
Contents

Preface	ix
Introduction	xi
Chapter 1. Describing Images	1
1.1. Light, visual perception and visual imagery.	1
1.1.1. Physical light	2
1.1.2. Visual perception: Gibson’s ecological approach	4
1.1.3. Visual imagery and cognitive sciences	6
1.2. Visual media	9
1.2.1. Visual media as mediation	9
1.2.2. Metaphors of visual media	13
1.3. Visual interfaces	16
1.3.1. Remediation of machines and media	17
1.3.2. Conventions and standards in human–computer interaction	19
1.3.3. Visual space of image interfaces	23
1.4. Visual methods.	26
1.4.1. Visual studies	27
1.4.2. Visual semiotics.	30
1.4.3. Diagrams and graphics.	33
1.4.4. Visual computation.	36
Chapter 2. Describing Graphical Information	41
2.1. Organizing levels of description	42
2.2. Fundamental signs of visual information	45
2.2.1. From binary code to data types.	45

2.2.2. Data types	47
2.2.3. Data structures	54
2.2.4. Algorithms	60
2.3. Visual information as texts.	74
2.3.1. Programming languages	75
2.3.2. Graphical interfaces	93
2.3.3. Image file formats	103
2.4. Objectual materiality of visual information	108
2.4.1. Screen.	108
2.4.2. Cameras, sensors, lenses.	110
2.4.3. 2D and 3D printing devices	113
Chapter 3. Practicing Image-Interfaces	115
3.1. Mise-en-interface	115
3.2. Studying graphical interface features.	117
3.3. 1970s: Xerox PARC years	118
3.4. 1984–1996: Classic Mac OS years	121
3.5. 1995–2005: Windows 95, 98 and XP years	128
3.6. 2005–2017: Free software years and web as platform	133
3.7. Interface logics.	144
Chapter 4. Designing Image-Interfaces	151
4.1. Precursors to data visualization	152
4.2. Data visualization	153
4.2.1. Data models and data tables.	155
4.2.2. Visual descriptors.	157
4.2.3. Exploratory data analysis	159
4.2.4. Dimensionality reduction	160
4.2.5. Graphical methods for data visualization.	162
4.2.6. Data visualization as image-interface	168
Chapter 5. Prototyping Image-Interfaces	185
5.1. Scripting software applications	185
5.2. Integrating data visualizations.	196
5.3. Integrating media visualizations.	199
5.4. Explorations in media visualization	200
5.4.1. Software visualization of Processing 2	200
5.4.2. Graphical interventions on Stein poems.	203

5.4.3. Web-based visualization of rock album covers	205
5.4.4. Esthetics and didactics of digital design	211
5.4.5. Prototyping new graphical models for media visualization with images of paintings by Mark Rothko	216
5.4.6. Volumetric visualizations of images sequences	224
Conclusion	233
Appendices	241
Appendix 1	243
Appendix 2	247
Appendix 3	251
Bibliography	255
Index	263