

Reviews

Kenneth D. Mackenzie, *The Organizational Hologram: The Effective Management of Organizational Change* (Kluwer Academic Publishers, Norwell, MA, 1991, vii, 493 p.)

Organizational hologram is a metaphor for holonomic organization, any part of which allows for the reconstructability of the whole: each functional part of the whole is (or contains) an image of the whole. The way I choose to understand it, organizational hologram organizes individual departments in such a way, that if some departments collapse or malfunction, the remainder not only continues its (autonomous) functioning, but can reliably and predictably catalyze the recreation of the rest or a new whole.

Such organizational *autonomation* (a Japanese expression) brings about efficient adaptability and strategic flexibility that are major (pre)requisites in the era of the global competition and knowledge-as-capital environments.

One interpretation of the hologram should, in my opinion, be avoided because of its inefficiency: that every system component should somehow receive and manage overall system information. This would mean that every component contains the overall system management mechanism within itself and the advantages of *distributed systems* would thus be dissipated. The issue obviously is not redundancy and mechanistic redundancy of parts is not flexibility. Flexibility resides in the functional integration in both men and machines.

Mackenzie concentrates on the redundancy of change processes: each part has the means, capacity and empowerment for adapting to change. Twelve holonomic processes can be made to work in every unit of the organization. They are:

1. Establishing and Maintaining Clear Strategic Direction.
2. Defining and Updating the Organizational Logic.
3. Ensuring Best Decision Making.
4. Adapting to Ensure Position Clarity.
5. Ensuring Systematic Planning That is Workable, Involved & Understood.
6. Integrating Associate Selection, Development of Flow With the Strategic Direction.
7. Nurturing and Rewarding Opportunistic & Innovative Problem Solving.
8. Ensuring Healthy Problem Solving Throughout the Organization.
9. Setting Tough and Realistic Performance Standards.
10. Operating Equitable and Effective Rewards Systems.
11. Ensuring Compatibility of Interest.
12. Encouraging and Rewarding Ethical behavior of All Associates.

This is easier said than done and Mackenzie is quite aware of that. In order to do all of the above, the questions of ownership, participation and profit sharing have to be resolved and anchored in the corporate constitution. Mere 'hired hands', whether blue or white collared, would do none of the above well, consistently and voluntarily.

Organizational hologram and similar topics are to be found in the literature under different headings: distributed systems, autonomous coordinability, distributed intelligence, asynchronous and parallel processes, declarative systems, circular bidding schemes, autonomous decentralization, autopoietic systems, and so on, or, in more practical terms, the amoeba systems, Bat'a-systems or integrated process management systems (IPMs).

Mackenzie is quite aware of the new role humans have to assume in such self-coordinating systems: by referring to them as Associates rather than subordinate employees of the old hierarchies of central planning and control. Associates are autonomous agents who contract and subcontract their goods, services and efforts to other Associates

in their common enterprise. Mackenzie even insists: 'The distinction between an Associate and an employee lies at the heart of this theory of the organizational hologram *all* members of an organization *should* be thought of and treated as Associates'.

We could only add that in actual practice of self-coordinating systems in most successful companies all employees were, have been and *are* Associates. The very system has to be designed so that no functional or status ambiguity could arise and that there is no superficial designation 'as if': why calling somebody an Associate while treating him as an employee would be 'deadly'.

Mackenzie is hedging: his organizational hologram is more of a proposal for the next dominant form to replace the bureaucracy than an established fact. The dilemma is that the next organizational form cannot be designed by man, but has to emerge spontaneously through the action of men, as did the bureaucracy itself.

Bureaucracy is necessarily a spontaneous order, growing in response to progressive division of labor, specialization of function and atomization of task. This is why bureaucracy is so resilient and resistant to any attempts of 'slimming', 'fat cutting', 'dismantling', and so on. The only way to reduce or remove bureaucracy rests in the reintegration of task, labor and knowledge – and that's when also autopoietic organizations, 'amoebas' and organizational holograms start slowly emerging. In this sense, one cannot 'propose' natural organizational form. Only man-designed, allopoietic and commanded forms can be 'proposed'.

Mackenzie has devoted years of effort to developing this theory. He admits that he has become rather fond of it: '*Like any proud parent, the theorist's affection for his offspring may blind him or her to its faults*'. But Mackenzie resists the temptation: '*It is axiomatic that this theory contains serious flaws which, in time, will become painfully obvious*'. The two strikes against it are that it is an open system theory (i.e., not organizationally closed and therefore not autonomous, like bureaucracy) and that it is prescriptive (suggesting what should be done), not descriptive (interpreting or illuminating what is being done). There might be some other criticisms.

My view is that this prescriptive theory has been too long in the making, remaining prescriptive even though the evidence increasingly shows that it could have become descriptive in recent years. There are simply too many organizations that have or are already shifting away from bureaucracy and towards decentralized self-managing and self-organizing forms – spontaneously, in response to the radically changing environments. So, the theory could serve as an explanatory and institutionalization guide for the observed changes, trends and propensities.

Mackenzie's book could be also very useful in another respect: it could help break the spent rigidity of current organization theories. Mackenzie writes:

Present theories or organizations and management are neither dynamic nor complete. Hence, it becomes necessary to rethink the entire theory in order to meet the challenge of how to operate successfully in a dynamically complex milieu. Meeting this challenge in order to accomplish this task meant that the new theory could not rely on merely adding details to existing theory. Fresh thinking was required and a new metaphor was needed to capture its essence. The metaphor of the hologram is used because it has the property that each part contains the whole (p. 445).

Mackenzie's book is organized into three parts and sixteen chapters, interweaving theory with case studies and practical experiences with organizational design.

Part I contains the following chapters: 1. The Organizational Hologram; 2. The Need for Organizational Holograms; 3. Overview of The Theory of the Organizational Hologram; and 4. The Crisis at White Metals and Manufacturing, Inc.

Part II consists of the following: 5. Combined Congruency; 6. A Congruency Diagnosis of the Euphoria School District; 7. Managing Combined Congruency to Improve Productivity and Adaptability; 8. Achieving Organizational Level Congruency; 9. Principles for Problem Solving in the Organizational Hologram; 10. Motivating, Rewarding and Bonding in the Organizational Hologram; and 11. Improving White Metals and Manufacturing, Inc.

Part III: 12. The Holonomic Processes of the Organizational Hologram; 13. Major Desired Organi-

zational Characteristics for the Efficiently Adaptable Organization; 14. The Holonomic Cube; 15. Macro Principles of the Efficiently Adaptable Organization; and 16. Summary and Conclusions.

The above listing of chapters provides the reader with a good indication of the novelty of Mackenzie's approach and treatment of organizations. Congruency (consistency or harmony) of all systems components and functions lies at the core of Mackenzie's efforts. The Appendix summarizes 35 Propositions and 24 Principles of the Holonomic Organization.

Some propositions echo the Japanese-style management (*Excellence, quality and productivity are each the result of continued improvements and there is always room for improvement*), others remind us of the Bat'a-system (*The organization's performance improves when there exist significant stakes for all Associates for (a) exceeding its performance standards and (b) making best decisions*) and some challenge existing systems (*Political behavior is neither in the organization's nor the Associate's best interest*).

Also the principles are rooted in the best experiences and thinking. For example, *Decisions should be made at the lowest possible level at which the work or problems occur* reminds us of von Hayek's teachings. It is interesting to note that the Bat'a-type principles, such as *Associate involvement in planning and implementing is vital to the organization success*, or *The achievement of the organization's missions depends upon compatible interests among its Associates, its organizational units, the organization as a whole, the Board of Directors, the shareholders, and other stakeholders*, are deeply misunderstood and misinterpreted by current Central European governments, even to the point of labeling any employee involvement as 'bolshivism'.

Another useful principle, practices at the Lincoln Electric in Cleveland and totally unheeded in by 'reformists' in Central Europe:

Employment is a mutual decision made by the Associate and the organization such that:

(a) The Associate earns the right to employment by meeting performance standards and behaving in a manner consistent with the organization's standards

(b) The organization provides continuity of employment and career opportunities and

(c) Both the Associate and the organization maintain this decision to the best of their ability by mutually sharing in the results they help create.

I hereby propose my own principle, derived from experience, applicable to any new and good theory, useful to any theorist or practitioner: *Good theories are heeded least, where and when they are needed most.*

Kenneth D. Mackenzie has written a good book, full of experience, wisdom and new research directions, projects and challenges. I hope that especially the young generation of organizational and management theorists will keep this book close and handy – in case they decide to make *their* bold move into the twenty-first century.

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Wiig, Karl (1990) *Expert Systems: A Manager's Guide*, Management Development Series no. 28. Geneva: ILO. 1990. 27.50 Swiss francs, pp. 182.

The ILO Management Development Series is intended, we are told, to 'focus on selected priority issues for practicing managers and administrators' which have 'not been adequately covered elsewhere in management literature'. The inclusion of a text on the management implications of expert systems, a field which already boasts at least half a dozen alternative titles (albeit none of any great quality) would thus seem rather out of place. If it is to add substantially to the existing literature in this field therefore, a new book needs to present a distinctive viewpoint on the subject. To some extent Wiig achieves this although there are a number of serious drawbacks to the book as a guide to managers.

While it may not be necessary for managers to become technical experts, a clear and concise description of the technology would seem a prerequisite for an effective evaluation of its potential. In con-

trast to most other books on the subject, however, Wiig focuses almost entirely on the development and implementation of Expert Systems in organisations. An explanation of how Expert Systems work, which typically takes up the first quarter of the other books, is here relegated to the last two, brief chapters and a glossary which would seem unlikely to be of much help to a manager with no previous knowledge of such systems. Managers seeking such information will need to look elsewhere.

Instead, the introduction begins with the sales pitch, quoting the potential return on investment from Expert Systems as put forward by proponents such as Feigenbaum and general assertions that progressive companies are investing heavily in these techniques. This sits somewhat uneasily with the later emphasis on the importance of organisational context in the development of effective systems. It also leads to the curious situation of describing how Expert Systems differ from conventional (presumably data-processing, although this is also not stated) systems without having specified the particular characteristics of either type of system. In addition, the introduction stresses the role of Expert Systems projects as change agents and the need for expert advice on the process of Expert System development and implementation (Mr Wiig is an Expert Systems consultant).

Part 1 provides an introduction to the commercial use of KBS, including their evolution, and a review of the technology. In discussing the evolution of Expert Systems/Knowledge-Based Systems (the terms are often used interchangeably although they are initially defined as being different) an interesting analogy is made between the current state of AI technology and that of the motor car in 1905. The analogy points up the underlying perspective of technological optimism, but also, perhaps inadvertently leads to some other implications. The development of the motor car from 1905 involved a process of incremental innovation with the basic technology remaining largely unaltered. It is by no means clear, however, that the envisaged potential of AI is likely to be fulfilled by incremental development of current hardware and software architectures. Moreover, the car, as present debates over traffic policy illustrate, is a technology with considerable social costs which we are only now be-

ginning to realise may require significant social control if they are not to irreparably damage the future survival prospects of the human race.

The review of technology faces the common, and perhaps unavoidable, problem of becoming out of date between text preparation and publishing. Thus state of the art microcomputers have already moved on from the 80386, 68030 systems described and 20 MIPS workstations are now available at prices similar to those quoted for less powerful predecessors. What is likely to be of more lasting value to managers, however, is a set of rules of thumb to guide the purchase of KBS development environments. Whatever changes take place with the technology, this advice, clearly based on considerable experience, is likely to retain its practical good sense.

Part 2 discusses the business considerations, looking at the justification for KBS (many of which turn out to be indirect, intangible and long-term) and the management of KBS development. The book includes as an appendix a set of worksheets to identify, characterise and quantify the benefits as a guide to project planning. Much of the discussion is something of a wish list, for example a table states that, amongst other roles, management should 'motivate functional, operational and technical personnel to become innovators and agents of change' and recommends the production of a '10-20 page' introduction plan. While such suggestions may bring home the complexity of the task involved in developing and implementing ES, it would seem questionable how helpful they are as a guide to management.

In Part 3 there is a consideration of the creation and management of the development team. This, it is argued, should contain individuals familiar with four areas of knowledge, just one of which is 'philosophy, epistemology, ontology, cognitive sciences and psychology, anthropology and sociology, linguistics and semantics, cybernetics and general systems theory'. Luckily, this latter day Leonardo da Vinci does not seem to be needed again in the subsequent spiders web diagrams which describe the dimensions of expertise which different team members should have. These being much more focused on technical skills in business and AI.

Following the traditional lifecycle model, Parts 4

and 5 consider the management of the system development project and, in considerably less detail, its deployment and maintenance. These chapters are perhaps the most useful of the book for a manager, providing advice, again evidently culled from considerable experience, on characteristics, factors and problems of the development and implementation process. While some of the advice could be dismissed as little more than truisms, there is also much that certainly deserves serious consideration by the manager of any KBS project. Part 6 is the introduction to the nature of KBS mentioned earlier.

As an introduction to expert systems for management, therefore, the book lacks the background necessary for a realistic appreciation of the technology involved or the examples necessary to substantiate its assertions of the business case. A more accurate title for the book however might be 'Knowledge Based Systems Development: Management Issues'. As such, it fulfills a particular niche role, though in a rather dense and fragmented style.

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