

Business process reengineering: the need for a methodology to re-vision the organization

Richard Vidgen^a, Jeremy Rose^b, Bob Wood^a & Trevor Wood-Harper^a

^aDepartment of Mathematics & Computer Science, University of Salford, Manchester, England

^bDepartment of Business Information Technology, Manchester Metropolitan University, Manchester, England

Abstract

There is now sufficient literature concerning business process reengineering (BPR) to attempt to identify its central tenets. Analysis of these tenets using well-established theoretical frameworks suggests that the effectiveness of BPR may be restricted by (sometimes unrecognised) underlying assumptions. The limitations exposed by this analysis might be addressed by the introduction of other methods and approaches that are already well-developed and tested.

Keyword Codes: K.4.2; K.4.3

Keywords: Social Issues; Organizational Impacts

1. INTRODUCTION

In its more radical form BPR is an exhortation to reinvent the corporation, the alternative being to shut up shop and go out of business. For organizations to reinvent themselves they must adopt discontinuous thinking, abandon outdated rules and challenge fundamental assumptions (Hammer & Champy 1993). To implement such grand projects is not going to be easy and many organizations will be defeated by the challenge of turning the dream into a vision and the vision into a new organizational reality. Belmonte and Murray say (without identifying the source): 'statistics show that less than 45% of companies that try business process redesign are successful at achieving their intended goals' (Belmonte & Murray 1993). Although there is awareness of the organizational impact of BPR in the popular literature, the approach proposed is all too often to adopt a mechanistic approach in which both business processes and organizational culture are seen as things to be reengineered. In this paper we intend to show that such an approach to organizational change is inappropriate and that it should not be expected to improve the perceived success of BPR initiatives.

The structure of this paper is as follows: - section 2 identifies some central tenets of BPR that are analyzed in section 3 by use of paradigms and metaphors in order to set up a caricature defining

BPR's limitations. In section 4 the BPR caricature is refined by the inclusion of softer and more complex aspects of the literature. Section 5 makes the proposal that a multiple perspective approach involving Soft Systems Methodology (SSM) and Assumption Surfacing would provide a more rigorous methodological basis for BPR, and allow it to move beyond the limitations of the currently employed paradigm and dominant metaphor. In section 6 a multiple perspective framework for BPR is proposed.

2. CENTRAL TENETS OF BPR

From a reading of popular BPR texts (Davenport 1990; Hammer & Champy 1993; Johansson 1993; Harrington 1991) a number of BPR tenets can be identified. The central notion of 'an initiative which combines process orientation with an edict for radical change' (Kawalek 1993) may be expanded to include:

- radical change and assumption challenging;
- process and goal orientation;
- organizational re-structuring;
- the exploitation of enabling technologies, particularly information technology.

To qualify for categorisation as BPR, change must be radical. For change to be radical rather than incremental requires that basic assumptions be challenged to avoid being trapped by the way things are currently done. Change becomes an essential part of 'normal' life rather than something to be avoided, a catalyst for getting ahead of the competition and staying there. The need for goal-oriented processes is recognized; each process is seen as part of a chain, and each process must add value to the products it handles with the ultimate aim of providing an end-product that the customer wants. Processes should not be viewed as tasks but as activities that achieve a goal, and may involve transcending intra-organizational and inter-organizational boundaries. Radically re-visioned processes drive the shape of the organization, rather than current structures (such as departments). The conception of organization in BPR is post-industrial and post-modern in the 'epoch' sense suggested by (Hassard 1993 drawing upon Clegg 1990), which is characterised by a craft-orientation, a multi-skilled workforce, and flexible manufacturing. Possible changes to the organization are not limited to internal re-orderings; whole activities can be out-sourced and parts of processes transferred to customers and suppliers. Links can be forged with other organizations even when they are competitors. This leads to a view of the organization as a fluid mix of interests rather than a fixed entity with an objective existence. It is recognized in the BPR literature that advances in technology bring opportunities that were difficult to imagine before the technology had been created. There is a sense of innovatory solutions looking for problems and the exploitation of unexpected consequences that cannot be predicted by a purely conceptual approach. At its best, BPR can be seen as a mix of conceptual thinking and practical experience gained through creative experimentation and faith.

This constitutes a powerful body of ideas. The following sections of this paper explore whether there is sufficient theoretical and methodological basis in which to ground the process of BPR.

3. ANALYSIS OF BPR

The purpose of this section is to surface the assumptions that underpin BPR by using well-accepted broad frameworks as a basis for critique. The four paradigms for theories about the social world (Burrell & Morgan 1979), and metaphors for organizations (Morgan 1986) offer a context for BPR. This discussion leads to the development of a caricature of BPR, which nevertheless encapsulates some truths.

Burrell and Morgan developed their well-known paradigm map in order to relate organizational study to a wider sociological context. They categorised assumptions about the nature of social science as *objective*, or *subjective* in character. An objective stance implies a 'realist' ontology (belief in the existence of an absolute social world, external to the observer), a 'positivist' epistemology and a determinist view of human behaviour. By contrast, the subjective stance regards social reality as 'constructed' from the roles, values, and norms of individuals. Assumptions about the nature of society were categorised as emphasising either *regulation*, or *radical change*. The sociology of regulation emphasizes consensus, order, and the mechanisms whereby those are maintained, whereas the sociology of radical change looks at conflict, dissonance, and the methods by which some groups exert control over others. The resulting matrix yields four paradigms labelled *functionalist*, *interpretative*, *radical structuralist*, and *radical humanist*.

Assumptions made by BPR advocates are objective in character. Business efficiency is assumed to be governed by the efficiency of its processes, which are invariably treated in a rather linear, mechanical fashion. All processes tend to be treated as though they were 'stages in the treatment of wood-pulp' (Zuboff 1988), with the nature of reality defined by the physicality of the process, even when they deal with intangibles such as customer satisfaction. Issues of change management (Davenport 1990) are discussed, but from a highly determinist standpoint - what does management need to do in order to create the right conditions? People issues are considered, but often with the underlying assumption that they are no more complex than manufacturing processes (cultural 'engineering'). At first glance, a pre-occupation with radical change, achieving quantum leaps or 'BreakPoints' (Johansson 1993), might appear to place BPR in the *radical structuralist* quadrant. However, a fundamental order facilitating the enactment of radical management-driven change is normally taken as given. Workers should accept the logic of better design, better order, a better regulated system even when that re-organization implies redundancy or imposed job re-design for them. It is seldom acknowledged that change is charged with personal and organizational stress even where groups of stakeholders are not substantially disadvantaged. Where the intention, in organizational terms, is to promote radical change, adopting a radical structuralist perspective must focus attention on power issues and the need for management to overcome the 'conservative impulse' (Marris 1986) - resistance to change. This perspective is largely lacking from the BPR literature, where the focus is on *what* change needs to be made, rather than *how* to enact it. We contend, therefore, that the language and conceptualisation of BPR are predominantly *functionalist* in character.

Morgan propounded various 'images of organizations', basing them on different metaphors (Morgan 1986). The metaphors are not mutually exclusive, but represent underlying sets of assumptions which may govern our mental models of organizations. Following (Jackson 1991), we

examine BPR in the light of four significant metaphors. Where an organization is taken to be a *machine*, decision making is assumed to be rational, control is exercised hierarchically to further the ends of the controllers, and organizational components interact according to management principles in the interests of maximum efficiency. Where organizations are taken to be *organisms*, a systemic perspective will be adopted - sub-systems interact in complex ways in response to environmental changes to ensure the survival of the whole. Management becomes the reading of environmental conditions, and consequent optimisation of the system interactions. If the organization is assumed to be a *culture*, it is essentially an accommodation and discourse between individuals, capable of assigning their own interpretation to events. Survival becomes a matter of establishing shared perception and understanding. The metaphor of organizations as *coercive systems* is based on Marx's account of the class struggle - capitalists exploit the labour process for their own profit, organizations are the arena in which this conflict is enacted.

The dominant metaphor underpinning BPR is the machine metaphor. 'Re-engineering' is itself a metaphor, since many of the business processes described (processing an insurance claim, for example) cannot be literally 'engineered' in any conventional sense. A root meaning of 'engineering' is, of course, the efficient design and manufacture of machines. Accepting this metaphor often leads to difficulties in distinguishing important people elements of organizational life. Adoption of a different underlying metaphor might imply fundamentally different priorities for BPR. Viewing the organization as an organism implies a far greater concern with how different sub-systems (e.g., goal, human, technical, managerial) interact with each other, and system awareness of its environment (beyond the ritual invocation of 'the customer'). Where the organization is regarded as a culture, a greater emphasis might be placed on the perceptions of different stakeholder groups, and the establishment of consensus around re-designed work practice. If the organization is taken to be a coercive system, attention must be focused on the commodities of power - the central problem becomes not the business re-design, but its enforcement.

We can exploit the dominant metaphor (machine) and paradigm (functionalism) to caricature BPR's central tenets by re-stating BPR like this:

'Organizations are machines directed by management. Processes are poorly optimised parts of the machine that need to be radically re-designed, exploiting the latest (information) technology. The structure of the new, more efficient machine will realign itself around the redesigned processes.'

4. BEYOND A CARICATURE

Clearly the analysis provided above is rather general in character and individual writers depart from the stereotype to offer wider insights. The stereotype is not exclusive insofar as aspects of other paradigms and perspectives are often observable. A broader brush must be used to paint BPR to offer a recognisable picture. The following section identifies further BPR concerns: holism, assumption surfacing, employee empowerment and associated issues concerned with the management of organizational change.

The desire for holism in BPR is manifested through exhortations to 'reunify tasks into coherent processes' and to 'reverse the fragmentation of processes' (Hammer & Champy 1993). Reductionism is concerned with breaking things down into successively smaller chunks that can be analyzed independently; holism works in the opposite direction by gaining an understanding of how things build together to form wholes that have properties that the parts did not possess individually. Despite embracing some of the ideas of systemic modelling, in BPR the perceived (real) world and the conceptual world are not differentiated sufficiently clearly, the result being an uncomfortable mix of hard and soft systems thinking.

Surfacing and challenging assumptions (the 'traditional' way) will normally be a prerequisite for 'visioning' radical change ('breaking the china' (Johansson 1993)), implying the need for a methodology for working with mental models, perceptions and perspectives. It is probably unreasonable to assume that people can reliably be manipulated - a senior manager setting a wildly optimistic performance target (Davenport 1991) may galvanise thinking, but it may equally well result in nervous breakdowns and a slump in morale. The most commonly offered technique for 'breaking the china' is 'brainstorming'; this does not really constitute method, however, more an admission of its absence.

A claim often made for BPR is that employees can be empowered. Responsibility and authority are devolved to lower levels of the organization with the potential benefit of stripping out now redundant levels of management while at the same time giving the employees working at the customer coalface opportunities for job satisfaction through decision-taking and genuine involvement in a process. Empowered employees do not necessarily master a job; their job grows as their expertise and experience grow (Hammer & Champy 1993):

Moreover, since workers in reengineered processes spend more time on value-adding work and less time on work that adds no value, their contributions to the company increase, and, consequently, jobs in a reengineered environment will on the whole be more highly compensated (page 71)

This should perhaps be considered from the perspective of those employees who no longer have jobs. The language of some writers on BPR gives the impression that staff savings take precedence over employee empowerment (Teng, Kettinger & Guha 1992):

The results of such reengineering efforts have already surfaced among firms in the 1990s. Ford Motor Company report increases in productivity and decreases in staff by about 80 percent after business reengineering (Krass 1991). DEC was able to

consolidate 55 accounting groups into five and was able to eliminate 450 jobs (Krass 1991). (page 82) (our emphasis).

Although there is a concern for employee empowerment in some parts of the BPR literature, given the dominance of the functionalist approach and the machine metaphor it must be concluded that only those employees who survive BPR can be empowered. Cultural and political implications of large scale redundancy are not considered.

The concern with employee empowerment goes hand in hand with a recognition of the need for cultural change. Hammer & Champy look at the cultural change needed to make BPR successful:

The trouble is that these values and beliefs do not promote the performance that customer-oriented organizations require. They are inconsistent with the new processes created in a reengineered environment: and unless the values change, new processes, no matter how well designed, will never work. Changing values is as important a part of reengineering as changing processes. (page 76)

Hammer and Champy proceed to introduce a mechanistic model where culture, like processes, may be engineered. In the 'business system diamond' there is a continuous cycle in which (i) business processes determine the (ii) jobs and structures that are (iii) managed and measured such that (iv) values and beliefs are changed and reinforced, thus making existing business processes more effective and new processes possible (i).

Thus, although there are a number of powerful ideas in BPR they do seem to be considered within a functionalist paradigm. This is apparent even where an organismic metaphor (holism) or a cultural metaphor (shared understanding) is adopted temporarily. Such methodology as exists is pragmatic and ad-hoc in nature - though often system-based (for example, (Guha et al 1993) present their 'comprehensive methodology' in the form of a SSM conceptual model, although without acknowledgement). For BPR to be widely applicable, it is necessary to find ways of looking beyond the limitations of the dominant paradigm and metaphor.

5. SSM AND ASSUMPTION SURFACING

In this section we propose the use of SSM (Soft Systems Methodology) and Assumption Surfacing in BPR. SSM facilitates the re-visioning of purposeful processes whilst retaining a cultural perspective. Assumption Surfacing takes account of the need to challenge hidebound thinking, without which the radical change characteristic of BPR is unlikely to take place.

5.1 Soft Systems Methodology (SSM)

SSM may offer a great deal to the BPR practitioner, and has the potential to address some of the limitations exposed earlier. It is a strong problem-solving methodology with a well-defined theoretical provenance (Checkland 1981) and considerable experience in use (Checkland and Scholes 1990; Wilson 1990), including the information system development arena (see, for example, the Multiview methodology (Avison & Wood-Harper 1990)).

SSM conceptual models are models of purposeful human activity ideally suited to BPR process modelling, since they cope with basic business processes as well as abstract and intangible

processes. Specifying the logical dependency of activities leads to fluid modelling which is less linear and simplistic. Levels of resolution allow detailed modelling of sub-systems which nevertheless retain their relation within the whole system. Root definitions (textual definitions of potential systems akin to mission statements) offer a structured way in to the 'visioning' of new processes. The use of conceptual models and root definitions, together with the CATWOE mnemonic, encourages reasoned and internally cohesive modelling that encapsulates most of the concepts important in systems thinking. The 'Weltanschauung' (worldview) concept encourages consideration of the differing perspectives of stakeholders. A crucial area for BPR methodology is how to migrate from a description of what is currently happening towards a 'vision' of a radically improved way of operating. Current BPR methodologies rely on crude techniques for re-conceptualisation, such as 'brainstorming' (Davenport 1990; Guha et al 1993), and removing processes which do not add value (this could be particularly unfortunate if the assumption is made that the ideal process is a subset of existing activities) (Harrington 1991). Re-conceptualisation, the stripping away of (often unconscious) 'mental furniture' to allow fundamental rethinking unencumbered by historical precedent, is at the heart of SSM. The modelling of 'relevant systems' and the clear status of SSM models as 'holons' (logically consistent potentially operable systems, not representations of the real world) offer a rigorous way of structuring thinking about re-conceptualization. The cultural stream of analysis, though not at present so well developed, offers a vehicle for social and political analysis that may be as, or more, crucial to the success of the intervention than consideration of the processes. Much of this analysis serves the purpose of establishing which changes are 'culturally feasible' - a consideration fundamental to successful business re-engineering.

In terms of Burrell and Morgan's paradigm matrix, SSM may be considered an 'interpretive' methodology, emphasising a more subjective construction of social reality, whilst taking for granted notions of order and regulation in society. SSM tends to treat organizations as 'organisms' or 'cultures' rather than 'machines.' Many of the successful uses of the methodology have been both participative and incremental in nature. Incrementalism derives from its assumption that culture and politics are 'givens'. BPR needs to take the more pro-active stance that these can be, at least to some extent, 're-engineered'. Participation is consequent upon the assumption that progress is dependent on developing shared mental models between stakeholders. In BPR change driven by managerial authority will not be able to avoid power-related issues.

5.2 Assumption Surfacing

Because of the need to consider who is affected by (and benefits or disbenefits) from BPR we propose that the use of SSM be supplemented by Assumption Surfacing (Mason & Mitroff 1981; Mitroff & Linstone 1993). SSM is particularly powerful in complex situations, but BPR analysis requires that change be radical. It is likely that radical change will take place in a situation of pluralism where there are multiple stakeholders who have a basic compatibility of interest but who do not agree entirely on ends and means, and whose values and beliefs will be divergent (Flood & Jackson 1991; Burrell & Morgan 1979). Assumption Surfacing involves the identification of stakeholders, the surfacing of assumptions, dialectical debate, and synthesis. With respect to BPR, the identification of stakeholders and the surfacing of assumptions is of central importance.

BPR is concerned with breaking old ways of doing and thinking and to achieve this assumptions will need to be surfaced and challenged. At first sight it seems easy to say that one will use the customer's needs as a benchmark when deciding what change to make. But, who is the customer and are the assumptions made about what the customer wants or needs reasonable? The BPR customer is not necessarily coincident with a SSM Customer. The customer is likely to appear in the Weltanschauung of a CATWOE as a legitimating device that will make a soft systemic Transformation meaningful. It is likely that there will be many stakeholders involved and the most important stakeholder is not necessarily the ultimate customer. The concept of stakeholder encompasses customers, but because it is wider in scope there is less risk of missing something significant. Having identified potential customers through stakeholder analysis then it is important to question the assumptions that have been made about the stakeholder group. In some cases it is not feasible to ask the customer what they want and members of the organization will need to make some assumptions about what *they* think is important to their customers.

We propose that Assumption Surfacing will bring a further degree of methodological rigour to BPR in the key area of surfacing and challenging assumptions. Stakeholder analysis could also provide considerable support to SSM in the identification of relevant Weltanschauungs.

6. A MULTIPLE PERSPECTIVE APPROACH TO BPR

A multiple perspective approach to BPR is described in figure 1. Re-visioning the organization is addressed using three perspectives: organizational, personal, and technical (Mitroff & Linstone 1993). Multiple perspectives are needed as no single perspective will suffice when dealing with complex and messy situations. The multiple perspective approach recognizes that there are different forms of knowledge and that they are not reducible to a common denominator (Flood 1991). There are no simple rules for balancing the requirements of different perspectives and it should not be surprising if the different perspectives produce conflicting requirements. In using multiple perspectives we need to be able to use methods that reflect the different knowledge interests, to be aware of the limitations of the different methods, and to use judgement to strike an appropriate balance.

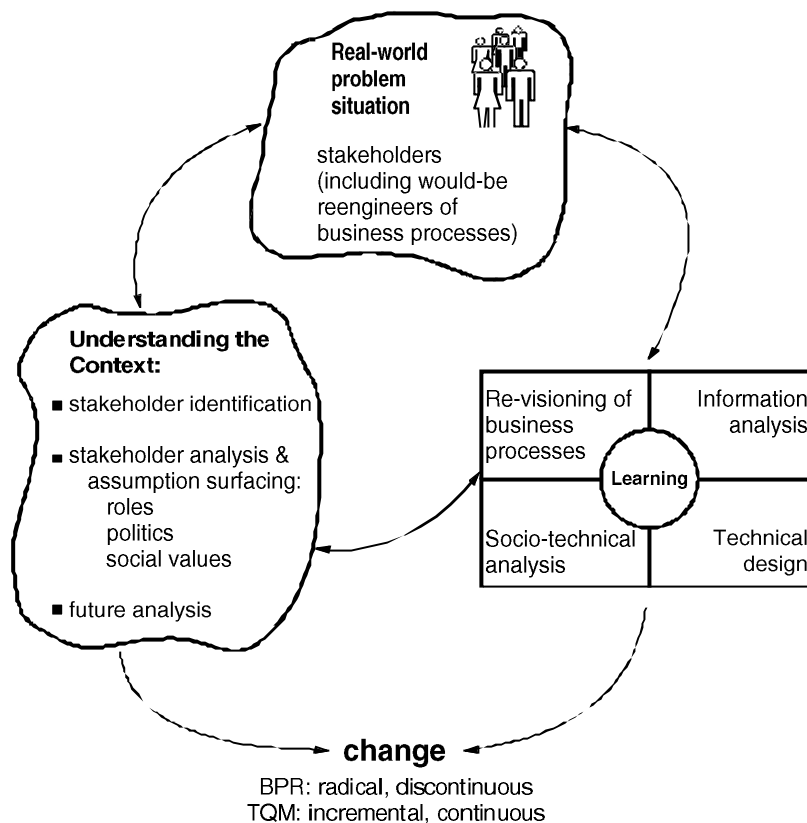


Figure 1: A multiple perspective approach to BPR (amended from Wood-Harper & Avison 1992)

Within the context of BPR, the organizational perspective is represented by techniques such as the modelling of purposeful activity (SSM). The personal perspective is concerned with job satisfaction (this might be translated as employee empowerment in the language of BPR) while the technical perspective will be concerned with how IT might enable new processes and forms of organization.

The left hand side of figure 1 is concerned with gaining an understanding of the context in which BPR takes place through the application of multiple perspectives. This investigation focuses on an analysis of stakeholders and assumptions. The future analysis is an attempt to predict how stakeholder groups and relationships between stakeholders might change as a result of BPR. If re-visioning requires the development of Information Systems (IS) to enact change then the three perspectives should be reflected in the IS development method. The right hand side of figure 1 shows the stages of the Multiview methodology embedded within a continuous cycle of learning (Avison & Wood-Harper 1990). The three perspectives used to explore the situation in which BPR takes place (organizational, personal, and technical) are mirrored in the IS development stages (information analysis, socio-technical analysis, and technical design respectively). Where the re-visioning and context analysis result in change that is radical and discontinuous then one might claim to have enacted a process of BPR; where change is incremental and continuous then perhaps TQM (Total Quality Management) is a better description. However, one should also be wary of casting BPR and TQM as a dualism; viewed as a duality, any change is at the same time radical and incremental, where BPR and TQM represent limiting cases.

7. CONCLUSIONS

In this paper we have argued that BPR is dominated by functionalism and that the prevailing metaphor is that of the machine. Where other metaphors are detected then their use is within the constraints of a functionalist paradigm. A multiple perspective approach is recommended on the basis that it brings a richness and degree of rigour to the process of BPR that is currently lacking. Areas of research that are being pursued by the authors include: how can multiple perspectives be used in practice to support BPR; how can the root definitions and CATWOEs developed in SSM be used to generate assumptions that can be used in stakeholder analysis; and, what are the necessary preconditions for radical rather than incremental change - does cultural feasibility have to be considered as a constraint outside of the influence of those engaging in BPR.

We propose that a theoretical understanding of the contribution of multiple perspectives to BPR needs to be supplemented by a practical understanding, which can be gained best from actually doing BPR. As Josef Stalin (a perhaps less than reputable source currently) said:

*Theory without practice is sterile,
Practice without theory is blind*

REFERENCES

- Avison, D.E., & Wood-Harper, A.T., (1990). *Multiview: An Exploration in Information Systems Development*. Blackwell Scientific Publications, Oxford.
- Belmonte, R.W., & Murray, J., (1993). Getting Ready for Strategic Change: surviving business process redesign. *Information Systems Management*, Summer: 23-29.
- Burrell, G., & Morgan, G., (1979). *Sociological Paradigms and Organizational Analysis*. Heinemann Educational Books, London
- Checkland, P., (1981). *Systems Thinking, Systems Practice*. Wiley, Chichester.
- Checkland, P., & Scholes, J., (1990). *Soft Systems Methodology in Action*. Wiley, Chichester.
- Clegg, S., (1990). *Modern Organizations: Organization Studies in the Postmodern World*. Sage, Newbury Park.
- Davenport, T.H., (1990). *Process Innovation*. Harvard Business School Press, Boston.
- Guha, S., Kettinger, W., & Teng, J., (1993). Business Process Reengineering - Building a Comprehensive Methodology. *Information Systems Management*, Summer: 13-22.
- Flood, R.L., (1991). Redefining Management and Systems Sciences. In: Flood, R.L., & Jackson, M.C., editors. *Critical Systems Thinking: Directed Readings*. Wiley.
- Flood, R., & Jackson, M., (1991). *Creative Problem Solving, Total Systems Intervention*. Wiley, Chichester.
- Hammer, M., & Champy, J., (1993). *Reengineering the Corporation, A Manifesto for Business Revolution*. Nicholas Brealey, London.
- Harrington, H.J., (1991). *Business Process Improvement*. McGraw-Hill, New York.
- Hassard, J., (1993). Postmodernism and Organizational Analysis: an Overview. In: Hassard, J., & Parker, M., editors. *Postmodernism and Organizations*. Sage, Newbury Park.

- Jackson, M. C., (1991). *Systems Methodology for the Management Sciences*. Plenum, New York.
- Johansson, H.J., (1993). *Back to the Future: Innovation through Reengineering and Process Technology*. Wiley, New York.
- Kawalek, P., (1993). Business Process Reengineering - a revolutionary manifesto? *Computer Bulletin*, December.
- Krass, P., (1991). Building a Better Mousetrap: What Role do MIS Executives Play in Business Reengineering Projects? *Information Week*, 313: 24
- Marris, P., (1986). *Loss and Change*. Routledge, London.
- Mason, R., & Mitroff, I., (1981). *Challenging Strategic Planning Assumptions*. Wiley, New York.
- Mitroff, I., & Linstone, H., (1993). *The Unbounded Mind, breaking the chains of traditional business thinking*. Oxford University Press, New York.
- Morgan, G., (1986). *Images of Organization*. Sage. Newbury Park, CA.
- Teng, J., Kettinger, W., Guha, S., (1992). Business Process Redesign and Information Architecture: Establishing the Missing Links. In: DeGross, J., Becker, J., & Elam, J., editors. *Proceedings of the Thirteenth International Conference on Information Systems*. December 13-16, Dallas, Texas.
- Wilson, B., (1990). *Systems: Concepts, Methodologies and Applications*. Second edition. Wiley, Chichester.
- Wood-Harper, A.T., & Avison, D.E., (1992). Reflections from the Experience of Using Multiview: through the lens of Soft Systems Methodology. *Systemist*, 14(3): 136-145.
- Zuboff, S., (1988). *In the Age of the Smart Machine - the future of work and power*. Heinemann, Oxford.