
Contents

Foreword	ix
Authors	xi
General Introduction	3

PART 1 Geographical Information

1 Geometrical Data	19
1.1 Geographic Objects	19
1.2 Projections	22
1.2.1 Finding a Localization on the Surface of the Earth	22
1.2.2 From Ellipsoid to Flat Surface	24
1.3 Spatial Extent and Orientation	28
1.4 Cartographic Generalization	31
1.5 The Spatial Subdivisions	36
2 Statistical Data	41
2.1 Data Tables	41
2.2 Data Types	43
2.2.1 Statistical Data Expresses Either a Quality or a Quantity	43
2.3 Data Processing	44
2.3.1 Summarizing	45
2.3.1.1 Position Parameters	45
2.3.1.2 Dispersion Parameters	46
2.3.2 Analyzing	48
2.3.2.1 The Distribution Diagram	48
2.3.2.2 Comparing Central Values	49
2.3.3 Determining Class Intervals	49
2.3.3.1 Classification Methods	51
2.4 Can Data Be Trusted?	55
Conclusion: Designing Maps	59

PART 2 Cartographical Language

3	Differential/Associative Visual Variables	67
3.1	Color (Hue)	68
3.1.1	HSL Coding	68
3.1.2	RGB Coding	69
3.1.3	CMYK Coding	69
3.1.4	Choosing the Right Colorimetric Mode	69
3.1.5	Harmony and Perception of Colors	70
3.1.6	The Symbolic and Cultural Dimensions of Color	71
3.1.7	Colors Give Meaning to Maps	72
3.2	Texture/Structure (without Hierarchy)	74
3.3	Orientation	75
3.4	Shape	76
4	Ordered Visual Variables	79
4.1	Size (Order)	80
4.2	The Value and Intensity of Color	81
4.3	Ordered Colors	83
4.4	Grain	86
4.5	Texture/Structure (Order)	86
5	The Visual Variables Expressing Proportionality	89
5.1	Size (Proportionality)	90
5.2	Varying Height and Volume	93
5.3	Other Approaches: "Bertin's" Dots and Dot Density Maps	97
6	Solutions in Statistical Mapping	99
6.1	Mapping Time	99
6.2	Mapping for Comparison	102
6.3	Mapping a Relationship	104
6.4	Mapping Typologies	106
6.5	Multivariate Mapping	109
6.5.1	Agglomerative Hierarchical Clustering (AHC) Analysis	109
6.5.2	Factor Analyses	111
Conclusion:	Combining Visual Variables	115

PART 3 Beyond the Visual Variables

7	Other Cartographic Presentations	125
7.1	Regular Grid Maps	126
7.2	Discontinuities	129
7.3	Smoothing	132
7.4	Cartograms (or Anamorphosis)	135
7.5	Flow Maps	139
8	Staging	143
8.1	“Dressing” the Geographical Image	144
8.1.1	Title	145
8.1.2	Legend	146
8.1.3	Scale	148
8.1.4	Sources	149
8.1.5	Dates	150
8.1.6	Orientation	150
8.1.7	Place Names	150
8.1.8	Insets	151
8.1.9	Supplemental Text	151
8.1.10	Any Other Relevant Elements	152
8.2	Layout and Staging	152
8.3	Designing a Poster or a Cartographic Composition	159
9	Variations on a Theme	163
9.1	What Is GDP?	163
9.2	How Can GDP Be Mapped?	165
9.3	What Lessons Should Be Drawn?	176
	Conclusion: Cartography Is a Martial Art	179
	General Conclusion	183
	Annexes	187
	Bibliography	201
	Index	205