

Table of Contents

Introduction	xi
Chapter 1. What is a Decision, or What Does Decision Theory Have to Teach Us?	1
1.1. Actions and events	1
1.2. Probabilities	5
1.3. Expected utility	7
1.4. Subjective probabilities and rationality of the decision	12
1.5. Caveats and recommendations	14
1.5.1. Distinction between actions and events	15
1.5.2. Distinction between decisions and results	15
1.5.3. Expectancy-based reasoning	15
1.5.4. Identification of all the probabilities and all the possible events.	16
Chapter 2. Scenarios and Conditional Probabilities	17
2.1. Scenarios	17
2.2. Compound probabilities	21
2.3. Scenarios and conditional probabilities	24
2.4. Decision tree	28
2.5. Scenarios, information and pragmatics.	32
2.6. Pursuance of the scenarios and the “just one more push”.	35
2.7. Conditional probabilities and accidents	39
2.8. Caveats and recommendations	41
2.8.1. Robustness of the result	41
2.8.2. Updating the scenarios and conditional probabilities	41
2.8.3. Slight probabilities	41
2.8.4. Re-evaluation of decisions	41
2.8.5. Knowing how to lose.	42

Chapter 3. The Process of Decision-Making and its Rationality, or What Does Artificial Intelligence Have to Teach Us?	43
3.1. A decision as a problem	43
3.2. Decision table	45
3.3. The general process of decision-making	46
3.4. Case-based reasoning	48
3.5. The Olympian point-of-view, and H. Simon’s view	51
3.6. Information	54
3.7. Limited rationality	57
3.8. Heuristics	60
3.9. Cognitive limitation	61
3.10. Feedback on rationality in decisions	62
3.11. Caveats and recommendations	64
3.11.1. Be imaginative	64
3.11.2. Stay on top of the problem and of time	64
3.11.3. Filter the information	64
3.11.4. Take a retrospective view	65
3.11.5. Be reactive rather than optimal	65
3.11.6. Constantly re-evaluate your objectives	65
Chapter 4. Intuition, Emotion, Recognition and Reasoning or, What Does the Neurobiology of Decision-Making Have to Teach Us?	67
4.1. Introduction	68
4.2. Animal “decision”	69
4.3. Recognition-primed decision	70
4.4. The brain and emotion	73
4.5. Short-term, long-term	78
4.6. The Bayesian brain	83
4.7. Caveats and recommendations	85
4.7.1. Beware of the emotions generated by recognition of decisional patterns	85
4.7.2. Structure the knowledge	85
4.7.3. The colors of the projection	86
4.7.4. Introduce learning into recognition-based learning systems	86
Chapter 5. Decision-Making in the Presence of Conflicting Criteria, or What Does a Multicriterion Decision Aid Have to Teach Us?	87
5.1. Preference structures	88
5.2. Multicriterion decision aid	91
5.3. Weighted sum aggregation	93
5.4. Other aggregation methods	100
5.5. Aggregation of votes	103
5.6. Social choice and collective decision	105

5.7. Individual reactions to multicriterion decision-making	109
5.8. Constraints and multicriterion decision-making in organizations	110
5.9. Caveats and recommendations	112
5.9.1. Finding a compromise between the different Pareto optima.	112
5.9.2. Balancing between the criteria to be aggregated.	112
5.9.3. The best decision in a multidimensional world does not exist.	112
5.9.4. Beware of false choices	113
5.9.5. The goals and the constraints are interchangeable.	113
5.9.6. Multiplicity of the goals and criteria.	113
5.9.7. Use the multicriterion decision aid.	113
Chapter 6. The Decision-Maker's Psychology, or What Does Psychology Have to Teach Us?	115
6.1. Introduction.	116
6.2. The decision-maker's rationality and utility function	117
6.3. Constructing the utility function	119
6.4. Utility function in the risk	120
6.5. Loss aversion and the endowment effect	125
6.6. Biases related to the probabilities	126
6.7. Self-confidence and the illusion of control	134
6.8. Biases linked to memory	136
6.9. Frame effect	140
6.10. Level of reference and anchoring	144
6.11. Rationalization and reinforcement	154
6.12. System 1 or System 2?	156
6.13. Biases or heuristics?	159
6.14. Caveats and recommendations.	162
6.14.1. A good decision-maker must make an effort to be rational in his preferences.	162
6.14.2. Be aware of risk-taking in loss-heavy situations	162
6.14.3. Do not overvalue the status quo.	163
6.14.4. Be objective in your estimation of the probabilities	163
6.14.5. Be wary, but not pessimistic.	163
6.14.6. Do not think that you control the events.	163
6.14.7. Do not be over-confident.	163
6.14.8. Do not trust your memory	164
6.14.9. Framing and reference point.	164
6.14.10. Do not make unproven correlations.	164
6.14.11. Avoid over-simplistic categorizations	164
6.14.12. Do not be taken in by pretty stories.	165
6.14.13. Beware of commitment escalation	165
6.14.14. Be mindful of the halo effect	165

Chapter 7. Context of the Decision: Intention, Commitment, Trust, Fairness, Authority and Freedom	167
7.1. Intention and commitment	168
7.2. Trust and reciprocity	171
7.3. Fairness	177
7.4. Freedom and responsibility	180
7.5. Authority	182
7.6. “Leadership” in organizations	186
7.7. Rationality between logic and probabilities	189
7.8. Rationality and “good reasons”	192
7.9. Caveats and recommendations	197
7.9.1. Genuine and false commitment	197
7.9.2. Threats	197
7.9.3. Transparency	197
7.9.4. Reciprocity	197
7.9.5. Explaining your decisions	197
7.9.6. Bias in favor of the status quo	198
7.9.7. Getting help	198
7.9.8. Fairness	198
7.9.9. Resentment	198
7.9.10. Freedom	198
7.9.11. Responsibility	198
7.9.12. Authority	199
7.9.13. Groups and leaders	199
7.9.14. Rationality	199
Chapter 8. Action: Giving the Impetus or Managing	201
8.1. Deciding and acting	202
8.2. Quick or slow decision-makers	203
8.3. Consensual or imperative decision-makers	208
8.4. To act or to manage? That is the question	212
8.5. Reflect long, project long term: strategic planning and decision-making in organizations	217
8.6. Feedback and learning	221
8.7. Conclusion	226
8.8. Caveats and recommendations	226
8.8.1. Decision is inseparable from action	226
8.8.2. A good decision-maker is quick	227
8.8.3. Inaction is a decision	227
8.8.4. Other people’s criteria	227
8.8.5. Consensus is not always possible	227
8.8.6. The decision is not only impulsion	227
8.8.7. Plans are useful before the action commences	227

8.8.8. Strategic planning	228
8.8.9. Learn from feedback	228
8.8.10. “No regrets; they don’t work” in action	228
8.8.11. Learn faster than your competition	228
Chapter 9. <i>Vade Mecum</i> of the Acting Decision-Maker	229
9.1. That which depends on you, and that which does not	229
9.1.1. The alternatives and the events must be dealt with separately.	229
9.1.2. A good decision-maker will avoid thinking that he controls the events	230
9.1.3. The result depends on your action and on nature	230
9.2. That which depends on you: information, imagination and the process of decision-making	230
9.2.1. You must make an effort to properly identify all the possible events	231
9.2.2. You must make an effort to properly identify all the possible alternatives	231
9.2.3. Information-seeking and information-filtering are crucial steps	231
9.2.4. A good decision-maker attempts to always remain “master of the problem and of time”	231
9.2.5. You must stick with “satisficing” decisions	232
9.3. That which depends only on you: learning and planning	232
9.3.1. A good decision-maker must always take a retrospective view of his decisions (review them).	232
9.3.2. You must always monitor the situation and update your scenarios in real-time	232
9.3.3. You must always keep your objectives in mind	233
9.3.4. Plans are useful before action.	233
9.3.5. Strategic planning.	233
9.3.6. Learning from feedback	233
9.3.7. No regrets; they don’t work in action	234
9.3.8. Recognition-primed action	234
9.4. That which depends on nature: the pitfalls of probabilities	234
9.4.1. Be objective in your estimation of the probabilities.	234
9.4.2. Identify all the probabilities, and do not overlook small ones up to the order of 10^{-3} or 10^{-4}	235
9.4.3. Expectancy-based reasoning	235
9.4.4. Remain rational in uncertainty	235
9.4.5. The events may be dependent.	236
9.5. That which depends on our human nature: the pitfalls of the human brain	236
9.5.1. The two brains.	236

9.5.2. Intuition	236
9.5.3. Risk-taking in loss	236
9.5.4. Beware of commitment escalation, and re-evaluate the results	237
9.5.5. Above all, do not over-value the status quo	237
9.5.6. Do not confuse reinforcement and self-suggestion	237
9.5.7. Correlations and classifications.	238
9.5.8. Memory	238
9.5.9. You must not idealize or blacken the past	238
9.5.10. Our own over-confidence, and that of experts	238
9.6. That which depends on other people: conflicts and manipulation	239
9.6.1. Conflicts	239
9.6.2. Multicriterion decision-making.	239
9.6.3. A skilled decision-maker knows that the goals and the constraints are interchangeable.	239
9.6.4. Other people's criteria	240
9.6.5. In a multidimensional world, there is no best decision	240
9.6.6. Beware of manipulation	240
9.6.7. Contextualization	240
9.6.8. False reciprocity	240
9.6.9. Commitments and feigned commitments.	240
9.6.10. Groups and leaders	241
9.6.11. Pretty stories and plans which are too good to be true	241
9.7. What the result depends on: your style and your action	241
9.7.1. The decision is inseparable from the action	241
9.7.2. A good decision-maker is timely.	241
9.7.3. The decision does not end with its impulsion	242
9.7.4. Explain your decisions.	242
9.7.5. Transparency	242
9.7.6. Freedom	242
9.7.7. Responsibility	242
9.7.8. Natural authority	243
9.7.9. Getting help	243
9.7.10. Fairness	243
9.7.11. Resentment.	243
9.8. And finally.....	243
Bibliography	245
Index of Names	263
General Index	269