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MALIK

STRATEGY FOR MANAGING COMPLEX SYSTEMS

A Contribution to Management Cybernetics for Evolutionary Systems

STRATEGY FOR MANAGING COMPLEX SYSTEMS

Fredmund Malik is one of Europe's leading authorities on management. The bestselling author's work represents a standard of professional management that can be both taught and learnt. Malik's thinking goes beyond economics and draws inspiration from modern sciences of complexity, particularly cybernetics. He is an expert on corporate governance practice and an adviser to executives at the highest levels of international leadership. Fredmund Malik was Professor at the Swiss University of St. Gallen and Guest Professor at the Austrian University of Economics and Business in Vienna. He is Honorary Professor at three renowned Chinese universities and member of the European Academy of Sciences and Arts. His honors include the Heinz von Foerster Prize for Organizational Cybernetics and the Austrian Award of Honor for Science and the Arts, awarded for his wholistic management systems.

Fredmund Malik

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A Contribution to Management Cybernetics for Evolutionary Systems

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Preface to the 1st German Edition

The present book, of which the original manuscripts for Chapters 1–3 were completed in August 1977 and accepted as a habilitation thesis by the University of St. Gallen in 1978, is committed to a long-standing tradition honored in St. Gallen.

Since as early as the mid-1960s, a group of varying composition mentored by Prof. Dr. Dr. h. c. mult. Hans Ulrich had been trying to establish a management theory that focused on the design and management of complex socio-technical systems. Their intention was to reform business administration studies and the pertinent, very economics-centered way of thinking. At the same time, however, the group moved away from business administration, since, from today's perspective, it is highly questionable whether business administration and management theory have anything in common at all.

The way I see it, management theory attempts to solve a problem quite different from that which business administration deals with. Whereas Wöhe in his *Einführung in die allgemeine Betriebswirtschaftslehre* ["Introduction to general business administration"]*[1] points out that business administration deals with "the sum of all economic decisions taken in the context of a business organization," to then explain that its focal point is "not the business as such" but rather "the economic side of a business and of business processes,"[2] management theory aims to gain control over the entire system made up of the organization and its environment. As such, management theory, just like management practice, cannot limit itself to a particular aspect. The system has to be under control in all relevant dimensions.

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* Text in square parentheses indicates that the author is supplying his own translation of German book titles that do not exist in English.

1 Wöhe, Betriebswirtschaftslehre, pp. 2 (quotes translated by author).

2 Wöhe, Betriebswirtschaftslehre, pp. 6 (quotes translated by author).

The strive for multidimensionality is not the only element typical of this understanding of management theory: An even more significant aspect is the element of "getting something under control." Decisions like those analyzed in business economics studies can be one means to achieve this control, but they surely are not the only one.

As I hope to demonstrate in this book, management and management theory have strong foundations in systems science, and most specifically in a certain type of cybernetics. Note that I am not referring to the kind usually referred to as control theory or control engineering. What I am talking about is the cybernetics of truly complex systems, of organismic, self-organizing, and evolving systems.

You might ask yourself whether a mundane activity such as managing really needs and justifies using such a complicated approach to provide a foundation. I think it does. Even by human standards, our world has become a very organized world in rather short time periods, a network of institutions so complex it can no longer be captured by human dimensions. This world is the result of human action, and the explosive growth in the number of managers at all hierarchical levels plays an increasingly important role. Much of our present world is a result of managerial action. But is it also a result of managerial intention?

I am not sure which answer—yes or no—would imply greater problems. An essential part of this work is dedicated to finding out which of the answers is more accurate and what the consequences are. Today there are more people handling management tasks than ever before, and more people than ever are affected by and dependent on what managers do. As a result, it is becoming increasingly important to be able to tell what good or bad management means, who is a good and who is a bad manager, and what theory is best suited to solve present and future management issues.

As mentioned before, after having completed the first three chapters of this book I focused on application-related issues. In 1977 I took on the leadership of Management Zentrum St. Gallen, an organization specializing in management training, development, and consulting. I was driven to find out whether the thoughts and concepts described here could be applied in practice, whether the goings-on in organizations, the way people act, and so on, would be easier to understand if viewed from this perspective.

Based on my personal experience—which, of course, I do not claim to have evidentiary value—I am convinced that business enterprises, just like

most other social institutions, are truly complex, self-organizing, and evolving systems and that only very specific ways of influencing, controlling, and shaping them will have a chance at being effective. Much of what happens in organizations is nothing but rituals that do not really have an impact or change anything. Many social institutions are not managed at all, even though it may appear otherwise, because they are simply not manageable. Quite often, decisions are not made—they make themselves. In many organizations, sensible things happen not because but in spite of management; and in many instances the past years have shown that it takes but a few changes for entire industries to get out of control. In many areas of society, the only way to conceal the fact that systems have never been under control is by resorting to semantics. Many problems can only be regarded as being under control because our expectations concerning their solution have been adjusted downward to reflect the status quo.

My efforts at practical testing and the dynamics these things tend to have—especially with regard to clients' specific needs and the associated time pressure—caused a greater delay in finalizing the print manuscript than originally expected. The experiences gathered during that time called for substantial changes and amendments. Chapters 0 and 4 were added; Chapter 3 was expanded and some essential aspects included. Chapter 1 remained unchanged for reasons I will explain later, while Chapter 2 was modified only marginally.

I would like to express my thanks to all the people that contributed to this book:

– those who influenced my thinking and my views about management, most notably Professor Dr. Hans Ulrich and my colleague Dr. Walter Krieg;
– the management practitioners with whom I had countless conversations at numerous seminars and consulting projects, and who taught me to see the world with their eyes;
– the client organizations which, apart from the immediate issues to be solved, were always objects of my research;
– my colleagues and staff at both Management Zentrum St. Gallen and St. Gallen University's Institute of Business Economics, who presented me with numerous management problems and helped me solve some of them;
– the Swiss National Fund for sponsoring my work;

– my publishers at Verlag Paul Haupt, who had almost given up hope of ever receiving my manuscript;
– Ruth Blumer, Felicitas Kurth, and my mother for producing and supervising the manuscript;
– Jochen Overlack for reading the proofs.

Last but not least, special thanks go to my family. Anyone who has ever written a book knows how much time and effort it takes, how everything else has to take a backseat. Every time my three-year-old daughter asked me, "Daddy, when are you going to play with me?" I would answer: "As soon as I'm finished here." "But when *will* you be finished?" she would ask. Over time, the children seemed to understand the nature and objective of evolution, for one day my five-year-old son, thoughtfully gazing at my crowded desk and the stacks of books, papers, and files on the floor, said to me, "Daddy, I think your book will never be finished."

St. Gallen, April 1984

Prof. Dr. Fredmund Malik

Preface to the 2nd German Edition

In many fields, systemic thinking seems to have arrived at a point close to critical mass. There are more and more areas of human thinking and action where, by all accounts, people have begun to seriously consider the systemic nature of things. However, as encouraging as this may be, one must not underestimate the time required to implement an innovation like this. Fundamental innovations, whether they happen in an intellectual or technical realm, mature slowly.

If you try to understand development patterns over extended periods of time, you will find that it always takes around 50 years for a fundamental invention or discovery to turn into an innovation, that is, a change in behavior. At that point, new ways of thinking and acting will begin to replace the old ones, which will also take a substantial amount of time.

To this date, around 20 years have passed since the first St. Gallen papers on the systemic approach were published. This work is gradually beginning to bear fruit. Wholistic, integrative concepts have found their way into executives' minds. Conceptual thinking is at the fore, even for managers with a bias for pragmatic approaches. The complexity of management issues is an acknowledged fact; demands for simple recipes have abated. The majority of practitioners agree that it is far from sufficient to operate to the best of one's abilities within the limitations of given systems, and that the only way to control most organizations is by developing and shaping adequate systems.

In an increasingly interconnected world, the challenges of dealing with complex systems have rapidly gained importance. We are still a long way from having solutions to these problems, but it seems we are beginning to realize where we ought to look for them.

The first edition of this book was received favorably in particular by practitioners, and thus reprinted quickly. Major changes were neither possible nor necessary. I therefore confined myself to improving the wording in some places where I felt there was a risk of misinterpretation. I owe sincere thanks to Mr. A. Bossler lic. oec., for assisting me with this revision.

St. Gallen, May 1986

Prof. Dr. Fredmund Malik

Preface to the 3rd German Edition

The second edition of this book sold out rather quickly, which actually surprised me because the book had originally been targeted at a primarily *scientific* readership, as is obvious from various details. I suppose the reason it appeals to practitioners as well is that these people know from first-hand experience that the complexity and interconnectedness of the systems surrounding them require them to adapt to events and circumstances they do not fully comprehend and perhaps never will. Most of the factors governing our behavior are basically unpredictable with regard to their future course. So the question is how best to design and control an institution in such a way that it will be functional, regardless of any turbulences, lack of predictability, and utmost complexity. This question was the starting point for my reflections on the management of complex systems.

In line with its original purpose, this book, now in its third unaltered edition, provides an (apparently still current) guide to the true nature of management, or in other words, to the design, development, and control of complex systems.

St. Gallen, March 1989

Prof. Dr. Fredmund Malik

Preface to the 4th German Edition

If events since March 1989 (or the publication of this book's 3rd German edition) have proven anything, it is clearly this: that we really and truly live in a world of highly complex systems, that many of these systems are extremely fragile, that we do not have any substantial knowledge of their structure or behavior, and that we are far from really having them under control. It seems as though even minute occurrences can cause these systems to implode and/or gather alarming momentum, which our institutions are hardly prepared and equipped to deal with.

The cutting of a barbed-wire fence by a Hungarian border guard in the summer of 1989 eventually caused the Eastern Bloc to collapse—with breathtaking speed, in a way absolutely unforeseeable, and with consequences that to this date are impossible to survey. Ever since the summer of 1990, the world economy—after what appeared to be a never-ending abundance of liquidity and credits—has suddenly been facing a dramatic shortage of both, and after an eight-year boom phase finds itself in the midst of a severe downturn with no end in sight, regardless of all economic-political efforts. An out-of-control drug scene, unprecedented levels of organized crime, endless streams of refugees, and new waves of radicalization are shaking the foundations of the democratic constitutional state. Key elements of our social infrastructure—the U.S. educational system, the welfare systems in most countries, the healthcare system—are eroding, if not decaying; we are faced with new poverty even in developed economies. Not to mention the ecological situation.

All of these factors underline the urgency of studying complex systems more thoroughly, rather than indulging in quick fixes and can-doism. Only

then will we adequately value the significance of modern society's most important function—the management of its institutions and organizations—and be able to implement necessary improvements. It is also the only way to recognize the charlatanism so rampant in this field.

St. Gallen, December 1991

Prof. Dr. Fredmund Malik

Preface to the 5th German Edition

This fifth edition, which I could not have hoped and certainly had not planned to ever publish, is preceded by a few words on some recent developments—rather unfortunate ones in my view—in the field of systemic-cybernetic management. In addition, this preface presents some ideas on the problem-solving potential of this type of management, which is clearly underestimated even by many of the people that consider themselves proponents of systemic management. Last but not least, I have added an amendment to respond to some of the criticism that has been put forward.

Is it possible at all, you might ask, to stand behind a book that was published 10 years ago and whose three main parts date back almost 20 years? This was probably the key question that both the publishers and I as the author had to turn over in our minds when considering this new edition. It goes without saying that I still stand behind this book, in the sense that it reflects the knowledge and views I had at the time of its first appearance. What is more, I stand by it in a broader sense: I believe it still contributes to the better understanding of complex systems, their cybernetics, and how we deal with them—in other words, to their management. Even against the backdrop of recent developments, the views presented here seem arguable from both a theoretical and a practical point of view. What is more, they appear to be largely correct in the sense that they have withstood the criticism put forward so far—or so I believe—and much of what is said here has proved to be feasible in practice.

Some have criticized a lack of elaborate arguments to support the hypotheses in this book. They can all be found in the first volume of Gomez/Malik/Oeller, *Systemmethodik: Grundlagen einer Methodik zur Erforschung und Gestaltung komplexer soziotechnischer Systeme* ["Systems methodology: a basic methodology for researching and designing complex socio-technical systems"], or, for short: *Systemmethodik* ["Systems methodology"], Bern and Stuttgart, 1975. That first volume describes, explains, and discusses the

terms, concepts, models, and areas of theory that I still consider the basis of a system-focused or systemic management theory. Just what these areas are and why I believe I can take the liberty of integrating them into a new whole will be explained on pages 57 and following of this book.

The book *Systemmethodik* has long been out of stock. I do hope, though, to soon republish the first volume—almost entirely written by me, except for a 14-page theoretical discussion of Ashby by co-author Peter Gomez—as a book in its own right. It would be both justifiable and useful because, first, the theoretical foundations are all discussed in the first volume of *Systems Methodology*[3] and, second, that volume would then form an entity with this book. Until then, anyone interested in the arguments and explanations not included in this book may want to resort to the sources listed at the end.

What matters much more to me than theory, however, is its *application in practice*. For a good 20 years now I have had the opportunity to work with executives as a mentor, trainer, and consultant. This has enabled me to meet another 500 managers or so every year, study their ways of thinking, problems, and solutions, and find out what mattered to them and why. I was also able to witness their successes and failures, to which—in both cases—I occasionally contributed my share. I learned both ways.

And while 20 years may not suffice to know all about business, I consider myself very privileged for not having to rely on my imagination as to what might be happening "out there." I have been able to experience it first-hand, both in the functions mentioned and as an entrepreneur in my own right. Admittedly, success and failure in practice have no evidentiary value for theory and thus cannot serve as arguments, which is why I do not rely on utilitarian or pragmatic arguments. Irrespective of that, I do find practical experience to be extremely valuable in helping to both identify priorities and gauge proportions and relative weights—which is something even "hard-core" theorists cannot avoid, although they usually lack a crucial dimension.

Heinz von Foerster[4] said many years ago that we ought to study cybernetic systems *in vivo*, not *in vitro*. I have had ample opportunities to do that and I took them. Von Foerster also said: "The laws of nature are written by

3 The second volume of *Systemmethodik* discusses various approaches to solving complex problems, and elaborates on systems methodology and some of its applications.

4 Fortunately, Heinz von Foerster's groundbreaking papers were also translated into German in the 1990s. I had compiled a complete collection of his work as early as 1977, including the legendary microfilms of all papers generated at the Biological Computer Laboratory (which were considered a best-kept secret at the time).

humans. The laws of biology have to write themselves," which he referred to as his Theorem Number Three. I would like to add a fourth:

The laws of management practice also write themselves—and they are always good for a surprise.

They will not be captured by any of the theorists' observations regarding possibility or impossibility.

Lamentably, in discussions on systemic management it has become fashionable to emphasize the most *complicated* aspects of systems theory and cybernetics. We hear and read about the risks of getting caught in logical paradoxes, about the impossibility of recognizing reality, about the general unpredictability of complex systems, about the non-trivial machines, undecidable issues, and the like.

Admittedly, these are intellectually fascinating things. Some of them appear in this book, and they are indeed crucial to the deeper understanding of complex systems. But do they have any practical significance? And if so, when, where, and why?

Practice will not be stopped by paradoxes, be it the Cretan Liar or the Medieval Barber, and I will spare you from rehearsing those stories yet again. If the matter is important enough, there will be pragmatic ways of finding out whether the Cretan is indeed a Cretan and whether he is lying or not. As to the question of whether the barber does or does not shave his own beard: This does not really have any practical relevance for anybody. Customers will accept him with and without a beard, as long as he does a good job shaving theirs, and if he fails to do that there will be others to take his place. Theoretically undecidable questions are resolved in practical action. Basically unpredictable systems are realigned. Unsolvable problems are something we can come to terms with—in the end we will all be dead anyway—while the world goes on. Alexander the Great failed to untie the knot, but that did not stop him.

Management and managers, whatever their relationships and names may have been or will be in the future, will continue to shape and direct systems as long as they exist. They will make the impossible possible, and they will fail to do the possible. All of that is part of *the practice of cybernetics*, and these managers do not care whether or not their actions are in line with relevant theories.

Irrespective of all the questions that have not been and perhaps cannot be solved in theory, managers can be helped in solving *practical* problems. One can sit down with them to jointly think about progress and regress,

about better and worse solutions. With their shirt-sleeved ways, managers may have done more harm than philosophers have—but they have done more good, too. Good managers take their responsibilities very seriously and accept help when they need it. They are interested in better solutions and a better world. However, that help needs to be easily accessible, as they have other things to do than spend their time struggling with complicated theories.

The only thing I regret about this book and its reprint is that back in those days I put some things in more complicated terms than I would today and that at some points I lacked the courage to simplify and clarify things. Today I muster that courage based on my extensive practical experience. My gratitude goes out to all the practitioners who never let this stop them from working through these more than 500 pages, or at least some of them, and from testing some of the recommendations given. I was able to learn an incredible lot from them, far more than from all the theorists that picked out single sentences to criticize but ignored the context.

The only thing I can promise to my management friends in return is that I will not let them down. My plans to write a practical guide to management cybernetics, a book that will address not the theoretical topic but the *practice* of systemic management, are beginning to take shape.

St. Gallen, March 1996

Prof. Dr. Fredmund Malik

Preface to the 7th German Edition

The publication of this 7th edition of my book comes at a time which highlights quite well, though somewhat tragically, the significance of cybernetics and a strategy for the management of complex systems. The year 2001 has dramatically proven the systemic nature of business and society. What may have been mere theory for many is now proving to be practice and reality—so forcefully that it can no longer be ignored.

Terrorism in the United States, the collapse of large corporations, the rise and fall of what had falsely been believed to be a new economic paradigm, increasing public awareness of the new situation in the stock markets and the entire economy, a growing skepticism vis-à-vis any kind of globalization after it was long believed to be the cure for everything: All these factors illustrate in various ways the enormous complexity of societal systems, their interconnectedness and interactive nature. They also illustrate the fact that the conventional concepts of management do not suffice to adequately deal with the basic phenomenon of any organization: its complexity.

Hardly ever has it been more evident how urgently we need to make use of the findings from systems science and cybernetics in order to design *robust*, *functional*, and *safe* systems in business and society—or indeed what the consequences are of ignoring these insights and leaving them for others to use, or even of systematically disregarding fundamental principles and laws of cybernetics.

Toward the end of the new preface to the fifth edition, which I wrote in 1996, I pointed out the risk of misuse of cybernetic findings, and how the extremely useful practical applications of cybernetics and systems science are recognized also by organizations pursuing unconstitutional goals. In that same preface I also expressed the notion that terrorist and criminal organizations probably have excellent system experts in their ranks. Back then there was no way of knowing when and how this assumption would prove

correct; I did feel quite certain, however, that it would happen sooner or later.

Complex systems have their own laws, behavioral patterns, capabilities, and risks. Cybernetics and systems science provide us with enormous knowledge, enabling us to understand, design, develop, and control those systems; yet a lot of work remains to be done in terms of preparing theoretical insights for practical usability and transforming existing knowledge into tangible, value-adding results.

It was this search for scientific progress and its relevance for solving practical problems which caused Prof. Hans Ulrich, the founder of St. Gallen System-Oriented Management Theory, to consider cybernetics and system theory to be the key fundamental disciplines for management training with practical relevance. His collected writings were recently published for the first time, split into a total of five volumes.[5] They impressively demonstrate how far ahead of his time Hans Ulrich was.

In technology, medicine, and the natural sciences, far-reaching progress has been made by relying on cybernetic insights to solve practical problems. By contrast, much remains to be done in economics and social sciences. Part of the reason is that in some of these disciplines it has always been fashionable to ignore the methodological standards that brought success and progress to other fields.

St. Gallen, January 2002

Prof. Dr. Fredmund Malik

5 Hans Ulrich, *Gesammelte Schriften*, 5 volumes, Paul Haupt Verlag, Bern/Stuttgart/Vienna, 2001.