

WILLIAM G. EGELHOFF
JOACHIM WOLF

UNDERSTANDING MATRIX STRUCTURES AND THEIR ALTERNATIVES

The Key to Designing and Managing
Large, Complex Organizations



Understanding Matrix Structures and their Alternatives

William G. Egelhoff • Joachim Wolf

Understanding Matrix Structures and their Alternatives

The Key to Designing and Managing Large,
Complex Organizations

palgrave
macmillan

William G. Egelhoff
Gabelli School of Business
Fordham University
New York, USA

Joachim Wolf
Institute of Business Admin.
Christian-Albrechts University of Kiel
Kiel, Germany

ISBN 978-1-137-57974-4 ISBN 978-1-137-57975-1 (eBook)
DOI 10.1057/978-1-137-57975-1

Library of Congress Control Number: 2016961068

© The Editor(s) (if applicable) and The Author(s) 2017

The author(s) has/have asserted their right(s) to be identified as the author(s) of this work in accordance with the Copyright, Designs and Patents Act 1988.

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Macmillan Publishers Ltd.
The registered company address is: The Campus, 4 Crinan Street, London, N1 9XW,
United Kingdom

Preface

The matrix structure is a familiar but poorly understood form of organization design. It exists when two or more elementary structures are overlaid. This can best be visualized by looking ahead to Fig. 2.1. The need for matrix structures in large, complex organizations like MNCs is growing. This growth is driven by the need to implement increasingly complex strategies.

Aside from the research described in this book, there has been little reported academic research on matrix structures in large, complex organizations over the past 30 years. This means most currently active academics have spent little time studying matrix structures. In most cases, their views about matrix structures are more likely to be based on the negative judgments of others than on their own investigation of the subject. This book represents an opportunity to personally investigate the subject with minimal time and effort. It tries to bring together the information academics would want to consider.

Next, we want to describe the book in two paragraphs. It tries to develop a more comprehensive and integrated theory about matrix structures and their relationship to strategy. The theory is based on an information-processing approach to organization design (Galbraith 1973; Tushman and Nadler 1978; Egelhoff 1991). Much of the content of the first half of the book is based on four articles we have published in referred journals. When integrated in the book, this content creates a much larger

and more integrated picture of strategy–structure fit. It includes not only matrix structures, but also elementary structures (where there is a single hierarchy) and network designs. The latter are the alternatives to using a matrix structure. The book attempts to develop a contingency framework which specifies when each type of organizing should be used. One of the advantages associated with using an information-processing theory is that it provides a clearer picture of how information is processed and decisions are made within an elementary structure, a matrix structure, or some type of network design. The perspective is often that of someone inside the organization.

The second half of the book is based on exploratory research we have been conducting over the past several years in MNCs with matrix structures. It reveals that practitioners have not been idle. They have been attempting to address the problems that are frequently associated with matrix structures. In some cases they are changing the way decision-making occurs within a matrix structure. In the later chapters of the book, we have tried to reconceptualize the design of a matrix structure to accommodate this development. Instead of focusing solely on the structural configuration of a matrix structure, we now view the mode of decision-making within a matrix structure as a second dimension of a matrix structure's design. The mode of decision-making can be either balanced decision-making (where both dimensions of a matrix jointly engage in decision-making) or what we refer to as “rule-based” decision-making (where types of decisions are pre-assigned to one dimension or the other for unitary decision-making). The additional degree of freedom created by varying the mode of decision-making within a matrix structure has potentially significant consequences for the future of matrix structures. In a more speculative chapter, the book attempts to logically argue that large, complex organizations like MNCs can use the more flexible type of matrix structure to become more ambidextrous at the macro level.

While this book is primarily aimed at scholars and researchers interested in macro-level organization design, we believe it should also be of interest to managers and consultants who struggle with this same problem in the real world. We have tried to write the book in a clear, concise, and readable style that minimizes a big part of the divide that often

separates academics and practitioners. What distinguishes this book from most books addressed to practitioners is the presence of a well-defined theory—and our insistence on using this information-processing theory to understand and describe most of the things we are discussing. No engineer would think of designing a large, complex bridge without using the theories of physics and engineering that are commonly associated with that task. A large, complex organization is an equally complex system. One needs some kind of overall theory to understand and describe how it functions—how it succeeds, how it fails. The information-processing theory applied throughout the book provides this kind of understanding and insight. Our intention is that matrix structures should become a better understood form of organization design, by both academics and practitioners.

William G. Egelhoff
New York, USA

Joachim Wolf
Kiel, Germany

References

- Egelhoff, W. G. (1991). Information-processing theory and the multinational enterprise. *Journal of International Business Studies*, 22(3), 341–358.
- Galbraith, J. R. (1973). *Designing complex organizations*. Reading, MA: Addison-Wesley.
- Tushman, M. L., & Nadler, D. A. (1978). Information processing as an integrating concept in organizational design. *Academy of Management Review*, 3(3), 613–624.

Acknowledgments

The authors are indebted to many people who provided the information and understanding that made this book possible. Over the past five years, many managers in German MNCs with matrix structures have agreed to our requests for interviews. They have patiently shared their experiences and understanding of matrix structures with us. In this regard, we are especially thankful to Dr. Kurt Bock (CEO, BASF AG), Dr. Heinrich Hiesinger (CEO, Thyssen Krupp AG), and Ludger Becker (Head of Corporate Organization, Bayer AG) for allowing us to conduct a series of interviews in their firms. The information from these interviews has shaped the last half of the book and also facilitated our interpretation of the statistical analyses of data on matrix structures. Prior to the interviews, we had conducted numerous mail surveys of managers in MNCs. The data from these surveys support the extensive empirical testing of hypotheses and the development of theory that are presented in the first half of the book. None of this would have been possible without the selfless cooperation of the many managers who participated in these studies.

Finally, we acknowledge the kind permission of *Administrative Science Quarterly*, *Global Strategy Journal*, *International Business Review*, and *Management International Review* to reprint portions of articles which we previously published in those journals.

Contents

1	Introduction	1
1.1	Reasons for Writing the Book	2
1.2	Summary of the Book's Chapters	4
	Bibliography	12
2	The Historical and Conceptual Contexts for Understanding Matrix Structures	13
2.1	A Brief History of the Broader Subject of Organization Design	13
2.2	The Development of the Multidivisional Structure	16
2.3	The Development of Matrix Structures	24
2.3.1	Definition of a Matrix Structure	24
2.3.2	History of Matrix Structures	27
2.3.3	Problems with Matrix Structures	28
2.4	Why Strategy–Structure Fit Is Important	29
2.5	A Growing Interest in Network Designs	31
2.6	The Development of an Information-Processing Perspective of Organizations	32
2.7	An Information-Processing Model for Relating Strategy and Structure	36
	Bibliography	40

3	Designing Elementary Structures to Fit MNC Strategy	43
3.1	Literature Review	44
3.2	The Need to Better Conceptualize the Strategy–Structure Paradigm	46
3.3	The Information-Processing Capacities of the Elementary Structures	49
3.4	The Information-Processing Requirements of Strategy for Elementary Structures	53
3.4.1	Foreign Product Diversity	54
3.4.2	Product Modification Differences	55
3.4.3	Product Change	56
3.4.4	Size of Foreign Operations	57
3.4.5	Size of Foreign Manufacturing	58
3.4.6	Number of Foreign Subsidiaries	59
3.4.7	Extent of Outside Ownership	59
3.4.8	Extent of Acquisitions	60
3.5	Testing the Hypotheses	61
3.6	A Multivariate Test of Fit Between Strategy and Different Types of Elementary Structure	63
3.7	The Coordination Capacities and Limitations of Different Types of Elementary Structure	67
	Bibliography	73
4	Designing Matrix Structures to Fit MNC Strategy	75
4.1	Literature Review	76
4.2	The Information-Processing Capacities of Matrix Structures	79
4.3	The Information-Processing Requirements of Strategy for Matrix Structures	82
4.3.1	Foreign Product Diversity	82
4.3.2	Size of Foreign Operations	84
4.3.3	Number of Foreign Subsidiaries	87
4.3.4	Size of Foreign Manufacturing	88
4.3.5	Strategic Orientation	89
4.4	Testing the Hypotheses	91

4.5	A Multivariate Test of Fit Between Strategy and Different Types of Matrix Structure	93
4.6	Extending and Modifying the Theory for Elementary Structure Fit So That It Is Applicable to Matrix Structures	99
4.6.1	The Combination of the Functional Division and Product Division Dimensions in a Matrix	99
4.6.2	The Multiple Roles of a Geographical Region Dimension in a Matrix	101
4.6.3	The Failure of the Existing Model to Adequately Specify the Strategic Domain of the Functional Division \times Product Division \times Geographical Region Structure	102
4.6.4	Some Concluding Remarks	104
	Bibliography	106
5	Understanding the Causes of Conflict in Matrix Structure Firms	109
5.1	Literature Review	110
5.2	Hypothesis Development	114
5.3	Testing the Hypotheses	118
5.3.1	The Study	118
5.3.2	Results	119
5.4	Discussion	122
5.4.1	Overall Findings	122
5.4.2	Limitations of the Study	125
5.5	Implications for Future Research and Practitioners	126
	Bibliography	128
6	Decision-Making Within Matrix Structures	131
6.1	The Modes of Decision-Making in a Matrix Structure	132
6.2	Further Conceptualizing the Design of Matrix Structures	138
6.3	Defining the Information-Processing Capacities of the Two Modes of Decision-Making	142

6.3.1	Accountability During Decision-Making	144
6.3.2	Speed of Decision-Making	144
6.3.3	Economizing on Human and Monetary Costs During Decision-Making	145
6.3.4	Novelty and Innovativeness of Alternatives Generated During Decision-Making	145
6.3.5	Thoroughness with Which Alternatives Are Evaluated During Decision-Making	146
6.4	Identifying the Situations Best Addressed by the Two Different Modes of Decision-Making	147
6.4.1	Situations that Fit a Rule-Based Mode of Decision-Making	147
6.4.2	Situations that Fit a Balanced Mode of Decision-Making	152
6.5	Designing a More Flexible Matrix Structure	157
	Bibliography	159
7	How a Flexible Matrix Structure Supports a More Ambidextrous Organization	161
7.1	The Need for Ambidexterity in Organizations	161
7.2	How Ambidexterity Is Currently Implemented in Organizations	162
7.3	A Hypothetical Example of a Flexible Matrix Structure Contributing to Ambidexterity	165
7.4	How Ambidexterity at the Macro Level Compares to Ambidexterity at Lower Levels	169
7.5	How a Flexible Matrix Structure Supports Ambidexterity at the Macro Level of Large, Complex Organizations	174
	Bibliography	179
8	The Joint Use of Matrix Structures and Network Designs to Implement Multidimensional Strategies	181
8.1	Introduction	181
8.2	Literature Review	182
8.2.1	Hierarchical Structures	182
8.2.2	Network Designs	183

8.3	The Information-Processing Characteristics of Hierarchies and Networks	186
8.3.1	Goal Structure	186
8.3.2	Information Flows	188
8.3.3	Motivation and Behavior	189
8.3.4	Decision-Making	189
8.4	Situations Where Hierarchical Structures Should Outperform Network Designs	190
8.4.1	Tight Coupling	191
8.4.2	Significant Economies of Scale and Scope	196
8.4.3	Significant Innovation	197
8.5	Two Alternative Conceptualizations of the Matrix Idea	202
8.5.1	The Concept of a “Structured Network”	202
8.5.2	The Concept of a Matrix in the Mind of the Manager	203
8.6	Expanding Information-Processing Capacity Through Matrix Structures and Network Designs	204
8.6.1	The Problem of Simultaneously Managing Local Adaptation and Global Integration in a Firm	204
8.6.2	The Problem of Managing Significant Innovation in a Firm	208
8.7	Conclusion	209
	Bibliography	212
9	Conclusion	215
9.1	The Future of Matrix Structures	215
9.2	The Need for Better Theory about the Functioning of Matrix Structures	217
9.3	The Need for More Academic Research	219
	Bibliography	220
	Bibliography	221
	Author Index	231
	Subject Index	235

List of Figures

Fig. 2.1	Information-processing flows in a product division × geographical region matrix structure	25
Fig. 2.2	A model showing the role played by strategy and structure as higher-level intervening concepts	29
Fig. 2.3	An information-processing model of strategy–structure fit	36
Fig. 2.4	Four types of information processing	38
Fig. 3.1	Stopford and Wells Model showing the relationship between strategy and structure in MNCs	45
Fig. 3.2	Simplified organization charts of the elementary structures	50
Fig. 3.3	Important fits between elements of strategy and types of elementary structure	68

List of Tables

Table 2.1	Summary of Problems and Complaints Involving Matrix Structures	28
Table 3.1	Type and Level of Information-processing Capacity Provided by Different Types of Structure	51
Table 3.2	Hypotheses and Results of Bivariate ANOVA Contrasts for Elementary Structure	62
Table 3.3	Multiple Discriminant Analysis of Elements of Strategy on Type of Elementary Structure	64
Table 3.4	Predicted Type of Elementary Structure from Coefficients of Discriminant Functions	64
Table 3.5	Centroids of the Four Elementary Structural Groups Measured along the Discriminant Functions	65
Table 3.6	Quality of Relationship between Parent and Foreign Subsidiaries	66
Table 4.1	Hypotheses and Results of ANOVA Contrasts for Matrix Structures	92
Table 4.2	Multiple Discriminant Analysis of Elements of Strategy on Type of Matrix Structure	94
Table 4.3	Predicted Type of Matrix Structure from Coefficients of Discriminant Functions	94
Table 4.4	Centroids of the Four Matrix Structure Groups Measured along the Discriminant Functions	95
Table 5.1	MNC Matrix Case Studies	111

Table 5.2	T-tests between Mean Levels of Conflict in Matrix and Elementary Structure MNCs	119
Table 5.3	ANOVA Contrasts of Levels of Conflict Associated with Two-Way Matrix Structures and Relevant Elementary Structures	120
Table 5.4	ANOVA Contrasts of Levels of Conflict Associated with a PD×GR×FD Matrix Structure and Relevant Elementary Structures	121
Table 6.1	Characteristics of the Classical Balanced Mode and the New Rule-based Mode of Decision-Making	133
Table 6.2	An Information-processing Perspective of Decision-Making within Elementary and Matrix Structures	141
Table 6.3	Information-processing Capacities of the Two Modes of Decision-Making	143
Table 8.1	Characteristics of Network Designs in the MNC Literature	185
Table 8.2	Important Differences between Hierarchical Structures and Network Designs that Influence Their Information-processing Capacities	187

1

Introduction

This is a book about the design and use of matrix structures in multinational corporations (MNCs). While its content should be of interest to anyone concerned with the design and functioning of large, complex organizations, it is important to know that the underlying research for the book was done in MNCs. Since MNCs tend to be the most complex form of organization in widespread use today, this context best reveals the difficult organizing and managing challenges that matrix structures typically seek to address. Our definition of a matrix structure is an overlaying of two or more elementary structures.

Currently, many scholars and practitioners believe matrix structures are too complex an organizational form to work with. They suggest using simpler organizational forms such as elementary structures and network designs. But unless one also simplifies the strategy the firm is attempting to implement, this suggestion will not work. Generally, complex strategies will require equally complex organizational forms. The law of requisite variety requires this. So the best response to complexity is not arbitrary simplification, but better understanding the complexity. Better understanding the complexity usually requires successfully conceptualizing it

in a more abstract way. After this has been accomplished, the complexity can usually be represented by a more simplified model. This simplified model describes those parts of the original complexity that the task at hand seeks to address and tends to ignore other parts of the original complexity that are not relevant to the task at hand. This is the best way to understand and deal with complexity.

1.1 Reasons for Writing the Book

One reason for writing this book at this time is that most of the existing literature on matrix structures is quite old, and there is evidence that firms employing matrix structures currently are frequently using them in ways that differ from what is described in the earlier literature. We will discuss the history of matrix structures more fully in Chap. 2, but some readers may already know that matrix structures have been out of favor among US firms since the late 1980s. This loss of interest largely explains the shortage of academic research and publication on matrix structures over the past 30 years. Currently, we believe there is a growing interest in matrix structures among practitioners—not yet among academics—largely driven by the increased complexity of the strategies that many firms are required to implement (Burton et al. 2015).

A second reason for writing this book is to provide a better conceptual model for understanding and working with matrix structures. Not only is most existing literature on matrix structures dated, it frequently reflects an early attempt to describe an emerging organizational form. As a result, many of the early publications are more optimistic than realistic, more interested in touting the new form than in critically evaluating it. Similarly, when matrix structures fell out of favor in the 1970s, another set of publications criticized matrix structures in general, without providing any useful insight into how to design successful matrix structures. We will review the literature on matrix structures more fully in Chap. 2. But, the point we want to make here is that there is a shortage of useful theory about matrix structures—theory about how matrix structures function, theory about how to design matrix structures to fit the unique characteristics of a firm's strategy and environment. What theory does exist tends

to be fragmented and scattered across a number of scholarly publications. It takes time for potential contributions to a more general theory to accumulate and become reconciled, and for a more cumulative and general theory about some phenomenon to result. And for matrix structures, this never happened. The volume of research on matrix structures was too small and the period when there was a scholarly interest in matrix structures too brief for a more cumulative, general theory to emerge.

As a result of the above situation, there is a need for a deeper understanding of how matrix structures function, and how dual hierarchies of headquarters (HQs) interact and provide coordination. And, this understanding needs to reflect how matrix structures are being used in companies today, since there is evidence that this may differ from the way they were reported to function 30 years ago. The way structures and organization designs are used tends to evolve as practitioners attempt to address the problems and shortcomings they encounter. Since matrix structures have been associated with numerous problems, it is important to restudy how matrix structures are actually being used in companies today. The concluding chapters of the book will look at this issue and attempt to adjust our theory to accommodate the more recent changes that have occurred.

And this new understanding of matrix structures needs to exist within a broader context that also includes the alternatives to using a matrix structure. Most academics today would probably argue against using a matrix structure. Instead, they would recommend using an elementary structure (with a single type of hierarchy) supplemented by a heavy use of network coordination. In academic circles, adding more non-hierarchical network coordination has been the preferred way of increasing the coordination capabilities of organizations for the past three decades. Any attempt to critically evaluate the use of matrix structures clearly needs to take this alternative to a matrix structure into consideration. So the conceptual framework underlying a more general theory of matrix structures needs to reconcile and integrate the hierarchical coordination provided by a matrix with the non-hierarchical, more lateral type of coordination provided by networks. This is a richer, more encompassing view of coordination in organizations than presently exists in the academic literature.

The intended result should be a much better understanding of matrix structures and their alternatives.

1.2 Summary of the Book's Chapters

This section provides an overview of what is in each chapter. While it may be tempting to skip the earlier chapters and go immediately to Chap. 4, where the discussion turns exclusively to matrix structures, we warn against this. The earlier chapters are more than a lengthy introduction. They develop the context and important concepts that help the reader understand matrix structures in a new and much more complete way. Matrix structures are a complex form of organization, which combines simpler forms of organization. One must first understand the simpler forms of organization before one can truly understand matrix structures. Chapters 2 and 3 attempt to develop this preliminary knowledge in a cumulative, easy-to-understand way, one step at a time.

Chapter 2 develops the historical and conceptual contexts for thinking about and understanding matrix structures. It begins by briefly reviewing the extensive experience that humans have had in attempting to organize themselves to accomplish tasks and achieve goals. Two important concepts emerge. The first is “interdependency among the actors.” As the strategies of organizations become more complex, there is increasing interdependency among the actors. This interdependency creates the need for coordination and organizing. Reducing or simplifying the interdependency reduces or simplifies the need for organizing. The second concept is “bounded rationality.” It refers to the fact that humans are limited in terms of the information and knowledge an individual or subunit can possess. This limits their ability to make rational decisions. In order to address this limitation and be sufficiently competent, individuals and subunits tend to specialize. This isolates knowledge in different parts of an organization. It requires organizations to bring such isolated knowledge together and to coordinate the decisions of separated subunits in order to implement an organization's strategy. Organization design is the way organizations accomplish this. Both of these fundamental concepts will be illustrated and used throughout the book, so that they become a

kind of subconscious framework for understanding and evaluating the problem of coordination.

The second part of Chap. 2 deals specifically with the history of matrix structures and their alternatives (some form of network design). The concept of a matrix structure probably evolved as practitioners adjusted and tweaked their organizational structures to better accomplish their organizations' goals. The growth of specialized staff functions in military organizations and later in large business firms created situations where some kind of shared decision-making involving line and staff officers arose. Given the sanctity of the principle of "unity of command" in military organizations (and probably most early business firms), this situation was generally addressed by giving line officers command authority and staff officers advisory authority over the situation (and more specifically, over the subunits that had to make decisions to address the situation). This is very close to being some kind of matrix structure. Formally, matrix structures first appeared in the US aerospace industry in the 1950s, but their antecedents and the concepts of shared responsibility and shared decision-making clearly existed well before this time.

Unfortunately, the term "matrix structure" is not used in a consistent manner throughout the existing literature. In Chap. 2 we will further discuss our definition of a matrix structure: a matrix structure combines or overlays two or more types of elementary hierarchical structure. Those who need to see a picture of this now can look ahead to Fig. 2.1. Matrix structures soon spread to other industries beyond aerospace, where they were applied in a broader way, combining different kinds of elementary structures to produce different combinations or configurations of matrix structure. This broadened the concept of a matrix structure and led to a design problem for firms. Which dimensions or types of elementary structure should a firm's matrix structure contain? The answer depends on the strategy of the firm.

The latter part of Chap. 2 introduces and describes the conceptual framework that will be used throughout the book to evaluate the coordinating potential of different types of structure and organization design. It is called an "information-processing approach" to organization design. Under this perspective, the organization is viewed as an information-processing system, and information processing between an organization's

subunits is considered an important aspect of organizational performance. Information processing in organizations is generally defined as including the gathering of data, the transformation of data into information, and the communication and storage of information in the organization. Each of the various types of organization structure or organization design available to a firm can be seen as facilitating certain types of information processing between the subunits of the organization, while at the same time restricting other types of information processing. Just as structure and organization design largely define the information-processing capacities of a firm, the strategy and environment of a firm largely define the information-processing requirements that the firm must seek to satisfy. There is good fit between organization design and strategy when the information-processing requirements of a firm's strategy are satisfied by the information-processing capacities of its organization design. This is the basic model or conceptual framework that the book will use to evaluate and compare the effectiveness of matrix structures against the effectiveness of their alternatives. It will lead to a deeper and more consistent understanding of the strengths and weaknesses of the different types of matrix structure and it will provide a logic for designing matrix structures that are appropriate for implementing specific elements of a firm's strategy.

Chapter 3 discusses the fit between strategy and the various types of elementary structure. Before one can understand matrix structures, one must understand how an elementary structure functions and how it can be related to strategy. An elementary structure exists when one dominant type of hierarchy is used to organize a firm at the second hierarchical level (the level right below the firm's CEO). The most common elementary structures are a functional division structure, a product division structure, and a geographical region structure. The subject of strategy-structure fit for elementary structures is well developed in the scholarly literature. It begins with the work of Chandler (1962) and other researchers, who attempted to explain why large firms like DuPont had to change from a functional division structure to a product division structure when their strategies began to embrace higher levels of product diversity. The later and most developed part of this stream of research deals with how to structure MNCs, so that they can successfully implement strategies

that are not only more diversified in terms of products, but more international. The information-processing approach discussed above was initially developed to model the fit between specific elements of an MNC's strategy (e.g., the degree of foreign product diversity, the extent of internationalization) and the specific types of elementary structure available to an MNC.

Chapter 3 describes the key fits between elements of MNC strategy and the four principle types of elementary structure used by MNCs (an international division structure, worldwide functional division structure, worldwide product division structure, geographical region structure). The focus is on describing these fits as clearly as possible in terms of the information-processing requirements posed by the strategy and the information-processing capacities provided by the structure. Using this logic, hypotheses are developed. They are empirically tested with a sample of 34 elementary structure MNCs. The strategy–structure fits developed here are the necessary foundation for being able to subsequently understand the key fits between the various configurations of matrix structure and strategy.

A matrix structure combines the information-processing capacities of the elementary structures that make up the matrix. Thus, elementary structures are the building blocks for designing matrix structures, and one needs a deep and thorough understanding of their capabilities and limitations before attempting to evaluate and design matrix structures. This idea of decomposing a matrix structure into a set of specific elementary structures (to better understand and specify its coordination capabilities) has largely been developed by the authors and supported by their own empirical research. Most articles and books on matrix structures tend to generalize across the various configurations of matrix structure. In our view, this hinders a deeper understanding of how matrix structures provide coordination. Our more detailed and explicit model of how a specific configuration of matrix structure provides coordination is unique and probably one of the most important contributions of this book.

Staying with the above issue a bit longer, we view matrix structures as a complex, high-level concept, which needs to be decomposed into a set of simpler concepts before it can be effectively understood and worked with. In our view, much of the existing literature on matrix structures attempts

to address the subject without first building an adequate foundation or conceptual framework for understanding such a complex concept. Our approach is to first lay the foundation or build the conceptual framework before we attempt to work with the concept of matrix structures. While this is a longer path to take into the subject, we believe it will ultimately take one much further than the existing literature.

Chapter 4 describes the key fits between elements of MNC strategy and the four principle types of matrix structure used by MNCs: a product division \times geographical region matrix, a product division \times functional division matrix, a geographical region \times functional division matrix, and a functional division \times product division \times geographical region matrix (the latter is often referred to as a Tensor structure in Germany). The approach here parallels that used in Chap. 3 for elementary structures. The same information-processing logic is used to hypothesize fit relationships between the specific dimensions of a matrix structure and specific elements of MNC strategy. The empirical testing of the hypotheses with a sample of 57 matrix structure MNCs both (1) confirms the overall information-processing logic underlying our theory, and (2) helps to refine and extend that theory in a number of areas that are unique to matrix structures.

Because we are attempting to develop a general model or theory for fitting matrix structures to strategy, the knowledge or learning developed in this chapter should not be confined to the four configurations of matrix structure that are explicitly discussed. Readers should be able to apply the logic and understanding developed here to matrix structures containing other kinds of structural dimensions (such as businesses or customers) and to strategies embracing different strategic characteristics.

Our empirical research supports using the same logic to fit the dimensions of a matrix structure to the strategy of a firm, as was previously used in Chap. 3, to fit the various types of elementary structure to a firm's strategy. The development of a common logic for designing matrix structures and elementary structures simplifies the design process and makes it easier to understand matrix structures. Naturally, some additional understanding and conceptualization is required to design matrix structures. For example, a matrix structure can contain a functional division dimension and a product division dimension. When designing an

elementary structure, a functional structure fits a strategy with low product diversity while a product division structure fits a strategy with high product diversity. A matrix structure that simultaneously employs both of these dimensions obviously requires some additional understanding and conceptualization that describes how these two dimensions work together to constructively process information inside a matrix structure. Our research further explains a number of these kinds of situations that are unique to matrix structures.

Chapter 5 discusses conflict in matrix structure firms. When many MNCs abandoned matrix structures in the 1980s, one of the most frequently reported problems was high levels of interpersonal and interunit conflict. While conflict is generally regarded as a common characteristic of matrix structures, there has actually been limited empirical investigation of this issue. Most reports of conflict come from clinical research and case studies. Our own research used a survey study of conflict in matrix and elementary structure MNCs, which supports the use of statistical analysis and the generalization of the findings to a broader population of firms. This research shows that conflict may be influenced by the structural configuration of a matrix structure. Structures which matrix a product division dimension with a geographical region dimension tend to have higher levels of conflict than structures which matrix a functional division dimension with either a product division dimension or a geographical region dimension. While this finding is new and requires additional research, Chap. 5 discusses what it may be saying about the causes of conflict in matrix structures.

Chapter 6 discusses two different modes of decision-making which can exist within a matrix structure. The first is the joint or balanced mode of decision-making, where decisions are jointly made by both dimensions of a matrix. The second is a unitary or rule-based mode of decision-making, where rules pre-specify which dimension of a matrix will unilaterally make certain types of decisions. Existing matrix structure theory generally assumes the joint or balanced mode of decision-making, but our recent exploratory research in matrix structure MNCs reveals that many firms appear to be adopting the rule-based mode of decision-making for various types of decisions. The information-processing capacity associated with the rule-based mode of decision-making differs significantly

from the information-processing capacity associated with the balanced mode of decision-making. As a result, we want to conceptualize mode of decision-making as an important second dimension of matrix structure design, along with the existing primary dimension of structural configuration (which is defined and addressed in Chap. 4).

This Chapter develops the information-processing capacities of the two modes of decision-making. It suggests that MNCs should be able to use both modes of decision-making on a contingency basis, the unitary or rule-based mode of decision-making and the joint or balanced mode of decision-making. Propositions are developed specifying which mode of decision-making best fits a given type of situation. The insight, that the difference between a rule-based matrix and a balanced matrix structure depends on a difference in the mode of decision-making, is an important observation. Because the mode of decision-making in a matrix structure is more changeable than its structural configuration, it provides additional potential for flexibility. The intended result is a more flexible type of matrix structure that can successfully address a wider range of situations than the existing classical balanced matrix structure, which only employs one mode of decision-making.

Chapter 7 discusses how the concept of the flexible matrix structure developed in Chap. 6 (with two modes of decision-making) can support building a more ambidextrous organization. Ambidexterity can be defined as “an organization’s ability to be aligned and efficient in its management of today’s business demands while simultaneously being adaptive to changes in the environment” (Raisch and Birkinshaw 2008: 375). It means simultaneously winning in the short run through more efficient exploitation and in the long run through exploration and adaptation to a changing competitive environment.

The existing literature on ambidexterity tends to address the subject at the business unit level or lower. In this chapter we discuss how ambidexterity might also be developed at the macro level of large, complex organizations like MNCs by using a flexible matrix structure. This structure can be used to selectively alter the mode of decision-making at the strategic levels of the organization for an issue such as product technology development. Rule-based decision-making, which assigns decision-making responsibility to a single dimension of the matrix, supports efficiency and