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FREDMUND

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

STRATEGY FOR MANAGING COMPLEX SYSTEMS

A Contribution to Management Cybernetics
for Evolutionary Systems

Translated from German by Jutta Scherer
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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.

* 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 Foerster⁴ 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.

Preface to the 10th German Edition

When writing the first preface to the first edition of this book in 1984, while I was convinced I was on the right track, I could not really be certain. I lacked the practical experience I have today. Now that I am writing the eighth preface and publishing the tenth edition, I have successfully completed numerous projects with a most diverse corporate clientele, which has confirmed my decision to take this radically different approach we call management cybernetics. What used to be an industrial society where many things were impossible to understand has turned into a society of knowledge and complexity which cannot function without cybernetic management.

It has certainly not become easier to capture the best knowledge about the management of complex systems. Nevertheless—or perhaps for that very reason—the demand for this book has risen from year to year. And while the theoretical knowledge has not become simpler, our firm has managed to simplify its practical application, in which I have gathered over 30 years' experience to date.

The manuscript for this book was completed in 1976. After that I dedicated all my efforts to developing, gathering, and integrating the models, methods, and tools required for the practical application of management cybernetics. It was only in 1984, after eight years of practical testing, that I published the book with corresponding amendments, specifically in Chapters 0 and 4.

I have written five other books since: *Die Neue Corporate Governance* [“The new corporate governance”], *Managing Performing Living*, *Uncluttered Management Thinking*, *Management: The Essence of the Craft*, and *Corporate Policy and Governance*. Every year, tens of thousands of managers familiarize themselves with my cybernetic management system for general management. A growing number of organizations use its contents and tools.

6 Please visit us online at www.malik-management.com.

Cybernetic management means self-organization: *organizing a complex system in such a way that it will be able to self-organize*. This is the theme that will eventually prevail in our 21st-century society of complexity, if there is to be any more progress at all. That means we will migrate to completely new and different solutions. Our old methods and ways of thinking have created very poorly organized complex systems, which now fail to function due to these same ways of thinking.

Cybernetic management is the crucial paradigmatic step toward what I call *self-concepts*: the step that takes us from regulation to self-regulation, from organization to self-organization, from structuring to self-structuring, from coordination to self-coordination, from developing to self-developing—or, in other words, to evolution. These solutions are the only ones that work, as we are no longer able to understand systems in their entirety. Due to their dynamics, interconnectedness, and indeterminateness—in other words, their complexity—they are non-analyzable, non-computable, and unpredictable in their behavior. This book shows how they can be controlled and shaped nevertheless. It contains the necessary theories and the reasoning behind them, as well as strategies, tools, and necessary steps for their application in practice.

For the new management, which is able to cope even with the most complex systems, I have put together elements from systems science, cybernetics, and bionics, configuring them so as to address the relevant issues, and integrating them into a new, coherent concept for managing the institutions of modern-day society. This has little to do with earlier concepts of management theory, and hardly anything to do with business economics and business administration. There is very little management can learn from these disciplines, or from economics in general, when dealing with complex systems. The potential of these disciplines—of whatever useful concepts they offer—has been exploited. Much has proved to be useless, in part even misleading. The issues that management has to deal with in our society of complexity differ greatly from those addressed by the economic sciences. Traditional, economics-based management theory is unable to cope with complexity, let alone take advantage of it.

Major references and rich sources of new insights can be found in the bio- and neuro-, computer, information, and communication sciences—which are all offspring of cybernetics and systems science. Existing knowledge about complexity has been used early and consistently in these disciplines, which is why they are the most successful in this field. Other

disciplines have fallen behind because they keep within the narrow confines of simple systems and clearly defined areas of expertise. All they are good for now is lab research—in the real world they have lost most of their relevance. In medicine and technology, too, cybernetics has provided the foundation for spectacular advances. Some other fields would be virtually unthinkable without cybernetics: aeronautics, modern shipping, the intelligent automobile with its many self-regulating elements, computer technology, telecommunications, non-invasive surgery, and intensive-care units at hospitals—to name just a few.

Cybernetic solution systems exist in countless variations—which ultimately does not really matter because they are all outcomes of applying the laws of nature. There is no similarity whatsoever between Isaac Newton's falling apple and the positioning of a navigation satellite—yet they both follow the law of gravity. It is much the same with cybernetic laws of nature, no matter whether they work through proteins, computer chips, or the master controls of complexity-adequate business management: “There are many possible manifestations; there is one cybernetic solution,” as Stafford Beer, the founder of management cybernetics and my long-time friend and partner, once summed it up.

Many fail to understand the significance of the natural laws at work in complex systems, which were discovered in the 20th century, because—contrary to those of physics—these are not perceptible to the senses via matter and energy. The laws of cybernetics describe the effects of the third basic quantity in nature: information. Information originates in the brain. So the only way to explore the effects of cybernetic laws of nature is by reflection. This is precisely what keeps the complexity-focused sciences, specifically cybernetics and bionics, from unfolding their full potential. To this date, some people still believe it is a mere illusion harbored by early pioneer thinkers, something impossible to implement. This kind of thinking is a sign of ignorance, especially when absurd allusions to totalitarian surveillance systems are used to stir vague fears.

Cybernetics is the science of functioning; management cybernetics is its application in practice to all organizations of business and society as well as to society itself. Crises and conflicts are always consequences of malfunctioning systems and management failures. All attempts to keep systems like these alive with outdated, simple, linear ways of thinking are bound to fail for reasons rooted in cybernetics and natural law. Functioning organizations

in a functioning society are the purpose, the objective, and the outcome of scientifically based, professional, ethical and

This book has mobilized valuable support for me in direct and indirect ways. I thank everyone that has contributed, if unknowingly. First and foremost my heartfelt thanks go to the numerous readers who have bought this book and worked their way through it. Many have corresponded with me for years; some have become cooperation partners and even friends.

To the tens of thousands of managers from all areas of business and society, I owe sincere thanks for the courage and trust it took to test cybernetic management models, principles, methods, and tools together with me and keep improving them. This practice has been and still is my research lab, where the strategy for the management of complex systems continues to be tested on a day-to-day basis. It is the ideal empirical platform for my scientific work, something I wish my colleagues from academia could have.

Special thanks are owed to the Swiss National Fund, which years ago funded the research project on “system-oriented cybernetic management of complex systems,” enabling me to do the research for this book, as well as to my long-time academic mentor and superior, Prof. Dr. Hans Ulrich, who established this kind of management thinking at the St. Gallen University in the 1960s, and my colleague and friend Prof. Dr. Walter Krieg. Together with Hans Ulrich he created the St. Gallen Management Model, which was first published in 1972 by Management Zentrum St. Gallen. The model was presented to the global public in 1973, together with the Club of Rome’s first report on the “Limits to Growth,” at the 3rd St. Gallen Management Symposium hosted by the ISC (which I co-chaired at the time). I am very grateful to Walter Krieg and to my colleague Dr. Karl-Heinz Oeller, co-author of my doctoral thesis, for continuing to provide the most valuable support in the developments at Malik Management Zentrum St. Gallen. I also owe sincere thanks to all my staff, some of whom have been with me for over 30 years, as well as to Haupt Verlag in Bern, specifically Dr. Manuel Bachmann for managing this new release of the book.

Last but not least I thank my wife Angelika and my two children. The final paragraph of the first preface still holds true: 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 say to her: “As soon as I’m finished.” “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 rather chaotic stacks of books, papers, and files on the floor, said to me, “Daddy, I think your book will never be finished.”

St. Gallen, April 2008

Prof. Dr. Fredmund Malik

Preface to the 11th German Edition

A strategy for managing complex systems is now more important than ever, much more so than in 1984, when this book first came out. I had actually written it from 1976 to 1978, as my habilitation thesis. This was in the context of a large research project conducted by the Swiss National Fund for Basic Research, which focused on the design and control of complex productive systems. Ever since then there has been a continuous process of self-reinforcing global complexification.

More recently, this process has developed a very distinct pattern: A fundamental transformation of businesses and societies around the world is going on, affecting more and more areas of our lives at increasing speed. This became apparent quite early: Back in the 1980s, I addressed the first signs of the transformation in my lectures and speeches. After the stock market crash in 1987, I started exploring strategic deflation scenarios with my corporate clients; in 1991, my book *Krisengefahren in der Weltwirtschaft* (“Risks in the global economy”) came out. In 1997, I described the key characteristics of this transformation, which were quite visible by then, in my book on corporate governance, referring to it as the “Great Transformation.” This choice of wording is a tribute to two great Austrian thought leaders, Karl Polanyi and Peter F. Drucker, who have both studied the transformation of global social and economic systems.

The Great Transformation 21, as I call it now, is not simply “change.” Change always happens. Rather, it is a very specific kind of change: the replacement of something that exists by something completely new. It is the kind of change that has regularly occurred in history, and which constitutes a key element in the brazen logic of social evolution: substitution by basic innovation. Joseph Schumpeter, the famous Austrian economist, introduced the term “creative destruction” to refer to this very phenomenon. He realized that innovative managers and entrepreneurs played a key part in this

kind of transformation, and he was the first to incorporate this insight into his economic theories.

Perhaps the most well-known example of a major transformation is the change from agricultural to industrial society some two hundred years ago. Collapse, revolution, and a new order are all features of such transitions. The fundamental shock to existing ways of life affects everything, down to the minute details of everyday life. Other examples of substitution through innovation include the replacement of the horse carriage by the automobile during the years from 1890 to 1930, and more recently the replacement of conventional telephony by smartphone technology. Substitution processes like these have invariably caused the demise of formerly thriving economic empires within a very short time. On the other hand, they have created new empires which have often risen to much greater significance. Examples of the former include Kodak and Nokia, and of the latter Apple and Google.

The survival and—much more importantly—the *viability* of a system fundamentally depend on its ability to realize its potential for the future, which also requires exploiting its present potential. Furthermore, the fact that we do not know where a specific development begins or where it ends creates enormous challenges to the management of complexity—in particular when considering that there is not one single future development but usually a set of competing potential developments.

In view of the growing number of economic, political and social crises we have witnessed over the past years, it is becoming increasingly obvious that this is the beginning not just of a new era but, literally, of a new world with a new order. What most people believe to be the coincidence of a number of individual crises is easier to understand if we consider these crises as the systemic dimensions of the Great Transformation 21. The exploding complexity of global systems, the increasingly dense network of interconnections between them, the accelerating dynamics of global change, the resulting turbulences—all of these phenomena are, in a sense, the “birth pangs” associated with the emergence of a new world.

To master this epochal change I call the Great Transformation 21, all organizations in society will need complexity-compatible management systems and innovative tools. Both businesses and society as a whole will have to shift their focus to the new *functioning of organizations in the 21st century's society of complexity*. The existing economic and social sciences alone will not be able to produce the new solutions we need. Rather, the sciences of complexity will provide the basis: system sciences, cybernetics, and bionics.

Disciplines such as engineering, medicine and the natural sciences have used cybernetic findings intensely and successfully for many years to create feasible solutions. Economics and the social sciences have taken much longer to recognize their inherent solution potential. Slowly but surely they are coming around, however, and we are seeing an almost Copernican turn. Yet while the significance of management cybernetics is generally recognized now, the scope of its impact is not.

What we are experiencing is not simply a paradigm change but a change of the categories in which we view those paradigms. The categorial dimensions of the new world are complexity, system, functioning, control, self-organization, information, nonlinearity, knowledge, and cognition.

Truly effective solutions to the questions raised by the hyper-complexity of business and society will only materialize if the old ways of managerial thinking and acting are replaced by cybernetics—the science of functioning. In going through this fundamental change, organizations' capability to adapt to completely new things and to function under any kind of circumstance will safeguard their survival.

We are not at the mercy of that complexity—provided we accept it and incorporate it into our thoughts and actions. By looking into the nature of complex systems, we will recognize what is impossible, and thus improve our ability to implement the possible and feasible. We will also realize that there is no reason to be afraid of growing complexity. On the contrary: Complexity provides the raw material for intelligent solutions at a higher level of effectiveness.

The systems, methods and tools required as well as the rules for their application are all described in the books I have written (see a complete list in the preface to the 10th edition). This book provides the basics on how to create robust, functional, and sustainably viable systems. One of the reasons why it has become a classic on management cybernetics, now in its 11th edition, is that the strategies and heuristic principles of complexity management are still relevant—now more than ever.

My thanks, which I have expressed extensively in the preface to the last edition, still hold true. I owe them to all the managers and clients mentioned there; to my partners and colleagues at the Malik Institute, who, with the combined expertise and skill of an interdisciplinary team, repeatedly and thoroughly scrutinized my theories—and who were sometimes hard to convince even by what I thought were excellent arguments; to Campus Verlag,

and in particular Jutta Scherer for her professional translation services and numerous improvement suggestions, which helped me to better communicate to an English-speaking audience; to my friends who, in many intense discussions, challenged me to put my thoughts in clearer words; and last but not least, to my family.

St. Gallen, January 2015

Prof. Dr. Fredmund Malik

Introduction to the 5th Edition

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Is This the Final Breakthrough?

When in the mid-1960s Hans Ulrich, together with other faculty of St. Gallen University, began developing a management theory based on systems science and cybernetics, great hopes were attached to both these fields—but less so with regard to the practical application of the abstract knowledge. When the first edition of this book was published some 20 years later, I was personally convinced of the value of systems science and cybernetics-based methods and concepts—but there was little to indicate they would ever find circulation and acceptance outside a small circle of experts.

Now that another 10 years have passed, we are presented with an entirely different picture. Triggered and driven primarily by the explosive developments in electronics and computer sciences, what used to be technical jargon from the pioneer field has all but become common usage. Everybody talks of (w)holistic approaches and networking; “information” and “communication” have become household terms; surfing the web has become a hobby

not only of youngsters but of your average office clerk; cyberspace and virtual realities, the Fractal Factory and the information highway have made the headlines.

Whether this actually aids the cause is a different question. But the fact remains that complexity, systems, networks, and cyber-whatever have become an issue. As questionable as this trend may be in some aspects, it also entails an opportunity. Above all, it involves a certain degree of *compulsion*: It is no longer possible to deny or ignore the *relevance* that systems science and in particular its core concept, complexity, have for the design and control of institutions—at least not in good conscience and without consequences. No one today can afford to not deal with these matters in a meaningful way.

This is not to say that every manager needs to be an expert in the theory of complex systems. But many will need an excellent understanding of the opportunities, limitations, and consequences that these systems bring to management practice. Most institutions, whether in business or in the ever-growing non-profit sector, will have to have at least a few systems theory and cybernetics experts in their ranks. It will be a key prerequisite for them to avoid the risks of complexity and take advantage of its opportunities. In the business sector it will be inevitable for those who want to prevent competitors from gaining major advantages by engaging in these activities; in the non-profit sector it will be necessary because many modern-day organizations have increasing difficulties executing their tasks and, unless there are fundamental reforms, may soon be forced to give up.

As business and society are going through one of the greatest transformations ever, almost all institutions face the need for fundamental, sometimes radical changes to their structure and mode of operation. In my view, systems science and cybernetics provide essential foundations and aids for coping with the current and future problems associated with this change. I am not saying they will provide a solution for *any* problem, let alone a simple and convenient solution, but they have a potential we cannot afford to ignore.

It will be all the more important then to separate the wheat from the chaff. Not everything published on the subject, which currently attracts quite some attention, is actually useful. Quite to the contrary: The growing general interest in systems science and cybernetics is bound to cause undesirable developments and misunderstandings, errors and misinterpretations⁷

⁷ Please also consider my statement in the attachment concerning the critique.

As far as I can tell, a particularly serious risk seems to be arising at the interface between systems science and the humanities, and it seems to be greatest in the field that has always intrigued me the most: management. There may be many reasons for this. A particularly important one, in my view, is the severe lack of critical analysis and debate in this area. The methodological principle of critical examination, absolutely indispensable and a clear driver of progress in the natural sciences and in engineering, is still underdeveloped in large parts of the humanities, despite all the debates over methodology. In management and management science it hardly exists at all. Despite the abundance of publications, there is hardly any critical discussion. In the natural sciences, by contrast, new findings are often tested by other, independent researchers within a matter of weeks or months; the underlying data are examined and hypotheses and experiments challenged. Similar things hardly ever happen in management.

Below I will summarize some of the misdirected developments that have particularly caught my attention.

Misdirected Development

1. Lack of Specificity

First of all, I cannot help noticing that a large part of the relevant literature is rather vague and superficial. It is not very helpful, least of all to practitioners, when terms like “system,” “subsystem,” “element,” “interaction,” “self-organization,” “self-reference,” “autopoiesis,” “feedback” and “complexity” keep popping up in theoretical contexts while their practical impact and application is hardly referred to. Some authors—at least this is my impression—keep writing the same books on fundamental topics over and over again, without ever moving beyond the basics to deal with the practical side. However, as systems theory and cybernetics are rather abstract, I consider it extremely important to work to make them concrete, in particular if their problem-solving potential is to be captured. In the absence of such efforts there will be little chance of widespread adoption in practice.

On principle, many practitioners, entrepreneurs, managers, politicians, chief executives, and so on are very open to and interested in these things—which is hardly surprising, as they increasingly realize that traditional ap-

proaches are reaching their limits. Much of what systems science and cybernetics have to offer is in line with their own intuition and experience, even though they are often unable to find the words for it.

Seasoned practitioners—not the inexperienced ones, obviously—are very well aware that many things in their organizations self-regulate, self-organize, and evolve on their own. But experience has also taught them that the results of this “self” process are not always satisfying, and sometimes lead straight into disaster. As a result their attitude tends to be ambivalent. On the one hand there is a vital interest in better understanding complex systems, be it out of necessity, lack, or disorientation; on the other hand there is considerable skepticism and distrust—and for good reasons, I might add. Practitioners need to be given practical aids. They also need to be shown, based on a few examples, that systems science thinking can provide solutions to several of their problems and that these solutions can be better than others.

It makes little sense, for instance, to keep emphasizing the significance of interaction when referring to management practice. It is quite obvious that many aspects of complex systems—including their complexity—result from interaction. Practitioners know that, even if they do not use the term, but they do not have the time to wait until science has explored every single interaction. Rather, their situation is such that they have to do something on Monday morning. If they do not launch any actions, the actions will launch themselves. And it will often be for the worse.

Let me illustrate what I mean by using an example which, in the broadest sense, belongs in the area of motivation. The past 30 to 40 years have been marked by what we could call the theory of job satisfaction. Put somewhat pointedly, it can be summed up in one phrase: *Keep employees happy and they will perform*. Certainly no one could say that nothing has happened in this field. But what are the results? If we look at international benchmarks, differences in productivity, market share shifts, and so on, my feeling is that results have not been as good as they could be. Of course, proponents of the job satisfaction theory would immediately object that my summary of their theory is incorrect, that there are interdependencies between satisfaction and performance, and that this is an “interactional” problem. Well, perhaps that is so... But what should practitioners actually do? How much longer can they afford to wait?

They do not have the time—for systemic reasons, no less—to await the results of interaction research and the corresponding publications. Precisely

because they deal with “dynamic” systems that keep changing from day to day, or even by the hour, and might be in a totally different constellation tomorrow, they *must* act. They cannot afford to sit back in contemplation.

That is why my suggestion to practitioners is a different one: To begin with, I tell them I am not convinced the job satisfaction theory is correct. The evidence and findings we have so far leave room for legitimate doubt. Historically, performance has probably never arisen from satisfaction but, on the contrary, from dissatisfaction. Had the Stone Age man been satisfied with his damp and cold cave, he would hardly have left it to eventually build a family home with central heating. In response to this, I am then usually asked whether I am suggesting we keep people dissatisfied to elicit good performance? Certainly not. But there is an alternative option: *Give people the chance to deliver the kind of performance that is great from both a relative and their individual perspective—and many of them (not all) will achieve an astounding degree of satisfaction.* That, in rough terms, is what I suggest.

Just like anyone else studying this problem, I am aware that this is still not 100 percent to the point. It is probably too simple to represent the “real” situation, and we are probably dealing with a much more complex interaction, a cybernetic or systemic interdependency involving many more variables. But this realization does not help anyone. When managers ask me, “what should I do Monday morning: Which way should I intervene with the system in order to shift it to another, hopefully better state or at least get it on the way?” I will still suggest the above, as I am convinced it will help them in an essentially system-adequate way. It will give them the chance to spend the weekend thinking about how to enable their people to deliver strong performance and how to shape their tasks accordingly. Last but not least, instead of thinking about how to do this for *everyone* in the organization, they will focus on the eight, twelve or fifteen people directly reporting to them—for this is the problem they will actually be facing, rather than how to make the world a better place. Some systems scientists may regard this as being too simplistic and modest an approach, and it may indeed lead to a suboptimal solution. However, if all or at least a majority of managers acted that way, this would be an enormous step forward.

I feel there are good reasons (though not final evidence) for this viewpoint, which can be derived from cybernetics and systems science. It is owing to these precise cybernetic reasons and the fact we are dealing with a complex system that I am making this suggestion.

There are many other examples to illustrate similar points, for instance with regard to cooperation, coordination, coexistence, and coevolution—which many systems theory papers claim should replace competition. I am not sure we are doing practitioners a great service by permanently insisting they should network. After all, they know from everyday experience that it is sometimes better to disentangle things, even keep them from interacting. Why else would it be that organizations are decentralized, independent entities formed, responsibilities delegated to other hierarchical levels or external providers? A system where everything is interconnected will *block itself* so nothing will work anymore. Perhaps all those that permanently talk about networking, and in much too general terms, would do well to read some works by the early cybernetics pioneer W. Ross Ashby, who masterfully explained these things back in the 1960s.

2. Difficulties Being Blown Out of Proportion

Much the same is true for a habit that has become fashionable in systems science literature, which is to overstrain the philosophy of (radical) constructivism⁸ beyond all reasonable measure. The basic message of this school of thought is that our picture of the world is a construction of our minds. As such, this fact can hardly be denied by anyone having studied the basic schools of philosophy and epistemology, and of course it has significant effects on the management of organizations. I have left no doubt about that in this book.

Some proponents of constructivism, however, seem to be taking it much further, claiming that the world “out there”—reality—does not exist at all.

⁸ Seeing as there are enough misunderstandings already, perhaps I should mention that the term “constructivist,” which I frequently use in this book, has nothing to do with the constructivism I am referring to here. When I use the terms “constructivist” in connection with “technomorph,” it is to express the opposite of “systemic/evolutionary.” In doing this I adopt the terminology used by Friedrich von Hayek, which, to my knowledge, dates back further than so-called (radical) constructivism. As far as I can tell, the term was introduced into the discussion much later, in the 1970s, by Ernst von Glasersfeld. In subsequent years, however, it was used by several authors publishing works about systems theory, cybernetics, and systemic management, and always with the meaning Glasersfeld had introduced. I always felt that this was creating a great deal of confusion, which is why I wish to call readers’ attention to the potential misunderstanding that would completely distort my meaning.

The ultimate question is not just whether our image of the “world” is a construction of the mind, but what this construction has to do with the reality that possibly exists, independent of the perceiving subject—or in other words, whether our image is completely subjective or correct, at least with regard to some aspects; whether it can be improved; whether or not we can get it to come close to what we might call reality.

If these were *only* philosophies, perhaps we would not have to deal with them in the management context. However, the different varieties of this type of constructivism are introduced to organizational practice in many ways: through communication theory and training, through training on leadership, motivation etc., and most recently through an ever-increasing number of publications on “systemic management,” including one by the Heidelberg Institute for Systemic Research. Of course I am all in favor of dealing with these questions thoroughly, and I am hoping for results that will add some momentum to the joint concern we may have, which is to contribute to improving the management of organizations.

But we will hardly succeed—at least not with the arguments put forward so far—in convincing practitioners that the world is just a figment of their imagination. Perhaps not all managers but many of them will readily admit that they sometimes make mistakes, that their image of reality is often incorrect or incomplete. Why else would they dedicate such effort to gathering information, gaining a clear understanding, driving market research, studying competitors, and so on? But they will hardly believe us when we tell them that currency rates are not a reality, that the superior product or the promotional campaign that enabled a competitor to win market share and turnover from them is just a phantasm, and that the shareholders’ meeting where people got furious over low dividends and sinking stock prices was just a product of their imagination.

Especially good managers will be willing to reflect upon the issues raised by this school of constructivism, particularly since they apply its findings on a daily basis (and had done so long before constructivism even existed), for instance in advertising or negotiations. And they have always known that balance sheets never reflect reality, which is why anyone who learned the trade will never be bluffed by them. He or she will not only have learned to use a balance sheet as a tool, but also have carefully studied the connections between balance sheets and economic reality, between “map” and “territory.”

Issues like these, which are systemic in nature, have been observed, studied, and applied in practice much longer and much more intensely in the business sector than they have been studied by philosophers. We can trace them back to the supposedly Sumerian scripts, which actually appear to have been Chaldean:⁹ rather than recording heroic deeds, as many historians have claimed, their main purpose was to document debtor-creditor relationships. So if we want to change, perhaps even improve the management of organizations based on findings from systems science and cybernetics, it will be essential to get practitioners' attention. That, in turn, will only be possible by being more specific, by using examples and providing practical advice.

And whether we like it or not, this will take some compromising with regard to the language used, the examples selected, and the specific recommendations made. Every example has its limits and raises its own ifs and buts; not every wording will stand up to purist semantic analysis; not every recommendation can be fully substantiated. On the other hand, if systems science and systemic management degenerate into an intellectualistic playground, this may be interesting to observe but it will remain *ineffective*. Also, practitioners will reject it, perhaps even aggressively, and justifiably so: first, because it is no help to them; second, because it causes even more confusion for them and their staff than they are already dealing with every day; third, because they are keenly aware that they—the business sector—are expected to create value before any tax money is spent on intellectual pursuits.

3. Small or Large System?

There is yet another observation to be made. A substantial share of recent literature on systemic thinking and systemic management deals with the type of system we refer to as a *small system*. It is the face-to-face group, the team, the workgroup, the family, and so on. Almost the entire field of organizational development, human resource management, and what is usually referred to as people leadership is influenced by these systems and by so-called systemic therapy. I certainly do not intend to question the sense and value of engaging with these elements; we owe significant insight to the research done in this area. Of course, small systems are systems, too. That said, they

⁹ See G. Heinsohn, *Die Sumerer gab es nicht* ["The Sumerians Did Not Exist?"], Frankfurt, 1988.

are not the main field where systems science and cybernetics will prove fruitful.

While there is nothing to be said against using systemic terms, concepts, and ways of thinking in this field, they are rarely needed. Common sense and some experience will get you quite far here.

The practical context of this kind of systemic management, systemic therapy, and so on is usually a *small* number of people: a couple or a group of, say, 20 or 25 individuals. With this system size and the corresponding degree of complexity we have the essential advantage that the structure and behavior of the system and its elements—that is, of the individuals and the groups they form—are accessible to sensory perception. Of course this perception is influenced by constructions of the mind and might not be able to get beyond it (if we believe the proponents of radical constructivism)—and yet the situation is completely different and in my opinion much simpler than it is with large systems. The true difficulties will occur *beyond* the limits of a small system, that is, when we deal with organizations comprising thousands or even hundreds of thousands of people. Systems of this kind are no longer accessible to sensory perception. Here, we face dimensions of complexity that require entirely different methods and ways of thinking: those that appertain to systemic management. Systemic management must not be confined to the field of small and/or simple systems, and we have to avoid the impression that this was the most important or preferred or most productive application.

Perhaps this is the right place to recount a personal experience that is still very vivid in my memory. Years ago I attended a small symposium entitled “Evolution and Management” in Vienna. The hosts had managed to win keynote speakers from different scientific disciplines; there were also quite a few senior and top managers of business organizations, some of them as speakers, most as participants. It was quite obvious that the practitioners present were very interested in possible applications of evolutionary (systemic) management. One of the scientific speakers, a business economist, gave an interesting and comprehensive presentation on a real-life case he considered best practice, explaining how systemic thinking was being applied at a company. He impressively outlined the methodology, presented complex network diagrams that had been developed in the course of the business diagnostic, explained an equally comprehensive matrix of influencing factors, and gave the time and HR expenditure required by the project. It had spanned several person-months. One of the managers in the audience

asked him—obviously quite impressed—what kind and size the company had been. The speaker readily provided the desired information: It was a trading firm with eight employees... Disappointment was written all over everyone's faces. The same manager went on to ask—and justifiably so—what use this method could be to him, the head of a corporation of over 100,000 employees, with several dozens of associated companies and over 500 business units worldwide ...!

Well, obviously it does not work this way. You cannot take minor issues that might serve as case studies for a third-year term paper and present them to seasoned practitioners faced with completely different dimensions, in hopes of persuading them to give your suggested management approach a try. And there is yet another point to consider: The influences of systemic therapy have led to the emergence of what I would call a dominance of pathological cases. Therapists deal with *sick* people and systems. If systemic thinking helps their therapies, all the better.

In organizations, however, we typically deal with *healthy*, normal people. Or, to be more precise: We are probably all sick or abnormal in some way—if only because it is impossible to define normality. Most of us, however, are probably abnormal to a perfectly normal extent. We may all be “sick” or “crazy,” but we are so in an ordinary way. We all have our problems and neurotic traits, but we are able to deal with them more or less. In that same sense, many organizations are “sick” in that they have their shortcomings, structural and functional deficiencies, and thus are in need of reforms and restructuring. In other words, people and organizations both have their difficulties, but treating them as illnesses is wrong in my opinion.

It seems to me that some therapists and organizational developers take ordinary problems, disagreements, and the occasional, perfectly normal and inevitable conflict and turn them into severe pathological cases. We may face such severe cases every now and then, but they are rare. By far the most difficulties occur because people are people—a fact we are obviously losing sight of. Many problems result from simple misunderstandings and from a certain degree of neglect in performing essential management tasks. To solve or eliminate such “problems,” we do not have to bring in the heavy artillery of therapy, least of all systemic therapy.

4. Mystification of the Systems Approach

Another trend to be observed—a rather unfortunate one, I might add—is what we might call the “mystification” of the systems approach. From a scientific perspective it is hardly worth the trouble dealing with it, as the arguments supporting it are rather weak. Surprisingly, however, this line of thought holds plenty of emotional appeal for many people. It is tightly linked to what is sometimes referred to as the “psycho-boom.”

In the course of this development, the systems approach is closely associated with the most diverse doctrines, be they of Chinese, Indian, or Tibetan origin, be they rooted in Taoism, Hinduism, Buddhism, or Confucianism, be they of the esoteric, spiritualist, or other mythological variety. Proponents of this line of thought sometimes refer to authors who used to be known as serious scientists before they started “tripping.” Their former scientific reputation often gives their mystifying musings enormous power of persuasion, and thus broad dissemination to a degree never justified by the quality of their metaphysical thought labyrinths. Well, we all know that scientists are people, too; like everybody else they have their ups and downs, their emotions, doubts, and self-doubts, and along with pronounced rationality we often find a remarkable degree of irrationality.

It is no exception, for example, for highly skilled physicians who have made major contributions to their discipline to develop a strong bias towards metaphysics and mysticism, either as part of their reaching old age or due to their personal situation. This is not objectionable, of course, nor can it be avoided. But the question is what impact this has on others, what intellectual movements it sparks, how it can be abused, and how it can put a dent into a scientific discipline’s thinking.

If these were all questions arising inside the science community only, one could calmly rely on their self-correcting forces. Not so in the world of media. Mystifying salvation doctrines are a favorite media product, not only due to their emotional appeal but also because they sell so well. As a consequence, the impact of such doctrines is far greater than we would like it to be, especially when they have the power to discredit a discipline to the point of being rejected by everyone outside those “esoteric” circles, for the very reasons that it is popular with them.

Interestingly, mystifying beliefs that resemble salvation doctrines often meet with a great deal of sympathy in entrepreneurial and management circles, sometimes even fervent support—so fervent in fact that it bears all the

hallmarks of sectarianism. Perhaps it is the sometimes very exposed positions of these people, the loneliness at the top of organizations, the decision-making pressures and considerable stress associated with management positions, which makes them so susceptible—not only to the usual temptations of modern society, such as alcohol, stimulating and tranquilizing substances, and other drugs (things that are much more common on executive floors than one might think, even though they are rarely discussed), but also to said mysticism—be it in the form of systemic theory or not. Fortune-telling, astrology, swinging the pendulum, and other magic rituals are “methods” which, lamentably, are firmly established in some companies—no matter whether they have proven untenable, and regardless of the damage they do.

The very least we should ask about these doctrines, be they camouflaged as systemic theories or not, is what their followers have actually achieved. No matter whether we are talking about Indian, Chinese, transcendental, or other metaphysical concepts—what are their accomplishments? I, for one, am not impressed. Even if we consider that there have been historical high cultures which were allegedly based on these philosophical or religious foundations that are recommended to us again, one question should be permitted: Was everyday life really influenced by these philosophical-religious doctrines, and if so, to what extent?

Why did these cultures perish, if their spiritual foundations were so superior, so much better than ours, to the extent that they are recommended to us now? Why is these peoples’ recent history, their economic, social, and political situation, anything but impressive? And even if our overall judgment is positive, would it be possible at all for us to transplant those doctrines to a totally different tradition, apply them to a totally different mentality?

I have always had my serious doubts about Japan’s owing its economic success of the past 30 to 40 years to Far Eastern culture and mentality, and I am having the same doubts about modern-day China. In my view, a much simpler and more convincing explanation for their achievements lies in the fact that these countries, after decades and even centuries of political and social maldevelopment, had reached a point where they had to face a few truths, and that they then adopted the very philosophies and approaches which in the Western world led us if not to Paradise, then to a way and forms of living that their populations found much more desirable than what they had at the time. Whatever the Japanese economy has accomplished, it has accomplished by means of Western approaches—methods that the Japanese

have demonstrably adopted from the West. These approaches had often been developed in the West but, having largely been ignored here, were implemented more rigidly and effectively by the Japanese. The same goes for China.

The Potential of the Systems Approach

As we have seen, anyone studying and dealing with systemic and systems-based management had better watch out for potential aberrations. Properly understood, however, systemic management holds considerable potential. We will simply need it, and those that master it will make substantial progress. They will be able to master much more complexity, and they will also achieve greater personal and economic success.

Systems- and cybernetics-based approaches and findings help you, for example, come up with a better and more precise assessment of given situations and their future evolution. It is largely due to my many years of studying complex systems that in the late 1980s I arrived at a completely different—and eventually much more correct—assessment regarding probable developments to be expected in the 1990s than almost anyone else that spoke or published on the subject.¹⁰ Neither did I join in with the universal euphoria about Europe, nor did I share the general view on the future of the collapsed communist world. From a systems-cybernetic perspective, I was fully aware that these hopes could not come true unless there was a miracle. It was equally obvious to me that the entire global economy would experience major turbulences in the 1990s and that there would be severe downturns, if not worse.¹¹ As a result I was able to forecast that in the economic and thus the political and social climate, changes for the worse were much more likely than the scenarios drawn up by most economists, futurologists, managers, and politicians, who had basically predicted lots of good things for the 1990s. If you read the headlines and publications of that time you will quickly realize that none of the predictions have come true; much to the contrary. The study of complex systems allowed even more forecasts: that

10 See, e.g., my book *Krisengefahren in der Weltwirtschaft* (co-author: D. Steiler), Zurich, 1991, p. 13.

11 I had expected this as early as in the late 1980s, but even systems theory and cybernetics do not allow for such precision, even though this forecast proved correct for Japan.

Europe was not going to work like that (neither in the given nor in the planned structures), that the U.N. would face a severe crisis and either become meaningless or break apart. In both these cases (and many more), a rough system analysis sufficed to show that the architecture of these systems was wrong and that they lacked crucial tools and regulations to ensure coherence and integration.

Complex systems have their own laws. If you are aware of them you will be able to understand, explain, and forecast their basic options and probable evolution much better than, say, with the techniques and tools used in economics and trend research. You will be able to organize and direct them more effectively, and in a certain sense, to better control them—if that is what you want.

Most importantly, once you have studied and understood complex systems you will find it easy to abandon the naïve can-doism that so dominates the minds of a certain kind of managers and politicians, always in the erroneous belief that they are masters of their systems. It will enable you to judge quite reliably whether or not an enterprise will be successful with a certain strategy, and under what circumstances. It was clear to see back then—and my view, which I expressed quite early, is “on the record”—that some of the strategic maneuvers in business would fail and thus produce severe consequences, even though at the time they met with general applause from the “experts” and were presented as showcase examples of entrepreneurial savvy and vision. There is this naïve type of managers—a result of poor personnel decisions—but then there are also many others who are well aware of the complexity of the systems in and for which they do business.

Being aware of the regularities of complex systems enables you to form an educated opinion on what a system is *not* able to do, what will *not* work, and that helps eliminate the naïve belief that anything is doable. It also enables you to assess what a system *can* do and what *will* work.

Just because you have dropped the attitude that anything is doable, there is no reason whatsoever to succumb to the other, equally naïve belief that there is hardly anything or nothing you can do. That attitude, which we might call the non-doability attitude, seems to enjoy unfortunate popularity among the proponents of system management. In my opinion, neither are they right nor are they doing the cause a favor. There is, for instance, the hypothesis that social relationships (in social systems) cannot be organized

by managers because they are part of the same organization.¹² Others see managers and management in the role of catalysts and facilitators, or would expect them to “give process-based suggestions, ‘disturb’ and irritate.”¹³ Well, the range of managerial behaviors does include that—amongst other things. I have occasionally used the terms “catalyst” and “cultivator” myself to express the degree of caution sometimes required, for example, in negotiations. But of course the fact that executives’ repertoire should include such practices does not mean there cannot or should not be other, very directive ways of shaping things.

This would not only mean that the possibilities of shaping, changing, and even improving systems—for which I think there is solid evidence—are massively underestimated. Also, such models of managerial behavior are hardly suited to persuade executives to study systems and systemic management, on which basis they could possibly change their dysfunctional understanding of their role. There will, however, be no way around winning managers over as allies to the cause—and once again, it is for systemic and cybernetic reasons.

There are numerous examples to prove that it is very well possible for executives to change and manage systems, and to direct them in a positive and desirable sense, in a way that serves the system’s interests or purpose. There have been mergers that were approached in a very professional, skilled, clever, and quite systemic way, including that of the Swiss pharma companies Ciba and Geigy in the 1960s. And it very much looks as though the most recent move, the merger of Ciba-Geigy and Sandoz, will result in a new system that in many ways holds attractive potential for success.

Every successful cooperation between companies is another case in point, and there are many of them. Systems like these do not simply emerge. There are decisions to be made, and they are made by managers in their function as members of legal or statutory bodies. Even if implementation requires plenty of self-regulation and self-organization—and it is often (or rather: always) deliberately organized that way—the fact remains that this has to be preceded by some decision-making.

12 See, e.g., H.R. Fischer, “Management by Bye?” in: C. Schmilz, P.W. Gester, and B. Heitger (eds.), *Managerie—1. Jahrbuch für Systemisches Denken und Handeln im Management*, Heidelberg, 1992, p. 28.

13 See Schmilz, p. 67, who referred to this as “stimulation mode” and contrasted it with what he called the “control mode” (author’s translations).

Of course there is no denying that for every positive example there are many more negative ones. But that, precisely, proves my point that these things can be done the right way—, in line with system requirements—or the wrong way. By the same token, it is certainly possible to change and improve the structure and function of, say, top management—undoubtedly a social system—by appropriately designing contracts, company bylaws, and in particular one of the most effective systemic interventions: managerial pay.

Let me give you another example. Take European air traffic control, a poorly functioning system comprising several dozens of autonomous local and national centers which, although interconnected and interacting, mainly produce plenty of cumbersome complexity. There certainly is no doubt that this system could be changed—which would have enormous positive effects on almost every system variable (except for a somewhat childish variety of national prestige). In the U.S., a new solution has long been implemented, and the same will happen in Europe, although it will take a bit longer—again, for systemic reasons. Technical structures and conditions play a crucial role here; yet the fact remains that it is a social or socio-technical system.

These examples should suffice to show that systems and their structures can indeed be shaped, even on a daily basis, which sometimes requires more and sometimes less systemic know-how, and it goes without saying that mistakes can happen. So when systems are shaped in this way, this clearly changes the conditions under which self-regulation, self-organization and a further evolution of the system take place, and it also contributes to the management of social relationships in a system—not in detail, but in their patterns. That has always been the meaning of “control” in a cybernetic sense, be it cybernetics of the first or second order.

So it *is* possible to act and do something—and I feel that this also implies an obligation. That does not mean you can act everywhere and any time, nor does it mean that your actions will always be flawless.

As I said earlier, business and society are currently undergoing one of the greatest transformations of all times. Almost all systems have fundamental changes coming. Almost everything we do and how we do it will change over the next 10 to 15 years: the way we produce and consume; the way we distribute and finance; the way we do research, teach, learn, and innovate—that is, the way we gain, disseminate, and use knowledge. The work we do and how we do it will all change.

All of this happens through and by means of organizations—that is, systems that are often difficult if not impossible to comprehend. That is why certain reactions of people are easy to predict. Some will resign and wish they could return to the romantic environment of the closed tribal societies of ancient times; some may even make aggressive attempts to bring them back. Others will be fascinated, dreaming of new worlds to come. Yet others will begin to coolly take advantage of these developments, perhaps use or abuse them.

Whatever one's attitude may be, the fact remains that we are going to have those systems. We will not be able to ignore or escape them. It will be up to systemic management to make sure these systems serve people, not the other way round. We will need system architects, system regulators, and system organizers, and not only will they need to know a lot about complex systems, but they will need ethics and morals suited to the complexity of these systems, in order to recognize potential abuse early on and prevent it.

One of the most important and most difficult issues to be solved will be the question of *responsibility*. How can we effectively implant responsibility in a complex system, what does it mean, what does it have to mean? Solving this issue has to take top priority. This also includes the responsibilities of the systemic consultant and of the therapist. There may be no *general* solution for these questions, but there are definitely *specific* solutions for individual situations, and a cumulation of individual cases would be a step forward. Effective responsibility will also have to include *liability*, as otherwise we would never get beyond the point of mere appeals.

As we learn from the quote from Gregory Bateson, which has headed this book since the first edition, a good understanding of complex systems can also be put to terrible use. Sometimes I cannot help the impression that those most knowledgeable about systems include the “Godfathers” in Mafia-like organizations and the masterminds of drug cartels and terrorist organizations. We just cannot afford to ignore the efficiency of these systems, and it is common knowledge that this efficiency does not spring from intuition alone; rather, these organizations have experts on their payrolls. It goes without saying that this is abuse.

It is all the more important for us to have large numbers of managers, in the broadest sense of the word, with profound knowledge about complex systems and who use this knowledge in a responsible and ethical manner. No philosophy, no theory, no discipline is immune to abuse, and as long as we do not have computers capable of taking ethical decisions and bearing

responsibility for these decisions, it is humans who take and are responsible for them. I therefore think it is extremely important that the knowledge about complex systems is disseminated as widely as possible, so that a maximum number of people will be able to gain a better understanding of them and competently work on their design.

0. Introduction: Construction and Evolution*

“... we create the world that we perceive, not because there is no reality outside our heads, but because we select and edit the reality we see to conform to our beliefs about what sort of world we live in”

Mark Engel

0.1 Premises, Frames of Reference, and Illusory Worlds

Depending on the premises that a scientific discipline uses with regard to its object of research and the problems studied, that discipline will come to different conclusions and even maintain a totally different theoretical understanding. It is normal for assumptions concerning the nature of the object and its central issues to appear so obvious, even trivial, that they are often perceived to be unproblematic. Many of these assumptions are not based on explicit knowledge but tacitly accepted. Some cannot even be put in words because they are implicitly inherent in the way we get our bearings in the world, in particular in the language we use to describe the structure of the world.

The dispute among scientific schools of thought can often be traced back to different basic assumptions, which their representatives may use subconsciously. The conclusions drawn by opposing parties and the resulting recommendations may be utterly irreconcilable and contradictory, and related discussions tend to be highly emotional because both parties proceed from the assumption—which in itself is based on assumptions—that they are referring to the same object, while upon thorough analysis it often turns out that a common understanding is impossible because they are talking about different things.

We tend to fall into a semantic trap here in that we automatically assume that identical names are used for identical objects. Alfred Korzybski⁸ is

* A very condensed version of this introduction entitled “Two Kinds of Management Theories: Construction and Evolution” was published in H. Siegart and G. Probst (eds.), *Mitarbeiterführung und gesellschaftlicher Wandel*, a festschrift for Charles Lattmann, Bern/Stuttgart, 1983.

⁸ Korzybski (Science).

known for his observation that a map is not identical to the respective territory and a name is not the same as the object it refers to. These observations only appear trivial. Together with the laws of human communication, ignoring these insights can cause us to create illusionary worlds which—and this is what is hellish about them—are not recognizable as such.

This is due to the fact that recognizing reality is more difficult than generally assumed, in particular because the human brain has the ability to construct different realities, each of which can be consistent in itself, so that under certain conditions we are unable to see which construction is the best. Rather than having a “picture” of reality, we have to learn to recognize it. This is true for both the human organism and science. Wherever we deal with a reality that can basically be shaped, and wherever we face the phenomenon that people think reality is what they consider to be real, the question as to what premises result in what constructions of reality and how we can recognize illusory worlds gains particular importance.

These questions are probably even more important to social sciences than they are to natural sciences. When people think that reality is what they believe to be real, they will act accordingly. A key aspect of the “social” is that, as a result of our expectations and opinions on our fellow humans, we act in a way that conforms to these opinions. That, in turn, influences others’ expectations, opinions, behavior, and so on, which enables socially constructed realities to emerge. In conjunction with modern-day technology, these constructed realities can then become *the* reality for us in those parts of the world where things can be shaped, and they may grossly conflict with other areas so far unaffected by our construction. Sciences with a strong application focus have particular responsibility in this context because the “images” of the world that they convey increasingly influence people in their actions—in particular when acting on behalf of organizations.

Large parts of business economics seem to be based on such deceptive views of the world, and for various reasons they are impossible or at least difficult to debunk. The main reason is that it depends on the nature of our cognitive tools what kinds of insights we are able to gain. One of these tools is language—above all, the structure of the language game prevalent in a science, of our frame of reference (or universe of discourse) we impose on an object and in whose light we see that object. Another aspect is the structure of language in a broader sense, the structure commonly referred to as object language or meta-language. This refers to the logical layering of language due to which it is not completely impossible to transcend a frame of

reference, difficult as it may be to break it. Confusing the object- with the meta-level of language is the main reason why certain phenomena cannot be recognized.

Here, the frame of reference is defined as a system of premises that together form an “image” of reality, which may or may not be consistent in itself. A frame of reference is comparable to a system of coordinates, defining what is considered relevant; how perceptions, observations, statements, allegations, and so forth should be interpreted; what kind of question is or is not “permissible,” and so on. What I refer to as a “frame of reference” here is sometimes given other names, such as framework, background knowledge, image of the world, world view, or universe of discourse. Despite all the variations that the paradigm concept according to T.S. Kuhn comprises, the core of this concept seems to correspond to what I call frame of reference.

Another enormous difficulty we face when discussing the usefulness and appropriateness of a certain frame of reference is a philosophical one. This is because the discussion inevitably leads us to ontological issues: As these are deemed inadmissible from some epistemological standpoints, many scientists believe these issues have to be avoided in strictly scientific procedures. My view is a different one: I believe that much of our thinking on the nature of the object of cognition is empirical rather than philosophical, in that we actually develop an empirical theory regarding the nature of the problem under study. Consequently, at least some of the premises initially mentioned represent not logical axioms but empirical statements. Again, due to a certain use of the word “premise” the word is often exclusively used for *logical* premises of the kind discussed by scientists when doing fundamental research on mathematics or formal logic. Those kinds of premises represent unquestionable assumptions of an often tautological nature (such as $p \rightarrow p$), or assumptions of a defining nature. While in the empirical sciences we probably face quite a number of premises of that nature, too, a considerable share of premises is purely empirical and can be validated by empirical means.

0.2 Systems-Oriented Management Theory

Business administration studies seem to be dominated by a set of empirical key assumptions which on closer inspection appear rather questionable. Some of them are clearly wrong.

Admittedly, the term “business administration” itself can be understood in a range of ways. It would lead us too far to discuss the whole spectrum of teachings and their widely varying viewpoints. This book focuses on the kind that thinks of itself as a *theory of management*. The question as to whether it is correct and useful at all to consider management theory one variety of business administration has deliberately been excluded from the analysis. There is plenty of evidence suggesting that management theory should be considered an independent and entirely different discipline, at least compared to the business administration theory taught in German-speaking countries, which largely presents itself as a sister discipline of economics.

One key point to remember is that in business enterprises, economic problems and their solutions never occur on their own. They are always linked to problems of *business management*. This immediately raises the question as to what “business management” actually is, as the assertion I just made is only true if we assume a very specific idea of business management applies. In the following paragraphs I will try to carve out the basic assumptions underlying this idea, in order to avoid the semantic trap of calling different things by the same name.

Some remarks on the historical development of management theory may facilitate readers’ understanding. In 1968, in the context of a reform of St. Gallen University’s Business Administration course, Hans Ulrich published his book *Die Unternehmung als produktives soziales System* [“The enterprise as a productive social system”]. The business administration theory it described, and to which a sizeable number of university faculty had contributed, was designed as a *general theory of business enterprise*—or so the subtitle read—a theory that explicitly referred to general systems theory and cybernetics as its basis and viewed the enterprise as a multidimensional entity. It was as early as in that book that business economics was perceived as the theory of *shaping and managing systems*.⁹

⁹ Ulrich (Unternehmung), p. 45.