
Contents

Foreword	ix
Preface	xiii
Chapter 1. Decision and Decision Context	1
1.1. Introduction	1
1.2. A fleeting look at some of the great civilizations.	5
1.2.1. Method of investigation	5
1.2.2. The ancient Near-East	6
1.2.3. Ancient Egypt	10
1.2.4. India	12
1.2.5. China	16
1.2.6. Ancient Greece	21
1.2.7. The Arab–Muslim world	25
1.2.8. The Western world	28
1.3. Conclusion	33
Chapter 2. Decisions: The Process	37
2.1. Introduction	37
2.2. Why a decision process?	40
2.3. The notion of process	43
2.4. Decision-making: rationality or intuition	44
2.5. The classical theory of rationality.	46
2.5.1. The search for a numerical value.	46
2.5.2. Fundamentals	47
2.5.3. Operational research	48
2.5.4. Game theory	52

2.5.5. Taking account of uncertainty: towards procedural rationality	53
2.5.6. A return to the decision process	56
2.5.7. Summary and analysis	60
2.6. Procedural rationality theory	62
2.6.1. The search for a satisfactory solution	62
2.6.2. The basics	64
2.6.3. The school of Herbert Simon	66
2.6.4. Extensions to Simon's process	74
2.6.5. Procedural rationality and artificial intelligence	83
2.6.6. A return to the decision process	84
2.6.7. Summary and analysis	87
2.7. Conclusion	89
Chapter 3. The Decision: The Multi-criteria Universe	91
3.1. Introduction	91
3.2. Comparing to be able to choose	93
3.2.1. Intuitive vision	93
3.2.2. In a single criterion universe	94
3.2.3. In a multi-criteria universe	94
3.3. The construction of MCDA	95
3.4. Vocabulary	98
3.4.1. Solutions	98
3.4.2. The criteria	101
3.4.3. Decision types	107
3.5. Ordering for comparison	111
3.5.1. Intuitive vision	111
3.5.2. The notion of preferences	112
3.5.3. Preferences and order relationships	114
3.6. The particular case of Pareto dominance	121
3.7. Summary	124
3.8. Conclusion	126
Chapter 4. The Decision: Methods	127
4.1. Introduction	127
4.2. Outranking	129
4.2.1. Principles	129
4.2.2. Condorcet's method	131
4.2.3. The ELECTRE III method	134
4.3. Aggregation	147
4.3.1. Principles	147
4.3.2. The Borda count method	150

4.3.3. The AHP method	152
4.3.4. The MACBETH method	168
4.4. Conclusion	187
Conclusion	189
References	193
Index	207