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# UNDERSTANDING INFORMATION SYSTEMS DEVELOPMENT: THE AGORA OF TECHNO-ORGANISATIONAL CHANGE

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# UNDERSTANDING INFORMATION SYSTEMS DEVELOPMENT: THE AGORA OF TECHNO- ORGANISATIONAL CHANGE

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## Abstract

*This paper introduces an alternative analytical and conceptual approach to the study of IT in Organisations, based on the concept of 'Agora of Techno-Organisational Change' (Kaniadakis, 2006). The Agora represents an analytical space, ranging from local, particular instances of technical and organisational change to global, abstract socio-economic networks of innovation and it marks an emerging research field in the interdisciplinary study of IT in Organisations. It also refers to a space for action and practice, where the involved actors are pursuing their interests and unfold their activities. This generic framework that encompasses the influence of both local actors and broader institutional settings, transcends the fragmentation of studies of technological and organisational change between supply-centred studies and studies of technology implementation. Two detailed longitudinal studies, one of a large-scale restructuring effort in a Greek bank and another on a Systems Integration firm in Greece, provide evidence for the empirical exploration of the Agora environment. Findings show that techno-organisational change appears increasingly commoditized and is happening within the Agora networks which are governed by market dynamics and actors' politics. Negotiated choices based on actors' diverse viewpoints of the Agora contribute to the configuration of an abstract, unbounded socio-economic environment into multi-local, particular, techno-organisational change instances. Processes of Agora particularisation and abstraction bridge the local-global gap and embrace multiple analytical levels. The Agora perspective is pointing towards a new Sociology of Technology and Organisation for a complete, integrative, multilevel and interdisciplinary understanding of the development, diffusion and use of IT in Organisations.*

*Keywords: Agora, Technology, Organisation, Viewpoint, Innovation, Particularisation, Abstraction, Global-Local.*

# 1 INTRODUCTION

The interdisciplinary study of technological and organisational innovation is divided across a number of more or less incommensurable positions. Technocratic analyses (economics, management, etc.), on the one hand, imply that technology is transformatory and develops around “universal logics”. On the other hand, more recent critical perspectives (Social Construction of Technology, Actor-Network Theory, Ethnomethodology) emphasise local action and contingency (Suchman, 1987; Fleck, 1988; Webster, 1990; McLaughlin et al, 1999; Ciborra, 2000). As a result, there is a shift in focus towards the implementation of technologies within particular organisational settings. Such studies of local scope, currently dominant in the Science, Technology and Innovation literature, offer ethnographic richness but are leading to partial and overly local understandings of techno-organisational innovation, leaving broader contexts of socio-economic relations analytically invisible. Pollock & Williams (2008) identify this analytical gap and stress the need for a more integrative approach in the study of IT in Organisations. The need for this integration is not a goal in itself; it rather has reference to the empirical reality, namely the shift from the development of locally specific to generic Information Systems (Pollock & Williams, 2008).

Along similar lines, the author of this paper identified fragmentation in the literature and the epistemologies employed in the study of the relationship between Technology and Organisation (Kaniadakis, 2006). In particular, the interdisciplinary study of technology and organisation is fragmented due to the different ways various studies treat analytical levels (macro, meso, micro); due to structural vs. action-oriented accounts; and due to inconsistent attention to a variety of issues stressed by previous disciplinary commitments and the way certain issues are raised in the literature. For instance, some studies, focus on knowledge and expertise (Fleck, 2002; Blacker, 1995; Sorensen & Levold, 1992), others on organisational politics (McLoughlin & Harris, 1997; Dawson et al, 2000), others on organisational boundaries (Sturgeon, 2002; Langlois, 2003), and so on. For a student or researcher of technology and organisation this creates confusion and shapes a weak academic identity. This work, then, also calls for an integrative methodological approach and an analytical template that would be able to embrace multiple analytical levels and issues as well as to account for action and choice.

Koch (2003) in his studies of ERP systems, also expresses dissatisfaction in regards to the way the development of such systems are analytically treated. In relation to ERP systems in particular, he suggests that they should be examined as “a community” (Koch, 2003), adopting a “multi-local” analytical template, rather than using dualistic accounts of local and institutional developments.

It seems that there is a turning point in the interdisciplinary study of IS. Existing theoretical and analytical approaches, although informative, have not managed to keep up with the ways that IS are developed, diffused and used in the world of industrial and commercial practice. Globalisation of technology markets, increasing specialisation, commoditisation and marketisation of expertise and technological artefacts, the generification of IS development, along with the need for low cost technological solutions are trends that affect technological and organisational change and need to be taken into account. The IS research community has come to realise that single local implementation studies do not tell the whole story, in fact only a small part of it. IS research, therefore, requires a more sophisticated analytical approach, an alternative, multi-level, analytical template that would integrate fragmented literature on IT in Organisations and embrace useful analytical categories in a single scheme. We suggest here the Agora perspective.

## 2 THE AGORA PERSPECTIVE

Although in the modern Greek language the term Agora translates as “market” or “marketplace”, the ancient Athenian Agora was not just a marketplace equivalent to a modern shopping centre, it was also a place/space of gathering for Athenian citizens to discuss, exchange political views and socialize<sup>1</sup>. It

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<sup>1</sup> The word Agora comes from the Greek word *ageiro* (αγείρω), meaning “gather” or “assemble”.

was the physical place where every Athenian citizen gathered to conduct their business, participate in their city's governance, decide judicial matters, express their opinion for all who cared to listen, and elect their city officials (Thompson, 1985). The concept of Agora then, in the context of ancient Athens, refers to a physical space which served as a platform for the formulation of social, economic, political, commercial relationships and the exchange of material products, ideas, values and knowledge amongst Athenian citizens.

The socio-economic environment within which our two case studies unfold resembles such a place, although not restricted to a particular physical place, and for this reason it was termed as Agora of Techno-Organisational Change (Kaniadakis, 2006). It refers to a marketplace for technological artefacts and expertise, but it is also a political arena where actors negotiate and pursue their interests and exercise power and control over the choices regarding innovation. It is a place where vendors, suppliers, consultants, user organisations, the state, technological promises, visions and rhetorics on a global scale, find their way into local, particular situations termed as instances of techno-organisational change (Kaniadakis, 2006). Analytically, by looking at such instances and the way they are initiated, designed and implemented, we are able to witness how a seemingly unshaped global socio-economic environment is configured into local, multiple, particular techno-organisational change stories.

More particularly, moving away from an artefact-centrism characterised certain literature (i.e. Hyysalo, 2004) or a focus on organisational settings of implementation (Hildebrandt & Seltz, 1989; Koch, 1997) we propose a shift of the focus of analysis towards "instances of techno-organisational change" as they emerge within a broadly conceived global environment of social and economic relations. The actions and choices (Child, 1972; Williams & Edge, 1996) of actors during the initiation, design and implementation of such instances reveal their links with the broader Agora. This way, multiple analytical levels are integrated into a single analytical scheme. "Choice" and "Action" are abstract concepts that take various complicated meanings in different cases. For this reason, and while avoiding to arbitrarily define these concepts in the context of this study, we suggest a paralleling between the analyst's view with the actors' views. This way, each one of the heterogeneous actors involved in instances of techno-organisational change is able to have a view of this social situation, their wider environment and produce choices that will affect its trajectory.

The Agora concept could be contrasted with other similar spatial concepts. The "development arenas" (Jorgensen & Sorensen, 1999) concept for example is very relevant and has been extensively used in the IS literature. Building on Actor-Network Theory, the "development arenas" concept illustrates the interaction of "actor-worlds" around the development of certain technologies. Although it captures important socio-economic dynamics in the development of technologies, it provides a restricted view of techno-organisational change due to its artefact-centrism. The Agora concept provides a wider frame as it includes global abstract relations and integrates them with local particular social situations. Development arenas are certain structures within the Agora. In that sense, there might be various development arenas within the Agora and contribute more or less significantly in various techno-organisational configurations. For instance, the development arena of banking integrated software packages could be identified as developing within the wider Agora space.

In summary, there are various shortcomings identified in the relevant interdisciplinary literature on IT in Organisations. These refer to dissatisfaction in the way analytical levels and conceptual tools are used as well as to the arbitrary way that certain issues are raised based on previous disciplinary commitments and the emergence of popular themes. These weaknesses have resulted to the production of fragmented knowledge on IT in Organisations as well as confusion and fluidity in shaping interdisciplinary academic identities. This calls for an alternative analytical approach that will integrate relevant literature, issues raised and also conceptual tools and levels of analysis. This will contribute to a more complete understanding of how IS are developed, diffused and implemented within multiple organisational settings. The Agora perspective is suggested here as a relational (not relativist) approach that analytically embraces local particular settings of implementation but also their links to wider, abstract, global socio-economic relations and networks of innovation. By illustrating the choices of and the negotiations amongst a variety of heterogeneous actors it will be shown how the abstract, wider socio-economic environment of complex innovation

networks finds its way into local, particular social situations where multiple actors, histories, biographies, interests and visions meet.

### **3 CONFIGURING THE AGORA: A VIEWPOINT APPROACH**

For empirical grounding of the Agora perspective, research results from two case studies conducted in Greece will be presented. These cases refer to instances of techno-organisational change in the context of IT in banking organisational settings, as they emerge from the wider Agora environment. One large-scale restructuring project in a Greek bank (GB) was examined for the first case and the involvement of a Systems Integration firm (SIF) in a series of other instances, for the second. In these cases, a series of choices is sought as well as the rationale and socio-economic relations forming behind them.

#### **3.1 Greek Bank (GB)**

Global trends in international banking and relevant technological developments, although with a delay, affected the Greek environment. In particular, the GB used to be one of the seven specialised banking institutions in Greece which provided credit to the Agricultural sector. A wider opening to the commercial retail markets occurred in 1991 when the guidelines of the Second Banking Directive (Second Council Directive 89/646/EEC of 15 December 1989) were applied in Greek banking. The institutional specialisation characterising the Greek banking system, which restricted specialised credit institutions to operate outside their special area of activity was abolished (Christopoulos et al, 2002:815-817; Hondroyiannis et al, 1999:378-379). Therefore, forces of banking de-regulation, increasing competition and the parallel emergence and diffusion of relevant technological developments have created the basis for the instantiation of the 1997 change instance in GB. The choice for the instantiation of this particular change instance, emerged from GB's management conception of themselves as a competitive firm within a wider changing socio-economic business and industrial environment. Alternative choices could have included smaller scale changes, which would continue a segmented relationship with the Agora, staying away from integrated, change management visions and promises. Given the inconsistent relationship GB has had with the broader Agora up to 1997 its wider exploration was seen as necessary. External expertise that would bridge the gap between GB and the broader Agora was employed and acquired great value for the success of the change effort. There was a call for competition announced in the Greek press and four consortia from the international environment participated. One of them was chosen based on their know-how on the Greek reality, their success history, their competitive advantage, but also the close connections of the consortium leader (IT firm) with the government.

The GB change instance was initiated as a business and political choice by the central management to mobilise specialist knowledge, technological and business, internal and external to the organisation, in order for this instance to become a successful strategic moment in the corporate history of the organisation. By employing external expertise, however, GB lost some of the control of the change effort, in relation to its direction, which in turn was distributed amongst the project stakeholders. The initiation of this change instance and the choices made represent one of multiple opportunities of the broader, abstract, global Agora to be configured into a local, particular techno-organisational change instance. The design phase refers to more particular choices to assemble and organise the material and non-material elements that would comprise the change effort, while the implementation phase illustrates the emerging difficulties and unexpected developments that were not part of the initial design, although they finalised it.

More particularly, while the initiation of this change instance constitutes a more or less abstract creation of a change vision, during the design phase there are more particular choices to be made. The abstract vision was to create a new modern competitive commercial bank with a new identity, aligned with the principles of customer-centrality. This, however, required technological, organisational and cultural transformations that had to be pursued in a systematic way. We therefore have the formation

of teams of suppliers and external experts, the organisation of the change effort into various subprojects and the organisation of the resources to be used and the tasks to be performed by those teams. These arrangements made possible the involvement of various actors-firms in the GB restructuring effort.

The design of the particular instance, although it provided a systematic way of executing the restructuring of the GB, it did not have a ready solution to the issue of heterogeneity and the challenges posed by the distributed power and control of the effort. In this phase, through further choices, the Agora becomes more particular, it takes a specific shape, it is represented by particular actors which have entered the organisational space of the GB and influence the direction of the change. In the implementation phase, however, it is shown that things did not run as smoothly as predicted in the design.

Although typically distinct processes of design and implementation were anticipated, in practice they were not that distinct. Interviews with external experts show that they indeed believe to the “ideal” of distinct phases of design and implementation while they treat their overlapping as “implementation problems”. The solution of such problems lies in the experts’ many-year experience. Such problems, however, emerge from the heterogeneity of the actors involved in the particular instance and from their interests, backgrounds, and strategic orientations. The implementation phase, then, in the GB restructuring, reveals a highly political process of negotiations, resistance and conflict. The concept of politics here is two-fold. One aspect is related to actors’ conflicting interests and agendas, while the other is related to the ownership structures of the GB. That is, the Greek state still maintained an influential presence, even though the new strategic direction of the GB was based on its detachment from it. For instance, suggestions made by specialist actors for design modification became an issue discussed in the Greek parliament and published in the government Gazette. Also, there was pressure by the GB central management to the external experts not to interfere with the hierarchical structures of the bank, because that might cause dissatisfaction and political cost to the governing political party.

The choices made during the implementation phase, therefore, took place through political negotiations amongst the physical actors involved in the projects. For instance, the IS package offered by the consortium leader required extensive customization to fit the organizational process requirements of the GB. This customization was raising technical issues which were dealt with negotiations and organizational politics during implementation. There was the issue, for example, of the centralization of organizational processes previously held at a branch level. This was part of designing the BPR subproject which had provided an initial design. The final decision, however, on which processes belong to the branch and which are centralized was negotiated between actors during implementation, and the IS package was customized accordingly. This is also evidence of how technological change is not a stand-alone process but overlaps with organizational changes.

The GB case illustrates the point of view of a user organization on the Agora and how through a series of choices its abstract, distant environment becomes more particular and relevant to the local particularities of the bank. As the empirical data show, however, this viewpoint was highly shaped by the involvement of external experts in the particular instance. This pointed towards the examination of actors from the supply side of the Agora and their role in shaping users’ viewpoints. The next case study shows the role of a supplier, a systems integration firm, in multiple Agora configurations.

### **3.2 Systems Integration Firm (SIF)**

After a long history of mergers and strategic changes, our systems integration firm (SIF) turns from a simple distributor into a systems integrator, also active in the area of banking technologies, thus, acquiring a more active role in the Agora.

Within the Agora, SIF has an active role in that they are seeking to initiate techno-organisational change instances within their customer base, and create channels for various alternative Agora configurations. For an Agora professional like SIF, these change instances are mostly commercial or business situations. It is where they profit from as a firm. As the empirical data suggest, the initiation of techno-organisational change instances is a “business negotiation” between SIF and their

customers. During this business negotiation there is also technological expertise involved in order for the business arrangement to have a realistic technological equivalency. In this phase, negotiations are based on what is the problem that needs a solution, the cost of the solution, the timetable for carrying out the change and the resources (both material and non material) to be mobilised. Although the previous case shows that the supplier has more control over the choices for the initiation of the change instance, this case shows that it is more of a business negotiation. Suppliers have more control over the technological aspects of the change since they have the relevant expertise and knowledge of international IT markets.

What is important to examine here is not particular change instances, rather the way SIF manipulates and manages the Agora networks in order to configure available resources into particular change instances for their customers. Therefore, the choices that they have to make are related to development of collaborations with international vendors of technological parts (i.e. software packages, network technologies, expertise, etc.). For instance, when SIF entered the banking sector they saw that more business opportunities existed in the area of branch automation since the market for mainframes was covered by another IT firm. For this reason, they formed a partnership with an international vendor which supplied them network technologies for branch automation. Similarly, as SIF's activities expanded in various areas, new partnerships were formed with various international vendors. This way they were securing access to technological components and expertise that they could in turn promote to their customers in the form of technological solutions.

The same goes for the development of customer networks. For instance, SIF has maintained a long term, symbiotic relationship with a bank for more than 30 years. Strategically, it was risky to be attached and dependent on one large customer but at times with financial shortages this customer literally saved SIF from serious problems. Some of the interviewees interpreted this as a result of SIF's underdeveloped marketing while others saw it as adjusting to the conditions of the market. Whatever the case, this co-evolutionary relationship had resulted to series of techno-organisational change instances. In this case the Agora for both SIF and the bank had a pretty particular shape and structure.

Network management with external actors also influences choices made during the design of change instances. In essence, the process of designing a technological solution for organisational/business problems is a process of managing networks of collaborations with external suppliers. More particularly, during the design phase the systems integrators are employing technological and business expertise in order to translate the operational requirements into system specifications. In other words, organisational processes are translated into software requirements. For example, the process of loans approval needs to be turned into a technical specification in the solution that is built. During this process various elements and modules from the wider Agora environment are assembled and configured into a technical solution. These elements might be technological artefacts, software packages, hardware, services, and so on, which are also commercial commodities circulated within the market and a source of profit for the actors promoting them. SIF, for instance, in order to use a certain technology in a solution they are building for a customer, they have to have some sort of collaboration with the firm supplying that technology. If the customer asks for a technology that SIF has not access to, either they try to form new collaborations, or they try to promote an alternative option based on their existing collaborations, or they quit. As the SIF case shows, then, the design of a technological solution constitutes a particular configuration not only of technological parts and modules but a configuration of the whole Agora environment. In consequence, alternative solutions for a particular organisational problem constitute alternative configurations of the Agora networks of socio-economic relations. The choices that lead to particular configurations of the Agora are a product of negotiations amongst actors' viewpoints and are based on both technological and business aspects.

From the point of view of SIF, the implementation process brings about issues and choices relating to the management of expertise and to organisational politics resulting from conflicts of interests and heterogeneity. Due to similarities with the previous case, we will not devote more space here. It is important however to mention that organisational conflicts and resistance appear more reduced in this case and this is due to long-term symbiotic relationships with large customers as mentioned above, and also due to a more effective management of expertise. That is to say, by putting to the right position

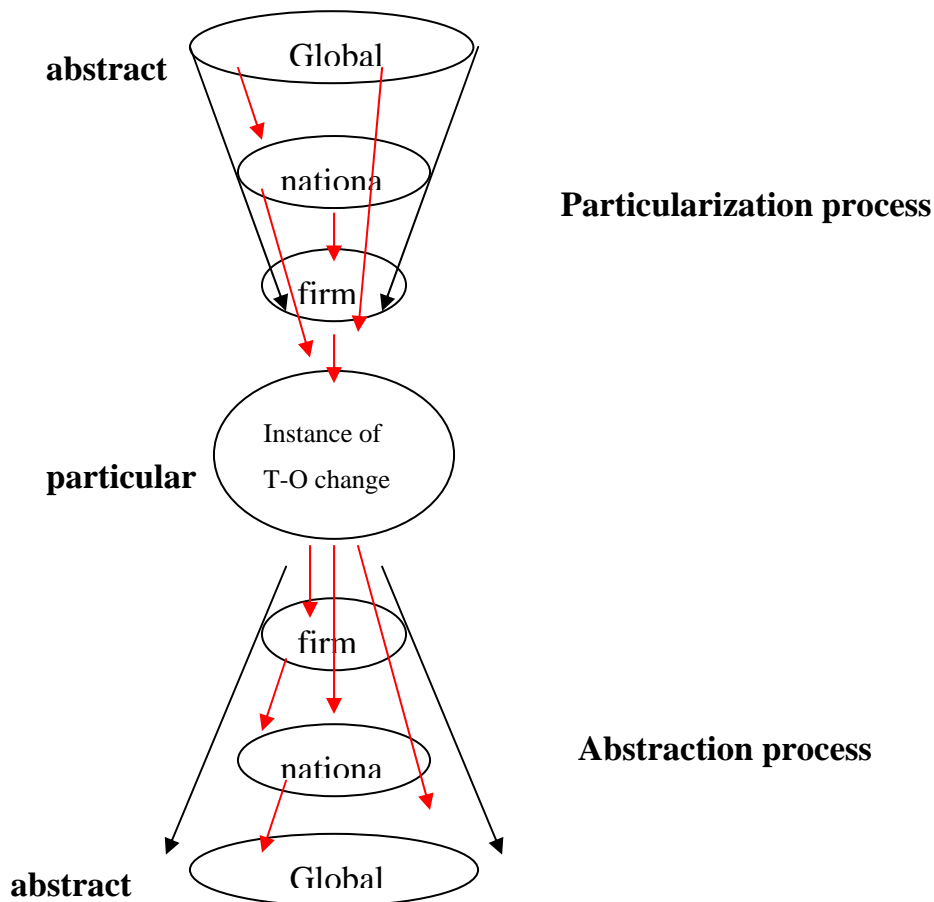
the person with the right expertise (technological or business or both) made negotiations during implementation smoother. For instance, while negotiating the process of loans approval, since this is a very processual operational area, it is better to use a person with business expertise, rather than technical.

The SIF case illustrates the viewpoint of an Agora professional. Gradually evolving from a simple distributor into a systems integrator, they are turned into an actor that has the relative power to influence the process of linking supply and use and shape the way Agora is configured. This case also illustrates that IS development or integration is also driven by business motives which offer a strong rationale behind actors' choices on the initiation, design and implementation of techno-organisational change instances. Finally, the development of technological solutions for organisational/business problems is a process of configuring not only technical and organisational aspects but also configuring the broader environment of socio-economic relations into particular techno-organisational change stories. This environment is best captured by the concept of Agora of Techno-Organisational Change.

#### **4 FROM THE 'ABSTRACT' TO THE 'PARTICULAR'...AND BACK**

The increasing trend of outsourcing technological and organisational/business expertise and other resources is moving the management of innovation outside the user organisation and places it within complex and heterogeneous networks. Technological and organisational change, then, is undergoing increasing commoditisation and marketisation and as our cases show local, particular change instances are the result of configurations of the external to the user organisation socio-economic environment. Through actors' choices during the initiation, the design and implementation of change efforts, this environment from abstract and distant becomes more particular to the organisational settings of the user. The concept of Agora of Techno-Organisational Change refers to this abstract, not clearly bounded environment of socio-economic relations of innovation. Its range covers an analytical distance from local actions and choices during particular instances of techno-organisational change to wider, global, complex networks. It is a marketplace for technological solutions for organisational/business problems which is shaped and structured through actors' strategies, interests and choices. Although not clearly shaped, certain Agora configurations are possible based on particular actors' viewpoints. Evidence from the case studies supports the argument that the process of initiation, design and implementation of techno-organisational change instances is a process from the "abstract" to the "particular" and back. As we have seen, abstract networks of international vendors, suppliers, experts become particular through choices and selection processes and eventually offer the necessary resources to provide a technological solution to a particular organisational/business problem. This process is termed as "Agora particularisation" and it analytically refers to the way that global, abstract socio-economic relations are linked with local, particular situations.





*Figure: Agora particularization and abstraction processes*

The reverse process is also possible and we refer to it as “Agora abstraction”. The cases examined here do not provide much detail on this process, however, existing research on the Biography or Artefacts and Generification (Pollock et al, 2007; Pollock & Williams, 2008) offers empirical grounding. The Agora abstraction, basically, refers to the process where the experience and elements (material and non-material) from a local, particular change instance travel back to the Agora through the various actors involved in it and may be used in other instances as well. For example, the experience of the particular instance in the GB may become part of the global, abstract socio-economic Agora environment in relation to a new change instance in the organisational settings of another user. This shows the relational character of the analytical levels like “global” and “local”, where what is considered as local for one actor might be part of the wider, global environment for another.

The driving forces of the Agora particularisation and abstraction are related to the nature of the Agora as a marketplace characterised by market characteristics of supply, demand, competition, collaboration and the actors’ choices emerging from such an environment. Given the complexity and diversity of the Agora there are many alternative scenarios of particularisation and abstraction, based on the circumstances of different cases. The Agora, therefore, may be configured into a particular change instance in many different ways although standardisation processes might create more fixed and stabilised channels and mechanisms of Agora particularisation and abstraction. Both the processes of Agora abstraction and particularisation contribute to the realisation and expansion of a cycle of development, supply, adoption and use of Agora configurations. In this cycle, the material and non-material, the technological and the organisational, the social and the technical, the contextualised and the generic, the distant and the proximate, merge and are shaped through actors’ social choices.

## 5 CONCLUSIONS

Concepts such as network innovation (Swan & Scarbrough, 2005), distributed organising (Orlikowski, 2002), innovation space (Tidd et al, 2005), and development arenas (Jorgensen & Sorensen, 1999), suggest that innovation is increasingly happening outside organisational boundaries of a firm and theorise spaces where certain socio-economic relations contribute to the shaping of certain technologies or organisations. The same is suggested by the concept of Agora of Techno-Organisational Change but in a more encompassing manner. The Agora refers to a socio-economic space within which technological and organisational change occurs. It involves choices, negotiations and interactions of diverse actors. They are not restricted in spaces such as the organisational environment of the user, or arenas and networks defined by certain technological artefacts, industrial fields or organisational actors and relations. The Agora as a space for techno-organisational change shows how the abstract, indeterminate socio-economic environment of complex innovation networks can be realised and systematically linked with particular local change instances. As a practice space, the Agora is also a market for knowledge and artefacts, a political arena and in general a socio-economic space where actors emerge and interact.

Apart from mapping out an emerging empirical field, the Agora concept offers analytical advancements in the study of IT in Organisations. It offers the researcher the flexibility for multiple research design choices and alternative analytical foci. One can focus on different actors, on situations, on wider structural phenomena but within a single conceptual framework. As actors have diverse viewpoints of the Agora, given their positions and interests, in a similar way the analyst may construct their own viewpoint based on the social significance of the research topic. This new Sociology of Technology and Organisation will benefit IS research as it enables the study of the socio-economic environment and choices surrounding the development, diffusion and use of IS in a more complete and integrative manner. IS can therefore be conceived as communities (Koch, 2003) within a multi-local analytical template.

Future studies on IS could address empirical, theoretical and methodological issues in relation to the Agora research field. For instance, studies on procurement activities and the way they shape the Agora structures will be quite interesting as they will reveal new aspects and mechanisms through which the Agora is configured. The Agora perspective does not explain everything about IS and the way they are developed, diffused and used. It is a generic template that could be used in different ways according to the cases and situations examined and also according to the purposes of each research endeavour. It is up to the IS academic community to further develop its analytical significance and value by applying it on interesting empirical developments and cases. The more interesting empirical reality becomes, the more exciting and useful the Agora perspective will be.

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