

Recognising Alternative Rationalities in the Deployment of Information Systems

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Abstract

Information systems research and practice have been developed under the combination of scientific and economic reasoning that forms the bedrock of western modernity. Alternative ways of perceiving the value of technical innovation, often manifested in the deployment of ICT in the social context of developing countries, are poorly understood and tend to be dismissed as 'irrational'. In this paper I review the literature that challenges the supremacy of the mutually dependent techno-scientific and economic rationalities of modernity and I argue for a shift from a universalistic and a-contextual notion of rationality to considering rationality as a system of reasoning arising from particular historical experiences and related to culture.

Theoretical discussion on rationality draws from Weber's analysis, critical theory, constructivist studies of science and technology, and writers on postmodernity. The manifestation and significance of alternative rationalities is demonstrated with two examples of systems implementation efforts, and the paper concludes with a discussion of the implications for professional practice.

Keywords: Information systems; developing countries; rationality

Introduction

Developing countries are usually seen as problematic hosts of information and communication technologies. Not only most developing regions lack economic resources and indigenous techno-scientific capabilities to develop and deploy modern IS infrastructures, they also tend not to make best use of the opportunities of technology transfer. Comparisons with advanced economies show poor exploitation of the ICTs. For example, Palvia and Palvia (1996) categorised countries in terms of economic growth in advanced, newly industrialised, developing and underdeveloped and studied the IS management issues concerning each of these categories. They found that these categories correlated with the level of IT adoption and demonstrated different business management concerns regarding IT adoption. Advanced countries (i.e. North America, Europe, Japan and Australia) were concerned with 'strategic issues' such as developing an enterprise model as an overall framework for the development of corporate applications and databases, or using information systems for competitive advantage. Developing countries had operations concerns, such as on the availability of technical skills for IS development, the reliability and accuracy of data maintained by their information systems, and – quite revealingly – low appreciation of the benefits and potential of MIS. Predictably, countries categorised as underdeveloped were found to have more basic problems regarding the acquisition and operation of the technology; management and strategic issues were not even raised as relevant.

It is acknowledged in the article of Palvia and Palvia as well as other cross-country comparisons (Ein-Dor, Segev et al. 1992) that local culture and political regimes are related with country differences in IT adoption and economic performance. The question regarding culture and IT that is usually asked is whether a country's culture - understood as values, beliefs, and behaviour

patterns - and political regime are favourable to IT adoption for economic growth purposes. The economic growth in a free market economy through IT adoption is the ultimate fundamental value, toward which local cultures and politics may be conducive or not.

In this paper I follow a different line of thought. I question the supremacy of the techno-economic rationality over other systems of reasoning that may counteract it. My main argument is that many of the widely known problems faced in the so-called developing countries are constituted within the techno-economic rationality of development which stemmed from the western societies' experience of modernity. But while in the context of developing countries the techno-economic rationality of western modernity is instrumental in defining a series of problems and determining their solutions, it is blatantly unsuccessful in streamlining people's behaviour to the achievement of such solutions. In the development literature it has been argued that societies in developing countries may have better chances to improve their life conditions if they recognise the limitations of the validity of the techno-economic rationality and pursue alternative rationalities stemming from their systems of value. Accordingly, this paper argues that IS professionals need to be attentive to the historically meaningful alternative courses of rational action, often manifested in ineffective IS projects in developing countries, and to avoid interpreting them as 'failures' due to irrational behaviour.

To form this argument, this paper discusses the theoretical fundamentals of the notion of rationality, as this developed in the context of the western modern society, and traces the literature that challenges its supremacy and its implications for developing countries. It then illustrates the significance of such theoretical ideas with two examples where computerisation efforts faced clashes of rationality. The paper concludes with a discussion of the implications of the consequences of the critique of the rationality of modernization for professional IS practice.

The rationality of Western modernity

The fundamental principle that distinguishes a 'modern' western society from 'traditional' societies is the belief that the human condition can be improved by reason alone (Touraine 1995). The streams of thought that converged in the formation of the aspiration of modernity and the forces that contributed to its legitimacy go back to the seventeenth century. Nevertheless, one of the most important theoretical efforts to address rationality in the context of Western modernity is found in the work of Max Weber. Written in the beginning of the twentieth century, while the course of modernity was already quite advanced, Weber's analysis drew from established ideas and referred to existing socio-economic realities. He attempted to theorise the 'rational' consistency of fundamental institutions of modernity, such as the order that sustains organisations and the functioning of the free market economy.

Weber's main notion of rationality, 'formal rationality', is primarily a methodological device for purposes of typological scientific analysis. His methodology consisted of constructing ideal categories of social settings, determining a course of rational action for the purposes of their particular ends. Such an abstract 'purely rational' course of action may then serve as a basis of comparison with actual, observed action to account for deviations from the line of conduct which would be expected on the hypothesis that the action was purely rational. Within this framework of analysis a particular behaviour or action is seen as irrational if it deviates from the conceptually pure type of rational action. Action which is not conforming to the rational means of serving the end assumed by the ideal model of action, is irrational.

Seen in such a comparative perspective, the modern Western free market economic order is not a 'natural order', but one possible line of social development. Weber himself identified other rationalities built into the dominant institutional structures of different societies, such as the

'communal rationality', referring basically to the family-based economic structures of traditional societies. Research since Weber's analysis of ideal types identified historical situations which demonstrate the dominance of alternative economic and non-economic rationalities and suggested various formal classifications and comparisons. In addition to the exchange mechanisms of the market context familiar to western societies, they identified two main patterns of economic action (Polanyi, Arensberg et al. 1957). The first is the reciprocative type of economic action, in which goods and services are exchanged without economic calculation, price payments and wages. Only a very loose principle of balancing the giving and receiving of goods and services is discernible in such reciprocal exchanges. The second is the redistributive type of economic action, in which goods and services are collected to a central source, such as government, and then redistributed throughout the members of the society. Rather than economic calculation, this pattern of activity is driven by principles of social justice and equity.

Weber theorised also on the social conditions that support particular rationalities. One of the most significant contributions of his analysis of the rational economic activity under market conditions is the outline of the fundamental social conditions of the modern capitalist system. These include market freedom, autonomy in the selection of management by the owners, free labour market), absence of regulation of consumption, production, and prices, or of other forms of regulation, calculability of the technical conditions of the production process, a public administration legal order, complete separation of the enterprise from the household or private budgetary unit and its property interests, and a formally rational monetary system (Weber 1947).

In contrast, in societies oriented to a communal rationality economic activity is neither clearly differentiated from other action, nor it involves the formal calculated arrangements of 'capital accounting'. Elements of reciprocative and redistributive rationality such as mutual responsibility among members of the community – often the extended family – solidarity, common welfare of members prevail over the freedom of enterprise to accumulate capital. Moreover, affectual, emotional and traditional ties are legitimate motives for action.

In analysing the formal rational type of the modern economy, Weber acknowledges that the outcome of economic action is judged differently in relation to different underlying ends – what he calls 'substantive rationality'. Such ends may include ethical, political or utilitarian considerations, such as social equity, social justice, furtherance of power of a political unit. For example, a particular course of economic action may be successful in terms of social equity within a social group, but inadequate in terms of the overall power of the social group *vis a vis* its political rivals. Indeed, in terms of substantive rationality, economic activity itself may be of secondary importance, or in conflict with the attainment of particular social values of a society.

The notion of the substantive rationality provides a wider perspective to view the modern economic system. Rational economic action describes what course human action should take to be in accordance to an ideal model if it were completely and unequivocally directed to a single end: the maximisation of economic advantage. But such a 'rationalised' economy, where people orient their decisions towards maximising efficiency and weighing costs and benefits, is based on a particular mentality, involving the ethical sanction of acquisitive activity and a propensity to seek new solutions of problems rather than to adhere to traditions.

In this sense the modern Western economic rationality that values productivity and efficiency in a free market setting conveys one particular set of values that dominated over others. This thesis has been echoed in many other studies that look at the economic activity within a social system. For example, Parson and Smelser (Parsons and Smelser 1956) made the point that societies differ with respect to the degree to which they temper economic productivity and efficiency in relation to other values. As a result, in different historical settings different mixes of economic and non-economic rationalities prevail and perpetuate through institutional mechanisms. Thus, Smeller

(Smelser 1978) suggests the need to understand the way different kinds of rationalities that may govern the production, distribution, and consumption of economic goods and services - such as efficiency, social justice, social security, military defence - are incorporated in the complex economic and social processes of particular societies, either local or global.

Critical theories of rationality

Although based on the relativistic premise that different rational systems of ideas and activities may be valid for different groups of people in different social settings, Weber's work contributed to the legitimation of the supremacy of the institutions of modernity rather than challenging them. The technical distinction between rational and irrational action is problematic (see for example (Parsons 1947). It indicates that action may be affectually determined, such as in actions provoked by feelings rather than reasoning, but overlooks the substantive sense of rationality, that is also pointed out in Weber's analysis. A deviation from a course of action dictated by the rational norms of a formal ideal type of social system may be rational in serving a different end from that assumed in this particular formal abstraction.

Weber considered it a danger for social sciences to pursue rationalistic interpretations, i.e. to assume the predominance or general desirability of the courses of action he determined in his abstract ideal rational categories. Yet, his formal rational models had an influence beyond academic analysis, inspiring, guiding and legitimating patterns of social action. His ideal types of authority, for example, which define and compare the charismatic, traditional and rational-legal modes of commanding and maintaining order and distributing resources, contributed to the making of the bureaucratic model of organisation the most widely spread institution of the modern western society.

Since Weber's time a succession of theoretical perspectives surpassed his analysis, taking a critical stance to the rationality of modernity. They include the Marxist critical theorists Adorno, Horkheimer (Horkheimer 1947; Horkheimer and Adorno 1972), and Marcuse (Marcuse 1964); Foucault (Foucault 1977); the various theorists of post-modernism, such as Lyotard (Lyotard 1984); the social-constructionists (Hughes 1983; Latour and Woolgar 1986; Callon and Law 1989; Bijker and Law 1992; Latour 1993); and sociologists of the 'late modernity' such as Giddens, Beck, and Lash (Beck, Giddens et al. 1994).

It is beyond the scope of this paper to present and discuss all these paths of critical thinking. Nevertheless, even an eclectic outline of the views of some of the most influential critiques can assist in understanding the partiality and fundamental limitations of the rationality of modernity.

Some of the strongest criticisms of the rationality that sustains modernity were articulated by Marxist theorists at the aftermath of the devastation of Europe from the Second World War. Horkheimer and Adorno made an intellectual attack to the subjectivisation and formalisation of reason which constitutes the intellectual engine of modernity, and is exemplified in the theoretical work of Max Weber. They point out that reason in the context of modernity is 'an intellectual faculty of co-ordination, the efficiency of which can be increased by methodical use and by the removal of any non-intellectual factors, such as conscious and unconscious emotions' (Horkheimer 1947). In this sense, rationality can serve any means, good or bad. It endeavours to optimize the means, but has nothing to say on the validity of ends.

Horkheimer and Adorno's criticism of the instrumental nature of rationality in the context of modernity does not refer only to the spread of formal rationality in social sciences and the faith in science and technology to dominate nature. More importantly it is a critique to the subjectivisation and therefore relativisation of substantive rationality; the lack of discourse on the values lying

behind the particular rationalities pursued by the formally rationalised institutions of modernity, such as science, technology, and the free market economy.

This point of view was voiced more clearly and loudly twenty years later by Marcuse in his critique of the cognitive foundations of modernity. He argued that, far from being universal and independent of social and historical conditions, the scientific-technical rationality in the context of modernity is a political system of domination (Marcuse 1964). Marcuse expanded on the view of the instrumental nature of the rationality of modernity and linked it with the prevailing political system of his milieu. Adopting a Marxist perspective, he saw the rationality of science and technology as serving a particular structure of power and class interests, reinforcing the way the rationality of the free market maintains the unequal relations fostered by capital accumulation.

Marcuse went even further than exposing the instrumental nature of rationality, arguing that the rationality of a technocratic society seizes to be the means that serve the specific demands of capitalism, or any other chosen economic system. Instead it establishes and maintains a system of domination in its own right. The pursuit of efficiency through scientific-technical rationality dominates over choices of human value, transforms social action to contexts of action bound by the requirements of the technology itself, and ultimately imposes its own authoritarian system. The methods of reasoning of science and technology are the universal instruments of domination of a particular civilisation. They are used to dominate nature, but also to maintain a social order of domination of some human beings by other human beings.

Marcuse's ideas were radical for his time and fuelled the political struggles of the left in Europe and North America but, as Marxist thought and radical political action were increasingly discredited in the following decades, his critical views were subsequently marginalised. However, the same views are echoed in more recent streams of critical thought on rationality, more attuned with the contemporary political milieu.

Foucault, suspicious of universal truths and ideas, rejects a single model of rationality. For him, the development of knowledge is historically located and related with power rather than driven by pure reason (Foucault 1977). His work seeks to reveal the relationship between rationalisation and excesses of political power, and to expose the social practice within which reason has played multiple roles. Lyotard too, in his influential work on postmodernism (Lyotard 1984), sees a plurality of rationalities, which he conceives as 'islands of order in a radically contingent world' (Feenberg 1995).

A stream of studies of science and technology that emerged around the mid-seventies started investigating in detail the way science is practised and technology is designed and used, revealing their 'irrational' impurities. Attention shifted from the macro-level social structures that affect science and technology to the microcosm of science and technology practice. Such studies converge on the same message: that the boundaries between the two realms of scientific and technological practice on one hand and social affairs on the other are unclear throughout the enactment of science and technology.

Most influential among such studies of science and technology has been the work of Bruno Latour. The novelty of his approach was in attempting to trace everything that a practicing science researcher goes through, thus showing the heterogeneous components (technologies, conventions of laboratories and field studies, technical scripts, beliefs, social circumstances) that make up science and technology (Latour 1987).

Latour argues that scientific facts are 'constructed' (Latour 1993). His analysis shows the inconsistency between the partiality and impurity of scientific practices and the 'matter of fact' quality attributed to published scientific findings. He challenged the distinction between the social and the scientific arenas of the ideology of modernity, and thus suggested that the superiority of

knowledge achieved in western societies by scientific practice is not a matter of objective reason, uncontaminated by culture, but a matter of strength of alliances mobilised to support this knowledge. Thus Latour's work suggests that even the results of scientific and technological work could be 'otherwise', therefore encourages the resurfacing of questions about 'whose order have scientific practices served?' outside the declined class conflict discourse.

The rationality of modernisation as development

Most of the critiques of the rationality of modernity draw from the social context of industrialised western societies, but they have clear implications for the so-called developing countries. If, as suggested in the critiques outlined above, the techno-economic rationality of modernity is not a neutral and objective way of reasoning but an aspect of the culture of western civilisation, thus inextricably bound to its history, modernisation as a project aiming at improving life conditions in the poorer and politically weaker countries by transferring and applying this rationality there takes a new meaning. Modernity's instrumental system of reasoning first determines the 'problems' to be solved: the irrationalities of tradition, the injustice of authoritarian regimes and the limitations of local inefficient production practices to feed the local population. Consequently it defines the solution: courses of action that need to be taken in order to perform according to the formal ideals that guide 'progress' in modernity, as they have been pursued in the advanced western economies.

Escobar (1995), following the critical line of thought of Foucault, analysed the 'development' pursued since the 1940s as a discourse, that is as a space of thought and action within which only certain things can be said, done, or imagined. Examining the political dynamics, theoretical ideas and the practical interventions that have constituted 'development' he argues that the adoption of free market rationality and its institutions, and the cognitive instruments of science and technology in developing countries were socially constructed rather than naturally chosen.

The organising premise of the discourse of development has been the belief that modernisation, based on the two pillars of science-technology and capital, is the only force capable of destroying archaic superstitions and relations, and that it should be applied at what ever social, cultural and political cost. Within this discourse, institutions and professionals of development determine and classify problems by applying the concepts and techniques of the sciences that sustain modernity – such as economics, public and business administration – and form policies of change.

Presented as a detached rationality capable to improve human condition, the modernisation discourse creates a 'regime of truth', passing judgement on social groups, determining their 'needs', and prescribing how they should change. Social life is conceived as a technical issue, and its improvement is entrusted to technical experts, capable of rational decision making and management.

Escobar's analysis points out that, instead of delivering universal improvement of the human condition as was initially expected, indiscriminate application of instrumental rationality in the second half of the twentieth century eroded poor people's ability to define and take care of their own lives further than the erosion of past colonial regimes. The transfer of the rationality of modernity carries with it the transfer of values and institutions. For example, the need for foreign exchange and investment influenced the promotion of cash crops to the detriment of food crops for domestic consumption; targeting efficiency and competitiveness in the global economy imposed industrialisation – or post-industrialisation – interventions over local production and trade patterns.

Moreover, Escobar notes, a discourse that privileges a modern 'culture' of western values and modes of knowledge and action is destructive in a deeper manner. Local cultures, predominant values and politics are considered responsible for backwardness. Most interventions of

modernisation pay little attention to the historically derived system of values that sustain social systems – such as an economy, a business organisation, a public service institution – which are irrational from the point of view of the rationality of modernity.

Information technology encountering different rationalities

From the outset, information and communication technology is a triumph of modernity: the enlightenment ideal of making progress through reason fuelled the continuous scientific and technological advances that led to the sophisticated modern computers and telecommunications. Furthermore, the diffusion of ICT innovation that created an unprecedented infrastructure of data and communication channels within and among organisations across the globe took place within a socio-economic regime committed to create wealth by optimising efficiency. These two rational courses of action – scientific advancement and the quest of economic efficiency and growth – not only are compatible, they re-enforce each other in a virtuous relationship: technology is one of the most significant variables in economic growth, and the economically strong societies invest in continuing research and development.

This view on capitalist techno-scientific rationality expresses the dominant premise for information systems practice and research. The bulk of the knowledge developed in the two major sub-fields of information systems, systems development and management information systems assumes that technology is deployed in the context of an enterprise striving for competitiveness in a free market economy.

In the context of developing countries IT is seen as one of the most significant forces of modernisation. In the global ‘information society’ the various indicators of diffusion of technology are a characteristic of development. Most of the literature of development agencies as well as the professionals’ codified technical knowledge considers IT as a Trojan horse, containing and releasing development in the underdeveloped societies. And although such a naïve technology-deterministic view holds little validity in the academic literature of information systems, and in the judgement of the most experienced professional practitioners, few academic analysis and even less professional interventions address the ‘problems’ of the deployment of IT based information systems as the manifestation of different rationalities.

The two following examples clarify the way apparently irrational behaviour in organisations implementing new technology-based information systems is the manifestation of a clash of the rationality intended to be conveyed by the technical innovation with the local, historically developed, system of values and reasoning. Detailed presentation and analysis of the cases studies used from which the examples have been drawn, as well as methodological information on the research conducted to trace them, can be found elsewhere (Chrysohos 1999).

IT use in the context of industrial reform in Cyprus

The first example is the effort to apply the industrial model of flexible specialisation in Cyprus. This effort began in the late 1980s, following the recommendations of an international team of advisors sponsored by the United Nations agencies UNDP/UNIDO. It was judged that the country’s secluded island economy, comprising a large number of very small manufacturing enterprises could not be competitive through a labour intensive mass production, and it would benefit from organising its manufacturing sector in networks of organisations to supply for diverse consumer tastes.

The industrial model of flexible specialisation emerged as a promising alternative to the Fordist pattern of mass production in hierarchically managed organisations, which use specialised technologies to produce efficiently for mass markets (Piore and Sabel 1984). Flexible

specialisation is associated with the following features: production driven by economies of scope rather than economies of scale; flexible machinery; niche markets; information intensive production inputs; task integration and flexibility; network and informal, rather than hierarchical, management structures; close customer and supplier linkage; competition by innovation, rather than by capacity.

One of the best known cases of successful flexible specialisation is the industrial networks of small producers and service providing agencies in the region of Emilia Romagna in Italy, and it was this particular case that Cyprus attempted to emulate. The firms in each of the 50 districts of Emilia Romagna have formed networks of industry associations, co-operative consortia, and joint facilities. The consortia play a significant management role for their constituent firms, coordinating their production and serving them with access to external information sources, export promotion programmes, market research, and staff training. This allows the small firms to further specialise, some producing particular parts, others assembling, while they are able to share out production to others if demand exceeds capacity. Moreover, through the consortia the artisans of the small firms have access to complex and expensive technologies such as art machinery, and CAD (Triglia, 1992).

The small firms participating in the consortia continue to be managed internally in a rather informal manner, but they had to move towards formalisation of particular functions, such as sales and marketing which are mediated by the services of the consortia. The organisational complexity of the industrial network of flexible specialisation in Emilia Romagna is sustained by rich information flows, both formal and informal. While management information requirements of the specialised SME producer firms are modest, the consortia and the network of support organisations need sophisticated systems to deliver multiple services to their diverse customers.

Analysts of the development of flexible specialisation in Third Italy tend to emphasise the significance of the socio-cultural environment that fostered such collaborative industrial relationships that amount to collective entrepreneurship. A catholic tradition combined with the prevalence of collectivist socialist ideology forms a socio-economic fabric that mixes traditional and modern elements. Such a culture facilitated the development of collaboration without the need of direct government intervention.

Following this model, the adoption of the flexible specialisation strategy in Cyprus involved activities at three levels: the small producer firms, sector-wide, and national. A number of initiatives were taken in each of these areas with varied degrees of success.

In the case of the reorganisation of the furniture manufacturing sector the most visible area of activities was in the formation of consortia. Much less was done for the development of service providers, while rather minor changes took place within the small firms as a result of the strategy.

The small production outlets continue to be the most significant agents of the industrial network of flexible specialisation. They were expected to adjust their operations and develop their organisational capacity taking part in the wider network of agencies that complement or support their business. For example, the firms taking part in the consortia formed in the furniture manufacturing sector were intended to remain independent organisations, but they were advised to specialise by product, such as children's furniture, garden furniture, pinewood furniture, or office furniture.

Initially the producer firms appeared to take advantage of the new opportunities offered by the various intermediary organisations set up by the government. For example several firms made use of the new financial schemes put forward by the government to expand their business, and sought to upgrade the skills of their workforce through government sponsored training programs. However, in general the small producers showed little appreciation of and commitment to

rationalising their enterprises. In just two years after the creation of the two major consortia in the furniture manufacturing sector their members started acting antagonistically both to each other as well as to the consortia that were supposed to be their marketing and sales agencies. Although initially the consortia boosted sales of the products of their members they could not absorb all their production capacity. The owners/managers of the small firms reverted to their pre-consortium state, each producing and selling on their own a broad range of products, rather than specialising by product. Each of them were competitors as well as suppliers of their consortium. Today, they often supply their products to the consortia at selling prices higher than those they offer directly to their customers. The marketing consortia are now viewed as customers with whom producers have an agreement to supply a particular line of products with a pre-specified mechanism of pricing and delivery timing.

The industrial restructuring had little effect on the management of the small firms. Although some adjustment were made, the overall structure, management, and business culture of the small firms remained unchanged, mitigating rather than contributing to the industrial change initiative. The owner/manager of the firm retained total control of the business through communications and task allocation.

The industrial restructuring initiative in Cyprus did not have the impressive results observed in the region of Emilia Romagna it sought to emulate. The limited networks of producers and service providers that emerged after the adoption of the flexible specialisation model in the 1980s did not develop the expected capacity to compete beyond the shores of the island.

ICT did not assume a strategic enabling role, as the IS literature suggests and as it was initially expected by the policy makers. The industrial development intervention relied on ICT in two main ways. First, it intended to introduce computer controlled machines to increase the efficiency of the manufacturing process. Second, it required information intensive networks to streamline producers, market service providers and consumers, and was expected to be accompanied by management information channels and tools. Our research found that while the efficiency potential of computer controlled machines was appreciated by the producers, but technology supported information infrastructures were not valued, and indeed were subverted by informal communication links. The information systems requirements of the producer firms have remained very limited. Computers are extensively used for administrative tasks, but the potential of IT to support decision making has been irrelevant in an environment of informal management. As the inter-organisational links that the flexible specialisation strategy intended to establish have remained very limited no need for network communications has arisen. Moreover, lack of export orientation makes international information communications irrelevant.

The Cypriot entrepreneurs did not act as predicted in the economic, business and IS literature: they did not adopt the rational model of flexible specialisation, did not follow the rational principles of business management and did not seize the opportunities of new ICT that would enable his enterprise to enter export markets. Yet, they have not acted 'irrationally'. The owners/managers of these companies were confronted with a rationality of economic growth that threatened a fundamental aspect of their 'rational' behaviour, namely the interests of the family business. The development of the consortia and the rationalisation interventions of the government conveyed a logic of impersonal economic growth which could not safeguard the integrity of the family-based enterprise. Similarly, professional management roles and formalisation of information channels were clashing with the need of overall control by the local entrepreneur. To be won, the promised export markets required a different setting of social relations and different driver values: not the minding of family wealth and the building of an enterprise that would be inherited by the son or the daughter, but the development of a different logic that separated ownership from management, involved intermediaries, such as professional managers and consortia administrators that hindered

the control of the enterprise and the immediacy of relations between the business owner and manager, his employees – often members of his family, and customers.

It is interesting to observe the difference of behaviour of the entrepreneurs in Emilia Romagna, which it was thought to have a similar culture and industry structure. Although family values are also prominent in that Italian region, the collectivist ideology had developed conditions of community trust that could sustain collaborative action required for the networking of the flexible specialisation model, and the setting of common supporting institutions.

Assimilation of IT in a ‘dysfunctional’ bureaucracy

The second example draws from the experience of IS implementation in the major social security service provider in Greece, IKA. IKA is a state institution, with 4000 staff distributed in central offices in Athens and 300 regional and local offices. The organisation provides old age and disability pensions as well as a number of non-means tested benefits to employees in the private sector of the economy. IKA operates in a legalistic, highly bureaucratic manner, which is typical of the public sector of Greece. It is generally seen, by politicians and public alike, as a dysfunctional organisation, but successive reform programmes have not managed to change substantially its fundamental structure and work processes.

IKA, relying mainly on the technology of a government computer centre, has a long history of ‘computerisation’ that started in the 1950s. In the era of the mainframes it developed a number of batch mode applications for the processing of pension payments, as well as for the internal administration of the organisation. However, most of these applications have been inefficient and in many cases they worsened rather than improving the overall capacity of the organisation to provide insurance services effectively. One of the most important efforts of the organisation has been directed towards developing computer based systems to ‘modernise’ the institution’s outdated method of collecting contributions by issuing insurance stamps. A number of such systems have been developed since the 1970s, either for specific categories of occupations, or as a general new platform of organising the relationship of the organisation with its insured members and their employers.

A major effort to that end was made in the early 1980s, motivated by the then socialist government efforts for the ‘modernisation’ of the public sector and its services. A project team set out to design the, so called, ‘revenue’ system. The project sought to design new processes of interaction between IKA, employers, and insured members. After studying the methods for the collection of insurance contributions in other European countries, the team designed new processes that were thought to be suitable for IKA and drew specifications for a new information system. The new system and the new processes it would support were expected to improve the organisation’s accountability and to strengthen its administrative decentralisation. However the system was never implemented according to its specifications further than a pilot stage. Indeed the whole range of ‘modernisation’ initiatives of the government waned from the mid-1980s, and the new ‘revenue’ information system project lost its management champion.

The effort was continued in the second part of the 1980s, mainly through the initiatives of IS staff who developed a ‘strategy’ aiming to re-organise the core operations of IKA with distributed information systems. The strategy echoed the ideas of local accountability and decentralisation that were prevalent in the ‘modernisation’ plans of the early 1980s, and set out to design a ‘revenue and insurance’ system utilising state of the art technology of the time. The implementation of the strategy was slow and, on the way, initial specifications were modified in response to the numerous bureaucratic and financial obstacles. By the mid 1990s this system was still under implementation in many regions. More importantly, the actual system was radically different from

its initial specifications, not representing a substantial transformation of the organisation's processes any more.

While the 'revenue and insurance' system was under implementation the organisation, in 1992 a new administration appointed by a new government, launched another effort for working out an 'information systems master plan', this time sub-contracted to international consultants. The debate on public sector 'modernisation' had resurfaced. Without the prevailing socialist reformist ideology of the early 1980s, the discourse on modernisation concerned now the elimination of the inefficiencies and irrationalities of the economy and the public sector, and was much less related with a broader agenda of social change. The information systems master plan was a remarkably detailed technology-driven design of the operations for each of the main task domains of IKA. They worked out scenarios of processes involving local office staff, central administration, insured members and employers in order to determine how data would be collected, where it would be stored and processed and what tasks would be automated.

By 1998 IKA outsourced the implementation of the information systems master plan, confident that this time they would overcome the obstacles of the past with private sector professional expertise. It is too early to know the outcomes of this major project. It is mostly likely that IKA will acquire a new technology infrastructure for its operations in a few years time. What is more difficult to predict is whether the new technical systems will result in any 'modernisation' of the organisation, or have any significant effect on the effectiveness of its services. So far this organisation, as well as many other public sector organisations in Greece have shown a remarkable capacity to assimilate technical interventions in their traditional bureaucratic functioning.

It is important to note that IKA employees, from the highest echelons of administration to the lowest grades of civil servants have rarely opposed computerisation efforts. Yet, their 'passive' attitude to accommodating the technical innovation in the course of their work, and their unwillingness to accept changes in their broader work conditions has annihilated their momentum for change.

The inability of successive information systems projects to fulfil their declared objectives are symptomatic of the existence in the organisation and its institutional environment of a rationality which is fundamentally at odds to these objectives. This rationality is rooted in the historical context of public administration in Greece. Sociological studies have elaborated on the complex role the state and its institutions have historically required to fulfil in that country (Tsoukalas 1987; Tsoukalas 1989; Mouzelis 1995). They show that in addition to its explicit mission for the delivery of modern state services, public administration has been playing other crucial economic and political roles. In a nutshell, the state has been the most important white-collar employer, and at crucial historical periods it used its employer capacity to reward those who were considered to have contributed to the national struggle. As in many other countries, public administration in Greece is a case of mockery of the ideal model of formal bureaucratic rationality it initially sought to emulate. Indeed, political debate between 'modernists' and 'traditionalists' in the last two decades brought to the fore the two missions of public administration that have uncomfortably coexisted ever since the formation of the modern Greek state: The overt, declared mission is as provider of an infrastructure of services necessary for an industrial economy. The covert, undeclared but highly institutionalised mission is as a politically manipulated apparatus for employment within a country following an uneven industrialisation process. The whole is dysfunctional in relation to its declared mission, but quite effective in relation to its tacit mission. From this latter perspective, it is not irrational that civil servants have been unwilling and incapable to sustain modernising reform interventions, including computerisation projects.

In successive IS development efforts in IKA, the techniques for 'strategic' analysis did not enable IS professionals to diagnose the socio-organizational significance of the attempted technical

innovation and to explain the covert resistance that nullified their well designed interventions. If they had, they might have allowed themselves to consider alternatives, such a 'bureaucratic' IS infrastructure better fitted to the current logic of the organisation, or an 'anarchic' introduction of flexible technologies in the local offices that could have better chances to be appropriated in the local work environment. More importantly, they could question the feasibility, and perhaps the wisdom of the ends the systems they were developing were expected to achieve.

Conclusions

Clashes and difficulties such as those manifested in the examples sketched above tend to be attributed to 'culture'. In this paper I focused more specifically on what different 'rational' action is fostered and sustained in different cultures. Culture is a broad and rather vague notion in IS studies, and does not usually explain why actors behave in one particular way rather than another. Moreover, there is often a tendency to suggest that culture perpetuates or supports 'irrational' behaviour. Focusing on rationality, one of the aspects of culture, analysis can reveal the logic of action and the clash of the intended and existing values.

In this concluding section I will trace the implications of the critique of the rationality of modernity, and more specifically the way this rationality has shaped the modernisation efforts that have been sustained in the last fifty years in the 'developing' world, for professional practice. Most information systems professionals, indoctrinated in the rationality of modernity, have little capacity to recognise the clashes of rationality they encounter when they strive to emulate the effects that ICT has 'enabled' in the western economies in the context of developing countries. The literature is littered with case studies demonstrating problems, and failures. More often than not the 'positive' messages refer to intended innovations that imitate the practice thought effective in advanced industrialised context. But even if a clash of rationalities is sensed by the 'reflexive' practitioner or researcher, a normative cognitive tradition where information systems development is viewed as an intervention to solve problems, overcome inefficiencies and improve organisational performance cannot respond to the local system of values and reasoning.

There seem to be two alternative consequences to this awareness: calls for action to change the local systems of values and reasoning and adopt the rationality conducive to modernisation, or withdrawal of effort to implement new technology systems, on the justification that ICT as the product of the western rationality is inappropriate for alternative meaningful local action. Most IS and management literature adopts the first alternative, and a flourishing international consultancy industry has developed techniques, such as benchmarking, to persevere in forcing organisations to comply to technical/rational imperatives and in the expectation that local irrationalities will eventually succumb under a critical mass of such rationalisation. In contradiction, a large part of the 'development studies' literature which is critical to the modernisation discourse as identified by Escobar, development institutions attuned to the 'basic human needs' paradigm, as well as some voices in the IS academic community find ICT irrelevant – if not detrimental - to local efforts for meaningful socio-economic action vis a vis the dominant discourse of modernity.

There is little evidence that the obstinacy of the modernisation discourse in deploying ICT can deliver the rationalisation of modernity in the 'developing world'. The positive cases of traditional societies turned into prosperous 'modern' economies that are often quoted in the IS literature, such as Japan, Singapore and other South East Asian countries, reveal violations of western rationality when examined closely; their prosperity resulted from 'idiosyncratic' locally meaningful responses to the powers of domination of the imperatives of universal modernisation (Feenberg 1995).

The attitude of discarding ICT all together as irrelevant or inappropriate is also misguided, although it may well be a valid political choice under particular circumstances. This attitude

conveys the 'essentialist' critique of ICT as inherently serving one particular system of values, being therefore bound to perpetuate the current system of power and domination. Counter arguments to this critique can be found in the more recent streams of critical thought on the role of technology in modernity that were briefly reviewed in the paper. Social constructionist analyses, for example, have convincingly shown that technology, far from being determined by its pure rationality or deterministically serving one particular social order, is constituted within its social milieu. Indeed, ICT – by now a generic term bunching together a broad range of machines and techniques - and its supporting disciplines of thought have proved to be 'shapeable', and capable of serving radically different ends: social control and surveillance or emancipation. As the cases presented above demonstrate, the issue is not that a particular rationality is embedded in a particular technology, which therefore is inherently inappropriate, but that particular technologies are transferred as part of transferring particular ways of organising economic and social affairs. They are mobilised in support of particular regimes of truth. The resistance to the means represented by computerisation that was manifested in these cases was resistance to the ends it was felt that such means were mobilised to convey.

If the theoretical debate on rationality suggests that we should reconsider the views of ICT as either a determinant of progress within the rationality of modernity, or as *a priori* inappropriate for certain social conditions, IS professionals need to develop the capacity to recognise and respect alternative rationalities that may counteract the logic of the projects they serve. Rather than assuming that economic action, and in particular the western type of rationalised economic action and its institutions, are of general value and therefore of global legitimacy there is a need for raising such questions as what values are rated the highest in a society, and who benefits from the maintenance of particular biases to certain values over others or from the overthrowing or maintenance of the status quo.

Recently the IS literature has given attention to the professionals' role as advocates or facilitators of change (Markus and Benjamin 1996). In the context of industrialised countries 'change' usually means adaptation of business processes and organisational structures which, it is recognised, has implications for work processes. In the context of developing countries IS projects often part of or intended to achieve much more radical change: they may introduce a new logic for the organisation and its mission, or they may convey social values very different from those sustaining the organisation and its community. Few IS professionals are prepared for such a role. But as Markus and Benjamin argue, the IS professional cannot avoid being a change agent. Only in the context of developing countries the change is more radical and this role is much more controversial.

Almost no effort has been done to prepare IS professionals to comprehend and cope with the radical changes their interventions imply. They are assumed 'rational', but as the cases above demonstrate they may not make sense according to the local values and historically formed socio-economic conditions. This is an area where few studies have been done. Research is therefore required to understand whether pieces of ICT can be disentangled from the universalistic rationality that has been the driving force for its development and spread in all human activities.

It is also important to search for different bases of professional responsibility. The IS professional roles have been based and legitimated mostly on a technocratic instrumental logic - to develop cost-effectively robust systems required for an organisation – without an obligation to consider the validity of the 'requirements' given to them. Usually the requirements are understood to be valid and meaningful as they conform to the prevailing logic of what organisations and their social context are like. There are some methods and approaches which may be used to understand what 'requirements' make sense, and why, such as Soft Systems Methodology, and these may be useful in contexts where alternative rationalities and systems of value prevail.

Ultimately, though, one has to accept that the very logic of professional roles, as they are shaped and practised in the international scene is a manifestation of the rationality of western modernity, and may not be feasible to address alternative rationalities. Frustrating as it may be for a professional tradition accustomed to believe that people can always improve their life condition by methodical reason, ICT may become effective only when it is truly appropriated by the actors in a social contexts. And this, as sociologists of technology have convincingly argued is a process which defies instrumental rationality, and within which ICT professionals negotiate their own identities and interests.

References

- Avgerou (forthcoming). *Information Systems and Organizational diversity: the Articulation of Local and Global rationalities*. Oxford, Oxford University Press.
- Beck, U., A. Giddens, et al. (1994). *Reflexive Modernization*. Cambridge, Polity Press.
- Bijker, W. E. and J. Law, Eds. (1992). *Shaping Technology / Building Society*. Cambridge, Massachusetts, The MIT Press.
- Callon, M. and J. Law (1989). "On the construction of sociotechnical networks: content and context revisited." *Knowledge and Society* 9: 57-83.
- Chrysohos, N. (1999). Information systems and organisational change: the case of flexible specialisation in Cyprus. *Information systems*. London, London School of Economics.
- Ein-Dor, P., E. Segev, et al. (1992). "The effect of national culture on IS: implications for international information systems." *Journal of Global Information Management* 1(1): 33-44.
- Escobar, A. (1995). *Encountering Development*. Princeton, Princeton University Press.
- Feenberg, A. (1995). *Alternative Modernity: The Technical Turn id Philosophy and Social Theory*. Berkley, niversity of California Press.
- Foucault, M. (1977). *Power/Knowledge*. New York, Pantheon.
- Horkheimer and T. W. Adorno (1972). *Dialectic of Enlightenment*. New York, Herder and Herder.
- Horkheimer, M. (1947). *Eclipse of Reason*. New York, Continuum.
- Hughes, T. P. (1983). *Networks of Power: Electrification in Western Society, 1800-1930*. Baltimore, MD, John Hopkins University Press.
- Latour, B. (1987). *Science in Action*. Cambridge, Massachusetts, Harvard University Press.
- Latour, B. (1993). *We Have Never Been Modern*. New York, Harvester Wheatcheaf.
- Latour, B. and S. Woolgar (1986). *Laboratory life: The Constitution of Scientific Facts*. Princeton, Princeton University Press.
- Lytard, J. F. (1984). *The Postmorden Condition: A Report on Knowledge*. Manchester, Manchester University Press.
- Marcuse, H. (1964). *One-Dimensional Man*. Boston, Beacon Press.
- Mouzelis, N. (1995). Greece in the twenty-first century: institutions and political culture. *Greece Prepares for the Twenty first Century*. D. Conostas and G. Stavrou. Washington, D.C., John Hopkins University Press & Woodrow Wilson Center Press.
- Palvia, P. C. and S. C. Palvia (1996). Understanding the global information technology environment: representative world issues. *Global Information Technology and Systems Management: Key Issues and Trends*. P. C. Palvia, S. C. Palvia and E. M. Roche. Nashua, Ivy League: 3-30.
- Parsons, T. (1947). Introduction. *Max Weber: The Theory of Social and Economic Organization*. T. Parsons. New York, Free Press.
- Parsons, T. and N. J. Smelser (1956). *Economy and Society*. New York, The Free Press.
- Piore, M. and C. Sabel (1984). *The Second Industrial Divide: Possibilities for Prpsperity*. New York, Basic Books.

- Polanyi, K., C. Arensberg, et al., Eds. (1957). *Trade and Market in the Early Empires*. New York, The Free Press.
- Smelser, N. J. (1978). Reexamining the parameters of economic activity. *Rationality, legitimacy, Responsibility: Search for New Directions in Business and Society*. Santa Monica, Goodyear publishing company.
- Touraine, A. (1995). *Critique of Modernity*. Oxford, Blackwell.
- Tsoukalas, C. (1987). *State, Society, Employment in Post-War Greece*. Athens, Themelio.
- Tsoukalas, C. (1989). *Social Development and State: the composition of public space in Greece*. Athens, Themelio.
- Weber, M. (1947). Sociological categories of economic action. *Max Weber: The Theory of Social and Economic Organization*. T. Parsons. New York, The Free Press.