

# MAPPING

## Outside the Lines

A triangular map of Mexico City, showing a grid of streets. The map is oriented with its base at the bottom and its apex pointing upwards. The map is divided into two main sections by a diagonal line. The left section is a black and white map, while the right section is a yellow map. The yellow map features a prominent yellow grid of streets, which is overlaid on a black and white map. The grid is composed of straight lines, while the underlying map shows a more complex, organic street pattern. The map is set against a black background.

*A Newberry Library Exhibition*

# Mapping Outside the Lines

A Newberry Library Exhibition

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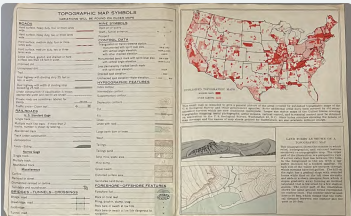
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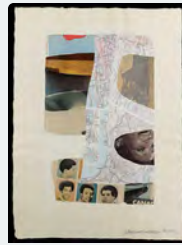
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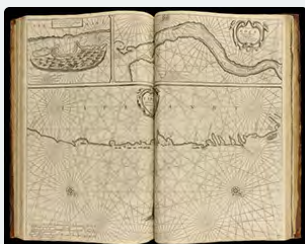
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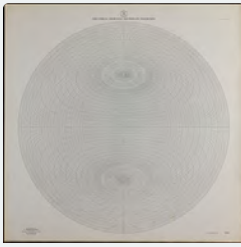
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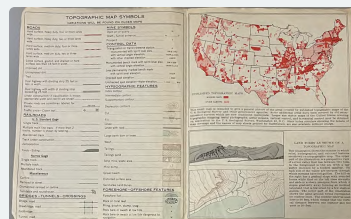
# Standardization

Numerous small and large variations in lines allow mapmakers to communicate all sorts of facts, stories, and concepts. A thin line may mark a minor road; an undulating line may track a river; and a straight line along the edges will often give the map itself a border. Although these lines now seem obvious, mapmakers developed these conventionalized, but still flexible, symbols slowly over time. By standardizing these symbols, texts that direct mapmakers how to use lines spread a European tradition of mapping throughout the world. The amazing variety in types of lines is most apparent in texts that explicitly teach mapmaking, a few of which you can see in these examples.



Laying Out Lines

16



A Language of Lines

18

## v

Newberry Library

# Laying Out Lines

|            |                                                                                                                                                                                                                        |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Artist     | Joseph Enthoffer                                                                                                                                                                                                       |
| Title      | "Conventional Signs for Topography" in <i>Manual of Topography and Text-book Of Tropographical Drawing; For the Use of Officers of the Army and Navy, Civil Engineers, Academies, Colleges, and Schools of Science</i> |
| Year       | 1870                                                                                                                                                                                                                   |
| Dimensions | 31 x 38 cm                                                                                                                                                                                                             |
| Medium     | Engraving                                                                                                                                                                                                              |
| Location   | Newberry Library                                                                                                                                                                                                       |

In this US Coast Survey manual, engraver Joseph Entoffer carefully detailed the colors, shapes, and types of lines mapmakers should use to mark features important for military purposes. To help standardize surveys of thousands of miles of territory, federal and military institutions funded and

published atlases, manuals, and textbooks as a guide. Manuals like Entoffer’s highlight that what may seem like universal cartographic principles were purposefully designed by past mapmakers.

# TOPOGRAPHIC MAP SYMBOLS

VARIATIONS WILL BE FOUND ON OLDER MAPS

## ROADS

|                                                                                         |  |
|-----------------------------------------------------------------------------------------|--|
| Hard surface, heavy duty, four or more lanes wide                                       |  |
| Hard surface, heavy duty, two or three lanes wide                                       |  |
| Hard surface, medium duty, four or more lanes wide                                      |  |
| Hard surface, medium duty, two or three lanes wide                                      |  |
| Loose surface, graded, and drained or hard surface less than 16 feet in width           |  |
| Improved dirt                                                                           |  |
| Unimproved dirt                                                                         |  |
| Trail                                                                                   |  |
| Dual highway with dividing strip 25 feet or less in width                               |  |
| Dual highway with width of dividing strip exceeding 25 feet                             |  |
| Under construction--if classification is known appropriate width and red fill are shown |  |
| Private roads are sometimes labeled for clarity                                         |  |
| Traffic circle--Clover leaf                                                             |  |

## RAILROADS

### U. S. Standard Gage

|                                                                              |  |
|------------------------------------------------------------------------------|--|
| Single track                                                                 |  |
| Multiple main line track. If more than 2 tracks, number is shown by labeling |  |
| Abandoned track                                                              |  |
| Track under construction                                                     |  |
| Juxtaposition                                                                |  |
| Yards--Siding                                                                |  |

### Narrow Gage

|                 |  |
|-----------------|--|
| Single track    |  |
| Multiple track  |  |
| Abandoned track |  |

### Miscellaneous

|                                |  |
|--------------------------------|--|
| Carline                        |  |
| Railroad in street             |  |
| Dismantled railroad or carline |  |
| Turntable and roundhouse       |  |

## BRIDGES--TUNNELS--CROSSINGS

|                  |  |
|------------------|--|
| Bridge, road     |  |
| Drawbridge, road |  |
| Footbridge       |  |
| Tunnel, road     |  |

## MINE SYMBOLS

|                        |  |
|------------------------|--|
| Open pit or quarry     |  |
| Shaft--Tunnel entrance |  |
| Prospect               |  |

## CONTROL DATA

|                                                                |  |
|----------------------------------------------------------------|--|
| Triangulation or transit traverse station                      |  |
| monumented with spirit level elev.                             |  |
| with vertical angle elevation                                  |  |
| with other checked elevation                                   |  |
| Monumented bench mark with spirit level elev.                  |  |
| with vertical angle elevation                                  |  |
| Less permanently marked bench mark with spirit level elevation |  |
| Checked spot elevation                                         |  |
| Unchecked spot elevation--Water elevation                      |  |

## HYPSOGRAPHIC FEATURES

|                       |  |
|-----------------------|--|
| Index contour         |  |
| Intermediate contour  |  |
| Supplementary contour |  |
| Depression contours   |  |

## Cut

|                 |  |
|-----------------|--|
| Fill            |  |
| Levee           |  |
| Levee with road |  |

## Large earth dam or levee

## Wash

## Tailings

## Tailings pond

## Strip mine, waste area

## Mine dump

## Gravel beach

## Distorted surface area

## Sand area, sand dunes

## FORESHORE--OFFSHORE FEATURES

## Foreshore flat

## Rock or coral reef

## Piling, dolphin, stump, snag

## Rock bare or awash at low tide

## Rock bare or awash at low tide dangerous to navigation



This small map is intended to give a general picture of the areas covered by published topographic maps of the U. S. Geological Survey and other government agencies. Some additional areas have been covered by old reconnaissance surveys which are now considered inadequate. Larger size status maps of the United States covering topographic mapping, aerial photography, aerial mosaics, vertical control, and horizontal control may be obtained on application to the U. S. Geological Survey, Washington 25, D. C. State index circles showing the details of map coverage and the names of map sheets printed for distribution, are also available without charge.



## LAND FORMS AS SHOWN ON A TOPOGRAPHIC MAP

This illustration shows the manner in which relief, hydrographic, and cultural features are shown on a topographic map. The upper part of the illustration is a perspective view of a river valley that lies between two hills. In the foreground is the sea with a bay partly enclosed by a hooked sandbar. On each side of the valley are terraces through which streams have cut gullies. The hill on the right has a gradual slope with rounded forms while that on the left rises abruptly and ends in a sharp precipice from which it slopes gradually away forming an isolated tableland that is traversed by a few shallow gullies. The lower part of the illustration shows the same ground forms represented by contour lines. The contour interval used here is 20 feet, which means that the vertical distance between one contour and the next is 20 feet.

## A Language of Lines

|                 |                                 |
|-----------------|---------------------------------|
| <b>Artist</b>   | United States Geological Survey |
| <b>Title</b>    | <i>Topographic Maps</i>         |
| <b>Year</b>     | 1950                            |
| <b>Medium</b>   | Lithography                     |
| <b>Location</b> | Newberry Library                |

Even as institutions evolved, they continued to standardize lines. Almost a century after Joseph Entoffer published his work with the US Coast Survey, another federal agency, the US Geological Survey continued to create topographic maps of the country. In the large surveys spanning thousands of sheets created by the US Geological Survey, mapmakers and

readers alike needed reminders of the subtle differences in lines. Responding to changes in technology and new mapping needs resulting from the second World War, such as aerial photography, mapmakers added their own recommendations on how to best use lines.

# Altitude

Beginning in the eighteenth century, mapmakers in Europe and the Americas experimented with how lines could represent depth and altitude on a flat page. These lines replaced, but also sometimes mimicked, the earlier convention of drawing small hills and mountains on maps. These techniques, most notably hachure lines and contour lines, met the dual demands that a map be both scientific and visually engaging.

Hachure lines run parallel to the slope. Short, thick strokes show a steep pitch and long, thin strokes show a gradual incline. Mapmakers often combine hachure lines with crosshatching—the network of intersecting lines artists use in printmaking to create shading—to enhance the illusion of depth. Contour lines, in contrast, run perpendicular to the slope. Each contour indicates a consistent change in altitude and is often paired with a numerical key for mathematical precision.



**The First Contour Lines  
Look Down**

22



**Shadows and Hachure  
Lines**

24



**Marie Tharp's New Kind  
of Line**



**A Hill "Face" with  
Contour Lines**



## The First Contour Lines Look Down

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|                   |                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Artist</b>     | Philippe Buache                                                                                                         |
| <b>Title</b>      | "Carte Physique ou Géographie Naturelle de la France" in <i>Cartes et tables de la géographie physique ou naturelle</i> |
| <b>Year</b>       | 1770                                                                                                                    |
| <b>Dimensions</b> | 39 x 50 cm                                                                                                              |
| <b>Medium</b>     | Hand-colored engraving                                                                                                  |
| <b>Location</b>   | David Rumsey Historical Map Collection                                                                                  |

---

As geographer to the French king, Philippe Buache experimented with techniques for communicating scientific discoveries about the world. In making this map, he first developed the method of contour lines to show the depth of

the English Channel. His commitment to these contours even extended outside of the edge of the map itself as the contour of the lowest shelf slips off the map into the margin of the page.



## Shadows and Hachure Lines

|                 |                                                         |
|-----------------|---------------------------------------------------------|
| <b>Artist</b>   | Paul Monnier and Gabriel Cyprien Le Bourguignon-Duperré |
| <b>Title</b>    | <i>Plan du Cul-de-Sac Marin (Ile de la Martinique)</i>  |
| <b>Year</b>     | 1828                                                    |
| <b>Medium</b>   | Engraving on paper                                      |
| <b>Location</b> | Newberry Library                                        |

By manipulating and layering hachure lines and cross-hatching, this French nautical chart of Martinique raised the mountains above us as if we were entering the harbor ourselves. Thousands of individual hachure lines of different lengths and weight combine with the illusion of shadows falling to the east to make the steepest peaks feel like they jut

off the page. Fittingly, however, the naval mapmakers reserved the most precise representation of elevation for the sea. The numbers scattered throughout the bay, although unillustrated by any hachure or shadow lines, marked the waters' depths for mariners most concerned with staying afloat.



# Marie Tharp's New Kind of Line

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| <b>Artist</b>     | Marie Tharp and Bruce Heezen                           |
| <b>Title</b>      | <i>Physiographic Diagram, Atlantic Ocean (Sheet 1)</i> |
| <b>Year</b>       | 1957                                                   |
| <b>Dimensions</b> | 77 x 142 cm                                            |
| <b>Medium</b>     | Offset lithography                                     |
| <b>Location</b>   | David Rumsey Historical Map Collection                 |

How do you convince the world that the ocean floor actually rumbles with a tumultuous topography? Oceanographer Marie Tharp discarded contour and hachure lines for a method that blended sonar data and pictorial mapping. Its foundation, though, was still a line. As these diagrams explain,

Tharp turned data taken along the surveying ship's path into an exaggerated, jagged elevation. These lines, extrapolated and rendered pictorially to fill the whole map, enlivened the newly discovered Mid-Atlantic Ridge.

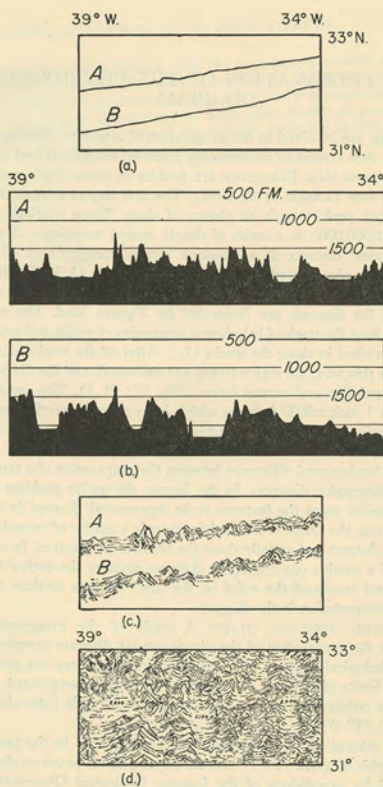


FIGURE 1.—Method of preparation of physiographic diagram

(a) Positions of sounding lines (A, B) are plotted on chart; (b) Soundings are plotted as profiles (A, B) at 40:1 vertical exaggeration; (c) Features shown on profiles (A, B) are sketched on chart along tracks; (d) After all available sounding profiles are sketched the remaining unsounded areas are filled in by extrapolating and interpolating trends observed in a succession of profiles.

Bruce Heezen, Marie Tharp, and Maurice Ewing, 'The Floors of the Ocean,' *The Geological Society of America Special Paper 65*. Newberry Library

Holzheimer 2023010999



map 1F 065752.L2A9 2017.F35

EOWP d

# A Hill “Face” with Contour Lines

|            |                                         |
|------------|-----------------------------------------|
| Artist     | Ed Fairburn                             |
| Title      | Untitled, in Borrowdale, United Kingdom |
| Year       | 2017                                    |
| Dimensions | 21 x 26 cm                              |
| Medium     | Acrylic on found paper                  |
| Location   | Newberry Library                        |

With the rise of color printing in the late-nineteenth century, mapmakers turned to color-coded contour lines. Whether on technical maps of the United States Geological Survey or on touring guides like the one used by this artist, color-coded contour lines have become a standard way to represent

altitude. Artist Ed Fairburn, as he describes it, “hijacks” the common rules of maps. He alters details and patterns to make portraits by blending together the rules of cartography and painting.

# Networks

Whether rivers or roads, train tracks or flight paths, the network of lines on a map makes the world seem easily accessible—or overwhelmingly complex. Built, manicured, or hypothetical, these network lines give maps the power to help us imagine moving through the world. They can empower us to set off into an unfamiliar city. They have also emboldened European colonizers to reach farther and farther to conquer and extract. Taken as a whole, a network of lines on a map makes connectivity seem inevitable and permanent. But, as the artists in this section reveal, those lines can never quite escape the evidence of the network's contingency and frailty.



**Lines Redefine Space**

33



**Lost on the Road**

35



**Ripped Paper or Flowing River?**

37



## An Overwhelming Network

## BMT

**39** **Ar to American 28 (Ar)** Broadway (Broadway) Local (IND) in Manhattan Rush hours only. Stops 13, 20, 21, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 85



# Lines Redefine Space

|                   |                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Artist</b>     | Massimo Vignelli                                                                                                         |
| <b>Title</b>      | The Metropolitan Transportation Authority revised map of the rapid transit facilities of New York City Transit Authority |
| <b>Year</b>       | 1972                                                                                                                     |
| <b>Dimensions</b> | 45 x 45 cm                                                                                                               |
| <b>Location</b>   | David Rumsey Historical Map Collection                                                                                   |

When travelers aren't following every turn, cartographers can take geographic liberties to represent an interconnected network. Massimo Vignelli brought a minimalistic approach to New York's subway system. His map only lasted from this 1972

edition to 1978 before New Yorkers clamored for more faithful street-level geography. But the 2025 New York subway map returned to a similar design.



AKU 643020 43/5772

## Lost on the Road

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| <b>Artist</b>     | Robert Rauschenberg                                          |
| <b>Title</b>      | Untitled print #47 from <i>Tares</i>                         |
| <b>Year</b>       | 1972                                                         |
| <b>Dimensions</b> | sheet 83 x 60 cm                                             |
| <b>Medium</b>     | Collage of printed maps and magazine and newspaper clippings |
| <b>Location</b>   | Newberry Library                                             |

Robert Rauschenberg's collage mixes together twentieth-century ephemera, including maps and magazine advertisements. By juxtaposing pieces of road maps at odd angles, Rauschenberg seamlessly connects the roads around South Bend, Indiana, and Pittsburgh, Pennsylvania—two cities

hundreds of miles apart. This collaging of maps uses the consistency and interchangeability of network lines to subvert the maps' own geography. Rauschenberg focuses our attention on how the maps communicate instead of the places they depict.

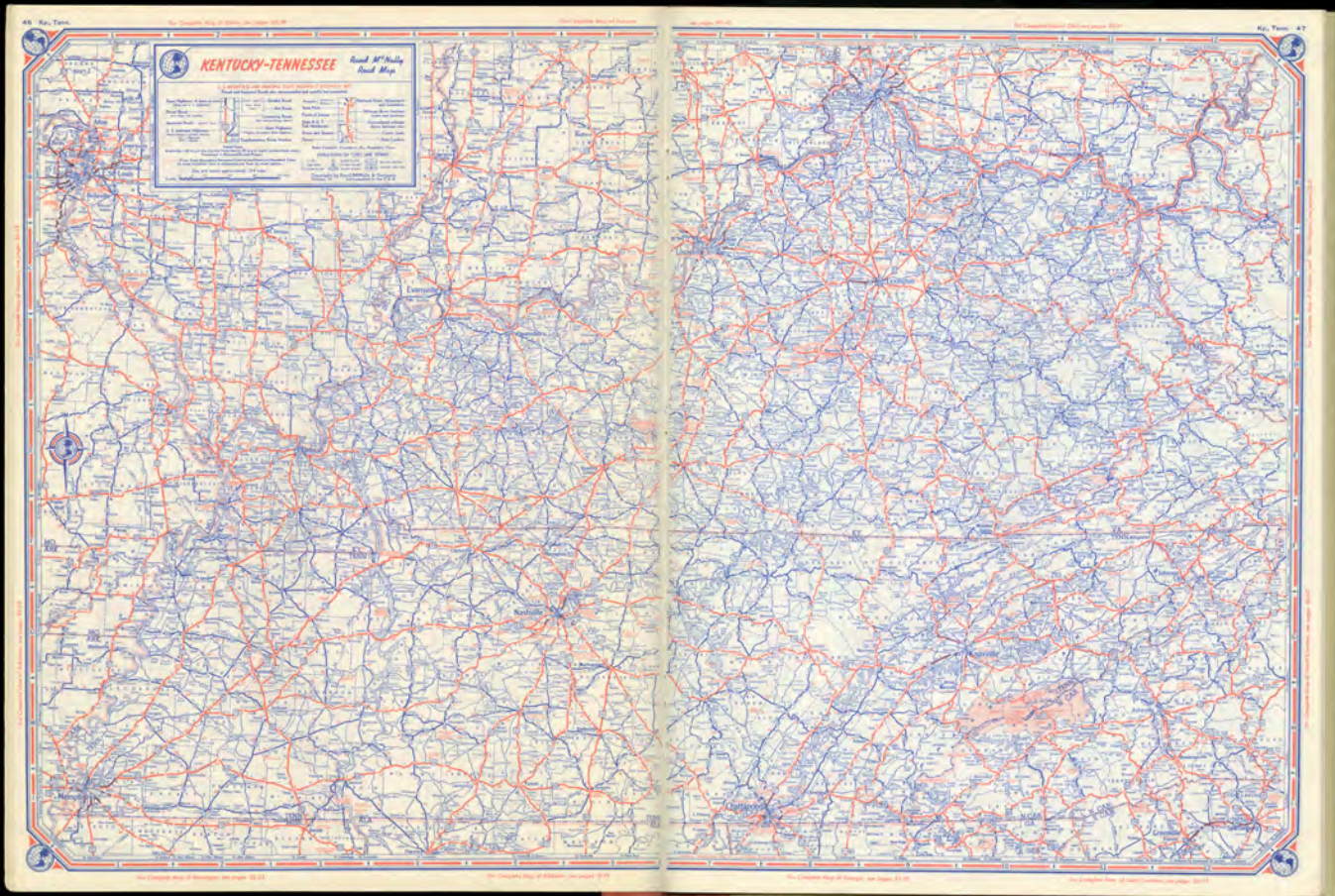


# Ripped Paper or Flowing River?

|            |                                                              |
|------------|--------------------------------------------------------------|
| Artist     | Joseph F. W. Des Barres                                      |
| Title      | "A Plan of the Delawar River" in <i>The Atlantic Neptune</i> |
| Year       | 1780                                                         |
| Dimensions | 82-88 cm                                                     |
| Medium     | Hand-colored engraving and etching                           |
| Location   | Newberry Library                                             |

Is that a river or a tear in the paper? Look closely at the lower center of the map. The line heading west from Crumb Creek shows a river but what it intersects is the illusion of ripped paper. Close up, the two kinds of lines are indistinguishable. You can see where the illusion ends and the river begins only

when you take a wider view of that area of the map. Joseph Des Barres’s charts were widely used guides to the shores of North America. They were also experiments in the plasticity of lines as subversive as the work of any artist.



# An Overwhelming Network

|            |                                                                                                |
|------------|------------------------------------------------------------------------------------------------|
| Artist     | Rand McNally                                                                                   |
| Title      | "Kentucky—Tennessee" in <i>Rand McNally road atlas of the United States, Canada and Mexico</i> |
| Year       | 1951                                                                                           |
| Dimensions | 40 cm                                                                                          |
| Medium     | Offset lithography                                                                             |
| Location   | Newberry Library                                                                               |

Twentieth-century road maps present a dream of a free-flowing, interconnected network. Lines of all types show you how to get around: some vary in color and thickness depending on the size of the road while others show counties,

states, time zones, and rivers. Up close, the map illuminates possibilities. But, from a distance, the promise of an accessible world becomes one overwhelming mass of tendrils.

# Journeys

The practice of using journey lines to connect a trip's start and end points as a continuous path grew in popularity in Europe starting in the seventeenth century. In their most radical form, journey lines can totally reshape the map. Strip maps, for instance, create a straight journey line but don't keep north at the top, instead adjusting cardinal directions throughout the map. Journey lines became especially prolific on maps illustrating travel literature as that genre grew in popularity in the late nineteenth century. In these maps, journey lines could memorialize an ephemeral experience and recreate, at least in our imagination, that same trip. In doing so, the journey line offers a tool for exploring the relationship between time, geography, and shared human experience.



**Lines Shape Imagined Journeys**

43



**Technology Shapes Journey Lines**

45



**Tracking Expeditions**

47



## Listen to the Line

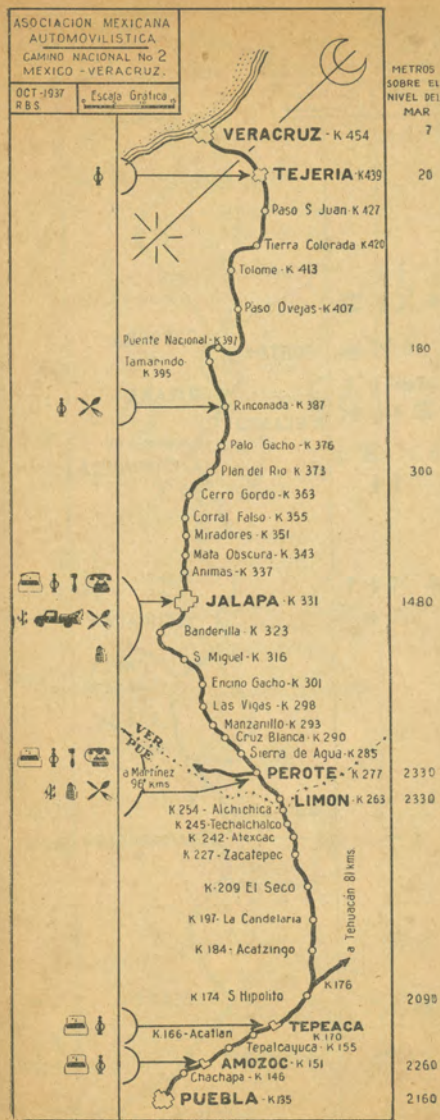
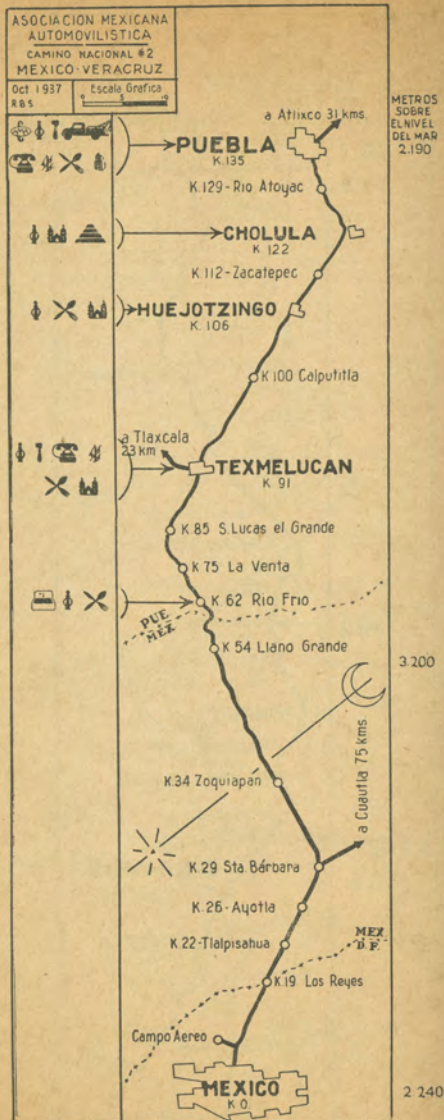


## Lines Shape Imagined Journeys

|                   |                                                                                              |
|-------------------|----------------------------------------------------------------------------------------------|
| <b>Artist</b>     | John Ogilby                                                                                  |
| <b>Title</b>      | 'The Continuation of ye Road from London to Barstable' in <i>Britannia, Volume the First</i> |
| <b>Year</b>       | 1675                                                                                         |
| <b>Dimensions</b> | 33 x 46 cm                                                                                   |
| <b>Location</b>   | David Rumsey Historical Map Collection                                                       |

The first of its kind, European mapmakers quickly imitated this strip map atlas of England and Wales created by Royal Cosmographer, John Ogilby. Strip maps depict journeys as straight lines, just like a smart phone app provides navigational directions. The orienting points on the map are not north and south, but instead the journey's start and end.

Ogilby's guidebook targeted growing interest in road travel, introducing viewers to the "flourishing kingdom" by providing them with a bird's-eye perspective of an imagined journey. But to do so, Britannia rotated the cardinal directions on each roadmap and prioritized each map's line over accuracy in the roads' shape.



# Technology Shapes Journey Lines

|                   |                                      |
|-------------------|--------------------------------------|
| <b>Artist</b>     | Guias Escalada                       |
| <b>Title</b>      | 'Mexico a Veracruz' in <i>Mexico</i> |
| <b>Year</b>       | ca. 1938-39                          |
| <b>Dimensions</b> | 23 cm                                |
| <b>Location</b>   | Newberry Library                     |

Strip maps that depicted a single journey line continued to be popular, especially in the 20th century with the rise in popularity of the automobile and the growing tourism industry. As in *Britannia*, the orienting points on the map are

not north and south, but instead the journey's start and end. This guidebook for Mexico uses journeys to portray the country as united along convenient lines, easily traversable by tourists via automobile.



75-1814



1209

MS. 67  
1814  
G7

## Tracking Expeditions

|                   |                                                                                            |
|-------------------|--------------------------------------------------------------------------------------------|
| <b>Artist</b>     | Hydrographic Office of the Admiralty                                                       |
| <b>Title</b>      | <i>Chart of the South Polar Sea</i>                                                        |
| <b>Year</b>       | ca. 1841                                                                                   |
| <b>Dimensions</b> | 63 cm diameter                                                                             |
| <b>Medium</b>     | Engraving with manuscript notes in pencil and red and blue ink added by John Edward Davis. |
| <b>Location</b>   | Newberry Library                                                                           |

On board James Ross's expedition to the Antarctic in the early 1840s, John Edward Davis meticulously tracked the progress of the journey while noting new coastal and glacial features and routes of other recent expeditions. His hand-drawn lines extend and intersect the map's printed lines marking past

expeditions, as far back as those of James Cook in the 1770s. If you examine the journey lines on the map, you can see Davis often marked each day of a journey in minute detail with points marking days and months. These annotations reveal the accretion of scientific knowledge in harsh conditions.



Map created by John Cage for his musical score, *A Dip in the Lake: Ten Quicksteps, Sixty-two Waltzes, and Fifty-six Marches for Chicago and Vicinity*. MCA Chicago.



No. 66761

# CAGE

A DIP IN THE LAKE

Printed in the U.S.A.

## QUICKSTEPS

### I

1. Evanston-Elgin Rd. by Lake Mary Ann 2. Damen Ave. and W. 71st St.

### II

1. Lake Michigan off Winnetka 2. Bartlett Ave. and Sunnyside Ave. (North Riverside)

### III

1. Pleasant Ave. and Chatham Ave. (Villa Park) 2. Wolf Rd. and Feehanville Ditch

### IV

1. Sportsmans Park Racetrack (Cicero) 2. Mission Hills Golf Club

### V

1. Waukegan Road and Wilderberry Drive (Northfield) 2. Dalewood Lane (Hinsdale)

### VI

1. South Branch of Chicago River and Grand Avenue W. 2. Oakton St. between Marmora Ave. and Menard (Skokie)

### VII

1. E. Oak St. and North Wabash Ave. 2. The Lake (4700 S)

### VIII

1. W. Augusta Blvd. at N. Drake Ave. 2. N. Cicero Ave. and N. Hiawatha Ave.

### IX

1. N. Plainfield Ave. and W. Roscoe St. 2. Laramie Ave. between 105th Place and 107th St. (Oak Lawn)

### X

1. Heather Lane in Oakbrook 2. 5th Ave. and 23rd St. (North Riverside)

## WALTZES

### I

1. W. Bryn Mawr Ave. and Winthrop Ave. N. 2. Fullerton Ave. and Thatcher Ave. (River Grove) 3. Argonne Forest Preserve (S.W. of Hinsdale Airport)

### II

1. Church St. at Dewey Ave. (Evanston) 2. Clay Hole, south of Jackson St., north of 138th St. (Riverdale) 3. Tampier Slough near Wolf Rd. and 131st St. (Forest Preserve)

### III

1. Wolf Road and Feehanville Ditch 2. 102nd St. at Sacramento Ave. (Evergreen Park) 3. Lake Michigan off Glencoe

### IV

1. Jewish Waldheim Cemetery near Harlem Ave. and W. Cermak Road 2. W. 14th St. and S. Wolcott Ave. 3. Roosevelt Road and S. Elgin Ave. (Forest Park)

### V

1. 95th St. and 87th Ave. (Hickory Hills) 2. W. Edmair St. and S. Davol St. 3. W. 119th St. and Ryan Expressway

# Listen to the Line

|                   |                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Artist</b>     | John Cage                                                                                                   |
| <b>Title</b>      | <i>A Dip in the Lake: Ten Quicksteps, Sixty-two Waltzes, and Fifty-six Marches for Chicago and Vicinity</i> |
| <b>Year</b>       | 1978                                                                                                        |
| <b>Dimensions</b> | 141.6 x 111.1 cm                                                                                            |
| <b>Medium</b>     | Felt-tip pen on printed map                                                                                 |
| <b>Location</b>   | The Museum of Contemporary Art Chicago                                                                      |

If Chicago were a symphony, who would perform it? With this unconventional score, composer John Cage invites us to listen to the city. Cage’s score consists of 128 sets of addresses (or 430 addresses)—labeled quicksteps, waltzes, and marches for the number of beats in a measure—in the larger Chicago area. The score provides no specific instructions on what to do with these addresses. Cage also produced a map with the score where each line connects these randomly generated addresses. The sets of addresses are sometimes immediately provocative such as waltz 12 connecting the City of Chicago Correctional Farm, the Oakbrook Polo Club, and the far South Side; but, more often, they require both a map and a spirit of adventure.

To perform part of this score, we chose one set of addresses from each of the Quicksteps, Waltzes, and Marches that connected in ways that seemed walkable or traversable by public transit. We recorded sound on our phones as we moved

between these places and then used a set of random operations with a deck of cards to select from these hours of sound. The Quickstep, Waltz, and March each has two, three, or four sections. The random operation determined how long each section would be and where the section would start from the master recording.

[Privacy policy](#)

[An Interpretation of A Dip in the Lake.](#)

# Folds

Not all lines on maps are made by a cartographer. When maps are repeatedly folded and unfolded and stuffed into pockets on trips, they develop another grid of lines just as enduring as those in ink. Evidence of these lines of use reminds us that maps are more than just objective representations of facts but viewpoints into different understandings of place that carry their own imperfections and histories. For contemporary artists, these inkless lines evoke the unwritten rules that have shaped heavily segregated cities like Chicago and Detroit. Redlining, a term that refers to policies of race-based housing discrimination in US cities, is rarely visible as a bright line on a map. Like lines from folds, lines of segregation and discrimination instead only become visible when we understand how people actually live in these cities.



**Lines of Use**

54



**Unfolding a River**

56



**Connections Across Folds**

58

TESS'S NEW PLAN OF LONDON, &c. WITH 360 REFERENCES TO THE PRINCIPAL STREETS, &c. 1831.



|            |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                 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London, Published by T. Agnew & Sons, 27, Abchurch Lane.

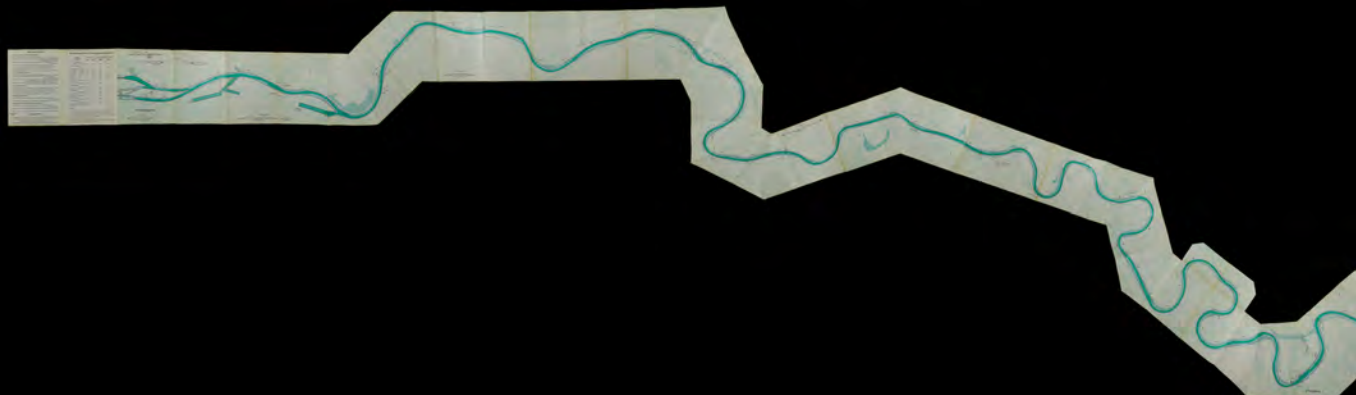
Scale, 1/250,000.

## Lines of Use

|                   |                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------|
| <b>Artist</b>     | Thomas Tegg                                                                                    |
| <b>Title</b>      | <i>Tegg's new plan of London, &amp;c with 360 references to the principal streets, &amp;c.</i> |
| <b>Year</b>       | 1831                                                                                           |
| <b>Dimensions</b> | 35 x 60 cm                                                                                     |
| <b>Medium</b>     | Hand-colored engraving on paper, dissected and mounted on linen                                |
| <b>Location</b>   | Newberry Library                                                                               |

The more people traveled with maps, the more they needed them to fit in small places. For 19th-century city maps, owners often cut maps into rectangles and pasted them to a sturdy fabric so they could repeatedly fold them without unexpected

rips. Look carefully at this example of a map of London: how do the folds interact with the other lines on the map? When was the last time you folded and unfolded a map?



# Unfolding a River

|          |                                                               |
|----------|---------------------------------------------------------------|
| Artist   | Wasser- und Schifffahrtsdirektion Süd                         |
| Title    | Karte der Bundeswasserstrassen 1:10,000: Verkehrskarte. Donau |
| Year     | 1975                                                          |
| Medium   | Offset lithography                                            |
| Location | Newberry Library                                              |

A neat street grid in a folded road map may tame a bustling city, but an unruly river is harder to control. Instead of fighting the bends of the river, this German agency decided to let the map follow the river rather than the river adjust to the map.

Through a series of carefully engineered folds, this map pours out into the shape of a sixty-mile section of the Danube, between Isarmündung and Regensburg.



Image captured during an installation of Tonika Johnson's *Folded Map Project* Tonika Johnson.

# Connections Across Folds

|        |                                               |
|--------|-----------------------------------------------|
| Artist | Tonika Johnson                                |
| Title  | Installation of the <i>Folded Map Project</i> |
| Year   | ca. 2017                                      |

In the Folded Map Project, Tonika Johnson uses a map of Chicago folded along a main city artery to explore segregation. Streets across the whole city are numbered north and south from Madison Street in the Loop. This system creates sets of address pairs like the 6900 block of North Ashland in Rogers

Park and the 6900 block of South Ashland in West Englewood, which Johnson uses as a structure to unpack the ongoing legacy of segregation in Chicago. Her work prompts us to consider how we can take action to shape our cities today.

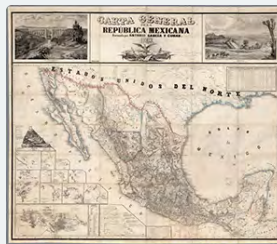
# Boundaries

Boundaries can be some of the simplest and most provocative lines on a map. These lines ask us to accept political borders as being as natural to the landscape as a mountain range. They are supposed to definitively mark long-lasting—if not permanent—political divisions. Most of all, they claim to constitute a national identity for those within them. At the same time, as maps like the one of nineteenth-century Louisiana in this section highlight, these boundary lines make concessions when unruly natural, geographical features interrupt them; they frequently change in response to global events; and they cannot tell the whole story of the historical, cultural, or political loyalties of the people within them. In their search for permanence, these boundary lines often end up exposing their own limitations.



## Inventing Borders

61



## Boundaries to Challenge History

63



## The (Mostly) Rectangular Survey

65



# Inventing Borders

|            |                                            |
|------------|--------------------------------------------|
| Artist     | J. Gabrys                                  |
| Title      | <i>Carte ethnographique de l'Europe</i>    |
| Year       | 1918                                       |
| Dimensions | 81 x 107 cm                                |
| Medium     | Chromolithography                          |
| Location   | Norman B. Leventhal Map & Education Center |

At the end of World War I, some politicians like Lithuanian Jozas Gabrys used ethnographic maps to argue that Europe had natural, ethnic borders that should dictate its new political borders to secure international peace. But, in this map, Gabrys’s argument about ethnic nation-states still relied on the binary logic of boundaries to redraw nations. His dependence on boundary lines inscribed majority rule over

areas with ethnic diversity and historical complexity, foreshadowing future conflicts.

For an example of the binary logic of borders, look at the border of Slovakia and Hungary, where alternating lines of green and yellow show an area split between two ethnicities, preventing representation of other ethnic groups in the area.



**CARTA GENERAL**  
DE LA  
**REPÚBLICA MEXICANA**  
Formada por **ANTONIO GARCÍA Y CUBAS.**  
1863.



## Boundaries to Challenge History

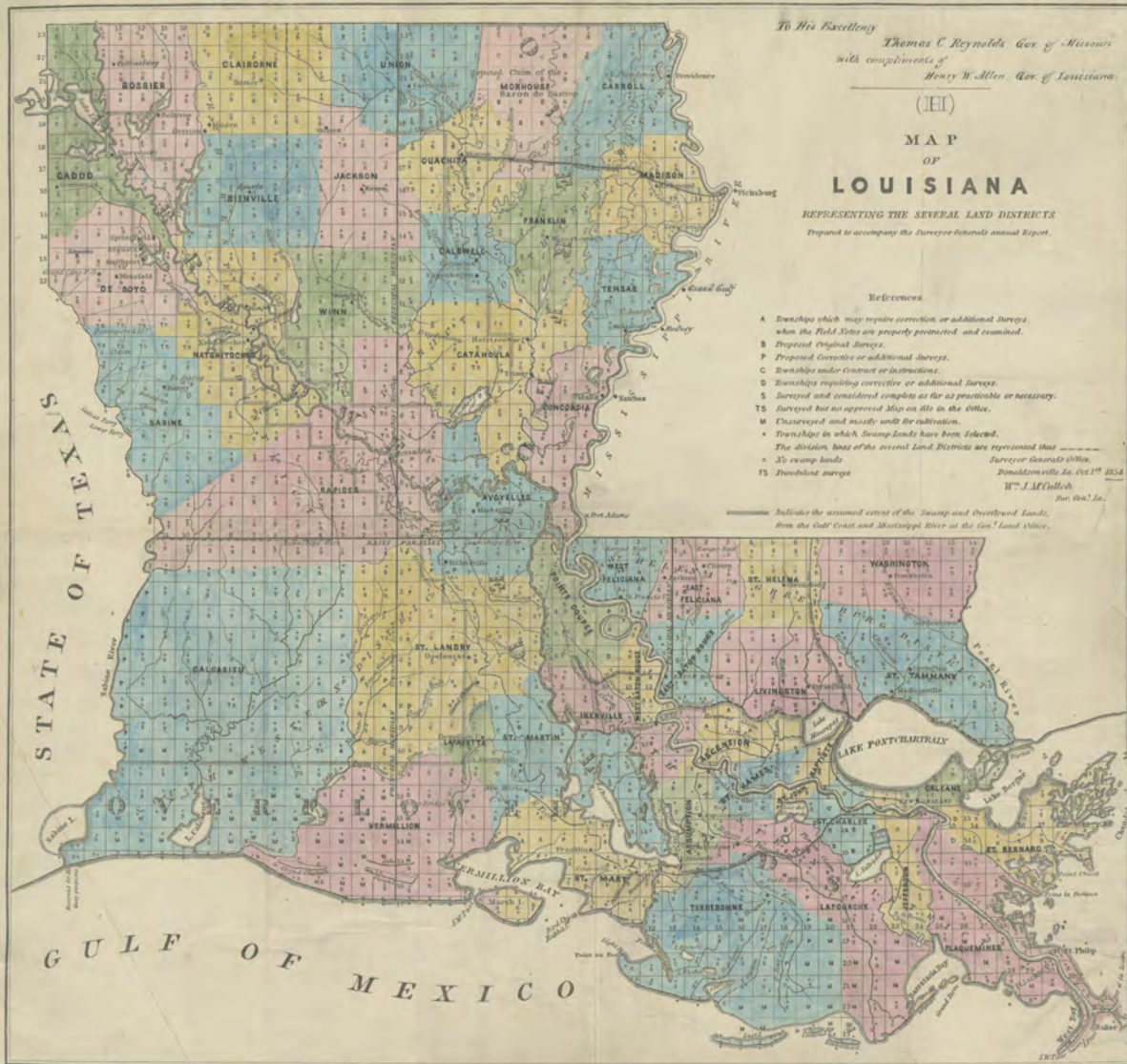
|                   |                                               |
|-------------------|-----------------------------------------------|
| <b>Artist</b>     | Antonio García Cubas                          |
| <b>Title</b>      | <i>Carta general de la República Mexicana</i> |
| <b>Year</b>       | 1863                                          |
| <b>Dimensions</b> | 125 x 146 cm                                  |
| <b>Medium</b>     | Hand-colored lithography                      |
| <b>Location</b>   | David Rumsey Historical Map Collection        |

"entre nuestra nación y la vecina no existe otro lindero que una simple línea matemática.....¡Dios salve á la República!!!"

("Between our nation and its neighbor exists no boundary except a simple mathematical line ... God save the Republic!")

-Antonio García Cubas, *Diccionario geográfico, histórico y biográfico de los Estados Unidos Mexicanos*, 1898.

Antonio García Cubas's *Carta General* was the first national, published map of Mexico made in Mexico by a Mexican cartographer. But instead of one northern border, it has two! After the Mexican-American War (1846–48), the US and Mexico agreed on different borders in treaties signed within six years. Both treaties forced Mexico to cede much of its territory, but they differed in whether the dividing line should follow the Gila River. In the quotation above, written toward the end of his career, García Cubas expressed his concern over the lack of a clear, natural geographic border between Mexico and a land-hungry United States to the north that resulted from these treaties. Can you find where the two borders diverge on the western third of the map?



## The (Mostly) Rectangular Survey

|                   |                                                                 |
|-------------------|-----------------------------------------------------------------|
| <b>Artist</b>     | William J. McCulloh                                             |
| <b>Title</b>      | <i>Map of Louisiana Representing the Several Land Districts</i> |
| <b>Year</b>       | 1858                                                            |
| <b>Dimensions</b> | 39 x 41 cm                                                      |
| <b>Medium</b>     | Hand-colored lithography                                        |
| <b>Location</b>   | Newberry Library                                                |

In 1785, the US government began to survey land based on systems of rectangles. The US General Land Office used this method to create standardized parcels of land that could be easily sold as part of the US colonial project of westward

expansion. But geographic features—like rivers—and older administrative systems—like parishes established by the French—disrupted this seemingly simple grid. Up close, these ruptures unsettled the order projected from afar.

# Rhumb Lines

Rhumb lines gave a rational order to the mysterious depths. From the Spanish *rumbo* for a defined path, the rhumb line directed mariners along a constant cardinal direction. Guided by a rhumb line, a captain could set a course using just a compass, which was crucial when measuring longitude at sea was almost impossible. Rhumb lines were so important for so long that by the eighteenth century they were simply part of how many maps depicted water. For centuries, maps that were never made to go to sea or even to plan sea routes still incorporated rhumb lines because readers would be confused without them.



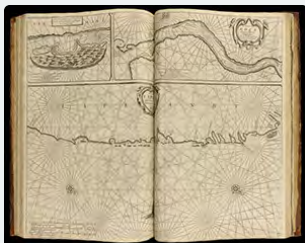
**Lines All Over the Map**

68



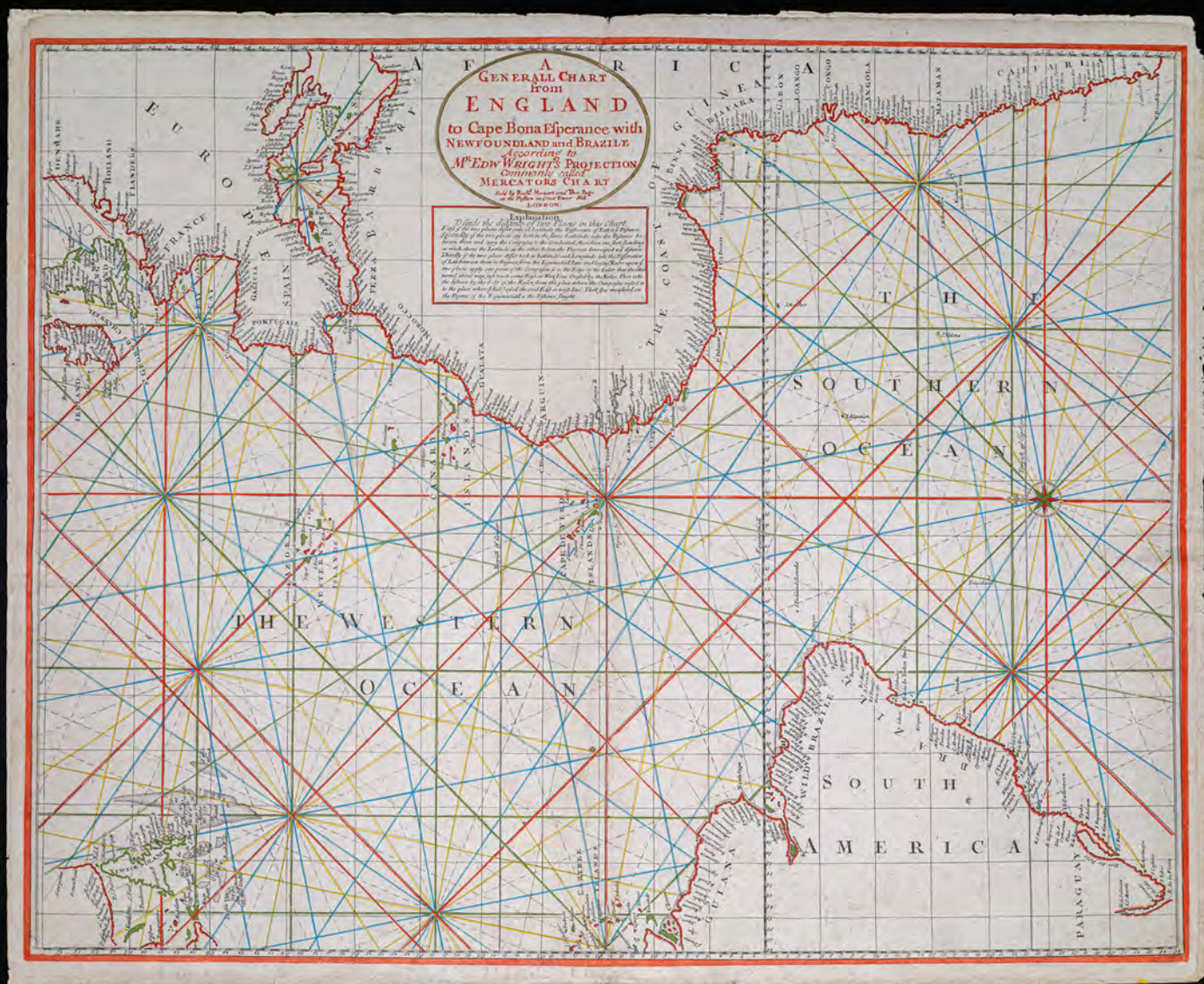
**Decorative Lines**

70



**It's Not You, It's the Line**

72



## Lines All Over the Map

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|                   |                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Artist</b>     | R. Mount and T. Page                                                                                                               |
| <b>Title</b>      | <i>A Generall chart from England to Cape Bona Esperance with Newfoundland and Brazile according to Mr. Edw. Wrights projection</i> |
| <b>Year</b>       | 1720                                                                                                                               |
| <b>Dimensions</b> | 447 x 563 mm (neat line), on sheet remargined to 486 x 596 mm                                                                      |
| <b>Medium</b>     | Engraving on paper                                                                                                                 |
| <b>Location</b>   | Newberry Library                                                                                                                   |

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Rhumb lines are supposed to guide you. But they can be overwhelming at the poles where every line of longitude intersect at one point. Although the rhumb lines on Mount and

Page's map are straight, seemingly straightforward lines, they quickly overpower all other information at sea so that you might almost forget you're looking at a map at all.

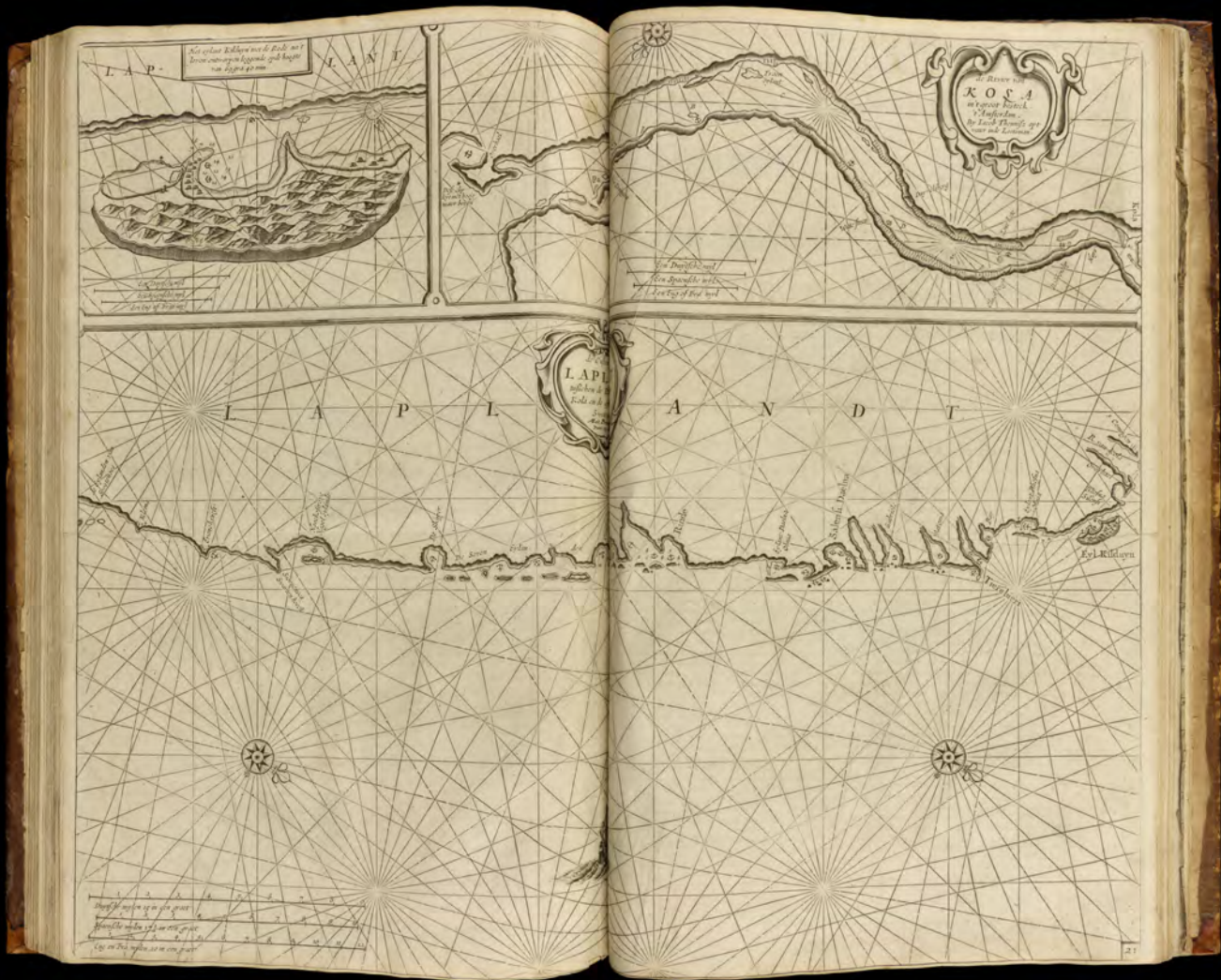


# Decorative Lines

|            |                                                                                |
|------------|--------------------------------------------------------------------------------|
| Artist     | Jan Jansson and Nicolaes Visscher                                              |
| Title      | <i>Nova et accvrata Poli Arctici : et terrarum circum Iacentium descriptio</i> |
| Year       | 1690                                                                           |
| Dimensions | 41 x 52 cm                                                                     |
| Medium     | Hand-colored engraving                                                         |
| Location   | David Rumsey Historical Map Collection                                         |

Early European mapmakers began to include rhumb lines in nautical charts for navigators to use to follow a trajectory along or parallel to a single line. But some of these charts and atlases were ornately decorated and never left the cozy

fireside. Swirling and converging on the North Pole in this map by Jan Jansson, the rhumb lines turn into a geometric abstraction, showing how rhumb lines could work as a decorative element rather than just as a tool.



## It's Not You, It's the Line

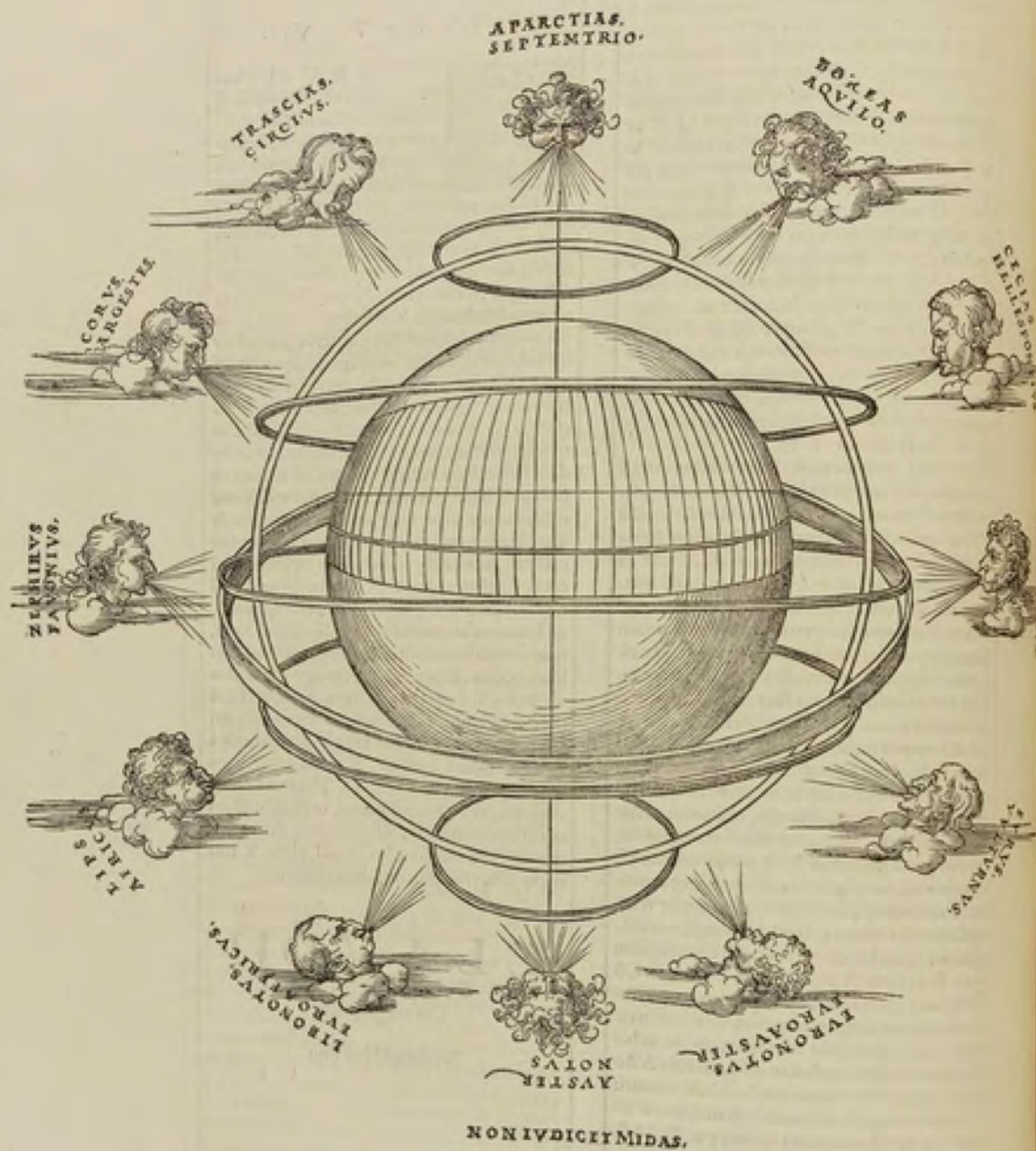
|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| <b>Artist</b>     | Theunis Jacobsz                                              |
| <b>Title</b>      | "Lapland" in <i>The lightning columnne, or, Sea-mirroure</i> |
| <b>Year</b>       | 1711                                                         |
| <b>Dimensions</b> | 44 cm                                                        |
| <b>Medium</b>     | Engraving                                                    |
| <b>Location</b>   | Newberry Library                                             |

This page includes a large map and two inset maps with north, as the compass roses show, in different directions on each map. But the rhumb lines blithely extend beneath the insets' borders and connect these compasses. With little warning,

what is southwest in Lapland becomes northwest near the Kosa river! The mapmaker's loyalty to what a map with rhumb lines should look like undermines the meaning of the lines themselves.

# Graticules

Even when we cannot see them, graticules provide the basis for modern mapping. Encompassing the whole grid created by lines of longitude and latitude, graticules are the scaffolding that holds the rest of the map in place. The reintroduction of polymath Claudius Ptolemy's (100? AD - 170? AD) system of mapping with graticules fundamentally changed how Europeans created maps beginning in the fifteenth century. Ptolemy's methods led to centuries of experimentation with mathematical projections. With different projections of the sphere of the Earth onto a flat piece of paper, this grid bends and stretches to preserve the mathematical relationship between locations on the map.





## How to Rule the World

77



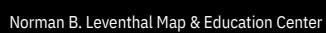
## Longitude and Latitude Become Popular

79



## Measuring the World

81



## How to Rule the World

|                   |                                             |
|-------------------|---------------------------------------------|
| <b>Artist</b>     | US Coast and Geodetic Survey                |
| <b>Title</b>      | Equatorial azimuthal equidistant projection |
| <b>Year</b>       | ca. 1940-1949                               |
| <b>Dimensions</b> | 86 x 86 cm                                  |
| <b>Medium</b>     | Offset lithography                          |
| <b>Location</b>   | Norman B. Leventhal Map & Education Center  |

Like a skeleton in the back of an anatomy classroom, this map shows how the world is put together without showing the living matter. As part of a series that demonstrates how graticules move within different map projections, the only

straight lines in this particular projection are the equator and the central line of longitude. Out of context, though, its lines are reminiscent of an abstract spirograph drawing.



## Longitude and Latitude Become Popular

|                   |                                                                    |
|-------------------|--------------------------------------------------------------------|
| <b>Artist</b>     | Ferando Bertelli and Pablo Forlani                                 |
| <b>Title</b>      | <i>Universale descrizione di tutta la terra conosciuta fin qui</i> |
| <b>Year</b>       | 1565                                                               |
| <b>Dimensions</b> | 41 x 75 cm                                                         |
| <b>Medium</b>     | Hand-colored engraving                                             |
| <b>Location</b>   | Newberry Library                                                   |

A prominent mapmaker in Verona, Italy, Paulo Forlani helped popularize what we now think of as a standard world map: one that is oval or rectangular and held together by parallel, horizontal lines and sloping vertical lines. Emphasizing these

lines on the map both helped people take advantage of the map's mathematical qualities and also assured users that the map was accurate and trustworthy.

## DE PARIS



Non amiamo le piazze per cui l'Architetto al suo posto ha

des opérations trop longues pour une étude de point exact.  
— 1934-1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613,

## Measuring the World

|                   |                                                                                                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Artist</b>     | Unknown                                                                                                                                  |
| <b>Title</b>      | <i>Horizon de Paris dedié a son Altesse Monseigneur l'Archeveque de Cambray, Pair de France, Prince du S. Empire, Comte du Cambresis</i> |
| <b>Year</b>       | 1739                                                                                                                                     |
| <b>Dimensions</b> | 48 cm diameter on sheet 61 x 84 cm                                                                                                       |
| <b>Medium</b>     | Hand-colored engraving                                                                                                                   |
| <b>Location</b>   | Newberry Library                                                                                                                         |

The flexibility of graticules and the mathematical basis of map projections allowed mapmakers to tailor their maps to specific needs. This map, for instance, centers the whole world on Paris. Its lengthy text explains how to precisely measure the distance between the French capital and any place on the

globe using measurements of longitude and latitude. This structure made the whole world appear as something you could know without getting up from a comfortable chair overlooking the Seine.

# Full Exhibition Item List

## INTRODUCTION AND STANDARDIZATION

1. Joseph Enthoffer, "Conventional Signs for Topography," "Types of Orography," and "High Mountains" in *Manual of Topography and Text-book Of Tropographical Drawing; For the Use of Officers of the Army and Navy, Civil Engineers, Academies, Colleges, and Schools of Science*, 1870.
2. United States Geological Survey , Topographic Maps, 1950.
3. Arthur Robinson et al, Elements of Cartography Fifth Edition, 1984.
4. Michael Wynne, England, 2019.

## ALTITUDE

1. Marie Tharp and Bruce Heezen, *Physiographic diagram, Atlantic Ocean (sheet 1)*, 1957.
2. Bruce Heezen, "Figure 1: Method and preparation of physiographic diagram" in *The Floors of the Ocean*, 1959.
3. Richard H Pease, *Mapa de una porcion de Chile, indicando el curso del ferro-carril proyectado entre Valparaiso y Santiago*, 1852.
4. Dépôt-général de la Marine, *Plan du Cul-de-Sac Marin (Ile de la Martinique)*, 1828.
5. Philippe Buache, "Figure 1: Method and preparation of physiographic diagram" in *Cartes et tables de la géographie physique ou naturelle*, 1770.
6. Mountford John Byrde Baddeley, "Section Map No. 8" in *The English Lake District*, 1923.
7. Ed Fairburn, "Borrowdale, United Kingdom," 2017.

## BOUNDARIES

1. Surveyor General's Office, *Map of Louisiana representing the several land districts: prepared to accompany the Surveyor General's annual report*, 1854.

2. J. Gabrys, *Carte ethnographique de l'Europe. Echelle moyenne 1:500,000,000*, 1918.
3. Rand McNally and Company, *World*, 2012.
4. Antonio de Herrera y Tordesillas, "Descripcion de las yndias occidentalis" in *Historia general de los hechos de los castellanos en las islas y tierra firme del mar oceano*, 1601-1605.
5. Antonio García Cubas, *Carta general de la República Mexicana*, 1863. On loan from the American Geographical Society Library at UW-Milwaukee.  
Jan Jansson, *Nova et accvrata Poli Arctici et terrarum circum iacentium descriptio*, c.1637?.

## FOLDS

1. Thomas Tegg, *Tegg's new plan of London, &c with 360 references to the principal streets, &c.*, 1831, 1831.
2. Wasser- und Schiffahrtsdirektion Süd., *Karte der Bundeswasserstrassen 1:10 000: Verkehrskarte. Donau*, 1975.
3. General Drafting Company, *Wisconsin Minnesota*, 1960s.
4. Tonika Johnson, *Folded Map Project*, 2017.
5. Kati Rubinyi, *Detroit City Map*, 2008 (1991).

## GRATICULES

1. Paulo Forlani and Ferando Bertelli, *Universale Descrittione Di Tutta la Terra Conosciuta Fin Qui*, 1565.
2. S., *Horizon de Paris dédié a son Altesse Monseigneur l'Archeveque de Cambray, Pair de France, Prince du S. Empire, Comte du Cambresis*, 1739.
3. U.S. Coast and Geodetic Survey, *Equatorial azimuthal equidistant projection*, 1965-1967.
4. Agnes Denes, *Isometric systems in isotropic space: map projections: from the study of distortions series*, 1973-1979, 1979.
5. George William Fitch, "Europe and British Isles" in *Fitch's mapping plates: designed for learners in geography, being a collection of plates prepared for delineating maps of the world and countries forming its principal subdivisions*, 1854.

## JOURNEYS

1. John Cage, a map and score for *A Dip in the Lake: Ten Quicksteps, Sixty-two Waltzes, and Fifty-six Marches for Chicago and Vicinity*, 1978. On Loan from MCA Chicago
2. Great Britain Hydrographic Office, *Chart of the South Polar Sea*, 1841.
3. Harry Alverson Franck, *Working north from Patagonia; being the narrative of a journey, earned on the way, through southern and eastern South America*, 1921.

4. John Ogilby, "Map 34, Barnstable to Truro" in *Britannia, volume the first. Or, An illustration of the kingdom of England and dominion of Wales*, 1698.
5. Guías Escalada, *Mexico*, 1938.
6. Richard Long, "The Isle of Wight as Six Walks" in *Sixteen Works*, 1984.
7. Drawn by Rhodaas for the Illinois Central Railroad Company, *Map of line from Canton, Miss. to New Orleans*, c. 1861.
8. Ruth Taylor White, "Reno – Salt Lake City" and "Boulder Dam – Salt Lake City" in *United Airlines: A Gay Geography of the Main Line Airway*, c.1938.

## NETWORKS

1. Thomas Jefferys, *A map of South America containing Tierra-Firma, Guayana, New Granada, Amazonia, Brasil, Peru, Paraguay, Chaco, Tucuman, Chili and Patagonia*, 1775.
2. William Knight, *A new mapp of South Britain or England and Wales containing all the cities and market towns*, 1720.
3. Rand McNally and Company, "Kentucky and Tennessee" in *Rand McNally road atlas of the United States, Canada and Mexico*, 1951.
4. Norman Macmillan, "The Air Map of Europe" in *The air travellers' guide to Europe*, 1929.
5. Ibrahim Miranda Ramos, *Mapaglyphy: Bird, Mexico City*, 2007.
6. Dallin Maybee, *Chasing away the buffalo*, 2022.
7. Joseph F. W. Des Barres, "A plan of Delawar River from Chester to Philadelphia" in *The Atlantic Neptune*, 1780.
8. Robert Rauschenberg, "Composition" from *Tares*, 1972.
9. Massimo Vignelli for the New York City Transit Authority, *New York subway guide*, 1978.

## RHUMB LINES

1. Petrus Roselli, Manuscript portolan chart of the Mediterranean and Black Seas, 1456.
2. R. Mount and T. Page, *A Generall chart from England to Cape Bona Esperance with Newfoundland and Brazile according to Mr. Edw. Wrights projection ...*, 1720.
3. Theunis Jacobsz, "Lapland" in *The lightning columnne, or, Sea-mirroure*, 1711.

# Contributors

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Emily Lyon is a historian of race, gender, visual culture, and US empire in the early twentieth century and in public memory. She worked on this project during her time as a public history fellow at the Smith Center for the History of Cartography.