

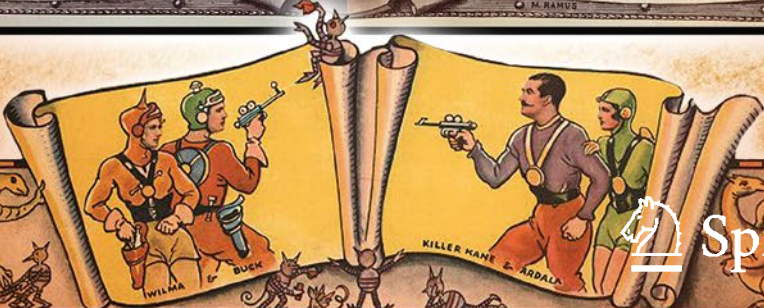
NICK KANAS

Star Maps

History, Artistry, and Cartography
THIRD EDITION



PRAXIS



Springer

Star Maps

History, Artistry, and Cartography

Third Edition

Nick Kanas

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History, Artistry, and Cartography

Third Edition



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*To Carolynn, Andrew, Peter, Gena, Yuly, and the new generation of sky observers:
Adonis, Allison, Joshua, Nathan, and Syany*

Contents

Preface to Third Edition	xvi
Foreword to First Edition	xvii
Preface to First Edition	xix
Acknowledgments	xxiii
List of figures	xxvi
List of tables	xxxv
List of abbreviations and acronyms	xxxvi
1 What is a star map?	1
1.1 Constellation maps	1
1.2 Cosmological maps	3
1.3 What makes these images maps?	5
1.4 Circles in the sky	6
1.4.1 The Sun–Earth orientation	6
1.4.2 The armillary sphere	8
1.5 Directions in the sky	11
1.6 Projections of star maps	13
1.7 Manuscripts and prints	15
1.8 Bibliography	17

2	Non-European cosmology and constellation development.....	18
2.1	China.....	19
2.1.1	Cosmology	19
2.1.2	Time and the calendar	20
2.1.3	Chinese constellations.....	21
2.1.4	Chinese influences in Korea and Japan.....	25
2.1.5	Outside influences on China	25
2.2	Mesopotamia.....	27
2.2.1	Historical interlude.....	27
2.2.2	Cosmology	28
2.2.3	Time and the calendar	30
2.2.4	Mesopotamian constellations and the zodiac.....	30
2.3	Egypt.....	31
2.3.1	Cosmology	31
2.3.2	Time and the calendar	32
2.3.3	Orientation of temples.....	35
2.3.4	Egyptian constellations	35
2.3.5	Differences from China and Mesopotamia	37
2.4	India.....	38
2.4.1	Cosmology	38
2.4.2	Time and the calendar	41
2.4.3	Indian constellations	41
2.4.4	Outside influences.....	43
2.5	Astrology in ancient times.....	43
2.6	Bibliography	49
3	European cosmology	52
3.1	Classical Greek astronomy	53
3.1.1	Precursors.....	53
3.1.2	The cosmologies of early Greek philosophers.....	54
3.1.3	Pythagoras and his followers	55
3.1.4	Plato	56
3.1.5	Eudoxus.....	58
3.1.6	Aristotle.....	58
3.1.7	The “Pre-Copernicans”	60
3.1.8	Eratosthenes and the Alexandria Library	61
3.1.9	The eccentric model.....	61
3.1.10	Apollonius and the epicycle model.....	62
3.1.11	Hipparchus	65
3.1.12	Claudius Ptolemy	66
3.2	European astronomy during the early Middle Ages	70
3.2.1	Impact of the fall of Rome	70
3.2.2	Astronomy in the Latin West	71
3.2.3	Time and the calendar	72

3.3	Islamic astronomy.....	73
3.4	Byzantine astronomy.....	79
3.5	Classical Greek astronomy comes back to Europe.....	82
	3.5.1 Entry from the West: Islam.....	82
	3.5.2 Johannes de Sacrobosco.....	83
	3.5.3 Entry from the East: Byzantium.....	85
3.6	Astrology in the Middle Ages.....	86
3.7	Printing and the Renaissance.....	90
	3.7.1 Johann Gutenberg.....	90
	3.7.2 The spread of printing.....	92
3.8	Astronomy and Central Europe.....	93
	3.8.1 Georg Peurbach.....	93
	3.8.2 Regiomontanus.....	94
	3.8.3 Hartmann Schedel.....	95
	3.8.4 Peter Apian.....	96
3.9	Paradigm shift: heliocentrism with circular orbits.....	100
	3.9.1 Nicholas Copernicus.....	100
	3.9.2 Tycho Brahe.....	103
	3.9.3 Galileo.....	107
	3.9.4 René Descartes.....	109
3.10	Paradigm shift: heliocentrism with elliptical orbits.....	111
	3.10.1 Johannes Kepler.....	111
	3.10.2 Follow-up to Kepler.....	113
3.11	Bibliography.....	113
4	European constellation development.....	117
4.1	Classical Greeks.....	117
	4.1.1 Aratus' <i>Phaenomena</i>	118
	4.1.2 Eratosthenes' <i>Catasterismi</i>	119
	4.1.3 Hipparchus' star catalog.....	119
	4.1.4 Geminus' <i>Introduction to the Phenomena</i>	120
	4.1.5 Ptolemy's star catalog.....	120
	4.1.6 Hyginus' <i>Poeticon Astronomicon</i>	123
4.2	Islamic constellations.....	125
	4.2.1 Arab star names.....	125
	4.2.2 Al-Sufi and his <i>Book of Fixed Stars</i>	126
4.3	Constellations and the Age of Exploration.....	127
	4.3.1 Navigating the oceans.....	127
	4.3.2 Filling gaps in the Southern Hemisphere.....	129
	4.3.2.1 Amerigo Vespucci.....	129
	4.3.2.2 Andreas Corsali.....	130
	4.3.2.3 Petrus Plancius, Pieter Keyser, and Frederick De Houtman.....	130

	4.3.2.4	Edmond Halley	133
	4.3.2.5	Nicolas de Lacaille	136
	4.3.2.6	John Herschel.....	137
	4.3.3	Filling gaps in the Northern Hemisphere.....	139
	4.3.3.1	Caspar Vopel.....	139
	4.3.3.2	Johannes Hevelius.....	139
	4.3.4	Impact on the Islamic World.....	141
4.4		Obsolete constellations	142
4.5		Bibliography	146
5		Early European star maps	148
5.1		The manuscript era	148
5.2		Early printed constellation images.....	149
	5.2.1	Erhard Ratdolt and Hyginus’ <i>Poeticon Astronomicum</i>	149
	5.2.2	An early printed edition of Aratus’ <i>Phaenomena</i>	152
	5.2.3	Aldus Manutius and Aratus’ <i>Phaenomena</i>	153
5.3		Albrecht Dürer and the first printed star maps.....	154
	5.3.1	Life and times	154
	5.3.2	Dürer’s celestial hemispheres	155
5.4		Johannes Honter and his geocentric hemispheres	156
	5.4.1	Life and times	156
	5.4.2	Honter’s celestial hemispheres.....	158
5.5		Alessandro Piccolomini and the first printed star atlas.....	158
	5.5.1	Life and times	158
	5.5.2	<i>De le Stelle Fisse</i>	159
5.6		Giovanni Paolo Gallucci and his coordinate system.....	161
	5.6.1	Life and times	161
	5.6.2	<i>Theatrum Mundi, et Temporis</i>	161
5.7		Thomas Hood: setting the stage for the Golden Age.....	163
	5.7.1	Life and times	163
	5.7.2	<i>The Use of the Celestial Globe</i>	163
5.8		Bibliography	165
6		The “Big Four” of the Golden Age of imaged star maps.....	166
6.1		Star map conventions	167
6.2		Johann Bayer	169
	6.2.1	Life and times	169
	6.2.2	<i>Uranometria</i>	169
	6.2.3	Derivative atlases	172
	6.2.3.1	Julius Schiller.....	172
	6.2.3.2	Aegidius Strauch.....	174
	6.2.3.3	Ignace-Gaston Pardies	174
	6.2.3.4	Augustine Royer	176

	6.2.3.5	John Bevis.....	179
	6.2.3.6	Philippe de la Hire	180
6.3		Johannes Hevelius.....	181
	6.3.1	Life and times	181
	6.3.2	The <i>Prodromus Astronomiae</i> and the <i>Catalogus Stellarum Fixarum</i>	183
	6.3.3	<i>Firmamentum Sobiescianum</i>	184
	6.3.4	Derivative atlases	184
	6.3.4.1	Johann Zahn.....	184
	6.3.4.2	Petrus Schenck.....	186
	6.3.4.3	Georg Christoph Eimmart.....	190
	6.3.4.4	Johann Leonhard Rost	190
	6.3.4.5	Mattheus Seutter	191
	6.3.4.6	Christoph Semler	191
	6.3.4.7	Tobias Conrad Lotter	192
	6.3.4.8	Johann Doppelmayr and Antonio Zatta	192
6.4		John Flamsteed	192
	6.4.1	Life and times	192
	6.4.2	<i>Historiae Coelestis Britannicae</i>	193
	6.4.3	<i>Atlas Coelestis</i>	195
	6.4.4	Derivative atlases	196
	6.4.4.1	John Hill.....	196
	6.4.4.2	Jean Fortin.....	197
	6.4.4.3	Johann Bode.....	198
	6.4.4.4	Maximilian Hell.....	198
	6.4.4.5	Kornelius Reissig	199
	6.4.4.6	Society for the Diffusion of Useful Knowledge	199
6.5		Johann Bode.....	199
	6.5.1	Life and times	199
	6.5.2	<i>Anleitung zur Kenntniss des Gestirnten Himmels</i> and Bode's Law.....	203
	6.5.3	<i>Vorstellung der Gestirne</i>	204
	6.5.4	<i>Uranographia</i>	205
	6.5.5	Derivative atlases	206
	6.5.5.1	Christian Friedrich Goldbach	206
	6.5.5.2	Alexander Jamieson	207
	6.5.5.3	Urania's Mirror	208
	6.5.5.4	Elijah H. Burritt	209
	6.5.5.5	M.C.G. Riedig.....	209
	6.5.5.6	Joseph J. von Littrow	209
	6.5.5.7	G. Rubie.....	212
	6.5.5.8	Kornelius Reissig (see Section 6.4.4.5)	212
	6.5.5.9	Karl Friedrich Vollrath Hoffmann.....	212
6.6		Bibliography	212

7	Other important star maps of the Golden Age	214
7.1	Andreas Cellarius	214
	7.1.1 Life and times	214
	7.1.2 <i>Harmonia Macrocosmica</i>	215
7.2	Athanasius Kircher	218
	7.2.1 Life and times	218
	7.2.2 Books of astronomical interest	219
7.3	Alain Manesson Mallet	220
	7.3.1 Life and times	220
	7.3.2 <i>Description de l'Univers</i>	220
7.4	Vincenzo Maria Coronelli	223
	7.4.1 Life and times	223
	7.4.2 Books with celestial plates	223
7.5	John Seller	225
	7.5.1 Life and times	225
	7.5.2 <i>Atlas Maritimus</i>	227
	7.5.3 <i>Atlas Coelestis</i>	228
7.6	John Senex	228
	7.6.1 Life and times	228
	7.6.2 Celestial maps	230
7.7	Corbinianus Thomas	232
	7.7.1 Life and times	232
	7.7.2 <i>Mercurii Philosophici Firmamentum</i>	232
7.8	Johann Doppelmayr	233
	7.8.1 Life and times	233
	7.8.2 Johann Baptist Homann	233
	7.8.3 <i>Atlas Coelestis</i>	235
7.9	Antonio Zatta	237
	7.9.1 Life and times	237
	7.9.2 <i>Atlante Novissimo</i>	237
7.10	Samuel Dunn	237
	7.10.1 Life and times	237
	7.10.2 <i>A New Atlas of the Mundane System</i>	237
7.11	Antoine and Nicolas de Fer	239
	7.11.1 Life and times	239
	7.11.2 <i>L'Atlas Curieux</i>	241
7.12	Philippe de la Hire	241
	7.12.1 Life and times	241
	7.12.2 Celestial maps	244
7.13	Pierre-Charles Le Monnier	244
	7.13.1 Life and times	244
	7.13.2 Celestial maps	245

7.14	The French Cassini Family	247
7.14.1	Life and times	247
7.14.2	Celestial maps of Giovanni Domenico (or Jean Dominique) Cassini.....	248
7.15	Giovanni Maria Cassini	249
7.15.1	Life and times	249
7.15.2	Celestial maps	249
7.16	Bibliography	251
8	Special topics	252
8.1	Celestial globes and gores	252
8.1.1	Early examples.....	253
8.1.2	Celestial gores.....	258
8.1.3	Important globe makers in Europe and the United States.....	258
8.2	Volvelles.....	264
8.2.1	What were volvelles?.....	264
8.2.2	How did volvelles work?	267
8.2.3	Planispheres and the demise of volvelles.....	271
8.3	Astronomical instruments before the telescope.....	271
8.3.1	Antikythera mechanism and the Nebra sky disk.....	273
8.3.2	Astrolabe	274
8.3.3	Nocturnal.....	278
8.3.4	Cross-staff and back-staff	278
8.3.5	Octants, sextants, and quadrants	279
8.3.5.1	Tycho Brahe's <i>Astronomiae Instauratae</i> <i>Mechanica</i>	279
8.3.5.2	Hevelius' <i>Machinae Coelestis</i>	281
8.4	The telescope	283
8.5	Non-stellar heavenly bodies.....	291
8.5.1	Sun, planets, and asteroids	291
8.5.2	Moon.....	301
8.5.2.1	Hevelius' <i>Selenographia</i> and Riccioli's <i>Lunar Map</i>	303
8.5.2.2	Later maps of the Moon.....	305
8.5.3	Eclipses	308
8.5.4	Comets	311
8.5.4.1	Stanislaw Lubieniecki's <i>Theatrum Cometicum</i>	313
8.5.4.2	Edmond Halley's comet.....	313
8.5.4.3	Charles Messier's catalog	316
8.5.5	Deep-sky objects	317
8.5.5.1	Current classification	317
8.5.5.2	From 1600 to 1900.....	318
8.5.5.3	The 20th Century	322
8.6	Playing cards.....	325

8.7	Frontispieces and title pages	325
8.7.1	Printer's marks	328
8.7.2	Allegorical images from the past	328
8.7.3	Contemporary instruments and people	336
8.7.4	Extension of the book's content	339
8.7.5	Combinations	344
8.7.6	Frontispiece cost-cutting measures	347
8.7.7	Conclusions	350
8.8	Bibliography	354
9	Mapping the stars in early America	358
9.1	The almanacs	359
9.2	Jedidiah Morse	360
9.3	Early American star maps	363
9.3.1	Bartholomew Burges	363
9.3.2	Enoch Gridley	363
9.3.3	William Crosswell	363
9.4	Elijah H. Burritt	365
9.4.1	Life and times	365
9.4.2	<i>The Geography of the Heavens and its Atlas</i>	365
9.5	Astronomy education in the schools	368
9.5.1	John H. Wilkins	368
9.5.2	John Vose	369
9.5.3	Denison Olmsted	369
9.5.4	Asa Smith	370
9.6	O. M. Mitchel	371
9.6.1	Life and times	372
9.6.2	Mitchel's edition of Burritt's book and atlas	374
9.6.3	<i>The Planetary and Stellar Worlds</i>	376
9.6.4	<i>Popular Astronomy</i>	377
9.6.5	<i>The Astronomy of the Bible</i>	377
9.7	Hannah Mary Bouvier	379
9.8	Bibliography	381
10	The transition to non-imaged star maps	383
10.1	The 1800s: A century of transition	383
10.1.1	Factors pushing for change	383
10.1.2	Star maps with subdued constellation images	384
10.1.2.1	Wollaston's <i>Portraiture of the Heavens</i>	384
10.1.2.2	<i>Stieler's Hand-Atlas</i>	385
10.1.2.3	Von Littrow's <i>Atlas des Gestirnten Himmels</i>	386
10.1.3	Star maps with connecting-line constellation images	389
10.1.3.1	The <i>Atlas Céleste</i> of Dien and Flammarion	389
10.1.3.2	Proctor's <i>Half-Hours with the Stars</i>	391
10.1.3.3	Ball's <i>Atlas of Astronomy</i>	395

10.1.4	Star maps with no constellation images.....	395
10.1.4.1	Argelander’s <i>Bonner Durchmusterung</i>	395
10.1.4.2	Dreyer’s <i>New General Catalogue</i>	399
10.1.4.3	Other star maps with no constellation images	402
10.1.5	Astrophotography and its influence on star maps	402
10.1.5.1	Early impact.....	402
10.1.5.2	<i>Carte du Ciel</i> project	403
10.1.5.3	Other photographic star maps	403
10.2	The 20th and 21st Centuries	404
10.2.1	Annie Jump Cannon and the <i>Henry Draper Catalog</i>	404
10.2.2	Constellation boundaries and the IAU	405
10.2.3	Major atlases of the 20th Century	406
10.2.3.1	<i>Norton’s Star Atlas</i>	406
10.2.3.2	Becvar and his celestial atlases	408
10.2.3.3	Tirion and his celestial atlases	412
10.2.4	Other contemporary star maps and atlases.....	415
10.2.5	Computerized star maps.....	419
10.3	Bibliography	421
11	Terrestrial and celestial pictorial maps.....	422
11.1	What are pictorial maps?	422
11.2	History of terrestrial pictorial maps	423
11.3	Categories of terrestrial pictorial maps	426
11.4	Examples of terrestrial pictorial maps	427
11.5	History of celestial pictorial maps	435
11.6	Examples of celestial pictorial maps	437
11.6.1	Pre- <i>Sputnik</i> celestial pictorial maps	437
11.6.2	Post- <i>Sputnik</i> celestial pictorial maps	447
11.7	Fruit crate labels	454
11.8	Bibliography	458
12	Celestial images in artistic paintings	459
12.1	Historical drawings and paintings.....	459
12.2	Traditional contemporary drawings and paintings	474
12.3	Astronaut art	482
12.4	Non-traditionally made celestial art.....	485
12.5	Children’s art	488
12.6	Contemporary folk art.....	492
12.7	Postal stamps and cards	494
12.8	Bibliography	501

APPENDICES

A	Collecting celestial maps and prints	502
A.1	The materials in printed celestial maps	502
A.2	Celestial map preservation and conservation.....	503
A.3	Buying celestial maps	504
A.4	Bibliography	506
A.5	Sources of antiquarian celestial maps.....	506
A.5.1	Dealers who carry celestial maps.....	506
A.5.2	Internet auction houses and fairs with a focus on celestial maps	508
A.5.3	Map societies	508
A.5.4	Journals	508
B	Supplementary reference catalog (<i>see also Index for names and sources discussed in the chapters</i>)	509
C	Indices of major constellation atlases	536
C.1	Bayer, Johann— <i>Uranometria</i> , 1603.....	537
C.2	Bode, Johann— <i>Uranographia</i> , 1801.....	538
C.3	Cellarius, Andreas— <i>Harmonia Macrocosmica</i> , 1660.....	539
C.4	Doppelmayr, Johann— <i>Atlas Coelestis</i> , 1742	540
C.5	Flamsteed, John— <i>Atlas Coelestis</i> , 1729	541
C.6	Fortin, Jean— <i>Atlas Céleste de Flamstéed</i> , 1776.....	542
C.7	Hevelius, Johannes— <i>Firmamentum Sobiescianum</i> , 1687, appearing in <i>Prodromus Astronomiae</i> , 1690.....	543
C.8	Piccolomini, Alessandro— <i>De le Stelle Fisse</i> , 1579 edition	544
D	The British Library “King’s” edition	545
	Glossary	546
	Index	553

Preface to Third Edition

Star Maps: History, Artistry, and Cartography was first published in 2007. A second edition was published in 2012, which added over 50 new pages, 44 new images, over 60 additional references, and several new sections that included a large section on frontispieces and title pages.

Now it is time for this third edition, with a number of significant changes and additions from the previous two. At the request of many readers, this edition is hardcover, making it more durable. In addition, the color plates have been incorporated into the text, rather than being placed in a separate section at the end. Two new chapters have been added: Chapter 11 on *Terrestrial and Celestial Pictorial Maps*, and Chapter 12 on *Celestial Images in Artistic Paintings*. Five clearer replacement figures and 54 new figures have been added: 20 in Chapter 11, 28 in Chapter 12, and several more in the preceding text (i.e., Figures 4.9, 6.4, 6.5, 8.61, 8.62, and 8.63). There are 83 new references reflecting information published since the second edition, along with corresponding updates in the text. There is a new Section 4.3.4 on the *Impact on the Islamic World* of new constellations resulting from the Age of Exploration. There also is a new Section 8.7.6 on *Frontispiece cost-cutting measures*. Finally, the text has been reread, typos have been corrected, and clarifications and additions have been made (especially to the Islamic and Byzantine sections and Section 8.1 on *Celestial globes and gores*). All in all, much is new in this book, for the ease and edification of the reader. Enjoy!

Kentfield, CA, USA

Nick Kanas
March 2019

Foreword to First Edition

The representation of celestial bodies (stars, planets, comets and other extraterrestrial phenomena) has been an important part of cartography for millennia. Star maps of early Chinese, Indian, Mesopotamian, Egyptian and other cultures are significant in their own right but also because of their influence on Greek, Roman, Islamic and, later, European celestial cartography. The history of changing images and practices in this field up to the present is discussed and illustrated in admirable detail in *Star Maps*, by Nick Kanas.

As with a number of others interested in cartography, the author is a medical doctor who has devoted a great deal of time and resources to studying and writing about his long-term avocation. However, most collectors have an interest in a limited time period or geographical area (e.g., the eighteenth century or Jamaica). By contrast, Dr. Kanas has a longer and larger agenda: the representation of the heavens from antiquity to the present, as illustrated by maps and charts.

In order to cover his wide-ranging subject, Nick Kanas' book features over 200 images, 76 in color. Each of these images is discussed in the text in appropriate detail. Most of the illustrations are miniaturized, but they are generally well reproduced and remarkably readable. Similarly, the text is lucid and can be appreciated by specialists, but also by collectors and others. In addition to the maps and their descriptions, the volume contains a glossary and other reading aids.

Undoubtedly, *Star Maps* will become an important reference work in civic, institutional, college and university libraries, but individuals who are interested in the topics it covers will want to have their own copy. The distinguished scientific publishing house of Springer, in association with Praxis of Chichester, U.K., is to be commended for undertaking to make such a valuable body of knowledge available to a potentially larger audience. Because of its wide coverage, its many

illustrations and other features, and because of the importance of the subjects it treats, *Star Maps* will become an indispensable library accession. It should also be acquired for their own private collections by all of those who are interested in the large and important body of knowledge it covers.

Norman J. W. Thrower
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Preface to First Edition

In the 17th and 18th Centuries, a number of beautiful sky atlases were produced in Europe that showed the constellations as allegorical representations of classical Greek heroes, heroines, and monsters. But these constellation images also had a scientific purpose, in that they were placed in coordinate systems of celestial latitude and longitude that allowed the stars to be mapped in the sky. In addition, many of these atlases depicted diagrams of the solar system that reflected both contemporary and ancient cosmological systems, thus tracing the development of our view of the heavens over time.

Such images have generally disappeared from modern-day celestial charts, which instead focus on showing thousands of stars and deep-sky objects such as galaxies and nebulae that are not visible to the naked eye. With the discovery of ever more wonders in space and with plans to finish the International Space Station and then move on to explore the Moon and Mars, there is a renewed interest in the heavens. Increasing numbers of people are buying telescopes and becoming amateur astronomers, and they are using star charts to help them navigate in the sky. But, at the same time, the beauty and awe generated by the celestial void has captured our imagination and delighted our aesthetic sense, and there is a longing for the old images. For example, antiquarian map societies are prospering, and celestial maps are now viewed as a specialty of map collecting.

Up until now, discussions of star maps have been found in either general histories of astronomy or in catalogs of celestial atlases that have failed to trace their development over time. What is needed is a more integrated book that discusses celestial cartography in terms of constellation development, changing views of the universe, and advances in mapmaking techniques, while at the same time capturing the beauty of the heavens using images from antiquarian celestial prints and atlases. This, in a nutshell, is the intention of this book.

My decision to write this book is the culmination of a number of factors having to do with my long-standing interests in amateur astronomy (from childhood) and antiquarian map collecting (from young adulthood). How I got here from there may serve as an example of the appeal of these two activities.

Since the launch of Sputnik I, the world's first artificial satellite, on October 4, 1957, I have been hooked on space. Although I read science fiction novels and joined the space cadet secret decoder club before then, trying to find Sputnik moving through the sky one evening on a bluff overlooking the Willamette River in Portland, Oregon, made me realize that the night sky was pretty interesting. This notion was reinforced by viewing Saturn and its rings through a telescope that someone had set up the same night. Shortly thereafter, I received a 6-cm (2.4-inch) refracting telescope as a holiday present, and I began my 50+ year avocation as an amateur astronomer. Subscribing to *Sky & Telescope* magazine, I looked forward to the monthly star charts in order to see what I could see in the heavens. Although my range was limited, my imagination wasn't, and I dreamed of viewing more of the planets and deep-sky objects that I had been reading about.

This was realized when I finished my schooling and took my first professional job in 1977 as a psychiatry professor at the University of California in San Francisco, a position I still hold. Now, I could afford to buy a larger 20-cm (8-inch) reflecting telescope, and I joined the San Francisco Amateur Astronomers. After my first club "star party" one cold November night on a mountain north of the city, I realized two things: I needed a warmer jacket (even in California), and I needed a good star atlas. I bought a copy of *Norton's Star Atlas*, and I was on my way. As my interests expanded, I bought additional star atlases to help me locate the dim objects I wanted to see. I found these star maps to be fascinating, especially those that showed actual constellation images. I read up on some of the mythology behind the images (mostly from the Ancient Greeks) and imagined being a part of this folklore as I scanned the heavens looking for my deep-sky prey.

While visiting relatives in Rhode Island one summer in 1982, my wife and I chanced upon an antique store in Newport that was displaying two antiquarian constellation prints on a wall. One featured Sagittarius and the other showed a number of constellations around the southern celestial pole. I bought them for a whopping \$24 (total!). I subsequently found out that these prints were from the 1776 French edition of a sky atlas written by John Flamsteed, the first English Astronomer Royal. Several years later in 1989, while on a sabbatical in London, I visited a special exhibit on celestial cartography at the British Museum, and I really became hooked at the beauty and sense of history of these old star maps. Since then, I have continued to acquire antiquarian celestial prints and books. I have joined the California Map Society, the Washington Map Society, and the International Map Collectors' Society (based in London), and I have learned a great deal about collecting old maps through these associations.

But I was frustrated by the fact that there was not a single book on celestial cartography that could inform me about the various aspects of my collecting, such as the meaning behind the squiggly lines that accompanied the epicycles of my cosmologically oriented charts, who some of the people were who produced the great classical star atlases, how celestial maps evolved and changed over time, ways to protect and preserve them, etc. What I needed was a book that not only was a primer for the collector but also had sufficient reference detail to allow me to identify and understand my maps. Nothing like this appeared, so I decided to write such a book some day.

And here it is, “only” 25 years after I acquired my first antiquarian star maps! This book has been written for three of my alter egos: (1) amateur astronomers who want to know more about star maps and their development, (2) antiquarian map collectors who want to expand their horizons from terrestrial to celestial maps, and (3) people out there who can appreciate the beauty and history behind these wonderful works of art and science and who want to know more about them. I have tried to tell the story of how star maps came into being and evolved over time, as well as to illustrate their artistry through the figures. Except where indicated, all of the images in the book are from the pieces that my wife and I have acquired over the years from here and there. I have digitally photographed nearly all of the illustrations in this book from actual celestial prints, in part to show their diversity, and in part to provide actual examples for the collector who may want to compare his or her prints with someone else’s.

The story of star map development is written and illustrated in the 10 chapters of the book, which may be summarized as follows. Chapter 1 defines the two types of celestial maps: those illustrating cosmological systems, which generally include members of our solar system, and those showing constellation images and the locations of stars in coordinate grids. In addition, this chapter discusses basic orienting concepts that are necessary for the understanding of the maps. Chapter 2 deals with the cosmologies and constellations of four non-European areas that either influenced or were influenced by European star map development: China, Mesopotamia, Egypt, and India. Also in this chapter is a section on ancient astrology. Chapter 3 presents a review of European cosmology from the pre-Socratic philosophers to the time of Newton, with an emphasis on topics relevant to understanding what is shown in the cosmological type of star map (e.g., geocentric versus heliocentric cosmologies, deferents and epicycles). Included are sections on printing and medieval astrology. Chapter 4 traces the development of constellations in Europe, with an emphasis on topics relevant to understanding what is shown in the constellation type of star map (e.g., constellation images depicted at different times in history, currently obsolete constellations). The astronomically sophisticated reader may wish to skip Chapters 3 and 4. However, as in all the chapters, the figures in Chapters 3 and 4 are taken from antiquarian celestial books

and prints, so even skimming readers may wish to take a look at them in order to enhance their familiarity with the range of such images.

The text of the remaining chapters deals more specifically with antiquarian celestial maps. Chapter 5 reviews early star maps found in manuscripts and printed works up to 1600. Chapter 6 discusses the Golden Age of star maps with constellation images from 1603 to 1801 in Europe, with a special focus on four of the most influential cartographers: Bayer, Hevelius, Flamsteed, and Bode. Chapter 7 continues the discussion of the Golden Age in terms of other important contributors in Europe. Chapter 8 discusses special topics that are relevant to mapping the heavens: celestial globes and gores, volvelles, astronomical instruments before and including the telescope, and members of our solar system. Chapter 9 focuses on the history of star mapping in early America. Finally, Chapter 10 deals with the transition to star maps without constellation images in the 1800s, and the importance of astrophotography, along with improvements in the graphic arts and computer technology, in producing the star-rich and precise atlases of Norton, Becvar, Tirion, and others up to the present day.

The first four appendices are designed for advanced amateur astronomers, map collectors, and collector-wannabees who wish to know more about the process of collecting and who want a general reference for specific maps that go beyond the material found in the chapters. A glossary and index round out the book.

The legends to the figures contain dimensions in centimeters (cm). This not only gives an indication of the size of the print or page for the general reader, but it also allows collectors to compare their maps with my images to help in establishing authenticity and state of printing. For maps and other images with a border, I have followed the convention of giving the vertical by horizontal dimensions as measured from the inner borderlines. If these don't exist, I have given the height and width of the block mark (for woodblocks) or plate mark (for engravings), or indicated the page dimensions. Where there are hemispheres and planispheres, I have usually given the diameter, again in cm.

It is my hope that this book will stimulate *you* to take a look at the heavens with a new eye, appreciating their scientific wonders for sure, but at the same time seeing the sky as a haven for beauties and beasts of old. You can become a direct participant: economically priced telescopes are available, antiquarian celestial maps can still be found, and there are many amateur astronomy and map-collecting organizations that are ready to help you along the way. Have a pleasant journey!

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Unless otherwise indicated, the figures in this book have been produced from digital photographs taken from antiquarian books and prints that are part of the Nick and Carolynn Kanas Collection. Permissions to use and photograph the images from other sources have been obtained, and these sources are acknowledged in the legends to the figures. Every effort has been made to source the original copyright holders, and I apologize to any that I may have missed through oversight or inability to contact via e-mail or phone.

Figures

1.1.	View of several northern constellations	2
1.2.	A plate produced by Doppelmayr for Homann Publications, ca. 1720	4
1.3.	An image from the first American edition of Flammarion’s <i>Popular Astronomy</i>	7
1.4.	A figure of an armillary sphere	10
1.5.	View of the north pole.....	12
2.1.	The Chinese northern circumpolar constellations.....	23
2.2.	A diagram of the 28 Chinese lunar mansions	24
2.3.	The 12 Chinese constellations of the zodiac.....	28
2.4.	Drawing of a ceiling painting from a temple at Thebes.....	32
2.5.	Chromolithograph of an Egyptian papyrus “Judgment of the Dead”	33
2.6.	A pullout plate of the plan of the temples at Karnak	36
2.7.	Copper schematic engraving of the famous “Dendera zodiac” planisphere at the Temple of Hathor at Dendera.....	39
2.8.	The 27 <i>naksatra</i> constellations from Vedic mythology	42
2.9.	Indian constellations.	45
2.10.	“Planisphere Egyptien” representing the Egyptian sky	47
2.11.	A figure from Charles-François Dupuis’ <i>L’Origine de tous les Cultes</i> <i>ou Religion Universelle</i>	48
3.1.	An illustration of the sphericity of the Earth.....	57
3.2.	A plate showing the orbit of the Sun around the central Earth according to Hipparchus and adapted by Ptolemy	63
3.3.	A figure from Sir Robert Ball’s <i>The Story of the Heavens</i>	64
3.4.	An illustration (influenced by Peurbach’s <i>Theoricae Planetarum</i> <i>Novae</i>) explaining the retrograde motion of an outer planet in the sky	65
3.5.	A figure from Sir Robert Ball’s <i>The Story of the Heavens</i>	68
3.6.	An illustration of the Aristotelian/Ptolemaic cosmological system that was used in the Middle Ages.....	69
3.7.	An outer planet’s orbit according to Ptolemy	71

3.8.	Anonymous calendar leaf for October from a <i>Book of Hours</i> , ca. 1350.....	75
3.9.	The planetary model of Ptolemy for Mercury	77
3.10.	A page from a 13th-Century Byzantine manuscript	78
3.11.	Copper engraving from the first printed Ottoman Turkish world atlas.....	81
3.12.	A nativity horoscope produced in 1421 for King Henry VI of England.....	89
3.13.	An engraved plate from the first Dutch edition (1682) of <i>Mundus Subterraneus</i>	91
3.14.	Woodcut illustration depicting the 7th day of Creation	97
3.15.	Page from the 1533 edition of Apian’s <i>Cosmographia</i>	99
3.16.	Image from the 1894 American edition of Flammarion’s <i>Popular Astronomy</i>	102
3.17.	Print entitled “Le Nom de Systeme me,” from Le Rouge’s <i>Atlas Nouveau Portatif a` L’Usage des Militaires et du Voyageur</i>	105
3.18.	Print entitled “Motus Planetarum Superiorum Qui Secundum Tychonis Hypothesin”	106
3.19.	Copper engraving from Bion’s <i>L’Usage des Globes Célestes et Terrestres</i>	110
4.1.	A pull-out plate showing the northern celestial hemisphere.....	123
4.2.	A pull-out plate showing the southern celestial hemisphere.....	124
4.3.	The constellation of Argo Navis, from Firmicus Maternus’ <i>Scriptores Astronomici Veteres</i>	126
4.4.	Two constellations from a manuscript copy of al-Sufi’s <i>Book of Fixed Stars</i>	128
4.5.	The southern celestial hemisphere (“Hemisphere Austral”) centered on the south equatorial pole	132
4.6.	The northern celestial hemisphere (“Hemisphere Boreal”) centered on the north equatorial pole	134
4.7.	Lacaille’s famous map of the south celestial polar region.....	138
4.8.	“Fig. Q.” constellations from Hevelius’ <i>Firmamentum Sobiescianum, sive Uranographia</i>	140
4.9.	A double celestial hemisphere thought to have been made in Arabia.....	141
4.10.	A section of the hemisphere centered around the first point of Aries	145
5.1.	The constellation of Aries, from a 10th-Century manuscript written on vellum	150
5.2.	The constellation of Aquarius, from Hugo Grotius’ <i>Syntagma Arateorum Opus Poeticae et Astronomiae</i>	151
5.3.	The constellation of Cetus, from Firmicus Maternus’ <i>Scriptores Astronomici Veteres</i>	153
5.4.	The northern celestial hemisphere produced by Albrecht Dürer in 1515	155
5.5.	The northern celestial hemisphere produced by Johannes Honter in 1541	157
5.6.	The constellations of Ursa Minor and Ursa Major	160
5.7.	The constellation of Andromeda, reproduced from Gallucci’s 1588 <i>Theatrum Mundi</i>	162

5.8.	The northern celestial hemisphere of Hood's 1590 <i>The Use of the Celestial Globe in Plano</i>	164
6.1.	A later-colored image of the constellation Bootes, from a mid-1600 edition of Bayer's <i>Uranometria</i>	170
6.2.	The Christianized constellation St. Sylvester (a.k.a. Bootes), from the 1627 edition of Schiller's <i>Coelum Stellatum Christianum</i>	173
6.3.	The verso of the print shown in Figure 6.2, giving the title and star table for the next constellation in the atlas	175
6.4.	Pardies' map centered on the winter solstice	177
6.5.	<i>Planisphere celeste meridional</i> , the southern celestial hemisphere map from Royer's <i>Carte du Ciel</i>	178
6.6.	The constellation of Libra, the only zodiacal constellation that is not a person or animal, from Bevis' <i>Atlas Céleste</i>	181
6.7.	The northern celestial hemisphere from Hevelius' <i>Firmamentum Sobiescianum</i>	185
6.8.	"Fig. F" constellations from Hevelius' <i>Firmamentum Sobiescianum, sive Uranographia</i>	186
6.9.	The northern celestial hemisphere from Zahn's <i>Specula Physico-Mathematico-Historica</i>	187
6.10.	The southern celestial hemisphere from Zahn's <i>Specula Physico-Mathematico-Historica</i>	188
6.11.	The double-hemisphere map from Schenck's <i>Atlas Contractus</i>	189
6.12.	The map labeled "Monoceros, Canis Major & Minor, Navis, Lepus," from Flamsteed's <i>Atlas Coelestis</i>	196
6.13.	The map showing the region around Monoceros (the unicorn), from Reissig's <i>Constellations Represented on XXX Tables</i>	200
6.14.	The constellations around the location of the Sun in the zodiac at the time of the autumnal equinox, from the 1833 edition of <i>The Constellations</i>	201
6.15.	The constellations for "Julius" (July), from a ca. 1787 edition of Bode's <i>Anleitung zur Kenntniss des Gestirnten Himmels</i>	202
6.16.	Plate III showing Perseus and Andromeda, from the 1782 edition of Bode's <i>Vorstellung der Gestirne</i>	204
6.17.	The hemisphere "Coelum Stellatum Hemisphaerium Arietis," centered around the location of the Sun in the zodiac at the time of the vernal equinox, from Bode's 1801 <i>Uranographia</i>	206
6.18.	Plate XXV featuring the region of Monoceros, Canis Major and Minor, from Jamieson's 1822 <i>A Celestial Atlas</i>	208
6.19.	An original hand-painted card of the constellation "Orion," from a later edition (ca. 1840) of Leigh's <i>Urania's Mirror</i>	210
6.20.	Plate XII featuring the region around Orion, from Riedig's <i>Stern-Karten in 20 Blättern</i>	211
7.1.	A diagram showing the orbit of the Moon around the Earth according to Ptolemy, from Cellarius' <i>Harmonia Macrocosmica</i>	216

7.2.	A diagram showing a planisphere centered on the north ecliptic pole down to about 20 degrees in the southern hemisphere, from Cellarius' 1660 edition of <i>Harmonia Macrocosmica</i>	217
7.3.	An engraved plate from the first Dutch edition (1682) of <i>Mundus Subterraneus</i>	221
7.4.	A print from Mallet's 1683 <i>Description de l'Univers</i>	222
7.5.	A double print from Coronelli's <i>Corso Geografico Universale</i>	224
7.6.	A double hemisphere from Coronelli's <i>Globi Differenti del P. Coronelli</i>	226
7.7.	A double hemisphere from Seller's <i>Atlas Coelestis</i>	229
7.8.	One of two pages depicting the zodiac in three long horizontal strips, produced by Senex in 1718	231
7.9.	The constellation of Canis Major, from Thomas' 1730 <i>Mercurii Philosophici Firmamentum</i>	234
7.10.	The stars and constellations that are centered around the location of the Sun in the zodiac during the winter solstice, according to Doppelmayr.....	236
7.11.	The southern hemisphere constellations, from Zatta's 1779 <i>Atlante Novissimo</i>	238
7.12.	The northern celestial hemisphere, from Dunn's 1774 <i>A New Atlas of the Mundane System</i>	240
7.13.	The depiction of three important globes ("La Sphère Artificielle"), from Nicolas de Fer's 1703 <i>L'Atlas Curieux</i>	242
7.14.	The southern celestial skies, from a famous print by Philippe de la Hire and published by Nicolas de Fer in 1705.....	243
7.15.	Copies of Le Monnier's famous celestial hemispheres, from side-by-side pages of Diderot and d'Alembert's <i>Encyclopédie</i>	246
7.16.	The northern celestial hemisphere, from Giovanni Maria Cassini's 1792 atlas <i>Nuovo Atlante Geografico Universale</i>	250
8.1.	Celestial globe made by Josiah Loring in 1833	254
8.2.	Celestial globe made by James Wilson in 1826.....	255
8.3.	Paper transcription of two hemispheres drawn from the celestial globe that is part of the 2nd Century AD Farnese Atlas.....	257
8.4.	A finely engraved set of 12 gores for a 5-inch-diameter celestial globe by Bales, 1845	259
8.5.	A single-gore engraving for a 107 cm celestial globe, from the 1693 edition of Coronelli's <i>Libro dei Globi</i>	260
8.6.	An insert containing the movable parts of a volvelle, from the 1647 Leiden edition of Sacrobosco's <i>De Sphaera</i>	266
8.7.	A beautifully colored volvelle from the 1584 edition of Peter Apian's <i>Cosmographia</i>	268
8.8.	An equatorium type of volvelle from Peter Apian's <i>Astronomicum Caesarium</i>	269
8.9.	A volvelle using a pointer rather than an inner circle, from the 1614 Spanish edition of Giovanni Gallucci's <i>Theatro del Mundo y del Tiempo</i>	270

8.10.	A Victorian planisphere, ca. 1890, constructed under the direction of A. Klippe from Dortmund.....	272
8.11.	A French planisphere, ca. 1900, constructed under the direction of Camille Flammarion	273
8.12.	The front of a brass astrolabe made by Badr ibn ‘Abdallah ca. 1130 in Iran	275
8.13.	The back of a brass astrolabe made by Badr ibn ‘Abdallah ca. 1130 in Iran	276
8.14.	Page depicting an armillary sphere from an edition of Tycho Brahe’s <i>Astronomiae Instauratae Mechanica</i>	280
8.15.	Page from a 1946 facsimile of Tycho Brahe’s <i>Astronomiae Instauratae Mechanica</i>	282
8.16.	Plate from a 1969 facsimile of Part I of Hevelius’ <i>Machinae Coelestis</i>	284
8.17.	Another plate from a 1969 facsimile of Part I of Hevelius’ <i>Machinae Coelestis</i>	285
8.18.	A beautiful frontispiece from volume 4 of a mid-1700s French book.....	287
8.19.	A third plate from a 1969 facsimile of Part I of Hevelius’ <i>Machinae Coelestis</i>	288
8.20.	Small spyglass-type refracting telescope made by Semitecolo, a well-known Venetian telescope maker	289
8.21.	An image of a meridian circle telescope from Sir Robert Ball’s <i>The Story of the Heavens</i>	291
8.22.	Map II from the 1921 edition of <i>Brown’s Star Atlas</i>	292
8.23.	Early telescopic representations of Saturn, from Camille Flammarion’s <i>Les Terres du Ciel</i>	293
8.24.	Engravings of the Sun and known planets, from Mallet’s <i>Description de l’Univers</i>	294
8.25.	An astronomy print labeled “Tableau Analytique,” from Delamarche’s 1823 edition of <i>Geographe</i>	295
8.26.	An enlargement of the upper left part of the plate shown in Figure 8.25	296
8.27.	This figure is from the 19th edition of Asa Smith’s <i>Illustrated Astronomy</i>	297
8.28.	A reproduction of Schiaparelli’s map drawing of Mars.....	299
8.29.	A reproduction of N.E. Green’s map drawing of Mars, 1877, taken from the 1894 American edition of Flammarion’s <i>Popular Astronomy</i>	300
8.30.	A contemporary view of “Mars and Syrtis Major,”	301
8.31.	A contemporary “Solar System Montage” showing the planets from Mercury to Neptune.....	302
8.32.	Plate showing a map of the full Moon from the first true lunar atlas, <i>Selenographia</i> , by Hevelius	304
8.33.	This image is from a copper engraving by Johann Doppelmayr and published by Homann Publications.....	306
8.34.	Map of the Moon, probably from Bion’s <i>L’Usage des Globes Célestes et Terrestres</i>	307