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SYSTEMS DEVELOPERS: PREOCCUPATIONS, KNOWLEDGE AND POWER

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1. INTRODUCTION

During the 1980s, the coherence and value of established methodologies of systems development has been challenged by approaches which question the adequacy of their assumptions and the efficacy of their prescriptions. This shift has been distinguished by a growing appreciation of the importance of the organizational contexts in which information technologies and systems are introduced. The primary focus of this interest has been the nature, role and contribution of the system *user*, to the comparative neglect of the philosophy and practice of the systems *developer*. The developer is mostly represented as a "hidden hand" or "black box" containing an assortment of tools and techniques for monitoring and managing the demands and preferences of the user (Boland 1987). There has been little interest in understanding *the developer as an agent* who mediates pressures from the organizational context in which development work is conducted.

Our particular concern is with the knowledge or world-view(s) of systems developers as important agents of social and organizational change in modern, "post-industrial" society. In particular, we are interested in the bodies of knowledge constructed by systems developers to convey and sustain an image of their distinctive competence.[1] The social significance of systems development resides in its increasing influence upon the regulation of human affairs. The design and implementation of information systems does not simply reproduce existing routines. Rather, different models of systems development shape the practices through which social and organizational realities are constituted. Information systems construct specific forms and contents of visibility and, in doing so, render the world amenable to different forms of intervention (Coombs, Knights and Willmott 1991).

The paper is organized in three sections. In the first, we present a brief interpretation of alternative conceptualizations of systems development. For heuristic purposes, we reduce the diversity of approaches to three perspectives of "models." The *conventional* model which focuses upon the abstracted, technical expertise contained within the systems designer's toolbox. It takes minimal account of "the human factor": the user who will be operating the system. The emphasis of the *progressive* model, in contrast, is upon processes of participation and user-involvement so that technical and social factors are effectively integrated. Finally, the third model, which we dub "socially responsible," takes greater account of the conditions which so often impede, frustrate or trivialize the processes of communication which are of such critical importance for effective systems development. In contrast to the progressive model which is fixated upon the managerial preoccupation of gaining the cooperation of the workforce, the "socially responsible" model views an important core of communication problems as inescapable without a radical democratization of transformation of work organizations.

In the second section of the paper, we present an in-depth examination of the systems development philosophy espoused by BSO, a large Dutch firm of consultants. Distancing its philosophy from both conventional and progressive models, the BSO philosophy stresses the importance of founding systems development upon agreements which confer responsibility upon those who enter into such agreements. Consensus reached through dialogue is understood to provide the best guarantee of predictable, recurrent patterns of action – action which can then be effectively modelled and managed, if not replaced, by information systems. The assumptions implicit in this philosophy are understood to parallel those of the progressive model. Where they differ is in the emphasis placed upon dialogue and the strong concern to exclude all elements of compulsion from the process of reaching agreements.

In the third and final section of the paper, we question whether, in its attentiveness to agreement and responsibility, the BSO philosophy takes adequate account of how power relations in modern corporations operate to shape and distort communication between different levels and specialties within the hierarchy. We doubt whether these relations of relative autonomy and dependence are capable of supporting and sustaining the quality of dialogue and consensus which the BSO philosophy demands. In conclusion, the silence within the BSO Report on the presence of the institutional contexts of systems development, and associated patterns of resistance, is interpreted as symptomatic of the market pressures upon the sellers of systems

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development expertise to collude in the reassuring fantasy that organizational problems of systems development are soluble without requiring any significant reform of the politico-economic structures through which organizational work is accomplished.

2. MODELLING SYSTEMS DEVELOPMENT

In this section, we present a brief overview and critique of the literature on systems development which groups development philosophies according to their approximation to three models: "conventional" (Kendall and Kendall 1988), "progressive" (Swanson 1988), and "socially responsible" (Lyytinen and Klein 1986). It is inevitable that this reduction of the diversity of approaches to three models produces something of a caricature of the subtlety and distinctiveness of the positions of the work reviewed. Our defence of this "pigeon-holing" approach is that, for all its faults, it provides an orientation to our discussion of systems development and, in particular, to our critical examination of the philosophy of BSO. We do this as a means of orientation useful for the discussion in the later sections of the paper.

In the *conventional* model, the systems developer is portrayed as an expert whose toolbox allows the construction of organizationally relevant information systems. S/he "brings change to an organization by studying old systems and planning new ones" (Capron 1986, p. 35) and identifies through abstract models "needs that must be met across the organization, or globally" (Inmon 1986, p. 3). Application of the *system life cycle* model, for example, explicates the various phases that are necessary preconditions for successful systems design (Lucas 1982). The mastery of the associated models, methods and techniques (Yourdon 1989) "guarantees" the success of the system. With its stress upon rigor and mathematical stringency, failure of the system is attributed to technical imperfections rather than to fundamental deficiency in its methodology. What might be characterized as the "hard-nosed," hardware orientation of this approach has been attacked for being exclusively "concerned with non-people and with people substitutes...planning is done with computer hardware, systems procedures, functional analysis and heuristics" (Boguslaw 1965, p. 202).

Such attacks are most forcefully made by those who associate the application of the conventional model with alienation and frustration of users and the decay of information systems (Klein and Kumar 1989). Favoring a more *progressive* model, they argue for a methodology of systems development which is more responsive to the human dimension of systems design and use. The problem of decay and non-use, for example, is interpreted as a product of inadequate communication with the user. Participation, interaction and socio-technical philosophies are identified as the relevant remedies for overcoming the resistance of users to change.

It is assumed that "people will actively welcome change if they believe that it brings with it personal benefits" (Mumford 1983, p. 11) and therefore that the effectiveness of participation is virtually guaranteed. When adopting the "progressive model," the systems developer acts as a process-consultant:

> Instead of being "designers" they will be teachers, advisers and learners. An important advantage of participation is that users and technical specialists learn from each other. (Mumford 1983, p.66)

Problems of "the human factor" are resolved as systems developers engage in a dialogue with users through which misconception and mistrust is dissolved. From the developers, the users learn how the systems can assist them in their work and eliminate needless inefficiencies. From the user, the developer learns to appreciate the features of the culture into which systems are being introduced. Dialogue between systems developers and users is thus understood to ensure "virtual" commitment of users to "their" systems. In marked contrast to the conventional model which is attributed "the potential to produce serious industrial relations problems" (Mumford 1983, p.11), the progressive model is understood to win the support of users for the implementation of systems and thus to reduce human relations risk.

The adequacy of the progressive model has been challenged by those who have questioned its assumption that improving channels of communication between developers and users is not a fundamental problem and requires only the expertise of a skilful process consultant. Central to what we have termed the *socially responsible* model is the understanding that meaningful dialogue and participation may be impeded or distorted by unfavorable material and ideological conditions. In common with progressive models, the importance of dialogue is stressed. However, its purpose is not restricted to the instrumental, managerial concern simply to facilitate the design and implementation of more effective systems. Rather, differences in the orientations and priorities of different groups within organizations is not only acknowledged but is regarded as legitimate and deserving of respect. Accordingly, advocates of a socially responsible model regard dialogue as a vehicle for bringing these differences to light and of respecting their integrity.

In contrast to the other models, which assume that the core values, interests and priorities of developers and users are shared (though confused by technical incompetence, irrational fear and/or inadequate communication), the socially responsible model recognizes the possibility, if not the probability, of an irreconcilable conflict over the rationality of proposed systems, a conflict which is not inevitable but rather one which, in principle, can be resolved through a radical change of the conditions which give rise to distortions of communication. In this regard,

Habermas' (1971) ideas about non-distorted communication and the characteristics of the ideal speech situation have been an important source of inspiration. As Lyytinen and Klein (1985, p. 228) have argued, participative forms of development practices are valuable not simply because they reduce the resistance of users but because they facilitate a dialogue about the rationality of particular information systems:

> In a discourse all of the participants have
> an equal opportunity to put forward ar-
> guments for or against change options.
> A rational, accepted form of information
> systems development can only be secured
> through participation.

In sum, the socially responsible model challenges the progressive assumption that the solution to problems of systems development resides in the employment of a process consultant, or the internal equivalent, whose task is to construct the understanding that a lack of communication is the only obstacle to the reconciliation of legitimate differences or "interests" between different levels and specializes within organizational hierarchies. Without denying that applications of the progressive approach can improve communications between developers and users, and thereby avoid many of the failings associated with the conventional methodologies of systems development, the development of a dialogue and the explication of differences is understood, within the socially responsible model, to be a first step in initiating changes in the conditions which impede genuine and lasting co-operation between developers and users.[2]

In the following sections, we first present, then critically evaluate, the philosophy of systems development contained in the BSO Annual Report. In doing so, it will be argued, first, that this philosophy is highly critical of both conventional and progressive models of systems development but, second, that it retains the unitary frame of reference which these models share. So, although there is a very strong emphasis upon securing agreements as a basis for effective systems development, there is a deafening silence when it comes to analysis of the conditions which support or disrupt the process of gaining and maintaining agreements.

3. SYSTEMS DEVELOPMENT ACCORDING TO BSO

In this section, we review the contents of the 1988 Annual Report of the BSO, a large Dutch IS consultancy.[3] We refer to this Report in order to explore and illustrate how elements of different models of systems development are articulated in the philosophies of IS consultancy firms. The Report also provides a vehicle for reflecting upon the constitution and presentation of IS expertise. It is worth stressing that no claims are being made about the representativeness of the BSO Report. Whether or not it is typical of such firms is an empirical question which we have not sought to address.

A distinctive feature of the BSO's 1988 Annual Report (published in English) is the inclusion of a lengthy statement of its corporate philosophy of systems development.[4] Covering twenty-two double sided pages and printed on high-grade, tinted cartridge paper, the Report has a strong visual impact, with colorful, futuristic art work obscuring some of the text. The linear argument of the text is impressively juxtaposed with the free-flowing, superimposed form of the graphics. The visual and tactile impact of the document – reinforced by the peppering of the text with references to diverse poets, politicians, philosophers, film directors and playwrights – conveys a strong impression of the post-modern aesthetics of high tech, and celebrates the coming of a post-industrial, information society. The Report alludes to the congruence between its own prescriptions for greater dialogue between systems developers and users, the reform of the Soviet planned economy, *Glasnost*, and the role of the media in society today (pp. 17-20).[5]

The striking form and visual appeal of the BSO Report both invites further inspection and inhibits a "serious," reflective reading. Its effects are very similar to those induced by the seductive images which surround life-style advertising in which more attention is paid to the signifiers with which the product is associated than with the provision of information about the product itself. In what follows, we seek to unsettle the smooth, seductive surface of the BSO Report by taking a closer look at what is obscured by its dazzling form.

3.1 Beyond Conventional Models of Systems Development

The major problem in traditional systems development, according to the BSO Report, is to discover to how it is possible to automate existing practices and build systems around people. The problem is to identify which elements of human practices are amenable to automation and which elements are not amenable to such development.

The systems developer is seen to face two competing demands. *First*, when pursuing his[6] mission is to automate, the systems developer experiences the human being as "the uncertain factor which disrupts the efficiency of technology" (p. 4). Unlike machines, human beings are capable of acting unpredictably and creatively. *Second*, since the human being is the user, the developer is obliged to "take account of man" (p. 4) as an integral element of systems. To deny either demand, the Report observes, leads to "ever more complex organizational structures which, over the long term, serve themselves more than the objective" (p. 4).

In the BSO Report, the limits of both conventional and progressive models of systems development are associated with the neglect or denial of the distinctive, dialogical qualities of human beings. The end-product of the assumption that human beings exist in a separate and in-

strumental relationship to their environment, the Report argues, is "compartmentalized thinking" (p. 7) in which the totality of the system is broken down into discrete elements, an approach which is said to produce a "Frankensteinian system" (p. 7). Although marginally more supportive of systems or cybernetic thinking in which reality is modelled as a totality of identifiable parts, the Report argues that their respective methodologies tend to become "bogged down in a mechanical kind of thinking" (p. 7). Finally, the BSO statement is critical of what we have dubbed progressive approaches – associated with such slogans as "human resources," "quality care," "corporate culture," and "internal communication" (p. 5) – because, it is argued, they are too readily "absorbed...into the classical philosophy of control" (p. 5). The neo-human relations thinking, most closely associated with the progressive model, is singled out for its lack of "a solid foundation" (p. 5) for understanding and sustaining the central importance of human qualities in the development of systems.

In sum, the BSO Report argues that what progressive approaches share with more established models of systems development is a superficial appreciation of the distinctive – creative and adaptive – qualities of human beings, qualities which, when neglected or inadequately understood are vulnerable to degeneration. This critique forms the basis of the BSO's alternative philosophy in which the emphasis is upon the relevance of anthropological insights and the importance of dialogue and agreement.

3.2 The BSO Alternative

The BSO philosophy seeks to avoid the development of an impersonal environment where the distinctive – creative and dialogical – qualities of human beings is unrecognized. It is equally concerned to avoid the opposite extreme of treating people as the only end, an approach associated with the real "danger of losing ourselves in an all-embracing theory, winding up in an essentially sophistic argument in which the answers dissolve into the visionary" (p. 9). The avoidance of these extremes, the Report contends, can be achieved by recognizing how, in the context of organizations, human beings are simultaneously means and ends: they are employed to perform tasks and to achieve objectives, and not just to realize their potential. Insights drawn from a classical, monological philosophy of control must be combined and reconciled in practical ways with an appreciation of the distinctive, dialogical qualities of human beings:

> [T]heories must measure with two different yardsticks. The technological measure, a yardstick with an accuracy predictable in a certain sense, for tools with which man tries to control processes, and the human measure, used on the mechanisms which control human relationships.

The human measure exists mostly in the form of agreements among people about the who, what and when of this control, where the agreements often have a richer pattern in quantitative and qualitative effectiveness than rigid, inflexible "tools" (p. 10).

The concept of agreement is central. *Mechanical* systems which follow *instructions* are differentiated from *human* systems in which activity is based upon *agreements* between people. Reaching an agreement involves a critical shift from a mechanical to a human mode in which personal responsibility is conferred upon those who are party to such an agreement: "He who wants to control a system in which people occur should first know the agreements involved" (p. 10). Inherent in the BSO concept of agreement is the understanding that both parties to an agreement are personally involved as responsible people. The developer, it is asserted "will note that people are more prepared to co-operate if dialogue is present than when he wants to recruit them to ready-made solutions" (p. 23).

Agreements are important because they are the condition for responsible, predictable action. Once entered into, agreements give rise to stable, institutionalized patterns of behavior. Such patterns are said to be "predictable to a high degree" because "they result to a high degree from the agreements made within one particular group which finds itself in one particular set of circumstances" (p. 21). In this regard, an "anthropological approach" is deemed to be of inestimable value because it goes beyond progressive corrections of classical philosophies of control: it reveals how words, thoughts, acts and feelings are rendered repetitive and routinized through processes of institutionalization and thereby become amenable to automation.[7] In contrast to the engineer's approach, that of the anthropologist "can help us look for the limits of what is repeatable, and can therefore be automated, without running into conflict with the development of that unique creature man" (p. 22).

To summarize, the BSO Report recommends that systems developers should take full account of the difference between machines and people. Whereas the former respond *automatically* to instructions, human beings *interpret* information (inter)personally. At the heart of the BSO philosophy is the contention that effective automation of human processes can be achieved by recognizing how stable, patterned activity in human systems is founded upon agreements. The key to successful system development is a dialogical process in which there is an absence of compulsion in the formation of agreements. The absence of compulsion is essential because, when dialogue is replaced by dictatorship, responsibility is denied and mechanical action is substituted for agreements.

> [D]egeneration sets in should one of the parties start to dictate his role....The dialogue should always give

room to the various parties and, to achieve this, all parties must agree to be responsible....Should one of them withdraw from this agreement, the creative space for the other disappears; he begins to feel conditioned and reacts in a mechanical way (p. 17).

Guided by this philosophy, it is anticipated that the systems developer will become more mindful of the functional importance of preserving the space in which agreements can be renegotiated, and systems modified, in response to changing circumstances. Accordingly, the systems developer is urged to make room for dialogue so that he may become more informed about the agreements which are present and enlist the cooperation of those with whom he interacts (p. 23).

4. REFLECTIONS ON THE BSO REPORT

The BSO statement presents a passionately argued case for an alternative approach to systems development which combines a recognition of the difference between mechanical and human systems with an appreciation of how human behavior is institutionalized, or patterned, through the formation of agreements. Yet, throughout the BSO Report, between the desire to automate social and organizational processes and a recognition of the creative, there are the unpredictable qualities of human beings. The BSO recipe for resolving this tension is based upon the (paradoxical) insight that the creative capacity of human beings to develop institutions provides the basis for achieving more effective control.

In our assessment, the philosophy of systems development presented in the BSO Report is commendable in principle but of limited applicability within most contemporary organizations. This is because its philosophy is abstracted from the political realities of organizations in which both the nature of "agreements" and associated "responsibilities" are much more complex and contradictory than is allowed by the consensualist assumptions. Relations of autonomy and dependence form a context in which only some forms of agreements and dialogue will be "acceptable." Conditions for genuine dialogue imply that all parties are uninhibited in articulating directly their own ideas, concerns, and desires. An absence of fear and a presence of trust, as basic ingredients of meaningful agreements, cannot be taken for granted in organizations in which asymmetrical relations of power are institutionalized. On the contrary, in this context, forms of degrees of instrumental compliance rather than any reliable form of morally or "responsibility" based forms of agreement are more likely to be the norm. Communication is systematically impeded or distorted when the subjectivity of "self" or "other" is mediated through non-democratic organizational processes – such as those which are dominant in both the public and private sectors.

The Achilles heel of the BSO philosophy is its assumption that institutionalization rests upon "agreements made within one particular group which finds itself in one particular set of circumstances" (p. 21). This formulation takes inadequate account of how institutionalization is generally an outcome of on-going struggles within and between different groups who have unequal access to valued material and symbolic resources. Certainly, routines are established and maintained, but it is a mistake to assume that these are based upon consensus rather than compulsion. Opportunities to engage in, and secure control over, processes of institutionalization are asymmetrically distributed in society and in organizations. In over-representing the concerns and purposes of some groups, institutions under-represent the concerns and purposes of other groups. The idea of "agreement" simply obscures the politico-economic process through which *compliance* with the requirements, or instructions, of the dominant group occurs for *instrumental* rewards, whether these be material (e.g., wages) or psychological (e.g., security).

It is simply implausible to contend that forms of organizations whose mechanisms of control have been historically forged through the systematic *exclusion* and *subordination* of the priorities of employees to the impersonal discipline of management (and ultimately the state-regulated capitalist market) offer ready-made, fertile contexts in which meaningful dialogue and agreement can provide a workable alternative to instruction. Without denying that *limited* possibilities for open "dialogue" do exist in modern organizations, especially within specialist "professional" groups and during favorable economic conditions, it is implausible to suggest that the major barrier to such dialogue is merely the absence of an alternative philosophy of control. Of equal, or even greater, importance are the material conditions which promote and sustain the continuing dominance of the conventional and progressive models repackaged in a more acceptable, dialogical statement of systems development philosophy. Lacking a critical examination of the material conditions which suppress and distort dialogue, the effect of the BSO Report is to sustain the implausible faith that the only obstacle of significance to systems development is the acquisition of the right ideas – the philosophical fix – which will overcome the disappointments and frustrations associated with other, discredited approaches.

5. CONCLUSION

The paper has reviewed contributions to current thinking on systems development. Our review of the literature revealed how conventional, mechanical conceptions of systems development are being challenged by approaches in which greater attention is paid to the "human dimension." The philosophy of systems development commended by the BSO Report was found to incorporate elements of both progressive and socially responsible models. With the former, it favors participation as an instrument of change.

With the socially responsible model, it has in common an appreciation of the importance of dialogue and agreement as a basis of systems development.

The chief limitation of the BSO philosophy was found to reside in its silence on the question of the relations of power within organizations which either facilitate or impede the process of attaining genuine, lasting agreements. In common with the progressive model, the philosophy of the BSO assumes that agreement is not a fundamental problem. Yet, as Klein and Lyytinen (1985, p. 228) have suggested, there is a connection between distorted communication and "organizational barriers that prevent a discussion by all participants of values and norms." Certainly, the BSO philosophy of systems development does recognize that agreements are precarious and subject to change. However, the forces of change are attributed either to exogenous factors or to universal qualities of human systems. No attention is given to the positioning of people in a conflict-inducing structure of power relations. There is no appreciation of how those occupying positions of relative dependence are compelled to enter into agreements to which they are not fully committed and in which a sense of autonomy may be achieved by refusing to accept responsibility for activities over which they exercise little control. Conversely, there is no recognition of how those occupying positions of relative autonomy routinely mobilize resources – such as the expertise of consultants – to impose their will when securing agreements from others.

While some barriers may be brought down by increased communication between developers and users, it is naive to assume that employees will willingly enter into, or feel morally bound by, agreements which they perceive to be counter to their interests or which are incompatible with their occupational cultures. In response, those sympathetic to the managerial concerns of the progressive model of systems development may well argue that it is precisely such resistance that the process consultant must overcome – for example, by encouraging employees to redefine their interests and/or by eroding occupational communities through the strengthening of the corporate culture. However, from the perspective of the socially responsible model, this conception of systems development is highly manipulative. Under the seductive cloak of greater participation, communication and involvement, it seeks to produce more compliant, less autonomous workers whose sense of social responsibility is equated with loyal devotion to the values of the corporation. However, the manufacture of compliance, let alone consent, is not without problems. The example of the recent plight of the Phillips corporation provides an relevant reminder of how, beneath the a surface of consensus, more decisive, structural pressures to achieve an adequate rate of return on capital takes precedence over maintaining the material and ideological conditions – in the form of job security and career advancement – which support and legitimize the corporate expectation of employee cooperation and loyalty.

As Thompson and McHugh (1990) have recently observed, efforts to win the agreement of staff are systematically undermined by pressures which require of them greater effort, flexibility and self-disciplined conformity to corporate values.

Finally it is relevant to offer some reflections on why the BSO philosophy omits consideration of the politico-economic conditions which will tend to undermine its practical effectiveness. We interpret this silence as a consequence of market pressures to differentiate their own approach from competitors. Since the material context of the production of the Report is one of winning customers and retaining the loyalty of staff, there is a strong incentive to omit or dilute consideration of "forces" which might cast doubt upon its practicality or, at least, encourage a more critical, reflective assessment of its claims.

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9. ENDNOTES

1. In order to reflect upon the knowledge of specialists, such as systems developers, it is necessary to suspend belief in their privileged access to the truth of the world which they seek to understand. Instead of taking it for granted that developers posses expert knowledge about how systems do and should, work or about how users do, or should, act, it is appropriate to engage in the "thought experiment" of treating the developer as equivalent to the shaman who consults the poison oracle (Evans-Pritchard 1937). This strategy of bracketing our taken-for-granted understanding is not recommended in order to ironicize their knowledge or to belittle or satirize their work. Rather, it is recommended in order to open up the possibility of understanding *how* the sense of developers processing expertise is socially constituted and sustained – for example, by favoring particular models of the system user or by making socially assumptions about the nature of systems. In pursuing this approach, we do not suggest or imply that systems developers have any less, or more, expertise than they claim. We are interested, instead, in the contexts and communications through which they (re)constitute the sense of their expertise.

2. Boland (1985), for example, argues that a non-instrumental (phenomenological) appreciation of the perspective of users and developers "offers the best prospect for helping us understand their [i.e., IS's] actual operation and significance" (p. 200). He asserts that scholars (and we would add systems developers and managers) can then choose to make a critical evaluation of the interpretive schemes. In this way, we can "move beyond describing the world and towards critically examining and changing it" (p. 196).

3. BSO sells a range of services in the field of automation and information handling. The stated aim of the company is to be "the most outstanding service industry in this part of the market" by employing staff who are "prepared to work with enthusiasm on behalf of the company through positive identification and complete dedication" (BSO 1988, p. 2).

4. The way of reading the text in the first place was inspired by a phenomenological approach (Giorgi 1975). This means bracketing any theoretical knowledge the reader/interpreter may possess in order to read the text as a text that is a phenomenon of words put together in order to give meaning. After this the interpreter applies her/his theoretical framework.

5. Subsequent page references are to the 1988 BSO Report.

6. In the BSO Report, both the designer and the user are male. We have retained the Report's gender usage in our analysis.

7. The Report is quite explicit about this when it asserts that "in order to control processes, [the systems developer] must know to what extent they are not controllable" (p. 23). There are three elements to the insight distilled in this aphorism. *First*, it highlights the crucial difference between mechanical and human systems and between instructions and agreements. *Second*, it provides the basis for developing an understanding of how the potentially infinite variety of human action is channelled and patterned through processes of institutionalization. *Third*, it reduces the risk of designing systems whose effectiveness is undermined by what Selznick (1949) has termed the recalcitrance of the human tools of action.