

Reviews

Russell L. ACKOFF

Redesigning the Future

New York, Wiley, 1974.

The Art of Problem Solving

New York, Wiley, 1978.

Creating the Corporate Future

New York, Wiley, 1981.

A Guide to Controlling Your Corporation's Future

(with J. GHARAJEDAGHI and E. VERGARA)

New York, Wiley, 1984.

Revitalizing Western Economies

(with Paul BROHOLM and Roberta SNOW)

Jossey-Bass, San Francisco, CA, 1984.

Like painters and other artists, an author's life work must be considered in the context of the rest of his/her achievements. This is why we have chosen to cover a whole decade of Ackoff's writing.

In *Redesigning the Future* (1974), Ackoff presented his four basic orientations to planning, namely *reactive*, *inactive*, *preactive*, and *interactive*.

In the next two books, *Creating the Corporate Future* (1981) and *A Guide to Controlling Your Corporation's Future* (1984), Ackoff extends considerably his field of vision and actually writes books which cover the whole spectrum of organization and management theory. He does not limit himself to planning, problem solving, or organizational problems but integrates his entire corporate knowledge and experience. Readers will probably agree with this reviewer, and even the author himself, to state that these books contain, in a reworked format, all of Ackoff's previous thinking. Thus, we find his comparison of the corporation as a machine, an organism and an organization (see for instance, J. Gharajedaghi and R.L. Ackoff, *Mechanisms, Organisms, and Social Systems* [2]), his work on purposeful systems (see R.L. Ackoff and F.E. Emery, *On Purposeful Sys-*

tems [1]), his typology of planning, as mentioned earlier, and many other themes.

However, none of his old readers, of which this reviewer is one of the most avid ones, should belittle Ackoff's effort. Without a doubt he is one of the most cogent management theory writers today. In the past, his books were more specialized. However, we appreciate his recent attempt to cover the whole spectrum of corporate life (and future). With uncanny intuition, Ackoff is able to blend his ideas with those of his friends and colleagues (such as C.W. Churchman, T.A. Cowan, S. Beer, F. Emery, I.I. Mitroff, and others) and make them even more approachable, more readable, and more readily applicable than when they appeared originally. It is no small feat, but then Ackoff has always written well: I could not but agree more with I.I. Mitroff's statement in the Foreword of *Revitalizing Western Economies*, the book we review in more detail below:

'I should state at the outset that I have a strong bias when it comes to the works of R.L. Ackoff and his colleagues. I find that one work of theirs is generally equal to the works of a hundred others in stimulating my thoughts and my passions.'

At first, *Revitalizing Western Economies* (1984) may sound like a departure from Ackoff's life time dedication, which is to become one of the foremost writers in organization theory of his day. However, a thorough review of this book reveals that the progression from his work on the corporation to this one, is quite natural. In the good old tradition of the Systems Approach they constitute an indivisible set.

Most economists and other scholars who have dealt with the problems of the industrialized nations economic decline, have concentrated on the subject of industrial policy (see the review of books by Magaziner, Reich, Hayes and Wheelwright in *HSM* 6 (1986) 87-88). Ackoff et al. has a wider perspective and suggests that revitalizing Eastern economies must cover the whole spectrum of economic, social, and political life. The latest of Ackoff's works is broader in perspective than his previous ones because he takes on the vexing problem of unemployment in what he calls

MDCs (or more developed countries) and LDSs (less developed countries).

Ackoff and his co-authors (two doctoral candidates in social systems sciences at Wharton, according to the book's cover) suggest that revitalizing the economies of the world will require a sweeping revitalization of their social and political life. They criticize and amplify upon a number of proposals which were made previously by others, namely: (1) dialogue, (2) industrial policy, (3) socio-economic reform, and (4) a radical transformation of society.

They suggest that dialogues between representatives of different economic sectors have seldom proved effective. Neither industrial policy, as suggested by Reich and others (see *HSM*, op.cit.), nor political reforms as proposed by Thurow (see *HSM* 6 (1986) 87–88), are likely to solve the problem. Furthermore, Ackoff et al. do not believe that radical social change coupled with changes in political life such as advocated recently, will work either, because they do not constitute a 'cohesive, consistent redesign of society'.

Ackoff et al. accept dialogue among economy's stakeholders but believe that *all* people who hold a stake in the outcome of the dialogue – not only their representatives – should have the opportunity to participate. They advocate a fundamental restructuring of the functions of government by 'returning government to the people, (and) converting it to *participative democracy*':

'Conversion to a participative democracy would, we believe, demonopolize and debureaucratize governments as well as public and private providers of services. This, in turn, would decrease the cost and increase the quality of services and improve their delivery, enabling demand for them to grow. As a result, a large number of jobs would be created that would significantly reduce, if not eliminate, the unemployment problem.'

At first, the changes advocated by Ackoff and his colleagues sound rather sweeping. However, a closer look reveals that they may not be so outlandish. There is no question that 'patchwork-like' measures as taken by the recent government of MDCs have only produced 'more of the same'. With ten million people unemployed in the USA, another ten million in the European Common Market, and the confrontation of the 'have's' in the Northern Hemisphere against the 'have not's' in the Southern Hemisphere, it is patently obvious that something is drastically wrong, and that the world faces a crisis of major proportions.

As in his previous books, Ackoff states that *growth is not development*, 'A country [or a corporation for that matter, ed.] can develop without growing, and it can grow without developing'. 'Growth should be treated as a means, not an end.' 'Developing is more a matter of learning than earning.' The solution to the crisis facing the world resides in measures directed at demonopolizing and debureaucratizing public and private providers of service to create an 'efficient, consumer-oriented, wealth-producing service sector' which will, among other things, 'enable the private sector to compete for the right to provide as many services as possible that are now provided by governments. *Participative democracy* is a system whereby 'government should not try to solve the unemployment problem, but should encourage and facilitate solution of the problem by the governed'.

Ackoff's thesis proposals may sound idealistic when they are reviewed in the context of our topsy-turvy world. However, they deserve more than a short shrift. By his previous work, Ackoff proved to be one of the foremost management authors today. The ideas presented in *Revitalizing Western Economies*, place him among the economic 'gurus' whose advice should reach the top government leaders of most countries of the world. As a final note, it is interesting to note that Ackoff's proposals apply as much to large industrialized countries such as the U.S. than to LDCs such as Argentina (from where this review is being written). The issue of industrialization with chronic structural unemployment of major proportions is a dilemma which most countries face.

The traditional formulas, such as to keep mechanizing and automating to reduce unit cost and labor participation, do nothing but exacerbate the crisis we are in. It is high time that we all turn to new ideas such as those advocated by Ackoff et al.

J.P. van GIGCH

*School of Business and Public Administration
California State University
Sacramento, CA 95819, USA*

References

- [1] Ackoff, R.L. and F.E. Emery, On purposeful systems (Intersystems Publications, Seaside, CA, 1982).
- [2] Gharajedaghi, J. and R.L. Ackoff, Mechanisms, organisms, and social systems, *Strategic Management Journal* 5 (1984) 289–300.

Charles A. MUSÈS

Destiny and Control in Human Systems

Studies in the Interactive Connectedness of Time
(Chronotopology)

Kluwer-Nijhoff Publishing, Boston-Dordrecht-
Lancaster, 1985, 218 pages, \$42.00.

For those who are not familiar with the name of Charles Arthur Musès, let us quote from his own self-assessment on page 219 of his book:

‘Charles Musès is one of the pioneers of new thinking in science in the twentieth century. He co-lectured and worked with the late Ross Ashby and Warren McCulloch, and with Norbert Wiener. He was requested by the Italian [sic] government to write the official obituary for the father of cybernetics...’

Further clues to this intriguing personality could be certain ‘pen-names’ of Charles Musès, such as his mature imaginations ‘Kenneth Demarest’ and ‘Kyril Demys’; unfortunately, no pages are given for their Index entries.

The intriguing label ‘Human Systems’ in the title is explained early, in the ‘Note to the Reader’:

“‘Human’ rather than ‘social’ appears on the title page because we would not wish to confine ourselves solely to institutions but also address the experience of human beings, who alone make institutions possible’.

The author, however, does *not* deal with either human or social systems: his sole concern turns out to be Eastern mystic psychological experience of the individual.

Charles Musès promises ‘not to be concerned with repeating either the already well known or the otherwise available’. Instead, he would like to ‘concentrate on those facts and connections that lead most readily, geodesically [sic] if you will, to new and useful viewpoints and findings’. He concludes, rather surprisingly, that ‘Time is an ultimate frontier’.

The titles of some of the Chapters *do* promise a winding path to the far pavillions of this ‘ultimate frontier’:

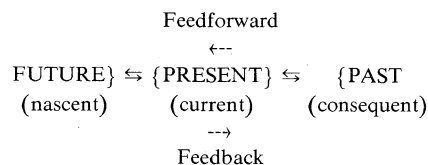
- (1) Introduction: System Theory and Chronotopology.

- (2) Syntactic languages: The Symbolic and the *Diabolic* [sic].
- (3) *Chronos* as a System of Qualitative Resonances: Chronosymbiosis and Computers.
- (4) *Animo et Themis Mundi*: Psyglyphs [sic], the Multilevel Language of Qualitative Time.
- (5) *Fons et Origo*: Some Traditions Uniquely Illuminating the Structure and Meaning of Time Systems.
- (6) Social Applications [sic].

I admit that the very notion of *diabolic* (ch. 2 above) immediately intrigued me so I proceeded directly to the Index: *diabolic*, see *Diabolon*; *diabolon*, see *symbolon*; *symbolon*, see *Diabolon*. Good: an adventure. Going then directly into the Chapter, one finds first *homo diabolicus*, then *diabolos* and finally *diabolon*. *Diabolon* means ‘an obstructing trajectory’. The usage of this ‘diabolical’ concept is obvious: deliberate reduction or masking of meaning is a *diabolizing process*. Musès’s example: ‘A military intelligence *codon* is then, quite technically, a *diabolon*.’

It is that kind of book.

Concerning *Chronos* as a system of qualitative resonances, the depth of Musès’s insight is demonstrated in the following diagram (‘Trochoidal Form of Time Development’, p. 67):



The above diagram (‘more hidden arcs being diagrammatized’) is commented upon (by Musès) as follows:

‘We do not ordinarily realise these feedback-and-forward turbulent “bubbles” in the (normally to us) laminar flow of time. Some poets and prophets in non-normal state [sic] of more powerful awareness have sensed them; and many more quotations to this effect might be adduced than the few given previously in the course of this book.’

I admit that I did not know the meaning of time before contemplating the above diagram and its accompanying commentary. I am not quite sure that I do now.

Actually there are quite a few quotations from quite a few ‘prophets in a non-normal state’.

'Time is an eroding, infinite mystery – in fact a son of a bitch.'
 'There is timing in everything. Timing in strategy cannot be mastered without a great deal of practice.'
 'There is always this bodiless half – This illumination, this elevation, this future.'
 'O Parvati: days, months and years are no more time than rulers are what they measure.'

and so on. The first quotation is my favorite; especially if I combine it with my own: 'Nothing is caused by time, although everything happens in time'.

Musès's footnotes are often charming, self-indulgent, and illuminating. For example, when discussing a posthumous philosophical poem by the Platonic-Buddhistic thinker Douglas Fawcett (and actually inviting the reader to 'see' it), he footnotes that it was 'kindly made available through his niece (daughter of Col. Percy Fawcett, the Amazonian explorer), Joan Fawcett de Montet'.

In reality, this poem ('Light of the Universe') is apparently hard to get to 'see'.

This reviewer then skipped again, to the chapter on *psyglyphs*. Alphabets of basic images in symbolic form are psyglyphs: '...representing the "nucleotide" basis of the DNA/RNA of the psyche, as it were.'

With these psyglyphs there is associated an intriguing 'trion and quadron' theory. It is handled in a typically precise and exhaustive manner:

'We now can combine the trion and quadron either supplementively by addition, or interactively by multiplication, arriving at $3+4=7$ distinctions in the first case and $3\times 4=12$ distinctions in the second.'

The whole 'theory' is a rather mechanistic extension of the Jungian four psychological types by additional three 'independent' types:

'whose nearest modern analogues lie in the Indian tradition (going back to Sankhya philosophy, and thence more ancient sources) of the three *gunas*: *tamas*, *rajas*, and *sattva*.'

Such a triple is called a trion and Jung's four elementary types (a quadron) can be multiplied by it. Why the late C.G. Jung himself decided not to think of this will probably remain a mystery.

Long paragraphs and even whole chapters are devoted to analyses of the great Nasir-i Khosrau, according to whom, for example:

'*Mabda* (or '*Aql*) *al-Awwal* of First Intelligence is the personifying of the *Maf'ul* phase, the Eter-

nal Divine Child of *Azal* and *Azaliyat*, of *Fā'il* and *Fi'l*. Emanation actually begins with the Second Intelligence, called *Nafs* or (Universal) Soul, emanated from '*Aql* and thus also known at "the first Emanation"'.
 Now in another sense, the First Intelligence ('*Aql*) is a resonance of *Azal*; and the Second (*Nafs*), of *Azaliyat*. Thus the Second is also called *Tālā*, the one who follows or comes afterward. Hence the "second emanation" or Third Intelligence would again resonate with *Azali* or *Maf'ul* and be a recreative and emanating power. This great Archangelical being is called *Adam Rūhāni* or the Spiritual Prototype of humanity.'

After about twenty pages (in the main text) of the above kind of 'approaching the frontiers', this reviewer realized why this book has so precious little on *human* perception of time, on history of *human* ideas of time, on *human* nature and *human* society: the book is all on Mr. Musès and mostly about his rather obvious narcissism, simple name-dropping and heavy intolerance. Why, not even the excellent work by Stephen Toulmin and June Goodfield (*The Discovery of Time*) is mentioned.

Then this reviewer went directly to the Epilogue of an extremely promising title: 'The Current Arena and the Birth of a New Era'. The author assures his readers that an entire '*science of synchrony and qualitative time*' is now possible, with applications to social contexts and problems.

(Says) the author:

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'In this book [i.e., *this* book] there are none of the customary genuflexions [sic] to a new obese and outmoded Cerberus. We refer to zealot, uniformed, and over-long entrenched naive materialism and mechanism that came to pervade academic circles of twentieth century science and philosophy as a vestige of the nineteenth, in the greed-cum-technology rather than wisdom- or beauty-oriented global civilization...'

Hapilly, a new era of more profound science is dawning. It is our business to make the future better than our memories.'

You can almost visualize the *diabolic* old 'Wizard of the Mountain' stomping around and committing to dust anything even remotely resembling modern science, anything redolent of modern technology, or (may Nasir-i Khosrau forgive) of modern systems science.

Again, my own 'quotation' rather suggested itself: 'Dont's design a future unless you can take the full responsibility of living it.'

Then I noticed that Charles Musès was:

'the first mathematician to discover and develop the higher arithmetics of hypernumbers beyond the square root of minus one, and pioneered the term "hypernumber" in 1966.'

Fair enough – but *Human Systems*?

Milan ZELENY
Fordham University
at Lincoln Center
New York, NY 10023, USA

Max DELBRÜCK
Mind From Matter?

An Essay on Evolutionary Epistemology

G.S. Stent, E.P. Fischer, S.W. Golomb, D. Presti and H. Seiler (eds.)

Palo Alto/Oxford, Blackwell Scientific Publications, 1986, 290 pages.

This book is a posthumous version of Max Delbrück's lectures on 'evolutionary epistemology' which he delivered in 1974–75 at the California Institute of Technology and which has been prepared by his disciples and friends.

In 1932, Delbrück spent six months in Niels Bohr's laboratory and it is through Delbrück that Bohr's epistemology is said to have become the intellectual infrastructure of modern molecular biology. In 1969, Delbrück received the Nobel Prize for Physiology of Medicine and during his acceptance speech in Stockholm, he delivered the essence of what is treated today in *Mind From Matter?*

Delbrück's avowed objective is to formulate and, if not answer, at least three principal questions:

(1) 'How can we construct a theory of a universe without life, and therefore without mind, and then expect life and mind to evolve, somehow, from this lifeless and mindless beginning?';

(2) 'How can we conceive of the evolution of organisms with mind strictly as an adaptive response to selective pressures favoring specimens able to cope with life in the cave, and then expect that this mind is capable of elaborating the most profound insights into mathematics, cosmology, matter and the general organization of life and mind itself?'; and

(3) 'Indeed, does it even make sense to posit

that the capacity to know truth can arise from dead matter?'

Delbrück proceeds through successive chapters to describe the evolution of the cosmos, the evolution of life, beginning of perception, evolution of genomes, to reach in chapter five to the evolution of man. Then chapters six, seven and eight are devoted to the evolution of the brain, vision, and perception, respectively. In chapter nine, Delbrück tackles the subject of cognition and adopts Piaget's genetic epistemology. We recall that Piaget's approach was 'to look upon human intelligence as a strategy of active construction of reality, rather than as a passive receiver and processor of information from the world'... 'Although human intellectual activities are unavoidably emotion laden, Piaget avoided the study of the affective component of mental operations and concentrated entirely upon cognitive capabilities and their development in ontogeny'. 'Assimilation the counterforce to accommodation... means fitting novel aspects of reality into old behavioral and cognitive schemes rather than changing them'. In chapter 10, the author considers the concepts of causality, time and space. Delbrück reminds us that Kant had already addressed Hume's critique of the logical basis of causality and had argued that although not of demonstrable logical validity, causality is another of the a priori categories, like time, space and object, that are a precondition of all experience. In a later portion of his lectures, Delbrück, when undertaking an in-depth exploration of modern physics, explains that quantum theory and its uncertainty principle put a definite limit on the definability of the past or future state of any system and therefore also on the applicability of the intuitive causality concept. See below.

Subsequent lectures are devoted to reveal the nature of numbers, and the concept of infinity. He delves as a 'digression' into what he calls one of the 'somewhat bizarre aspects of logic, specifically of its simplest branch, the *propositional calculus*', by which once a single formal contradiction is allowed, the truth of *any* statement can be proved by application of the rules of the propositional calculus. Thus, as an example, 'it may well be possible to believe that God is good and also that God is not good; indeed this contradiction... may express a deep truth about God'. Niels Bohr is quoted as saying that: 'It is the hallmark of any

deep truth that its negation is also a deep truth'. Some truths may be ambiguous, in that their negations are false, but they tend, according to Delbrück, to be trivial. After dealing with logical paradoxes, the controversy of whether numbers and mathematical relations are part of reality and thus have an existence independent of the mind or whether they are a creation of that mind, is discussed. Cantor's continuum hypothesis is discussed in the light of the conflict between the creationist and the realist points of view.

Delbrück devotes the next portion of his discourse to the famous subject of decidability by introducing the conjecture of Fermat's last theorem that remained unresolved until Gödel revolutionized the foundations of mathematics by demonstrating, using Hilbert's own methods of formal axiomatics, that 'for any mathematical system as complex as the theory of infinite sets, or of numbers, (a) it is impossible to prove the consistency of the axioms, and (b) it is possible to generate undecidable propositions from the axioms'. As we now, Gödel's demonstration is independent of the set of particular axioms and pertains to a feature in *all* axiomatic systems. Delbrück asks then what are the epistemological implications of the demise of the belief in the consistency and completeness of mathematics for the creationist–realist debate. According to him, the demonstration of undecidable propositions supports the creationist viewpoint 'that mathematics reflects some deep aspect of the human mind'. 'If numbers and their mathematical relations *were* constituents of the real world, independent of the human mind, then surely any proposition about them should state either what *is* or what *is not* the case. Gödel's proof shows, therefore, that even if numbers were "real", our minds could not adequately capture the definitions and axioms that would reflect their "true" nature'.

Delbrück's lectures are not over at this point. They still must consider subjects of utmost importance such as Newtonian mechanics, Relativity Theory, Quantum Theory, Complementarity, and even Language. We cannot in the short space of a review convey the richness of this material which we offer to prospective readers to survey for themselves. We conclude with Delbrück's remarks on the epistemological implications of the uncertainty principle and of the complementarity concept which have revolutionized modern thinking about

the real world: 'Quantum phenomena are an expression of a "conspiracy of nature" that prevents us from attaining a fully deterministic description of physical phenomena. Every observational act embodies an element of subjectivity'. This so-called 'conspiracy of nature' (that Einstein was unwilling to admit), 'prevents us from attaining a fully deterministic description of physical objects and thus places a limit on the empirical knowability of the real world. We cannot observe reality at its deepest level without disturbing it: every experimental arrangement we set up becomes part of the reality to be observed, and the conceptual cut between instrument and material object necessarily represents a subjective choice made by the observer'. Delbrück is said to resort to complementarity to develop an argument that shows the inadequacy of all versions of realism.

Delbrück's lectures 'deal with truth and reality'. 'Truth refers to knowledge, reality refers to the objects of knowledge'. They also deal with epistemology, i.e., the theory of knowledge: 'What do we know and how do we know it? Epistemology is a "metascience" in the sense that it presupposes science and reflects on the essence of science'. A truly remarkable work from an important thinker of our times.

John P. van GIGCH

*School of Business and Public Administration
California State University
Sacramento, CA 95819, USA*

A. RAPOPORT

General System Theory

Abacus, Tunbridge Wells, 1986, 270 pages.

It is with natural expectation that we receive this book from one of the original founders of the General Systems Movement. We recall that in December 1954, the Society for General Systems Research was founded by Ludwig von Bertalanffy, R.W. Gerard, K.E. Boulding and A. Rapoport. Thus, the basic ideas upon which the movement has been founded have had time to be distilled and assimilated. It is thus important to have Rapoport's opinion concerning the relevance of these ideas, more than thirty years after their initial dissemination.

First, Rapoport discusses the difference between analytical and holistic and between descriptive and normative approaches to cognition. He shows the limitations of the analytical point of view, an approach 'which is founded on the epistemological paradigm of the physical sciences', when it is extended to the realm of the behavioral and the biological. The author proceeds to show how the abstract mathematical model serves as a focus to integrate phenomena which differ in content but are similar in structure. Mathematical models, [are said to] 'legitimize creative analogical thinking'. Later, the 'basis of subjective awareness of "systemness" is explored with emphasis on the perception of and attribution of reality to "wholes"'. In the following chapters, organization and goal-directedness, features ascribed especially to living systems (including social systems) are treated. The last chapter is 'a survey of applications of the ideas generated in general systems theory with special emphasis on transcending elementalistic conceptions of causes and effects. That a cause may have several effects and an effect may be a result of many causes is conceded by all. Yet in management of practical affairs and in attempts at problem solving, this truism is often lost sight of. Only the recent dramatic manifestation of (often disastrous) side effects of attempted solutions has brought the inadequacy of massively applied "technological fixes" to the center of public attention. This new awareness of the fundamental relatedness of everything to everything else has been probably the most important "practical" result of the system approach' (from the Introduction).

The preservation of identity is considered a fundamental system property for two reasons: 'First, if anything is not characterized by some constancy amid change (which is what is meant by preservation of identity), it is not *recognized* as a system. Second, unless something develops mechanisms that preserve its internal organization in the face of disturbance, it ceases to be a system'. The contribution of general system theory is a vast broadening of categories subsumed under 'identity-preserving mechanisms'.

Rapoport makes a clear distinction between the two meanings of 'Organization Theory': a theory of *organization* and a theory of *organizations*, and then places emphasis on the concept of *information* and its significance and role in both theories.

The limitations of the concept of information in its entropic sense are shown and the question asked about the relationship between information, and higher forms of knowledge such as associated with complex living systems and consciousness.

Rapoport is Professor of Peace Studies at the University of Toronto and as such he takes a keen interest of how general system theory can be applied to the problems of conflict resolution. For instance, he devotes some pages to the relevance of the concept of autopoiesis to the description of military institutions. The universal rationale of the continued existence of the latter is, of course, 'defense'. However, claims Rapoport, 'if one tries to picture concrete referents of this world, related to the activities of military systems, one sees little that can be interpreted as "defence", least of all the sort that calls to mind defence against the elements, against disease, or even against aggression by enemies'. 'On the contrary, military establishments are likely and have been observed to *invite* attack rather than forestall it, if one simply looks at historical evidence not filtered through interpretations designed to preserve the myth of "defence"'. 'Be this as it may, even if the function of "defence" could be ascribed to military establishments before the advent of weapons of total destruction, this function has now completely fallen by the wayside. Nuclear weapons are certainly not a "defence" against nuclear weapons'... 'There are good reasons for regarding the global military machine as a single system. Its principal components, the military establishments of the superpowers "nourish" each other, as it were: each provides the other with rationale for the latter's continued existence, that is, with justification for deflecting resources for its support. In fact, this mutual reinforcement insures not only the survival of the global war machine but also its exuberant growth. Autopoiesis can be attributed to this system if its modus operandi insures its perpetuation (in the face of disturbances) through appropriate reorganization'.

Rapoport visualizes that the most important function of general system theory is to make 'thinking in terms of analogies, the basis of all searching for "explanation" (probably a basic human need) sharper and broader, and above all, disciplined, so as to satisfy the standards of scientific cognition'.

This is a well presented and composed book

which is offered to all those 'who seek the concrete meaning of "unity in diversity"'. We all are grateful for Rapoport's efforts to return to the original intent of General System Theory and give an overview of the discipline after the first three decades of its inception. His book is clear and well written. We can only fault him for not being able to decide whether the book should be a text or just a treatise for general reading. It probably can

serve both purposes but it suffers from not really being one or the other and falling somewhere in between.

John P. van GIGCH
School of Business and Public Administration
California State University
Sacramento, CA 95819, USA