
Contents

1	Introduction.....	1
1.1	Intended Readership	5
1.2	Outline of the Book.....	5
2	Defining and Identifying Uncertainties in Organizations	11
2.1	Definitions of Uncertainty	12
2.1.1	Content of Uncertainty	12
2.1.2	Sources of Uncertainty	15
2.1.3	Causes of Uncertainty.....	16
2.1.4	Organizational Actors Affected by Uncertainty	19
2.1.5	Potential Consequences of Uncertainty	19
2.2	Defining Uncertainty within a Control Framework	20
2.3	Identifying Uncertainties in Organizations	22
2.3.1	Objective versus Subjective Accounts of Uncertainty.....	22
2.3.2	Uncertainty Analysis: An Example from Railway Operations.....	24
2.4	Chapter Summary	27
3	Generic Principles for Managing Uncertainties.....	29
3.1	Minimizing Uncertainties versus Coping with Uncertainties	30
3.1.1	Distribution of Autonomy and Control.....	32
3.2	Contingencies in Managing Uncertainties	32
3.3	Balancing Stability and Flexibility: The Concept of Loose Coupling	35
3.3.1	Organizational Mechanisms for Balancing Stability and Flexibility	36
3.3.2	Demands on Stability and Flexibility with Very High Levels of Uncertainties	38
3.3.3	Balancing Stability and Flexibility in Internal and External Responses to Uncertainty	39
3.3.4	Balancing Stability and Flexibility from a Learning Perspective.....	40
3.4	Deciding on a Management Strategy for Handling Uncertainties	41
3.4.1	A Generic Process for Decisions on Managing Uncertainty	41
3.4.2	Covering Strategic and Operational Processes	43
3.4.3	The Four Steps in Detail.....	44

3.5	Power and Control in Relation to Managing Uncertainties	51
3.6	The Railway Example Revisited.....	53
3.7	Chapter Summary	55
4	Coordination in Organizations: Creating Flexible Routines	57
4.1	Organizational Routines	58
4.1.1	Flexibility of Routines.....	59
4.1.2	Conditions for Flexible Use of Routines	61
4.1.3	Routines in High-Risk Systems.....	62
4.2	Flexible Routines through Flexible Rules.....	63
4.2.1	Rule Types.....	64
4.2.2	Effects of Rules on Team Coordination	65
4.2.3	Procedures for Defining Appropriate Rules	66
4.3	A Field Study: Rules Management in a Railway Company.....	67
4.3.1	Implications for Developing Flexible Routines through Flexible Rules	70
4.4	Systematic Rule Management as Support for Creating Flexible Routines	71
4.5	Chapter Summary	73
5	Managing Uncertainties through Collaborative Planning	75
5.1	Approaches to Planning in Organizations.....	75
5.1.1	Feedforward versus Feedback Control	76
5.1.2	Tightening versus Loosening of Interdependencies	77
5.2	A Model of Collaborative Planning.....	80
5.3	Empirical Evidence for the Model of Collaborative Planning.....	85
5.4	Views on Planning: A Qualitative Case Study	87
5.5	Chapter Summary	89
6	Limits to Control in Automated Systems.....	91
6.1	Control and Accountability in Automated Systems.....	92
6.2	Designing for Human Control over Technical Systems: The KOMPASS Method.....	93
6.2.1	KOMPASS Design Criteria.....	94
6.2.2	KOMPASS Design Heuristic	97
6.2.3	Application of the KOMPASS Method.....	100
6.2.4	Concluding Comments on the KOMPASS Method	103
6.3	“Human Unreliability”: Lack of Human Control over Technical Systems	103
6.4	Control and Accountability in Automated Systems Revisited.....	105
6.5	Designing Partially (Non-)Controllable Systems.....	108
6.6	Towards a New Politics of Uncertainty in System Design	110
6.7	A Note on the Process of System Design and Implementation.....	112
6.8	Chapter Summary	115
7	When Uncertainty Implies Safety Risk.....	117
7.1	A Case of Handling Uncertainties: Process Upset in a Polyethylene Plant	118
7.2	Minimizing Uncertainties as the One Road to Safety?	120
7.3	Safely Coping with Uncertainties?	121
7.4	Safety Culture as a Mechanism for Loose Coupling.....	123

7.5	The Uncertain Relationship between Safety and Autonomy	124
7.5.1	Interpreting the Evidence.....	126
7.6	An Uncertainty Management Approach to Safety Management and Safety Culture	127
7.6.1	Analysis of Uncertainties and the Ways of Handling Them.....	128
7.6.2	Assessing Safety Management and Safety Culture	130
7.6.3	Adjusting Safety Management and Safety Culture in Light of Adequately Managing Uncertainty.....	134
7.7	Chapter Summary	136
8	Managing Uncertainties in Working Life.....	137
8.1	Uncertainties in Everyday Work.....	138
8.2	Uncertainties in Working Lives	139
8.2.1	Changing Psychological Contracts	140
8.2.2	New Career Forms	145
8.2.3	Employability	147
8.3	Consequences for Human Resource Management.....	149
8.3.1	Strategic Human Resource Management.....	149
8.3.2	Managing the Psychological Contract.....	150
8.3.3	Matching Career Orientations to Company Uncertainty Landscapes	153
8.4	Chapter Summary	156
9	Conclusion	157
9.1	Integrative Management of Uncertainty: An Example	157
9.2	Research Implications.....	160
9.3	Practice Implications.....	160
References	163
Index	185

Management of Uncertainty
Theory and Application in the Design of Systems and
Organizations

Grote, G.

2009, XI, 192 p., Hardcover

ISBN: 978-1-84882-372-3