutional dimensions in schematization that had received little attention. Functional categories were derived from functional sociology, semantic categories from interpretive sociology (attended by Orlikowski and Robey [20]), and power categories from Marxist sociology. What should be noticed is that the institutional dimension of these multiple categories advances their intertwining, and there is an opportunity for organizational change to arise through the endogenous contradictions in the social system. Later, Greenwood became a leading researcher of organizational institutionalism, because it was connected to institutional change and the institutional logics concept (e. g., [4, 5]).

Not many research examples exist that apply the theoretical arrangement by Giddens and the conceptual framework of the institutional dimensions to information management research, but Negoro and Suzuki [16] have made budding attempts. Using a soft systems approach, they have attempted to visualize the context that

supports the actions and perceptions of the system implementers and the information system supplier, and to apply it as a diagnostic tool to determine an introduction strategy by the amount of the gap. Such an application of structuration theory still provide useful tools for practitioners, and there are lessons to be learned as methodologies that apply these meta theories.

As we have seen in the foregoing discussion, as well as Orlikowski and her colleagues developed the structural model into sociomateriality, Giddens's structuration theory plays a key role in the background and birth of the materiality concept in management studies. In the chapters that follow, we will examine in detail the various materiality concepts in management research, along with a review of the meta theories to which they refer.

References

1. Barley, S. R. (1986). Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly*, 31(1), 78–108.
2. DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, 5(2), 121–147.
3. Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. Polity Press.
4. Greenwood, R., Oliver, C., Lawrence, T. B., & Meyer, R. E. (Eds.). (2017). *The sage handbook of organizational institutionalism* (2nd ed.). Sage Publications.
5. Greenwood, R., Oliver, C., Sahlin, K., & Suddaby, R. (Eds.). (2008). *The sage handbook of organizational institutionalism*. Sage Publications.
6. Grint, K., & Woolgar, S. (1997). *The machine at work: Technology, work and organization*. Polity Press.
7. Inrona, L. D., & Hayes, N. (2011). On sociomaterial imbrications: What plagiarism detection systems reveal and why it matters. *Information and Organization*, 21(2), 107–122.
8. Kautz, K., & Jensen, T. B. (2013). Sociomateriality at the royal court of IS: A jester's monologue. *Information and Organization*, 23(1), 15–27.
9. Leonardi, P. M. (2010). Digital materiality? How artifacts without matter, matter. *First Monday*, 15(6). <https://doi.org/10.5210/fm.v15i6.3036>. Accessed 27 July 2018.
10. Leonardi, P. M. (2012). Materiality, sociomateriality, and socio-technical systems: What do these terms mean? How are they related? Do we need them? In P. M. Leonardi, B. A. Nardi, & J. Kallinikos (Eds.), *Materiality and organizing: Social interaction in a technological world* (pp. 25–48). Oxford University Press.
11. Leonardi, P. M. (2013). Theoretical foundations for the study of sociomateriality. *Information and Organization*, 23(2), 59–76.
12. Leonardi, P. M., & Barley, S. R. (2008). Materiality and change: Challenges to building better theory about technology and organizing. *Information and Organization*, 18(3), 159–176.
13. Leonardi, P. M., & Rodriguez-Lluesma, C. (2012). Sociomateriality as a lens for design: Imbrication and the construction of technology and organization. *Scandinavian Journal of Information Systems*, 24(2), 79–88.
14. Markus, M. L., & Robey, D. (1988). Information technology and organizational change: Causal structure in theory and research. *Management Science*, 34(5), 583–598.
15. Matsushima, N. (2015). *Genba no jyōhōka [The informatics embedded in workplace practice: Organizational approach for IT-use practice]*. Yuhikaku. (in Japanese).

16. Negoro, T., & Suzuki, S. (1998). Gyoumukaikaku to ERP [Operation reforms and ERP]. In Y. Teshima, T. Negoro, S. Sugino (Eds.), *ERP to bijinesukaikaku: Gyoumutougō pakkēji no kastuyō no gokai to shishin* [ERP and business transformation: Misunderstandings and guidelines for using integrate operation package] (pp. 67–100). Nikka Giren. (in Japanese).
17. Orlikowski, W. J. (1992). The duality of technology: Rethinking the concept of technology in organizations. *Organization Science*, 2(2), 398–427.
18. Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), 1435–1448.
19. Orlikowski, W. J., & Hoffman, J. D. (1997). An improvisational model for change management: The case of groupware technologies. *Sloan Management Review*, 38(2), 11–21.
20. Orlikowski, W. J., & Robey, D. (1991). Information technology and the structuring of organizations. *Information Systems Research*, 2(2), 143–169.
21. Orlikowski, W. J., & Scott, S. V. (2008). Sociomateriality: Challenging the separation of technology, work and organization. *The Academy of Management Annals*, 2(1), 433–474.
22. Pentland, B. T. (1992). Organizing moves in software support hot lines. *Administrative Science Quarterly*, 37(4), 527–548.
23. Pentland, B. T. (1995). Grammatical models of organizational processes. *Organization Science*, 6(5), 541–556.
24. Pentland, B. T., & Feldman, M. S. (2008). Designing routines: On the folly of designing artifacts, while hoping for patterns of action. *Information and Organization*, 18(4), 235–250.
25. Pentland, B. T., & Rueter, H. H. (1994). Organizational routines as grammars of action. *Administrative Science Quarterly*, 39(3), 484–510.
26. Ranson, S., Hinings, B., & Greenwood, R. (1980). The structuring of organizational structures. *Administrative Science Quarterly*, 25, 1–17.