Association for Information Systems
AIS Electronic Library (AISeL)

PACIS 2013 Proceedings

Pacific Asia Conference on Information Systems (PACIS)

6-18-2013

Beyond ANT and Sociomateriality: Explore Symbolic Power to Information System Adoption

Huifen Wang
Jinan University, twhf@163.com

Wenhui Ye
Jinan University, wenhui.ye@qq.com

Qiuhong Tang
Jinan University, tqh2000@qq.com

Follow this and additional works at: http://aisel.aisnet.org/pacis2013

BEYOND ANT AND SOCIOMATERIALITY: EXPLORE SYMBOLIC POWER TO INFORMATION SYSTEM ADOPTION

Huifen Wang, School of Management, Jinan University, Guangzhou, Guangdong, China, twhf@163.com

Wenhui Ye, School of Management, Jinan University, Guangzhou, Guangdong, China, wenhui.ye@qq.com

Qiuhong Tang, School of Management, Jinan University, Guangzhou, Guangdong, China, tqh2000@qq.com

Abstract

IS adoption is inherently a social practice shaped by the immediate social context but capital power does not have a stronger presence in ANT and sociomateriality. The paper describes Bourdieu's practice theory and suggests that by this lens we can better understand IS adoption (e.g., implementation of MRP II/ERP/ERP II) as symbolic capital changing power relations in an adopted organization. Such shift of power relations is viewed as accepting relation thinking mode and critical realism in IS adoption. From symbolic power perspective, character status and role prestige is ascribed to IS. Implementation of an IS are configuration of power relation designed by IS software vendors. By exploring IS as social inclusion and distinction, we review Ivy University's Oracle ERP case beyond ANT and Social-materiality theory. We also applied symbolic capital of Bourdieu's theory to explain "ERP adoption means find dying" by Liu Chuanzhi in Chinese Legend Company.

Keywords: ANT, Sociomateriality MRPII/ERP/ERPII, Critical realism, Bourdieu's practice theory, Social recognition, Symbolic power.

1   Introduction

Information system (IS) researchers, oscillates between two seemingly incompatible points of view, two apparently irreconcilable perspectives: technology materialism and subjective socialism. On the one hand, it can treat information system as technology artifacts, and thus leave out everything that they owe to the fact that they are objects of knowledge, of cognition-or misrecognition within social existence. On the other hand, it can reduce the social world to the representations that agents have of it, the task of social science consisting then in producing an account of the accounts produced by social subjects. The seminal work by Feldman and March (1981) was perhaps the origin of the thoughts about information as symbol. They suggest that the use of information is embedded in social norms that make it highly symbolic. Information is significant symbolically because of a particular set of beliefs in a particular set of cultures. But Feldman and March did not treat information system as symbol and signal. This paper use Bourdieu's field logic to analysis IS as structuring structures that mediate practices by connecting individuals and groups to institutionalized power relations. We argue that IS such as MRPII/ERP/ERPII is symbolic system, which mediate the effects of wider power structures to produce various forms of information design and implementation practices.

The lack of capital base and clear power analysis might be a reason that IS artfacts presented in the sociomaterial writings are very general, and why it is difficult to identify in Symbolic power which acknowledges power relations. In this paper, we tried to transcend the artificial opposition that is thus created between technology structures and representations based on relational mode of thinking. Our major contribution of what must rightly be called the structuralist revolution consists in having applied critical realism to IS adoption, and which identifies the real not with substances but with relations (Bourdieu 1968). Our research try to transcend IS function might provide a solution for the problem of the recursive intertwining of humans and technology in practice and the entwining of the material and the social.

2   USING RELATION THINKING MODE AND CRITICAL REALISM TO OPEN POWER "BLACK BOX"

The nature of society as an open system makes it impossible to make predictions as can be done in natural science. According to Bourdieu's practice, people are not aware of the factors affecting their behaviour, nor the implicit logic behind that behaviour (Bourdieu, 1977, p. 18). One of the Bourdieu's key epistemological critiques of the research process was the inability of study participants to critically reflect upon their behaviour because as humans our 'practical logic' – the inherent association between what people do and their location in social space –is limited (Bourdieu, 1977, 1990a). Bourdieu suggested that 'the principles embodied in this way are placed beyond the grasp of consciousness and hence cannot be touched by voluntary, deliberate transformation cannot even be made explicit' (Bourdieu, 1977, p.94; Bourdieu, 1984, p. 466).

Bourdieu provided his concepts which he coined a set of 'thinking tools' (Wacquant, 1989, p. 50) .In spite of the scrutiny and many attempts to apply Bourdieu's theoretical work (Calhoun et al., 1993; Swartz, 2003; Swartz &Zolberg, 2004), the way in which he saw his 'thinking tools' being deployed is often overlooked. Information system, in its objectivist moment, is a social topology, an analysis of relative positions and of the objective relations between social positions. The "social reality" which Durkheim spoke of is an ensemble of invisible relations. Even though it is always the case that information system implementations will change power relations, IS researchers have not pay more attention to power relations configured in IS itself. Traditional research method and paradigm of power is primarily studied using the case study method. This is especially the MRPII/ERP/ERPII case with the interpretive studies. With regard to the functionalist studies, theoretical reasoning and archival studies are conducted. Bariff and Galbraith (1978) argue that power shifts downwards as the

monopoly of top management, with regard to information, is reduced. On the other hand, the loss by subordinates of the possibility of smoothing data will upwardly shift power. Thus, the effects of and on power relations seem to be highly context dependent. Therefore, we focus our study on power relation in IS adoption based on relation thinking mode.

This research is situated in a critical realist paradigm which, as sociologist Margaret Archer argues, views society as 'inseparable from its human components because the very existence of society depends in some way upon our activities' (Archer, 1995, p. 1).This view is largely consistent with Bourdieu's ontology (Bourdieu, 1991). Central to critical realism is that the explanation of social phenomena is achieved through revealing the causal mechanisms that produce them (Archer, 2010).

According to critical realism, the objective IS software are reflection of power relations between positions occupied within the distributions of the resources which are or may become active, effective, like aces in a game of cards, in the competition for the appropriation of scarce goods of which this social universe is the site. By basing this research on the analysis of the causal mechanisms of IS adoption, it is possible to arrive at IS configuration analysis about the potential consequences of mechanisms that operate in IS implementation. But, uncovering these causal mechanisms is not a linear process whereby the researcher can ask IS designer and IS consultants why they design IS in a certain way or for what cause. In this paper we contextualize the broad reach of IS adoption into a complex set of relationships, classification schemes and social dynamics that Bourdieu discusses in his work on the social field through the concept of symbolic capital and symbolic power. We argue that Bourdieu's reltation thinking mode and Archer's critical realism should be tapped into IS adoption research. We need to use critical realism to explore power mechanism to IS adoption research. As part of a critical project, this paper focuses on the power relations in IS and try to express power dominance that entail the privileging of management interests over others. We use critical realism and try to explore change of power relations in IS adoption processes as figure 1.

IS as symbolic capital is nothing other than economic capital, social capital or cultural capital means that symbolic capital is the representation of economic capital, social capital and cultural capital in IS field. We suggested IS be symbolic capital to change power relations because symbolic capital is the transformed form of economic capital, social capital and cultural capital. Traditional IS adoption research are focus on the empirical level and events level which did not deepen into mechanism and structure level as right part of figure 1.

Critical realism offers researchers tool to explore 'black box' of power struggle as top part of figure 1. The framework discussed symbolic power is a suitable analytical tool for making sense of the maneuverer made by powerful actors to create obligatory passage points for weaker actors. We should not pay attention to power shift activities and attributes of IS, such as MRPII/ERP/ERPII, but think the nature of IS as symbolic power and cause mechanism of power alteration. Information system adoption means social status and prestige. From symbolic power perspective, character status and role prestige is ascribed to information system. For example, traditional. The symbolic value in figure 1 emphasizes social value aspects such as role status, social inclusion and legitimacy which determine IS adoption decision. The objective of the paper is to argue that given the complexity of IS adoption, power phenomenon requires a complex and rich theory such as symbolic power. Moreover, the hidden nature of power relationship need to be explored around IS practice.
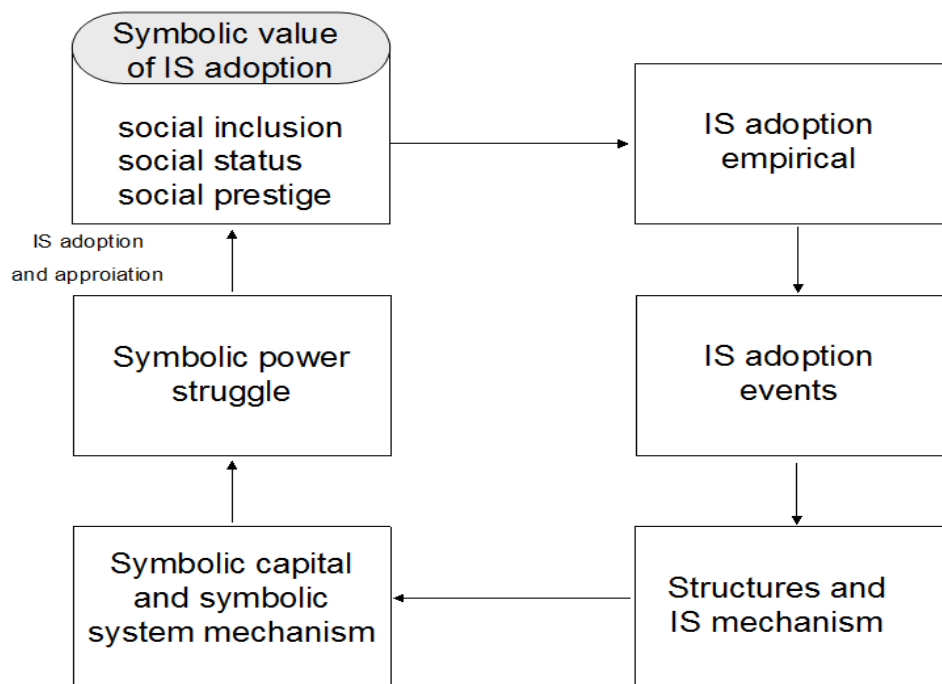
Figure 2.1 Framework of IS adoption field and practice from critical realism

3 EXPLORE SYMBOLIC POWER BEYOND ANT AND SOCIOMATERIALITY

The concept of actor-network theory (ANT) was developed by the French sociologists Michel Callon and Bruno Latour (Callon 1986; Callon et al.1986; Latour 1986, 1987). ANT deems power relationships as strategic: 'Understanding what sociologists generally call power relationships means describing the way in which actors are defined, associated and simultaneously obliged to remain faithful to their alliances' (Callon 1986, p. 224).Walsham (1997) argues about the virtues of applying ANT to the field of IS and he and Sahay have applied the theory for making sense of how information systems become adopted or rejected (Walsham and Sahay1999). A compelling example of how ANT can illuminate the study of power and IS is presented in the work of Bloomfield and Best (1992).These authors applied the concept of ANT to analyze how organizational problems are defined and how an IT solution is proposed by IT consultants. They focused particularly on how power is exercised throughout this process. Because of the centrality of power in social theory, Bloomfield and Best adopted a sociological inquiry position to approach power exercise regarding organizational IS. The organizational definition, the proposal of the IT solution and its implementation are considered by Bloomfield and Best as a process of sociological translation; hence the appropriateness of approaching their study with ANT.

One of the main problems in study power with ANT is short of power analysis from capital base. IT solution and IT consultants are full with capital especially symbolic capital which determine IT implementation process of sociological translation and appropriation. Symbolic power tends to be hidden. Symbolic power is supposed to comply with legitimacy and statues. Symbolic power is the sources of getting commitment, or building support, or creating momentum for change.

On the other hand, the notion of sociomateriality has recently gained in popularity among organization studies and Information Systems scholars in their search for providing new ways of theorizing about the dynamics between artefacts, practices, and organizations. Influenced by previous literature (in particular Latour, 2005; Pickering, 1995; Suchman, 1987) a number of influential ideas on sociomateriality has been published (see e.g., Leonardi and Barley, 2008; 2010; Leonardi, 2010;

Leonardi, 2011; Orlikowski, 2006; 2007; 2009; Orlikowski and Scott, 2008; Scott and Orlikowski, 2009). These writings have inspired scholars to offer a sociomaterial view on various topics such as enterprise system implementation (Wagner et al., 2010), mobile IT usage (Leclerq et al., 2009), work collaboration in Second Life (Orlikowski, 2009), digital innovation (Svahn et al., 2009). The imbrication metaphor and digital materiality are particularly useful in the sense that they provide a language that is both clear and recognizable, that is, human and material agencies are distinct phenomena, yet fundamentally interdependent. But the terms that Leonardi uses and the studies he conducts might not explore the power of imbrication. We think that the fundamental cause of imbrication is capital power especially symbolic power.

According to Bourdieu's practice logic, fundamental powers in social relation are economic capital (in its different forms), cultural capital, social capital, and symbolic capital. Symbolic capital is the form that the various species of capital assume when they are perceived and recognized as legitimate (Bourdieu 1986a). Economic capital "is immediately and directly convertible into money and may be institutionalized in the form of property rights"; cultural capital "may be institutionalized in the form of educational qualifications"; and social capital is an individual feature, which is "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition". Thus agents in social are distributed in the overall social space, in the first dimension, according to the overall volume of capital they possess and, in the second dimension, according to the structure of their capital, that is, the relative weight of the different species of capital, economic and cultural, in the total volume of their assets such as economic capital, cultural capital, social capital and symbolic capital.
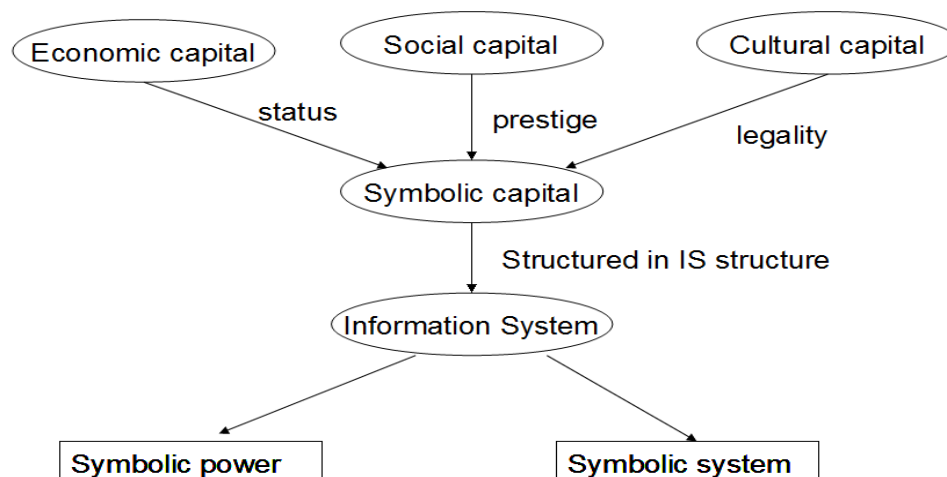

Figure 3 .1 symbolic power resulted from symbolic capital

Symbolic power of IS is as showed in Bourdieu (1986)'s power relation gave us another kind of view of IS power relation. IS as a social system is a symbol system which also embedded symbolic capital and symbolic power. Thus IS software vendors and implementers are distributed in social space according to the overall volume of capital they possess and adopt different IS software. On the other hand, according to the structure of their capital, IS software vendors and implementers adopt different strategies based on the relative weight of the different species of capital, economic and cultural. Thus power relation change in IS adoption processes and final value are quite dependent on the total volume of their assets such as economic capital, cultural capital, social capital and symbolic capital. The capital volume and asset species possessed by IS software vendors and implementers are cause power of change in IS adoption.

According to Bourdieu, symbolic capital can take on forms such as obligations and expectations, information potential, and norms and effective sanctions. Owing to the fact that symbolic capital is nothing other than economic, social or cultural capital when it is known and recognized, when it is

known through the categories of perception that it imposes, symbolic relations of power tend to reproduce and to reinforce the power relations that constitute the structure of social space. More concretely, legitimacy of the social world is not, as some believe, the product of a deliberate and purposive action of propaganda or symbolic imposition; it results, rather, from the fact that agents apply to the objective structures of the social world structures of perception and appreciation which are issued out of these which tend to picture very structures and the world as evident. From this point, IS vendors design objective structures of social structures of perception and appreciation which tend to picture very structures and the world as evident in IS system.

Therefore, IS as symbolic capital is nothing other than economic, social or cultural capital when it is adopted and implemented, when it is known through the promotion of IS vendors that it imposes symbolic power relations. IS vendors and implementers tend to reproduce and to reinforce the power relations that constitute structure of social space. More concretely, legitimacy of IS worldwide best-practice seems not the product of a deliberate and purposive action of propaganda or symbolic imposition. In fact, IS best practice such as Oracle ERP is myth making and has symbolic imposition and legitimacy effect underpinning symbolic power relations.

4 REVIEW IVY ERP CASE FROM SOCIAL RECOGNITION PERSPECTIVE

In this part, we review Ivy ERP Case from Bourdieu's practice theory and symbolic power based on Scott and Wagner (2003)'s ANT theory and Orlikowski (2007)'s social-materiality theory. Ivy University reflects social influences behind Oracle implementation. We suggest that IS adoption strategies are not based on conscious calculation but rather results from unconscious dispositions towards a particular way of social recognition and inclusion. Ivy teachers maybe had not initially recognised that Oracle ERP was a form of symbolic capital used by CEO who wishes to bolster Ivy social status.

Scott and Wagner (2003) use ANT (Actor Network Theory) to discuss Ivy ERP case in which the ambitions of a university vice president to elevate his organization to the status of "gold standard" combined with the concerns of the financial controller regarding their top rated (AAA) audit compliance to drive the adoption of a particular technical accounting method during the implementation of an enterprise resource planning (ERP) package. This accounting method was written into the programming code during the customization of the ERP software and subsequently manifested in the graphical representation and calculative processes of reports that the university administrators were told they must use.

We can use Bourdieu's social practice logic and symbolic power to review Ivy case. In Ivy university, the use of practice theory can be used to shed light on power relations in IS adoption. This is an objectification technique that Bourdieu recommended researchers use as a process of standing back from the subject to get as close as possible to reaching objective reflection.

When enterprise engages in social practices like IS adoption, they enter a game-like scenario where they draw on their capital to make social gains or 'wins'. Participation in the 'game' of IS adoption relies on previous accrual and use of capital (e.g. IS investment, employee cultural, IS application history, IS vendor competency) and knowledge of the rules and engagement in 'symbolic struggles' to improve social positioning. By adoption a certain IS software such as SAP, ORACLE, or adopting a particular consultant brand, IS application enterprises express their affiliation to a social group or rejection of lifestyles or groups to which they do not relate or do not wish to be perceived as related. In this way, IS adoption complex than they appear at the outset; they are also meaningful, figurative, and an important element of social status and prestige.

Orlikowski (2007) uses social-material theory to re-analysis Ivy ERP case of Oracle. From social-material theory, the social life worlds of university rankings, claims regarding expert accounting

knowledge, government regulations, and the practices of credit rating agencies were entangled with the technological agencies of the ERP package and routine conversations among administrators and academics about how much money they had left in their grants. These entanglements triggered intense controversies over values, identities, and community within the university.

In above Ivy Case, objective relations of power in Ivy University tend to reproduce themselves through the adoption of symbolic power embedded in Oracle ERP system. In the symbolic struggle for the production of common sense or, more precisely, for the monopoly over legitimate naming, Ivy agents put into action the symbolic capital that they have acquired in previous struggles and which may be university rankings guaranteed. Thus titles of nobility, like status of "gold standard", educational credentials, represent true titles of symbolic property which give Ivy a right to share in the profits of recognition. Therefore, symbolic power in Oracle ERP is a power of world-making."

"World-making" consists, according to Nelson Goodman (1978), "in separating and reuniting, often in the same operation," in carrying out a decomposition, an analysis, and a composition, a synthesis, often by the use of labels. Oracle ERP became the label of Ivy symbolic property of social life worlds such as top rated (AAA) audit compliance. The adoption of a particular technical accounting method customized in Oracle ERP system means composition and synthesis of expert accounting knowledge, government regulations, and the practices of credit rating agencies.

Therefore, by discussion of the power dynamics behind Oracle implementation assisted researchers to make conscious previously taken-for-granted social ranking and status distinctions. The symbolic property of Oracle ERP is also useful to unravel unconscious will from audit regulations.

5 REVIEW IS ADOPTION FROM SOCIAL DISTINCTION AND INCLUSION

IS adopters construct social distinction in order to build social positions which embedded social power. Social distinction is constructed in such a way that the closer the agents, groups or institutions which are situated within social space, the more common IS software they use; and the more distant, the fewer. Therefore, IS adoption is not an end in itself, but a means to activating behaviours through which social competencies can be demonstrated and symbolic gains or capital can be achieved according to what is valued by social distinction. Bourdieu's conception of 'lifestyle', that is, a system of classified and classifying practices (Bourdieu, 1984) can be used to analysis adoption patterns that are embedded in the formation of MRPII/ERP/ERPII evolution. To this end, Bourdieu's concept of lifestyle is useful to understand how IS adoption styles are demarcated and to indicate how different IS adoption patterns lead to social cohesiveness or dissociation. IS adoption style provides a foundation for understanding adoption dynamics or causal processes that highlights how these legitimated adoption styles operate as a form of distinction.

 Using Bourdieu's theoretical frame we argue that the sense of ERP adoption fashion regardless of cost, the sense of risk taking regardless enterprise live or die arises from the feeling of acceptance and belonging achieved through emulating social competencies in MRPII/ERP/ERPII adoption. Acting in congruence with the business norms and mechanism displayed by dominant enterprises, which is verified by more popular peers who have the social authority to know what in vogue and who possesses symbolic capital to dictate, alleviates discomfort in IS adoption. For example, the famous CEO of Legend Company Liu Chuanzhi said: "If we do not adopt SAP ERP, we are waiting for dying. If we try to adopt SAP ERP, we will try to find die. "

Liu's ERP dying sense-making seems to be paradox from economical or institutional theory view. But we can find the answer to settle the paradox based on Bourdieu's practice theory. Amongst IS adopters, competition for social status occurs at two levels: at the macro social level in which social power is dependent on enterprise type, location and reputation; and, at the micro level, in which power struggles take place within industrial sectors. Thus, changing enterprise's social status does not occur

by chance. From the outset, the competition is unequal, the stakes and opportunities for accumulation of capital are not evenly distributed. IS adopters bring a social history of success or loss in capital accumulation to each new IS implementation. Further, social boundaries are imposed by ERP software. The die sense-making means that it is worse that we do not adopt ERP. But it wouldn't be as bad and maybe find a way to live through ERP adoption.

In attempting to transgress social structures/fields, Legend Company ended up subscribing to worldwide dominant norms. For Legend Company, gaining entry to worldwide business mechanism is a source of symbolic capital. Here, SAP ERP is transformed from a commodity to a socially symbolic and value-laden object capable of communicating social distinctions. Adoption of SAP ERP would renew social history allowing Legend Company a fresh start for world social encounter. In reality, the accumulation of capital is intrinsically linked to previous social encounters and therein, opportunities for the accrual of capital. Social capital enables Chinese ERP adopters' entry to SAP or Oracle community. Without social networks and symbolic capital, Chinese would not have opportunity to enter SAP field and get opportunity of mechanism revolution.

As Liu Chuanzhi said, SAP ERP confers upon the Legend symbolic capital accrued from subscribing to a way of being that represents the world best practice and subsequently brings a sense of social ease. This is more of an imperative to Chinese enterprises ever before as all aspects of social life and particularly MRPII/ERP/ERPII adoption is becoming increasingly legitimacy. Financial market, government pressure, encourages Chinese enterprises to demonstrate international competence. MRPII/ERP/ERPII is embodied with particular meanings and associations and enterprise adopt what the branding symbolizes and build it into part of their identity repertoire. The effects of ERP/ERPII brand classification rest on the volume of symbolic capital afforded to enterprises and their subsequent power and authorization to classify. MRPII/ERP/ERPII adoption pattern therefore is based on popular regard, and power in a Bourdieuian sense is the ability to classify successfully, the capacity to make one's definition of the situation as the situation.

6   CONCLUSION

ANT and sociomateriality are not enough to explain IS adoption reason. What are the supplements of ERPII adoption decision? Bourdieu's relation thinking mode and Archer's critical realism provides a base for power analysis. Researchers have the opportunity to master power relation embedded in IS by review symbolic power. By doing so, researchers may gain power knowledge based on Bourdiue's symbolic capital and symbolic value.

Sociological thought facilitates more complex understandings of social inclusion and distinction of IS adoption. We introduce symbolic power of Bourdieu's practice concepts to IS adoption research using our research on MRPII/ERP/ERPII .Our work provides an example that researchers in IS adoption can draw on to critical realism and more complete social understandings of social capital underpinning IS adoption. MRPII/ERP/ERPII means affirming congruence with socially sanctioned practice and aligning internal business according to what is deemed socially correct or legitimate. ERPII adoption highlights acceptable behaviors and creates distinctions between social positions. Bourdieu termed this a 'symbolic struggle' over capital (Bourdieu, 1989).

Symbolic power is also ascribed symbolic value transferred symbolic capital. The implications of MRPII/ERP/ERPII implementation on power relations cannot be perceived on business processes or MRPII/ERP/ERPII function module. Power relations depend on how the actors make use of MRPII/ERP/ERPII and the position power resulted from symbolic capital. Symbolic power indicates that power has a legitimate source for symbolic value.

Our contribution is exploring symbolic power in IS and recommends that one must review power from relation thinking mode and critical realism:
- The content of information system such as hardware, software and consultant service is symbolic capital cause power relation change. Symbolic capital is representation of economic capital, social

capital and cultural capital.

- Social positions of actors are recognition and distinction by IS adoption. IS adoption are structured and also structuring symbolic power of IS software vendors and IS implementers. IS are reflection of social relations, information infrastructure and capital history.
- Social inclusion and recognition are factors which cause power relation change resulted from symbolic struggle in IS domination strategy.

By introducing sociologists Bourdieu to IS field, we have prepared to ground our explanations in practice theory. We advocate the use of symbolic power theory to arrive at credible research findings and be tested empirically. Theorizing takes purely descriptive research further so that ERPII adoption can be examined, compared and understood rather than simply described. We hope to reflect more powerful explanations of social phenomena such as political struggle in IS adoption.

References

Archer, M. 1995. Realist social theory: The morphogenetic approach. Melbourne: Cambridge University Press.

Archer, M. 2010. Critical realism and relational sociology: Complementarity and synergy. Journal of Critical Realism, 9(2).

Bariff, M L, and J R Galbraith. 1978. Intraorganizational power considerations for designing information systems. Accounting, Organizations and Society 3, no. 1:15-27.

Bond, B., Genovese, Y., and Miklovic, D., 2000. ERP is dead - long live ERPII. Research note. Gartner Group.

Bourdieu, P. 1977. Outline of a theory of practice. Cambridge: University Press.

Bourdieu, P. 1984. Distinction: A social critique of the judgment of taste. London: Routledge & Kegan Paul.

Bourdieu, P. 1985. The social space and the genesis of groups. Theory and Society, 14, 723–744.

Bourdieu, P. 1989. Social space and symbolic power. Sociological Theory, 7, 14–25.

Bourdieu, P. 1990a. The logic of practice. Cambridge: Polity Press.

Bourdieu, P. 1990b. Photography: A middle-brow art. Cambridge: Polity Press.

Bourdieu, P. 1991. Language and symbolic power. Cambridge: Polity Press in association with Basil Blackwell.

Bourdieu, P. 1993. The field of cultural production: Essays on art and literature. New York: Columbia University Press.

Bourdieu, P. 1997. Pascalian meditations. California: Stanford University Press.

Bourdieu, P. 1999. The weight of the world: Social suffering in contemporary society. Cambridge: Polity.

Bourdieu, P., & Wacquant, L. 1992. An invitation to reflexive sociology. Cambridge: Polity Press.

Business Week Research Services, "New-World Value: The Strategic Impact of Business Application Suites in Today's Corporate Environment'', Business Week Research Services, November 2008.

Calhoun, C., LiPuma, E. & Postone, M. (Eds.). 1993. Bourdieu: Critical perspectives. Chicago: University of Chicago Press.

Callon, M. (1987), 'Society in the making: the study of technology as a tool for sociologicalanalysis', in W.E. Bijker, T.P. Hughes and T. Pinch (eds), The Social Construction ofTechnological Systems: New Directions in the Sociology and History of Technology,Cambridge, MA: MIT Press, pp. 83–103.

Callon, M. J. Law and A. Rip (eds) (1986), Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World, London: Macmillan.Cavaye, A.L.M. and J.K.

Charles Møller. 2005."ERP II: a conceptual framework for next-generation enterprise systems?", Journal of Enterprise Information Management, Vol. 18 Iss: 4, pp.483 - 497

F.C. Weston,Jr., ''ERPII: the extended enterprise system'', business horizon, November -- December,2003, pp.49-55.

Feldman, M. S., and March, J. G. 1981. Information in organizations as signal and symbol. Administrative Science Quarterly, 26(2), 171-186.

Information systems group, London School of Economics, London, UK.Suchman, L. (1987).

In Proceedings of the International Conference on Information Systems (ICIS) Phoenix,Arizona, 1-19.Scott, S. V., and Orlikowski, W. J. (2009). ―Getting the Truth ‖ : Exploring the Material Grounds of Institutional Dynamics in Social Media. Working Series no. 177.

In Proceedings of the International Conference on Information Systems (ICIS), Phoenix, Arizona.Leonardi, P. M. (2010). Digital Materiality? How Artifacts Without Matter, Matter. First Monday,15(6).

Latham, R., & Sassen, S. 2005. Digital formations: IT and new architectures in the global realm. Princeton, NJ: Princeton University Press.

Latour, B. (1986), 'The powers of association', in J. Law (ed.), Power, Action and Belief: ANew

Sociology of Knowledge, Sociological Review Monograph 32, London: Routledge &Kegan Paul, pp.

264–80.

Latour, B. (1987), Science in Action, Cambridge, MA: Harvard University Press.

Latour, B., 2005. Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford:

Oxford UP.

Leclerq, A., Carugati, A., Giangreco, A., Da Cunha, J.V. and Jensen, T.B. (2009). A Sociomaterial View of the Scaffolding of Work Practices with Information Technology.

Leonardi, P. M. (2011). When Flexible Routines Meet Flexible Technologies: Affordance, Constraint,and the Imbrication of Human and Material Agencies. MIS Quarterly, 35(1), 147-167.

Leonardi, P. M. and Barley, S. R. (2008). Materiality and Change: Challenges to Building BetterTheory about Technology and Organizing. Information and Organization (18), 159-176.

Leonardi, P. M. and Barley, S. R. (2010). Sociotechnical Systems Design: Evolving Theory and Practice. In Bjerknes, G.,Ehn, P. and Kyng, M. (Eds). Computers and Democracy, Brookfield, VT: Avebury.

Markus, M. L., & Pfeffer, J. 1983. Power and the Design and Implementation of Accounting and Control Systems. Accounting, Organizations and Society, 8: 205-218.

Nelson Goodman, Ways of Worldmaking, Indianapolis: Hackett Publishing Company, 1978. Orlikowski .W. J. 2007. Sociomaterial pracieces: Exploring technology at work Organization Studies, 28, 1435-1448.

Orlikowski, W. J. (2006). Material Knowing: The Scaffolding of Human Knowledgeability. European Journal of Information Systems (15), 460-466.

Orlikowski, W. J. (2007). Sociomaterial Practices: Exploring Technology at Work, OrganizationStudies, 28(9), 1435-1448.

Orlikowski, W. J. (2009). The Sociomateriality of Organisational Life: Considering Technology in Management Research. Cambridge Journal of Economics, 10, 1-17.

Orlikowski, W. J., and Scott, S. V. (2008). Sociomateriality: Challenging the Separation of Technology, Work and Organization. The Academy of Management Annals, 2(1), 433-474.

Pickering, A. (1995). It's Not a Property! Exploring the Sociomateriality of Software Usability.

Plans and Situated Actions. New York, Cambridge University Press. Sutton, R. I. (2010).

Scott, S.V., & Wagner, E.L. 2003. Networks, negotiations, and new times: The implementation of enterprise resource planning into an academic administration. Information and Organization, 13(4), 285–313.

Skok W, Legge M. Evaluating enterprise resource planning (ERP) systems using an interpretive approach[J]. Knowledge and Process Management. 2002, 9(2): 72-82.

Sociomateriality: More Academic Jargon Monoxide, Expert Blog.Svahn, F., Henfridsson, O. and Yoo, Y. (2009). A Threesome Dance of Agency; Mangling the Sociomateriality of Technological Regimes in Digital Innovation.

Swartz, D. 2003. Drawing inspiration from Bourdieu's sociology of symbolic power. Theory and Society, 32.

Swartz, D. & Zolberg, V. 2004. After Bourdieu: Influence, critique, elaboration. Dordrecht: Kluwer Academic Publishers.

Wacquant, L. J. D.. 1989. Towards a reflexive sociology: A workshop with Pierre Bourdieu. Sociological Theory, 7(1), 26–63.

Walsham, G. and S. Sahay (1999), 'GIS for district-level administration in India: problemsand opportunities', MIS Quarterly, 23 (1), 39–66.

Webb, J., Schirato, T., Schirato, T., & Danaher, G.. 2005. Understanding Bourdieu. London: Sage Publications.