

[Instructors](#)  
[Journalists](#)  
[Librarians](#)  
[Rights & Permissions](#)  
[Societies & Publishing Partners](#)  
[Subscription Agencies](#)  
[Help & Contact](#)  
[Open Access & Springer](#)  
[Products](#)  
[Journals](#)  
[Books](#)  
[Proceedings](#)  
[SpringerLink](#)  
[Springer for R&D](#)  
[Springer for Hospitals & Health](#)  
[Databases and Software](#)  
[Springer Shop](#)  
[About us](#)

50% off Statistics books + FREE shipping +++ All Engineering eBooks & journals 50% off

[Business & Management Operations Research & Decision Theory](#)  
[Free Preview](#)



© 2017

# Wonderful Solutions and Habitual Domains for Challenging Problems in Changeable Spaces

## From Theoretical Framework to Applications

Authors: **Larbani**, Moussa, **Yu**, Po-Lung

Introduces a new decision theory, Optimization in Changeable Spaces

Illustrates how to expand competences, handle environmental, psychological and behavioral aspects and their dynamics when solving challenging decision problems

Includes perspectives related to innovation dynamics, management, artificial intelligence, artificial and e-economics, scientific discovery and knowledge extraction

Relevant to academics, managers and policy makers

[see more benefits](#)

Buy this book

eBook

118,99 €

price for Malaysia (gross)

[Buy eBook](#)

ISBN 978-981-10-1981-4

Digitally watermarked, DRM-free

Included format: PDF, EPUB

ebooks can be used on all reading devices

Immediate eBook download after purchase

Hardcover

149,99 €

price for Malaysia (gross)

[Buy Hardcover](#)

ISBN 978-981-10-1979-1

Free shipping for individuals worldwide

Usually dispatched within 3 to 5 business days.

[FAQ Policy](#)[About this book](#)[About the authors](#)[Reviews](#)[About this book](#)

This book introduces a new paradigm called 'Optimization in Changeable Spaces' (OCS) as a useful tool for decision making and problem solving. It illustrates how OCS incorporates, searches, and constructively restructures the parameters, tangible and intangible, involved in the process of decision making. The book elaborates on OCS problems that can be modeled and solved effectively by using the concepts of competence set analysis, Habitual Domain (HD) and the mental operators called the 7-8-9 principles of deep knowledge of HD. In addition, new concepts of covering and discovering processes are proposed and formulated as mathematical tools to solve OCS problems. The book also includes reformulations of a number of illustrative real-life challenging problems that cannot be solved by traditional optimization techniques into OCS problems, and details how they can be addressed. Beyond that, it also includes perspectives related to innovation dynamics, management, artificial intelligence, artificial and e-economics, scientific discovery and knowledge extraction. This book will be of interest to managers of businesses and institutions, policy makers, and educators and students of decision making and behavior in DBA and/or MBA.

[Show all](#)[About the authors](#)[Reviews](#)

## Table of contents

### (10 chapters)

Challenging Decision Problems and Decision Models

Larbani, Moussa (et al.)

Pages 1-23

[Preview Buy Chapter](#)

24,95 €

Decision Processes and Decision-Making in Changeable Spaces

Larbani, Moussa (et al.)

Pages 25-50

[Preview Buy Chapter](#)

24,95 €

Habitual Domains, Human Behaviour Mechanism and Wonderful Solutions for DMCS Problem Analysis

Larbani, Moussa (et al.)

Pages 51-88

[Preview Buy Chapter](#)

24,95 €

Expansion of Habitual Domains and DMCS

Larbani, Moussa (et al.)

Pages 89-121

[Preview Buy Chapter](#)

24,95 €

Competence Set Analysis, Decision Blinds and Decision-Making

Larbani, Moussa (et al.)

Pages 123-145

[Preview Buy Chapter](#)

24,95 €

[Show next](#)

5

[Read this book on SpringerLink](#)

[Download Preface 1 PDF](#)

(133.3 KB)

[Download Sample pages 2 PDF](#)

(382.4 KB)

[Download Table of contents PDF](#)

(135.7 KB)

**Buy this book**

eBook

118,99 €

price for Malaysia (gross)

[Buy eBook](#)

ISBN 978-981-10-1981-4

Digitally watermarked, DRM-free

Included format: PDF, EPUB

ebooks can be used on all reading devices

Immediate eBook download after purchase

Hardcover

149,99 €

price for Malaysia (gross)

[Buy Hardcover](#)

ISBN 978-981-10-1979-1

Free shipping for individuals worldwide

Usually dispatched within 3 to 5 business days.

[FAQ Policy](#)

## Book Metrics

[Reviews](#)

1

[Downloads](#)

1156

Provided by **Bookmetrix**

**Services for this Book**

[Download Product Flyer](#) [Reserve an Online Book Review Copy](#) [Download High-Resolution Cover](#)

[Facebook](#)

[Twitter](#)

[LinkedIn](#)

[Google++](#)

## Recommended for you

# Contents

<b>1</b>	<b>Challenging Decision Problems and Decision Models</b> . . . . .	1
1.1	Introduction . . . . .	1
1.2	Existing Decision-Making Models and Their Limitations . . . . .	2
1.2.1	Traditional Decision Models . . . . .	2
1.2.2	The Cognitive Decision Models . . . . .	6
1.2.3	Some Problems Unsolvable by Existing Decision Models . . . . .	6
1.3	An Informal Introduction to Decision-Making in Changeable Spaces . . . . .	11
1.4	Conclusion . . . . .	13
	Appendix 1: A Snapshot on Decision-Making Models . . . . .	14
	Appendix 2: Discussion of Schelling’s Game of Chicken Model of Problem 1.8 (Cuban Missile Crisis) . . . . .	20
	References . . . . .	22
<b>2</b>	<b>Decision Processes and Decision-Making in Changeable Spaces</b> . . . . .	25
2.1	Introduction . . . . .	25
2.1.1	A Brief Introduction to the Ten Decision Parameters . . . . .	26
2.2	Classification of Decision Problems . . . . .	30
2.3	Decision Elements and Decision Environmental Facets . . . . .	32
2.3.1	Decision Elements . . . . .	32
2.3.2	Decision Environmental Facets . . . . .	38
2.4	Decision-Making in Changeable Spaces Problems . . . . .	44
2.5	Conclusion . . . . .	49
	References . . . . .	50
<b>3</b>	<b>Habitual Domains, Human Behaviour Mechanism and Wonderful Solutions for DMCS Problem Analysis</b> . . . . .	51
3.1	Introduction . . . . .	51
3.2	Habitual Domains . . . . .	52
3.3	The Eight HD Hypotheses H1–H8 in Behaviour Dynamics . . . . .	54
3.3.1	Circuit Pattern Hypothesis, H1 . . . . .	54

- 3.3.2 Unlimited Capacity Hypothesis, H2. . . . . 55
- 3.3.3 Efficient Restructuring Hypothesis, H3 . . . . . 55
- 3.3.4 Analogy/Association Hypothesis, H4 . . . . . 56
- 3.3.5 Goal Setting and State Evaluation Hypothesis, H5 . . . . . 57
- 3.3.6 Charge Structure and Attention Allocation Hypothesis, H6 . . . . . 60
- 3.3.7 Discharge Hypothesis, H7 . . . . . 63
- 3.3.8 Information Input Hypothesis, H8 . . . . . 65
- 3.4 Human Behaviour Mechanism and Decision-Making . . . . . 66
  - 3.4.1 Stability of Habitual Domains . . . . . 69
- 3.5 HD Model of DMCS Problems and Acceptable and Wonderful Solutions . . . . . 71
  - 3.5.1 Acceptable Solutions and Wonderful Solutions . . . . . 74
  - 3.5.2 Comparing DMCS Habitual Domain Model with Existing Decision Models . . . . . 78
- 3.6 Behavioural Tendencies. . . . . 81
- 3.7 Conclusion. . . . . 87
- References . . . . . 88
- 4 Expansion of Habitual Domains and DMCS. . . . . 89**
  - 4.1 Introduction . . . . . 89
  - 4.2 Degrees of HD Expansion . . . . . 91
    - 4.2.1 Zero-Degree Expansion . . . . . 91
    - 4.2.2 First-Degree Expansion . . . . . 92
    - 4.2.3 Second-Degree Expansion . . . . . 93
  - 4.3 The 7-8-9 Principles of Deep Knowledge for HD Expansion. . . . . 95
    - 4.3.1 Seven Empowerment Operators . . . . . 96
    - 4.3.2 Eight Basic Methods for Expanding HD . . . . . 101
    - 4.3.3 Nine Principles for Deep Knowledge. . . . . 105
  - 4.4 Procedure for Solving DMCS Problems . . . . . 112
  - 4.5 Conclusion. . . . . 120
  - References . . . . . 120
- 5 Competence Set Analysis, Decision Blinds and Decision-Making . . . . 123**
  - 5.1 Introduction . . . . . 123
  - 5.2 Cores of Habitual Domains . . . . . 126
  - 5.3 Learning Process . . . . . 128
    - 5.3.1 Implanting . . . . . 128
    - 5.3.2 Nurturing . . . . . 129
    - 5.3.3 Habituating . . . . . 130
  - 5.4 Competence Sets and Classes of Decision Problems . . . . . 130
    - 5.4.1 Routine Problem. . . . . 131
    - 5.4.2 Mixed Routine Problems . . . . . 132
    - 5.4.3 Fuzzy Problems . . . . . 132
    - 5.4.4 Challenging Problems . . . . . 134
  - 5.5 Confidence, Risk Taking and Ignorance . . . . . 136

5.6	Effective Decision-Making . . . . .	139
5.7	Decision Blinds and Decision Traps . . . . .	140
5.8	Covering and Discovering Problems . . . . .	141
5.9	Support in Decision-Making Process . . . . .	144
5.10	Conclusion . . . . .	145
	References . . . . .	145
<b>6</b>	<b>Decision-Making in Changeable Spaces (DMCS):</b>	
	<b>A New Paradigm . . . . .</b>	<b>147</b>
6.1	Introduction . . . . .	147
6.2	Optimisation in Changeable Spaces . . . . .	148
6.3	Covering Problem . . . . .	152
6.3.1	Feasibility and Covering Time and/or Cost . . . . .	154
6.4	Discovering . . . . .	155
6.5	Necessary and Sufficient Conditions for Covering . . . . .	158
6.5.1	Cardinality Approach to Covering . . . . .	158
6.6	General Procedures for Solving Covering and Discovering Problems . . . . .	161
6.6.1	General Covering Problem Procedure . . . . .	164
6.6.2	Covering Feasibility Procedure . . . . .	171
6.6.3	Covering Time Procedure . . . . .	172
6.6.4	Discovering Procedure . . . . .	173
6.7	Application . . . . .	174
6.8	A Comparison Between OCS Models and Existing Decision Models . . . . .	180
6.9	Conclusion . . . . .	181
	References . . . . .	182
<b>7</b>	<b>Solving Real-World DMCS Problems, Part 1: Management and Economics Problems . . . . .</b>	<b>183</b>
7.1	Introduction . . . . .	183
7.2	Management Applications . . . . .	184
7.2.1	From Business Crisis to Prosperity by Matsushita . . . . .	185
7.2.2	The 1984 Olympic Games, Converting Potential Big Loss to Big Gains . . . . .	191
7.2.3	From Tough Competition to Supply Chain Integration by Synnex . . . . .	195
7.2.4	Converting Revenge Sentiment to Full Cooperation . . . . .	199
7.3	Economics Application . . . . .	201
7.4	Conclusion . . . . .	208
	References . . . . .	208
<b>8</b>	<b>Solving Real-World DMCS Problems, Part 2: Social, Geopolitical, and Discovery Problems . . . . .</b>	<b>209</b>
8.1	Introduction . . . . .	209
8.2	Silence Game Between Husband and Wife . . . . .	210

- 8.3 Clearing a Violent Demonstration Peacefully . . . . . 214
- 8.4 The Farmer and the Hunter . . . . . 217
- 8.5 A Winning Strategy Without Implementation . . . . . 221
- 8.6 Cuban Missile Crisis (1962) . . . . . 224
- 8.7 Multilanguage Script Keyboard. . . . . 235
- 8.8 Conclusion. . . . . 238
- References . . . . . 239
- 9 Innovation Dynamics as a DMCS Problem . . . . . 241**
  - 9.1 Introduction . . . . . 241
  - 9.2 Innovation from Habitual Domain Perspective . . . . . 242
  - 9.3 An Anatomy of Innovation Dynamics. . . . . 243
    - 9.3.1 Competence Set Expansion and Transformation  
(see Fig. 9.1(i) and (C)) . . . . . 244
    - 9.3.2 Providing Product/Service to Release the Pain  
and Frustration of Targeted Customers  
(see Fig. 9.1(ii)–(iii) and (B)). . . . . 245
    - 9.3.3 Creating Charge and Releasing Charge  
(see Fig. 9.1(iv)) . . . . . 246
    - 9.3.4 Creating Value (see Fig. 9.1(v) and (A)) . . . . . 247
    - 9.3.5 Value Distribution and Reinvestment (see Fig. 9.1(vi)  
and (D)–(E)) . . . . . 247
    - 9.3.6 Clockwise and Counterclockwise Versions  
of Innovation Dynamics . . . . . 248
  - 9.4 DMCS Problems in Innovation Dynamics . . . . . 249
    - 9.4.1 OCS and Innovation Dynamics . . . . . 251
  - 9.5 Conclusion. . . . . 254
  - References . . . . . 255
- 10 Conclusion and Further Research . . . . . 257**
  - 10.1 Introduction . . . . . 257
  - 10.2 DMCS and OCS in Management and Game Situations . . . . . 258
  - 10.3 DMCS and OCS in Artificial Intelligence. . . . . 259
    - 10.3.1 HD-Agent in Artificial Economics and e-Economy. . . . . 260
  - 10.4 Scientific Discovery. . . . . 261
  - 10.5 Knowledge Extraction . . . . . 262
  - 10.6 Competence Set-Related Research Problems . . . . . 262
  - References . . . . . 264
- Index . . . . . 271**



<http://www.springer.com/978-981-10-1979-1>

Wonderful Solutions and Habitual Domains for  
Challenging Problems in Changeable Spaces  
From Theoretical Framework to Applications

Larbani, M.; Yu, P.-L.

2017, XXVII, 275 p. 17 illus., Hardcover

ISBN: 978-981-10-1979-1