



## Electronic Transactivity And Networks Prospects, Problems, Questions

*Stream:9: Exploring Critical Perspectives in Entrepreneurial Organizations and Discourses*

**Jannis Kallinikos**

*London School of Economics*

Department of Information Systems  
Houghton Street, Tower 1  
WC2A 2AE London, UK  
Tel: +44 20 7852 3622  
Fax: +44 20 7955 7385  
[J.Kallinikos@lse.ac.uk](mailto:J.Kallinikos@lse.ac.uk)

## **Introduction**

Modernity is changing. There may be considerable disagreement as to how and why it changes and even more as regards the consequences of such change. Yet the belief in far reaching social, cultural and economic transformations that keep on reshaping the premises on which modernity was predicated is indeed widespread (e.g. Baumann 1992; Giddens 1999; Heller 1999; Lyotard 1984). Current developments are, among other things, manifested in the emergence of forms of work, employment and organization alternative to those that dominated the modern social order (see, e.g. Castells, 1996, 2000, 2001; Fukuyama 1997; Rifkin 2000). The diffusion of flexible employment and the network-form of organization epitomize these developments. Networks, in particular, are claimed to challenge central organizational principles of modernity, notably the boundary-maintaining practices of modern organizations and the institutional relations that sustain such practices, i.e. waged/salaried labour, rule following and hierarchical stratification.

In Castells' (1996) widely acclaimed account, networks emerge both as the epitome of a wide range of social and economic changes and a vehicle that drives the current transition from the industrial to the informational mode of production. The communicative density of late capitalism makes the gathering, processing and use of information the axial principle of effective management and value creation. It comes therefore as no surprise that while tied to the overall economic and socio-cultural climate of late modernity/late capitalism, the significance networks assume in the current age is inextricably bound up with the advent and diffusion of contemporary technologies of information and communication. The tasks, interaction forms and modes of communication the latter enable call for alternative structural moulds and novel modes of organizing economic operations that allow for the development of a diversity of ties across established institutional boundaries (Castells 2001). Network-forms of organization respond precisely to that need.

True as this may be, it is though widely known that networks have been fundamental and old forms of human sociality and cooperation that have antedated the advent of information and communication technologies (ICTs). Indeed, a case could be made for the fact that the organizational patterns of the modern industrial age emerged out of the hazy, network-looking background of communal relations and commercial ties of the premodern world (Giddens 1990; Kallinikos 1996; North 1981). Looked upon the present horizon, the establishment of markets as impersonal, deterritorialized forms of exchange and the diffusion of formal organizations as major sites of work significantly reduced the importance of older forms of carrying out the production and distribution of goods and services. And yet older forms of economic activity persisted alongside the impressive dominance of markets and formal organizations. Networks continued to operate, as it were, in the squeezing interstices of markets and organizations (Fukuyama 1997; North 1981; Williamson 1975).

Electronically-mediated networks may however differ, and in some respects substantially, from older forms of associations across markets and organizational boundaries. On the one hand, relationships constructed over the electronic media may obey quite different principles than the old forms of sociality that were heavily embedded in local cosmologies (i.e. customs, beliefs, conceptions of time, etc.). On the other hand, the emergence of electronic networks as a major form of organization confronts a solid institutional system of work and employment regimes, boundary maintaining organizations and legal systems which networks must transcend, modify or somehow manage to accommodate. These observations therefore suggest that it is

crucial to understand the distinctive terms by which contemporary technologies of information and communication enable networks and the institutional issues that are raised by the diffusion of these forms of organization.

The article is structured as follows. First, the terms by which electronic transactivity reframes human interaction and communication are considered. Contemporary technologies of information and communication reframe the experience of time and space and put to a hard test the adequacy of older forms of accountability, predicated on contiguity and the sequential conception of time. Next to it, electronic networks are examined. The paper claims that the communicative density of late capitalism and the spectacular growth of ICTs drive the management of organizations outside the secluded domain of monitoring the production/distribution of goods and services to the very coordination of economic operations dispersed across boundaries, locations and time zones. Networks epitomize these developments and emerge as systems of a second order concerned with the monitoring of monitoring of primary operations (i.e. the production/distribution of goods and services). Finally the article considers the dense institutional system within which electronic networks develop. It identifies a number of issues that are associated with the institutional friction occasioned by the diffusion of networks and the persistence of traditional and value-laden forms of organization as well as the stable forms of engagement and work they have implicated.

### **Electronic Transactivity and Interaction Forms**

For nearly half of century now, the diffusion and organizational involvement of computer and information technologies have brought significant changes in modes of work and the wider structural moulds and organization forms within which such modes have been traditionally accommodated (Kling 1996; Zuboff 1988; Zuboff and Maxmin 2003). Up to end of eighties, computer and information technologies have basically been technologies of control. That is, they have been concerned, by and large, with improving the efficiency of organizational operations through automated systems of acting upon information (organizing, processing, storing information). This inward-looking, efficiency-enhancing orientation of computer and information technology has however shifted over the last fifteen years or so. As witnessed by the impressive diffusion of electronic commerce and the internet, a strong communicative component has been superimposed onto the older information processing and controlling technology (Kallinikos 2001).

These developments relate to networking in a rather straightforward fashion. Superimposed upon its potent (and growing) processing capacity, the communicative functions of computer and information technology help make *context-free electronic transactivity* a central ingredient of contemporary institutional life. They do so in a massive scale, across extended regions of the globe and in ways that often circumnavigate established political and economic institutions (Sassen 2002). The *distributed character* of electronic transactivity and the *instant feedback loops* underlying electronic transactions challenge the principle of organizational closure upon which formal organizations have been predicated. Boundary maintenance, rule following and hierarchical ordering do not accommodate well the interaction forms that coincide with the growing organizational involvement of ICTs. The operative mode of electronic transactivity promotes disembodied interaction and communication forms that transform significantly the role which situated action and spatial proximity have as-

sumed in the making of the modern organizational order (Zuboff 1988; Kallinikos 1995, 1996).

The assumption that ICTs help overcome the constraints of time and space and the inescapable context-embeddedness of social actors is indeed widespread. However, such a claim is seldom analysed in its specificity. I would like to make the point here that the interaction forms enabled by contemporary technologies have far reaching organizational effects that go beyond the sheer overcoming of the constraints space and time impose to social actors. Instant feedback loops challenge and partly undo the *sequential ordering of time* and an entire arsenal of controlling techniques, based on the separation and placement of events on a linear and standardized time scale (Zerubavel 1981; Kallinikos 1995, 1996). Formal organizations have been predicated upon the typically modern conception of time as a succession of events (Mumford 1934; Luhmann 1993,1998). The attribution of cause-effect relationships and the construction of accountable forms of action so essential to formal organizing are ultimately dependent on the legibility of social events, enabled by the control of simultaneity and their temporal segmentation (March and Olsen 1989; Luhmann 1993, 1998). Simultaneity, as Luhmann (1993) well demonstrates, is inimical to instrumental rationality.

Hierarchy is certainly a social institution and boundary maintenance and control polyvalent social practices that cannot be simply reduced to a specific conception of time. True as this may be, it is crucial to understand that the ontology of sequential time (Heidegger 1985) is essential to the construction of predictable worlds upon which hierarchy and formal organization are predicated (Kallinikos 1996). The erosion of such a time ontology may therefore undermine the foundations of traditional forms of organization, even though much more is needed for social change to occur. The tracing of causes, the attribution of outcomes to particular actions, the construction of means-ends chains all presuppose a sequential time upon which the world can be laid out in legible forms that promote manipulability, inference making and learning from experience (March and Olsen 1976, 1989). These cardinal characteristics of the modern, bureaucratic age could therefore be reframed by the very decline of legibility and the blurring of causal attribution brought about by the quasi-simultaneity of electronic transactions.

The “de-sequencing” of time (Castells 2000) is therefore an essential element of current forms of action closely associated with the diffusion of electronic transactivity. However, a few qualifications must be made at this point. Electronic transactions often entail sequential patterns. Indeed, each transaction is constructed as response to preceding ones or involves the taking of an initiative that is itself expected to generate responses. However, the time frames of responses becomes increasingly shorter while multiple communicative acts initiated from a variety of sources reduce the ability to sequentially order such communications. Transactions follow one another in an almost instantaneous pattern of short time intervals that do challenge the premises of control and causal attribution underlying modern formal organizing. There is, as H.G. Wells (1942) prophetically claimed, “interstitial squeezing...It is the intervals between events that are dwindling to nothing ...(while) the crowding together of events goes on.” It is essential to understand that electronic transactivity is tied to the proliferation of unpredictable events as it invites or at least enables participation from diverse and often hardly foreseen sources. Even though the crossing of institutional boundaries is subject to multiple constraints (i.e. controlled accessibility, interoperability bottlenecks, etc.) it is often difficult to predict initiatives in a connected world. Financial markets stand as the epitome of these developments.

Contemporary technologies of information and communication and electronic transactivity transform even another basic principle upon which formal organization has been predicated. Immediate involvement enabled by *contiguity in space* has been a crucial means of understanding, communicating and controlling social events. Spatial proximity enables the attribution of relations (a basic form of comprehensibility) based on the principle of adjacency, the coordination of interaction and the disambiguation of communication through multimodal forms of message exchange involving instant feedback loops in a “here and now” and the construction of control through observation and surveillance (Ong 1982; Kallinikos 1995, 1996). Now these basic conditions have been altered over the course of industrialism by a variety of technologies and predispositions (Giddens 1990). However, ICTs expand and in some way change rather dramatically the distancing from the immediacy of local contexts as they enable transactions between people separated by vast geographical distances and alternative models of reality.

Electronic transactivity reframes thus the experience of space. To be sure, electronic transactions cannot but take place from some location and involve answers always located somewhere. What electronic transactivity does, however, is to alter the crucial significance that contiguity has assumed in the construction of organizational patterns of the modern, industrial age (Castells 1996). Spatial proximity and immediate involvement have always been tied to oral interaction, face-to-face communication and the crucial role natural language and speech have played in the making of the modern world. As alluded to above, writing and paper-based filing systems (e.g. accounting, archiving techniques) have been crucial means of modern formal organizing that too dissolved or disaggregated contiguous forms of interaction (Cassirer 1955; Beniger 1986; Zuboff 1988). And yet, orality, context immediacy and face-to-face interaction withstood the intrusion of writing and have been crucial elements of those processes of work, interaction and communication we associate with formal organizations.

It is therefore reasonable to assume against the background of these observations that the interaction forms promoted by ICTs challenge fundamental albeit abstract premises upon which formal organizations have been predicated. Contiguity, oral interaction, observation, accountability and surveillance have all been closely associated with a fundamental organizational practice of industrial capitalism that historians of technology often refer to as the *factory system* (Kranzberg 1989), i.e. large scale production of goods or services in particular sites. While being a central social institutions for the rationalization of social relations (Weber 1947; 1978), formal organizations have been heavily conditioned by the attachment to specific locations that has been ultimately related to the constraints which the communicative technologies of the industrial age imposed.

It is a customary Marxian view to associate the factory system with the control of the labour process and the subjugation of workers to the capitalist objective of surplus value extraction (Marx 1865/1867; Thompson 1968; Tilly and Tilly 1998). It is indeed difficult to deny the crucial role which capitalist objectives and the quest for social control and surveillance seem to have played in rendering the factory system the functional archetype of industrial capitalism. And yet, looked upon the present horizon the capitalist quest for profit, control and surveillance could be seen as just one expression of a wider orientation that coincides with the very ontology of modernity, i.e. the framing of *what is* as an object of mastery and manipulation (Heidegger 1977, 1985; Heller 1999). It may not be immediately evident yet the organization forms of the modern industrial age are firmly rooted within an entire cosmology that

conceived of labour and technological artefacts as major means of effecting the *material world*. Production is above all a material transformation. Accordingly, the concentration of people and resources in secluded localities that were governed by elaborate systems of rules and regulations reflected the inexorable reality of production understood as material transformation, and the demands for comprehensibility, rationality and accountability constructed upon the ontology of temporal sequencing and spatial proximity. The logic of the factory system (boundary maintenance and hierarchical ordering) makes precisely sense when it is placed within this wider understanding of production and the spatio-temporal order upon which it has been predicated (Deleuze 1995).

In sum, contemporary information and communication technologies embody a different conception of space and time that is essential in sustaining their reorientation from a medium of control and efficiency to a means of coordinating disembodied message exchanges and interaction forms beyond a 'here and now'. Rather than being a system that acts upon the material world (industrial technology), or a means for improving data transaction and processing (early computer technology), contemporary ICTs become an encompassing platform (perhaps a technological paradigm) for coordinating human activities that transcend local contexts. Thus viewed electronic transactivity emerges as a modality of organizing, and electronic networks the organization form for *the structuring and mediation of decisions that provide the very premises upon which the production of goods and services is predicated*. To put it simply, electronic networks are concerned with organizational relations not operative details of how to run and control a system or an organization. Contemporary technology thus provides the platform onto which second-order or third-order operations develop concerned with, to paraphrase Luhmann (1995), the *monitoring of monitoring of instrumental operations*.

Some clarifications must be made even in this context. As already indicated, techniques like accounting, statistics, indexing, and writing and notation in general have too been directed towards the monitoring of monitoring of instrumental operations, targeting the field of communications in production. Archives and paper based filing systems standardize and record information and allow for comparisons across space and time. Writing and its outcomes represent a pre-electronic information and communication technology that too is involved in producing systems and relations (i.e. monitoring systems) that helps managers (i.e. monitoring operations) to improve the efficiency of the operative core of organizations (Mintzberg 1979; Kallinikos 1996). Similarly other technologies like postal service, telegraph and later telephone and radio have enabled the coordination of large scale operations performed by units separated by time zones and large space distances. Central staffs co-ordinated military units across the American continent during the American civil war, and in naval warfare across the oceans from the early twentieth century. The multi-plant firm began to operate and coordinate its units across the American continent in the late nineteenth century while multinational firms have been operating across several continents by the early twentieth century (Chandler 1997).

Based on similar arguments, Beniger (1986) claimed that contemporary information and communication technologies represent just another step into the human project of controlling the contingencies of life. True as it may seem, this argument fails to observe the distinctive character of contemporary technologies of information and communication as metasystem of regulation, predicated upon a spatio-temporal conception that violates basic temporal principles of the organizational order of modernity. It also fails to take notice of the polyvalent side effects (i.e. loss of control due

to unexpected interactions and impaired causal attribution) that may be generated as the result of its de-anchoring from the primary process of production (Beck 1992; Luhmann 1993; Hanseth 2000). Contemporary technologies of information and communication undeniably owe a lot to the techniques of writing, indexing and notation, telephony and broadcasting that preceded them. But there are crucial differences as well that must be included into the appreciation of their status and effects.

### **Networks as Organization Forms**

If we are right about the spatio-temporal premises underlying the diffusion of electronic transactivity, then the massive employment of ICTs in contemporary economy and society cannot but have far reaching consequences for the factory system and the organizational logic associated with it, i.e. boundary maintenance, rule following and hierarchy. These comments stand however in stark contrast with the current conditions of work and agency in organizations still marked by the primacy of fixed location. In a sense, this comes as no surprise, at least as far as technology is not an exogenous determinant of social relations. As we will claim in the last section, the changes which seem to be associated with electronic networks develop within an institutional order that sometimes supports them but at other times constrains them significantly.

Despite these institutional frictions, I would like to suggest that the diffusion of electronic transactivity may alter, in one sense it has already done, the governance of late modern organizations and the operations of the late capitalist economy. In such a changing context, location does not vanish (how could that ever happen?) but gets inserted and for that reason subordinated to wider system of cross-site and inter-organizational relations (Giddens 1990; Kallinikos 1996). The crux of what has been said so far is that the massive introduction of ICTs in organizations and the diffusion of the internet *make communication and communicative transactions central components of economic and organizational life*. The making and transfer of decisions as to what is to be produced and how is to be disposed, information processing and exchange about economic states, consumption patterns and other external contingencies provide the very premises upon which the operations of contemporary organizations are predicated. Now, activities of this sort always constituted a crucial domain of organizational operations. What characterizes the current stage is however the decisive fact of them becoming increasingly autonomous from the *primary process of throughput* (i.e. production of goods and services). Communicative transactions are of course related to the primary process of throughput, yet only in the indirect way of providing the very context into which the latter should develop and not in the direct way of supervising/managing that process. Put differently, the sphere of production, i.e. how to produce a certain product or service, keeps losing the very primacy it has had in the industrial age (Baudrillard 1988; Bauman 1992; Zuboff and Maxmin 2003), being increasingly subordinated to decisions concerning design, quality, quantity and comparative cost of production.

Planning and execution were always separate organizational process in industrial capitalism. Indeed, one of the basic characteristics of the large, hierarchical industrial enterprise is precisely the rigid separation of planning and execution that allows these activities to be performed according to the distinctive rationalities pertaining to each one of them. But planning in the industrial context is by and large a protective belt that aims at ensuring the smooth functioning of the operative code (Chandler 1977; Mintzberg 1979; Thompson 1967). Boundary maintenance is predicated

precisely on the assumption that the primary concern of the organizational system and its leadership is to keep boundaries controlled, in ways that allow for the efficient carry out of the internal operations. What counts mostly is the internal system. External relationships are important, sometimes crucial, but only as a supplement to the internal ones. Current organizational and economic developments are increasingly emancipated from this logic. ICTs give communicative transactions, concerned with the external relations of organizations, such a momentum as to make them a largely *autonomous domain, endowed with its own complex dynamics*. The objective of this communicative domain is not simply to find outlets for predefined goods and services but to provide the very premises (e.g. design, quality, price) onto which the production of the latter must be based. If the internal system cannot reprogram itself to respond to these premises then it must be replaced or abandoned.

The causal processes that bring about this changing context of late capitalism and late modernity are too complex to be analyzed in the present article. It should be clear however that we do not attribute ICTs a causal status. We do consider ICTs a central vehicle of these developments, a necessary yet not sufficient requirement for these changes to occur. To be sure, the huge inspecting capacity of the contemporary technologies of information and communication propel its own dynamics, i.e. data and information about the world reveal novel relationships about it and force the making of decisions that may demand additional data in an ever expanding circle. This dynamics is often overlooked. However, the driving forces of these developments must be sought in the overall social, economic and cultural processes that have been initiated during the second half of the twentieth century (individualism, affluence, the primacy of consumption, institutional deregulation) and which have gradually altered the profile of the contemporary world (e.g. Baudrillard 1988; Baumann 1992; Beck 1992; Castells 1996).

Be that as it may, an important consequence of the autonomous character of the communicative transactions, as described above, is the conditions of possibility they provide for decoupling (both operationally and also in terms of ownership) the *primary process of production* from the overall *strategic context* of this process (Castells 1996, 2001; Ciborra 1996; Harrison 1994; Sennett 2000). Since Talcot Parsons (1956) seminal article, in the first volume of *Administrative Science Quarterly*, it is customary to view the organizational system as being comprised by the operational level (production of goods and services), the managerial level (monitoring of production of goods and services) and the institutional level (taking care of the external relations of the organizations). Indeed, a basic concern of Taylorism was to adequately separate the management/planning from the very core of operations/activities by which goods and services were produced to ensure that each of these organizational domains pursued as affectively as possible its own distinctive tasks. However, in the neat Taylorist world, the two domains remained closely intertwined. Managerial activities gained its momentum and legitimacy from their very object whose operations they monitored.

Despite its many transubstantiations, Taylorism or fordism managed to retain its basic characteristics over the last century. Recent developments however put a test on this model that goes well beyond the widely known pressures exercised by customisation, flexible specialization and the like. If I am right about the increasingly independent character of the communicative domain, then the expansion of this domain and the informational infrastructure (ICTs) on which it relies provide the possibility to radically dissociate production from its strategic context and thus create the conditions under which separate organizations can take care of these processes. This is indeed a

major breakthrough in the logic of late capitalism of the information age that has disseminated well beyond the profit seeking sector. The arm's length relationships that have been lately developing between producers of public services (primary process) and other public organizations that use these services (context providers) is a case in point. In the private sector, the very disaggregation of industrial companies into smaller units, the fads of downsizing and core business, all these developments may be seen as reflecting the quest for disengagement from the constraints associated with the ownership of the operative core and its location-dependence.

Placed against this backdrop, the impressive diffusion of subcontracting and outsourcing represents the *managerial package for gaining independence from the constraints of the operative core* (Malone and Laubacher 1988; Rifkin 2000; Castells 2001). The most extreme perhaps manifestation of these trends is the emergence of organizations that subcontract production and most other resources in short-lived schemes that can be abandoned when they are no longer needed. By these means, organizations of this type concentrate in the making of decisions and the tying together of various organizations in temporary networks that seek to accommodate the socio-cultural context of late capitalism and its ephemeral and steadily shifting consumption patterns (consumption of identity making and lifestyle experiences) (Kallinikos 2001; Starkey et al. 2000). They provide for another way of bringing together diverse and spatio-temporally scattered contributions that defies the logic of boundary maintenance and its accompanied investment in physical assets underlying the unitary industrial enterprise. Production in the literal sense becomes just an accessory of a much wider logic that puts a primacy on the timely and successful adaptation to market or other environments into which an organization may happen to operate, as such an adaptation is construed by the growing and autonomous domain of communicative transactions.

Companies like Nike, Cisco, the Hollywood giants, broadcasting industry in general have often been mentioned as typical examples of the aforementioned dissociation of production from the very control of the communicative domain, providing the very premises of production (Castells 2001; Rifkin 2000). Companies of this sort control the communicative processes centring on product development, technological development or market development and subcontract/outsources the bulk of the routine activities of production. In other, more benign environments, widely dispersed actors coalesce together to achieve the coordination of the communicative domain (what is to be produced) and assign the production of particular products or services to its members according to capacity, availability and local proximity (Starkey et al. 2000). The term federation has occasionally been used to describe these sort of activities, and Zuboff and Maxmin (2003) go a long way to describing how such federations should function to respond to the individualized consumption of the late capitalism. The problem with terms like federation or alliance is that they are too benign to describe the power game that goes underneath. They are also incapable of singling out and accounting for the distinctive character of the late capitalist/late modern processes analysed above, whereby the communicative domain gains precedence over the very domain of production.

The dissociation of production from its strategic context and the disaggregation of organizations is, thus, not an innocent market game as it is often assumed (Mallone and Laubacher 1998; Castells 2001; Starkey et al. 2000). In principle, it tends to transpose intra-organizational stratification onto inter-organizational relations. Those organizations capable of providing the strategic context (and guidance) for other economic actors may obtain a powerful position vis-à-vis the latter. In other

words, a complex system of what economists call externalities is involved and value created at a particular stage in the value chain (production) is appropriated at another (providers of strategic context). These trends then may be seen as exemplifying the as yet unsettled outcome of a power game in which operational or financial control of organizations is increasingly replaced by *strategic control* (Harisson 1994; Rifkin 2000; Sennett 2000). Strategic networks set the premises on which large numbers of subcontractors operate. These last can be abandoned to their fate when shifting markets demands dictate so or forced to commit themselves to choices that they would have otherwise preferred to avoid.

Power practices of this sort are of course not unknown to powerful industrial enterprises (Chandler 1977; Perrow 1986). But there are important differences that have to be clearly spelled out. Power in industrial complexes were usually associated with the centrality of the production unit to which a large degree of suppliers and distributors were tied (i.e. the automobile industry). By contrast, what confers networks of the sort describe above their distinctive capacity is their mastery of the communicative domain and the ability to provide the strategic context for other organizations. Such an ability, and this has to be stressed, is closely related to the dissociation of such networks from production facilities. Now, the effects of these developments is difficult to predict. It could, however, be conjectured that they may lead to new division of labour, manifested in the operational and financial dissociation of strategy making from the very production of goods or services. Successful strategy may have pay-offs without operational control of resources and this may indeed signify a major social and economic change.

### **Postscript on Institutional Change**

As already indicated, the aforementioned developments take place amidst a dense institutional context that moderates their impact and at times modifies, resists or even undoes it. Many of the issues associated with flexible work and the deregulation of employment regimes that dominated high modernity is related to the disengagement that capital accumulation demands from particular social and economic contexts. Whether people will end up as disposals, the Brazilianization of West as Beck (2000) describes it, in the global struggle of capital to increase its gains remains to be seen. But such a world, if it comes through, is unambiguously discordant with modern polity and the basic ideals of human freedom and dignity.

The embeddedness of electronic transactivity and the diffusion of electronic networks call furthermore into question not simply the vertical industrial enterprise, as Castells (1996, 2001) assumes, but a central institution of the modern social order, i.e. that of formal organization. The formal or legal status of electronic networks is quite unclear in the literature (Castells 1996, 2001; Fukuyama 1997; Rifkin 2000). In most of these descriptions, networks emerge basically as new models for running the operations of firms and organizations. There is a striking lack of precision in the literature (the same holds true for our own description) as to what network forms of organization really involve and how they differ from the two basic institutions of the modern economic order, namely formal organizations and markets. Most importantly, the normative, institutional and legal embeddedness of networks into the wider social order remains unclear and only vaguely described. It is important to uphold, in this respect, the rather obvious fact that the operations of markets and formal organizations have been sustained by elaborate systems of rules, legal regulations and social commitments.

There is little doubt that the term ‘network’ offers a suggestive *counter image* to the boundary-maintaining, hierarchically structured organizations typical to modernity and the industrial age. The image of connections linking discrete entities in fluid, non-hierarchical patterns may undeniably suggest an intuitive juxtaposition of networks to formal organizations conceived as rigid, hierarchically structured arrangements of discrete entities (roles, units, departments). However, such an image is often oversimplified and does not do justice to the institutional complexity of formal organization and the legal/rational heritage of bureaucracy. By the same token, it falls short of the crucial task of accounting for the precise forms by which networks are supposed to challenge (complement or replace) formal organizations (Kallinikos 2003). The pressures exercised by the developments analysed in the preceding section will unavoidably create the incentives and the power struggles for the modification or elaboration of the institutional base onto which the dominant forms of work and organization have been based. The deregulation of labour markets is a case in point. However, the remaking of the institutional edifice of work and the organizational order of modernity imply the redistribution of risks and benefits across social groups and classes and the reconsideration of basic issues of modern polity (equality, accountability, human dignity, etc.).

An indication of the inadequate conceptual status of the notion of ‘network’ emerges in its juxtaposition to the dense system of social and institutional relations underlying formal organization. After Max Weber, we do know that the bureaucratic form of organization (of which the large industrial enterprise is but one expression) is a basic institution of the modern (capitalist, industrial) age. Rather than being simply a managerial model for running the production of goods and services, the bureaucratic organization is a major institution that *modulates the relationship of the individual to the organization* in ways that express basic civic and cultural orientations of the modern age (du Gay 2000). Central to such modulation is the legally and culturally sanctioned stipulation of the terms (e.g. universalism, meritocracy) by which individuals join, abandon or interact with organizations.

Major characteristics of the organizational order of bureaucracy derive thus from its rational-legal orientation and the fundamental, though often overlooked, fact that bureaucratic authority in principle regulates only the employment contract. Individuals are involved in organizations *qua roles* and not *qua persons*, and the organizational sphere of jurisdiction applies to the role not the person (Luhmann 1995; Kallinikos 2003). Formal organizations have no mandate whatsoever to decide over issues that extend beyond their clearly demarcated jurisdictions. By the same token, work is regulated by means of an elaborate legal edifice that limits arbitrary behaviour and stipulates the employee’s and the employer’s rights and obligations. Organizational behaviour is governed by the universalistic principles of meritocracy while recruitment, career development and the relationship of the organization to its environment (other organizations, consumers, citizens) are thus shaped as to conform to these principles (Gellner 1983; Parsons 1947; Weber, 1947, 1978). Though not often thought this way, bureaucracy represents a basic institutional modality through which modernity historically sought to break with paternalistic and autocratic patterns of government, bypass nepotism and corruption and regulate the organization’s relationship to people, inside and outside its boundaries, in ways that are compatible with the ideals of liberty, transparency and justice (du Gay 1994, 2000; Perrow 1986). It is far from accidental that Weber (1947, 1978) distinguished and juxtaposed the rational-legal order of the bureaucratic form to traditional and charismatic forms of power and authority.

There is little doubt that the adequate appreciation of current organizational transformations must take place on the background of the social relationships built in and around the bureaucratic order. If the legal edifice sustaining modern formal organization is revised and the social practices associated with it decline then by what sort of legal and cultural order are they replaced? Are individuals tied to organizations in new ways, not foreseeable so far in modernity? Current changes away from life time employment, the blurring of boundaries between work, family and civic life and the diffusion of networks suggest that the contemporary age moves away from the legacy of modernity (Bauman 1992; Beck 1992, Beck and Beck-Gernsheim 2002; Rose 1999). The transactional infrastructure that enables new forms of involvement in organizations (e.g. virtual work) and alternative interaction patterns partake in the re-drawing of the institutional boundaries of modernity. Some of these changes will be accommodated within the older institutional edifice. Others will demand however far reaching institutional transformations. Any attempt to appreciate the status of these transformations necessitates an understanding of the changing organizational landscape of modernity.

## References

- Baudrillard, J (1988), *Selected Writings*. Stanford University Press, Stanford.
- Bauman, Z (1992) *Intimations of Postmodernity*. London: Routledge.
- Beck, U (1992) *Risk Society: Towards a New Modernity*. London: Sage
- Beck, U (2000), *The Brave New World of Work*. Polity, Cambridge.
- Beck, U and Beck-Gernsheim, E (2002), *Individualization*. London: Sage.
- Beniger, J (1986) *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge, Mass: Harvard University Press.
- Cassirer, E (1955), *The Philosophy of Symbolic Forms: Volume 1: Language*. New Haven: Yale University Press.
- Castells, M (1996), *The Rise of Network Society*. Blackwell, Oxford.
- Castells, M (2000), 'Materials for an Explanatory Theory of Network Society', *British Journal of Sociology*, 51/1: 5-24.
- Castells, M (2001), *The Internet Galaxy*. Oxford University Press, Oxford.
- Chandler, A (1977), *The Visible Hand: The Managerial Revolution in American Business*. The Harvard University Press, Cambridge, Mass.
- Ciborra, C (1997), 'The Platform Organization: Recombining Strategies, Structures and Surprises', *Organization Science*, 7/2: 103-117.
- Delueze, G (1995), *Negotiations*. New York: The Columbia University Press.
- Du Gay, P (1994), 'Colossal Immodesties and Hopeful Monsters.' *Organization*, 1/1: 125-148.
- Du Gay, P (2000), *In Praise of Bureaucracy: Weber, Organization, Ethics*. Sage, London.
- Fukuyama, F (1997), *The End of Order*. Centre for Post-Collectivist Studies, London.
- Gellner, E (1983), *Nations and Nationalism*. Blackwell, Oxford.

- Giddens, A (1990), *The Consequences of Modernity*. Cambridge: Polity Press.
- Giddens, A (1999), *Runaway world*. London: Profile Books
- Hanseth, O (2000), 'The Economics of Standards' in Ciborra, C. (ed.) (2000) *From Control to Drift: The Dynamics of Corporate Information Infrastructures*. Oxford: Oxford University Press.
- Heidegger, M (1977), *The Question Concerning Technology and Other Essays*. New York: Harper.
- Heidegger, M (1985), *The History of the Concept of Time*. New York: Harper.
- Heller, A (1999), *A Theory of Modernity*. London: Routledge.
- Harrison B (1994), *Lean and Mean*. Basic Books, New York.
- Kallinikos, J (1995), 'The Architecture of the Invisible: Technology is Representation, *Organization*, 2/1: 117-140.
- Kallinikos, J (1996), *Technology and Society: Interdisciplinary Studies in Formal Organization*. Accedo, Munich.
- Kallinikos, J. (2001) *The Age of Flexibility: Managing Organizations and Technology*. Academia Adacta, Lund.
- Kallinikos, J. (2003), 'Work, Human Agency and Organizational Forms: An Anatomy of Fragmentation', *Organization Studies*, 23/ 4: 595-618.
- Kling, R. (1996) *Computerization and Controversy*. San Diego: Academic Press.
- Kranzberg, M. (1989) The Information Age, in T. Forester (ed.) *Computers in the Human Context*. Oxford: Blackwell.
- Laubacher, R & Malone, T (2000), Retreat of the Firm and the Rise of the Guilds: The Employment Relationship in an Age of Virtual Business. MIT Initiative on Inventing the Organizations of the 21<sup>st</sup> Century, *Working Paper #033*.
- Luhmann, N (1993), *Risk: A Sociological Theory*. De Gruyter, Berlin.
- Luhmann, N (1995), *Social Systems*. Stanford University Press, Stanford.
- Luhmann, N (1998), *Observations on Modernity*. Stanford, Ca: Stanford University Press.
- Lyotard, J.-F (1984), *The Postmodern Condition: A Report to Knowledge*. Manchester: Manchester University Press.
- Malone, T. and Laubacher, R (1998), 'The Dawn of the E-Lance Economy,' *Harvard Business Review*, September-October, pp. 145-152.
- March, J. and Olsen, J (1976), *Ambiguity and Choice in Organizations*. Oslo: Universitetsforlaget.
- March, J. and Olsen, J (1989), *Rediscovering Institutions*. New York: Free Press.
- Marx, K (1954 & 1956), *The Capital*. Two Volumes. Moscow: Progress Publishers. Originally Published in 1865 and 1867 respectively.
- Mintzberg, H (1979), *The Structuring of Organizations*. Englewood Cliffs: Prentice Hall.
- Mumford, L (1934), *Technics and Civilization*. San Diego, CA: HBJ.

- Ong, W (1982), *Orality and Literacy: The Technologizing of the Word*. London: Routledge.
- North, D (1981), *Structure and Change in Economic History*. Basic Books, New York.
- Parsons, T (1956a), Suggestions to a Sociological Approach to the Theory of Organizations I, *Administrative Science Quarterly*, 1/1: 63-85.
- Parsons, T (1956a), Suggestions to a Sociological Approach to the Theory of Organizations II, *Administrative Science Quarterly*, 1/2: 225-239.
- Parsons, T (1947), Translators Introduction to Max Weber, *The Theory of Social and Economic Organization*. Free Press, London.
- Perrow, C (1986), *Complex Organizations: A Critical Essay*, Third Edition. Random House, New York.
- Rifkin, J (2000), *The Age of Access*. Penguin, London.
- Rose, N (1999), *Powers of Freedom: Reframing Political Thought*. Cambridge: Cambridge: University Press.
- Sassen, S (2002). 'Digitization: Its Variability as a Variable in the Reshaping of Cross-Border Relations', Workshop on *Globalization and ICTs*. Department of Information Systems, London School of Economics.
- Sennet, R (2000), *The Corrosion of Character: The Personal Consequences of Work in the New Capitalism*. New York: Norton.
- Starkey, K, Barnatt, C and Tempest, S (2000) Beyond Networks and Hierarchies: Latent Organizations in the U.K. Television Industry, *Organization Science*, 11/3: 299-305.
- Thompson, E. P (1968), *The Making of the English Working Class*. London: Penguin.
- Thompson, J (1967), *Organizations in Action*. McGraw & Hill, New York.
- Tilly, C. and Tilly, C (1998), *Work Under Capitalism*. Oxford: Westview Press.
- Weber, M (1947), *The Theory of Social and Economic Organization*. Free Press, London.
- Weber, M (1978), *Economy and Society*, two volumes, Edited by Roth, G. & C. Wittich. University of California Press, Berkeley.
- Wells, H. G (1942), *The Conquest of Time*. London: Watts & Co.
- Williamson, O (1975), *Markets and Hierarchies*. Free Press, New York.
- Zerubavel, E. (1981), *Hidden Rhythms: Structures and Calendars in Social Life*. Chicago: University of Chicago press.
- Zuboff, S (1988), *In the Age of the Smart Machine*. Basic Books, New York.
- Zuboff, S. and Maxmin, J (2003), *The Support Economy*. Alen Lane: Penguin Press.