

week 2:

process

cartography & spatial data visualization

2026.08.27

**first: thank you
for filling out the
questionnaire!**



Will the map readings be more of a written analysis of a map that we create based on an image or multiple images of a given map?

What is expected of out-of-class readings, specifically the map readings, and how will they be integrated into class time and/or various assignments?

it's a bit of both



How much time is each of the 3 big labs estimated to take? (including allotted lab work class time)

i aim for labs to take
3 hours on average



I am curious about "Illustrator" I have never used it before. So I am excited to learn what it is and how to use it! I have heard adobe before but I want to know how it translates to cartography work.

Will we be using Adobe Illustrator only for the labs or across all three assignment types?

illustrator = vector graphics
software with lots of
fine-grained design firepower

you'll use it for about 4-6
assignments, category neutral



**How will you grade the maps that we make?
How do you evaluate aesthetic choices? "**

love this question - i'll
dock points based on
your adherence to
best principles



**How will you grade the maps that we make?
How do you evaluate aesthetic choices?**

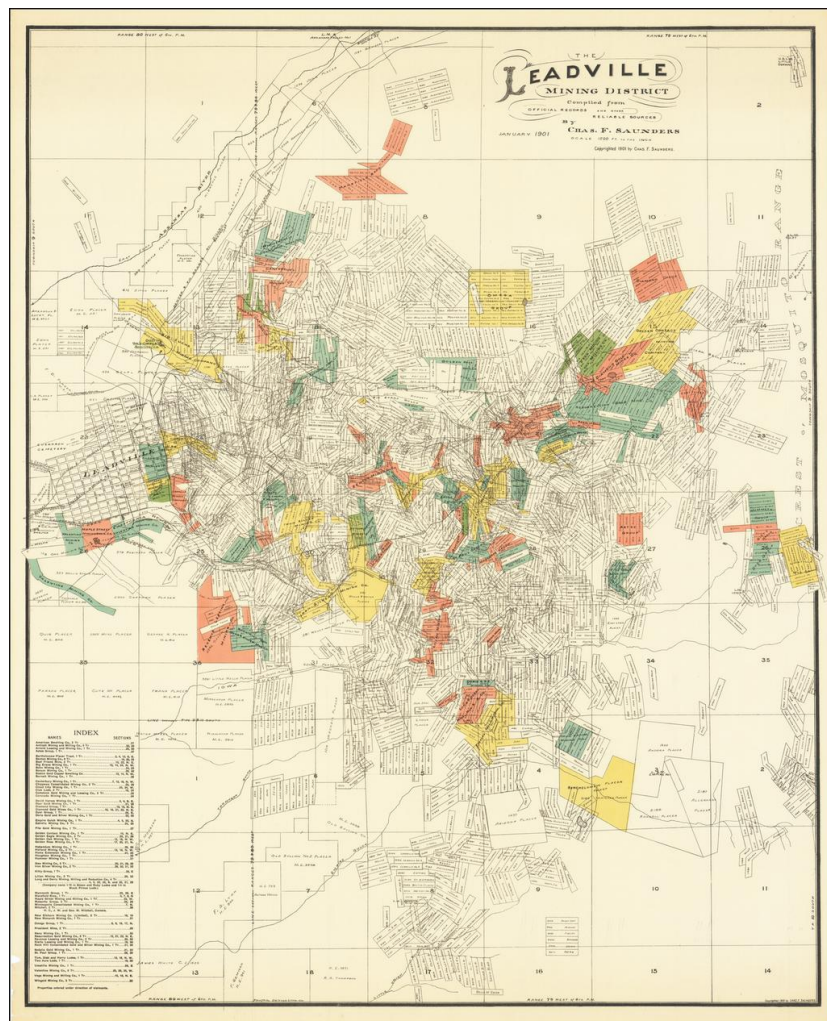
love this question - i'll
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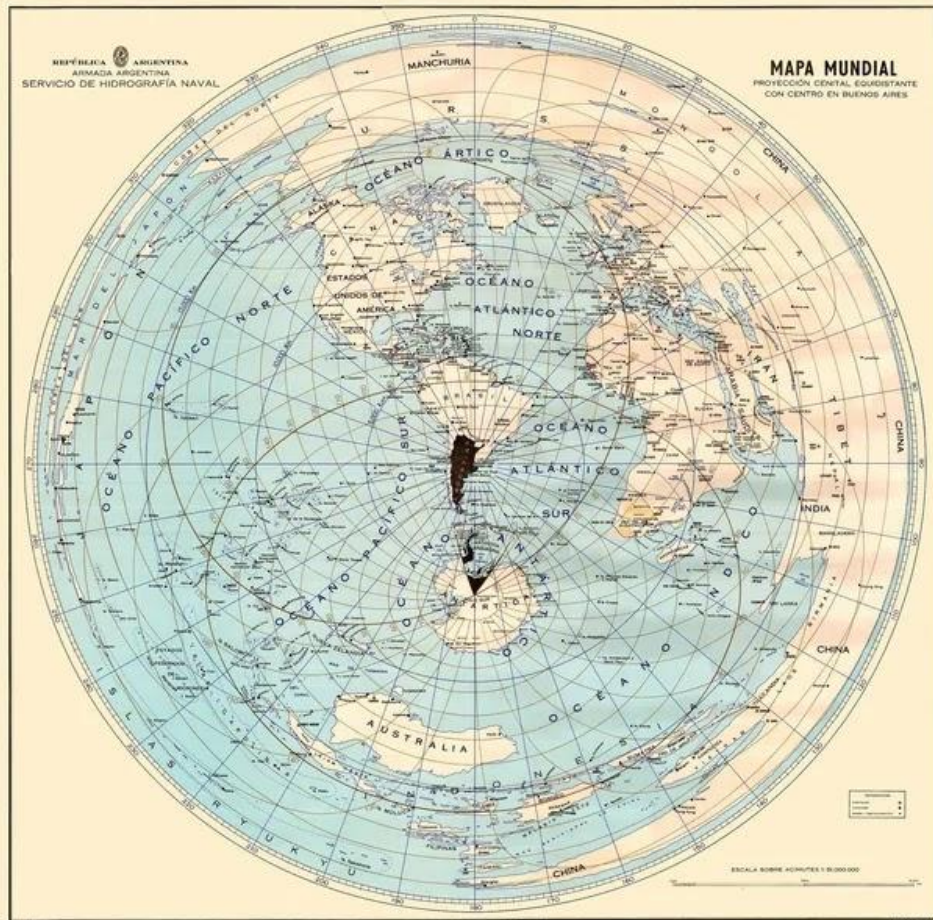
One of the learning objectives is "Responsible, intentional, accessible, and ethical cartographic design." What does it mean to design an "ethical" map?

also great question.
we'll talk about this
today

your maps!



MAPA MUNDIAL
PROYECCIÓN CENTRAL EQUIDISTANTE
CON CENTRO EN BUENOS AIRES



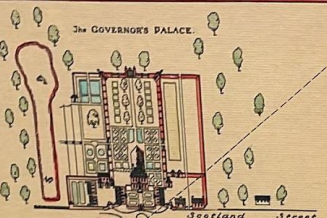
H-5071



Seal of the College
Founded 1693
by Royal Charter.



The Governor makes his Progress.



The GOVERNOR'S PALACE.

A true MAPP of the Town of WILLIAMSBURG — incorporated, 1722 — at one time the CAPITAL of the Colony of VIRGINIA.

Scale of furlongs & ft.
0 100 200 300 400 500 600 ft.
one furlong



Arm of the Crown.



Advertisement for the use of the plow, 1722.



EXPLANATION OF PLATE



The Virginia Company's ship, 1722.



Arm of the Colony.

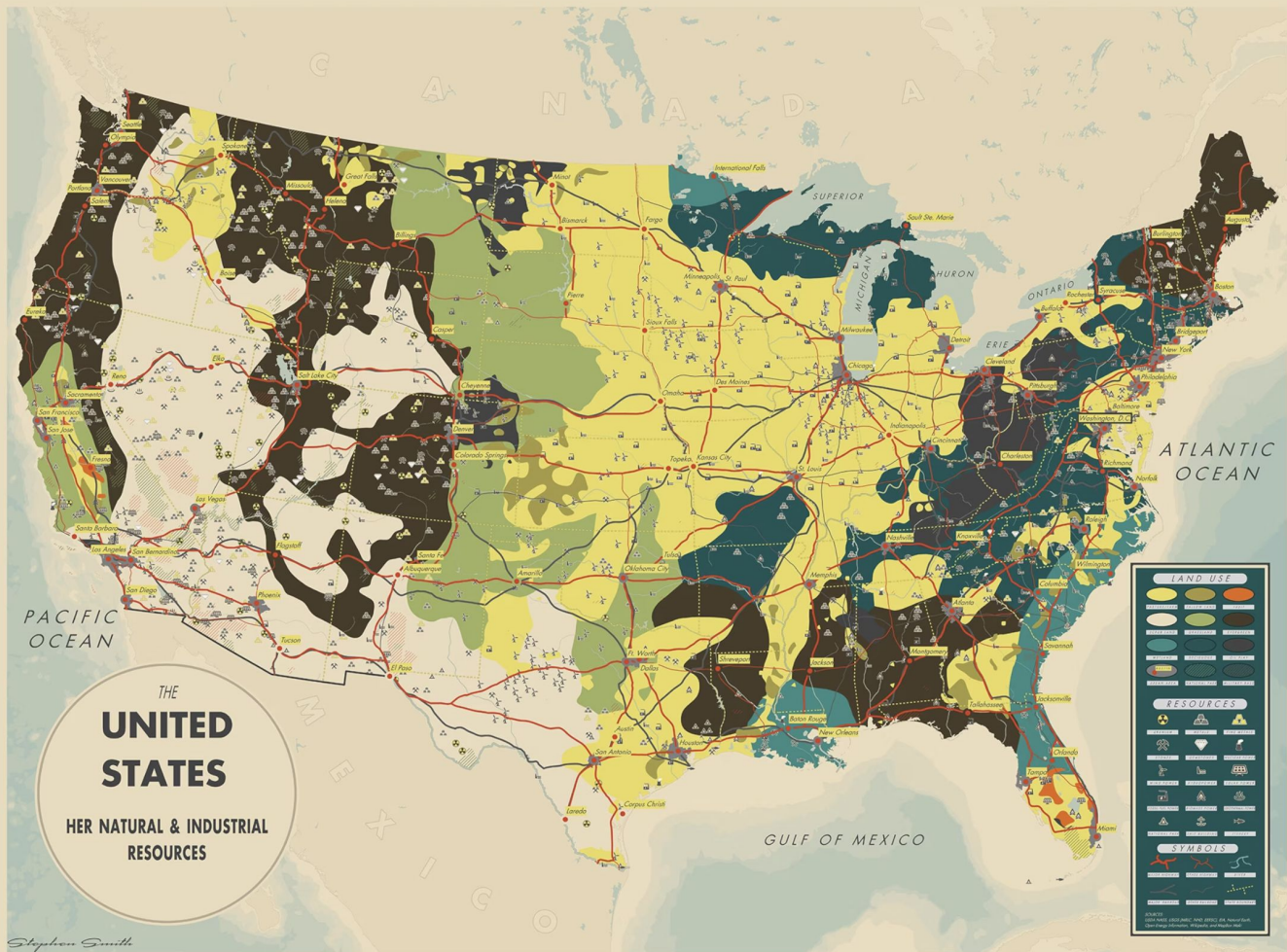




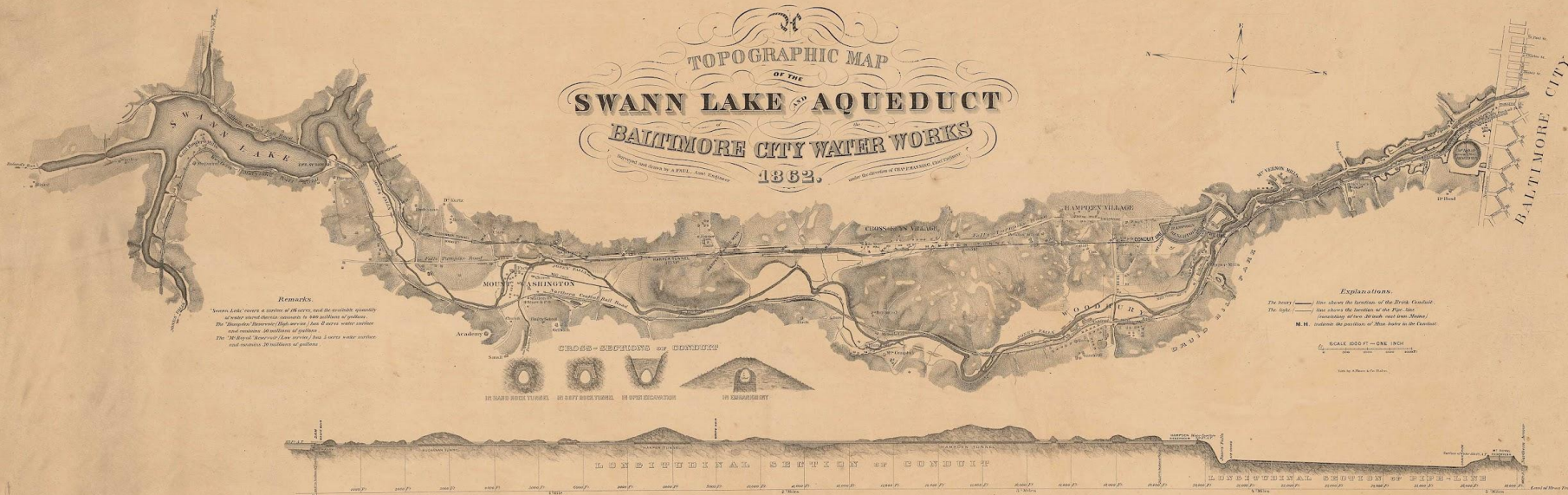


Vlady, (Ilustración)
(San Petersburgo, Rusia, 1920 — Cuernavaca, Morelos, 2005)

Iosen Bartoli (Ilustración)



TOPOGRAPHIC MAP
OF THE
SWANN LAKE & AQUEDUCT
BALTIMORE CITY WATER WORKS
1862.



very cool maps!

or are they?

what even *is* a map?

Oxford English Dictionary, I.1.a

A drawing or other representation of the earth's surface or a part of it made on a flat surface, showing the distribution of physical or geographical features (and often also including socio-economic, political, agricultural, meteorological, etc., information), with each point in the representation corresponding to an actual geographical position according to a fixed scale or projection; a similar representation of the positions of stars in the sky, the surface of a planet, or the like. Also: a plan of the form or layout of something, as a route, a building, etc.

Oxford English Dictionary, I.3.a

A diagram or collection of data showing the spatial distribution of something or the relative positions of its components.

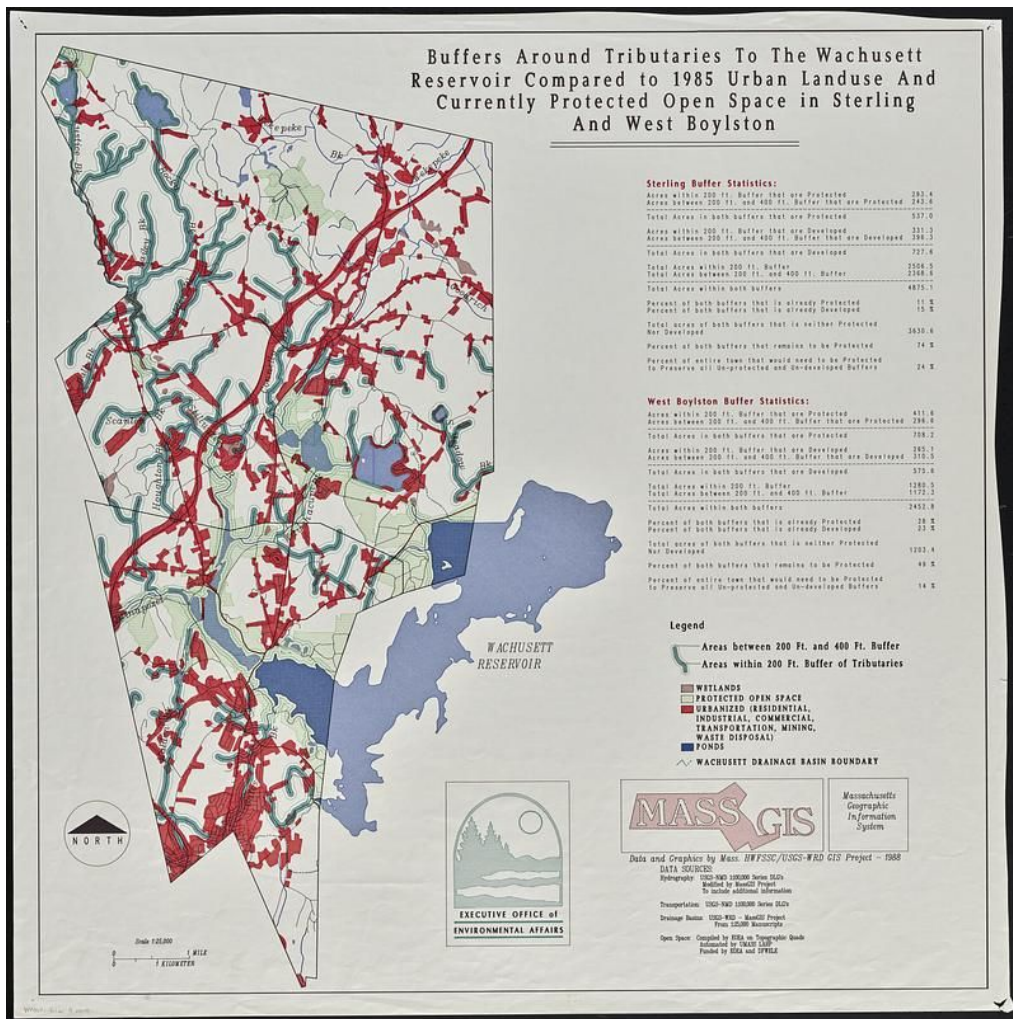
1

is this a map?

[source](#)

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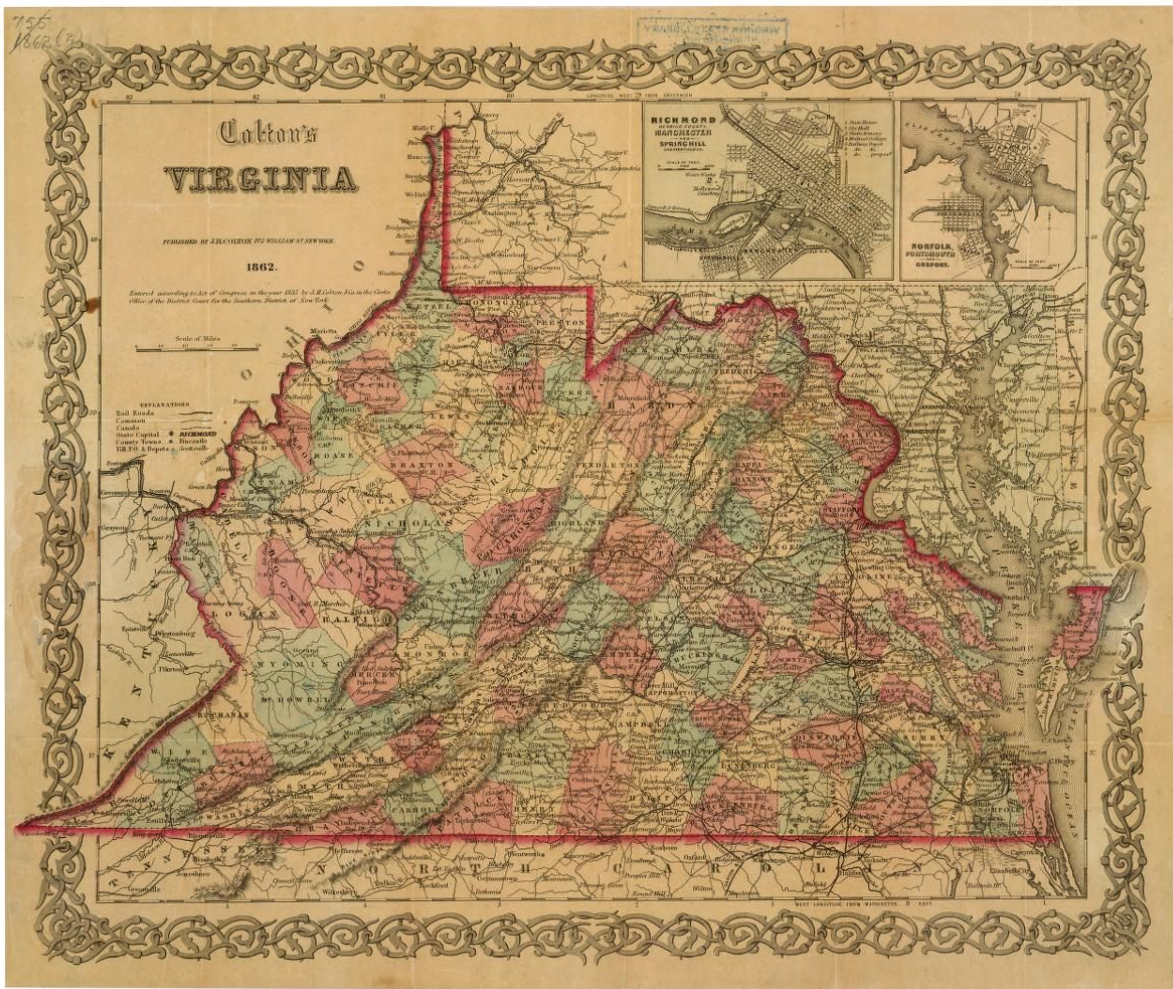
2

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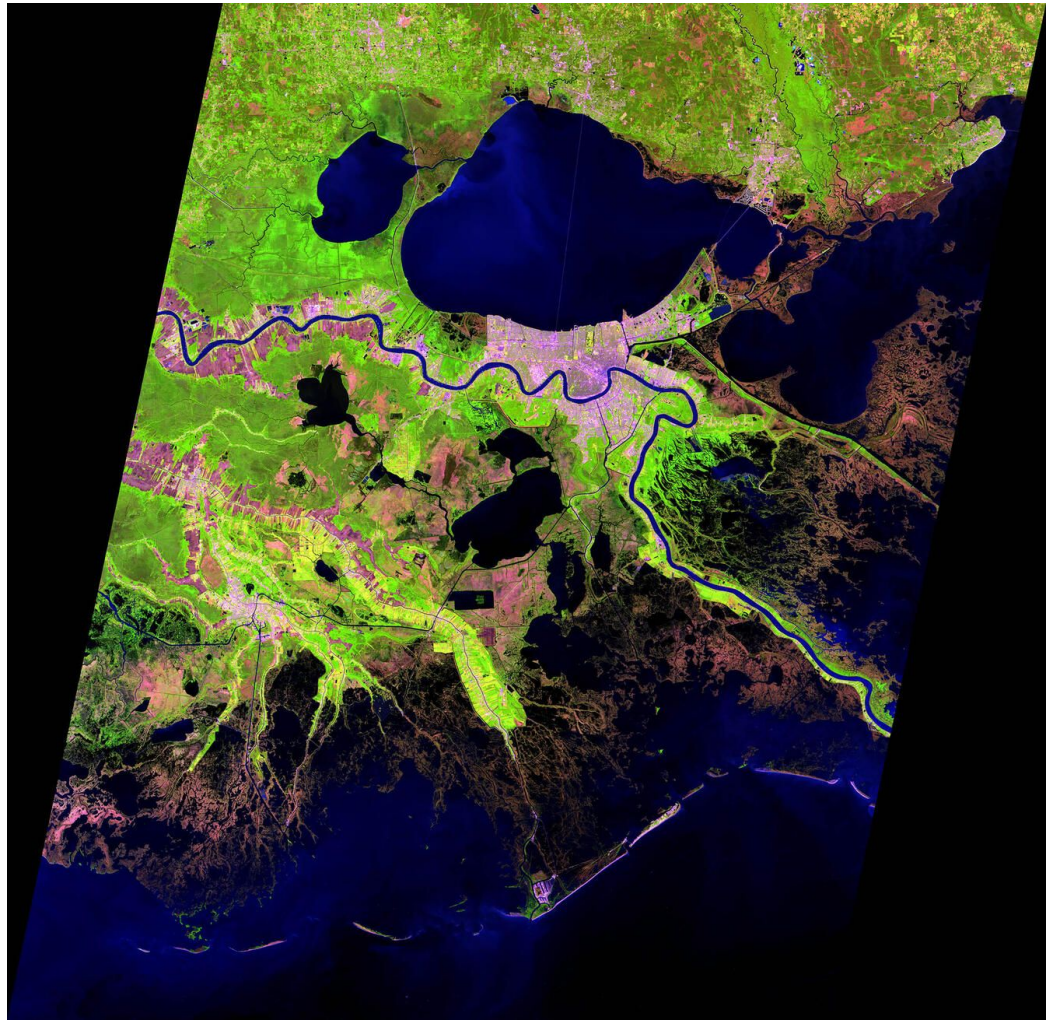
5

is this a map?

[source](#)

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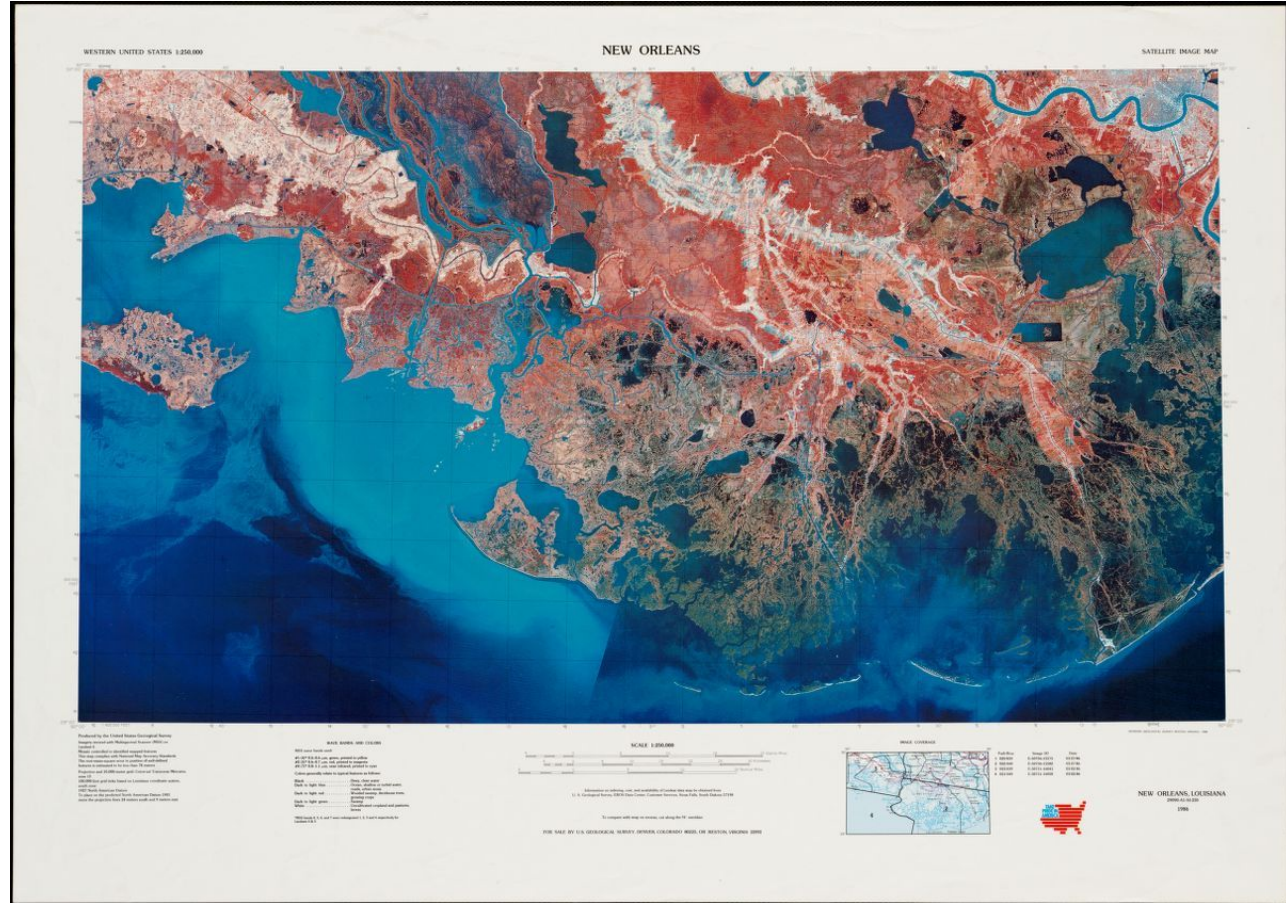


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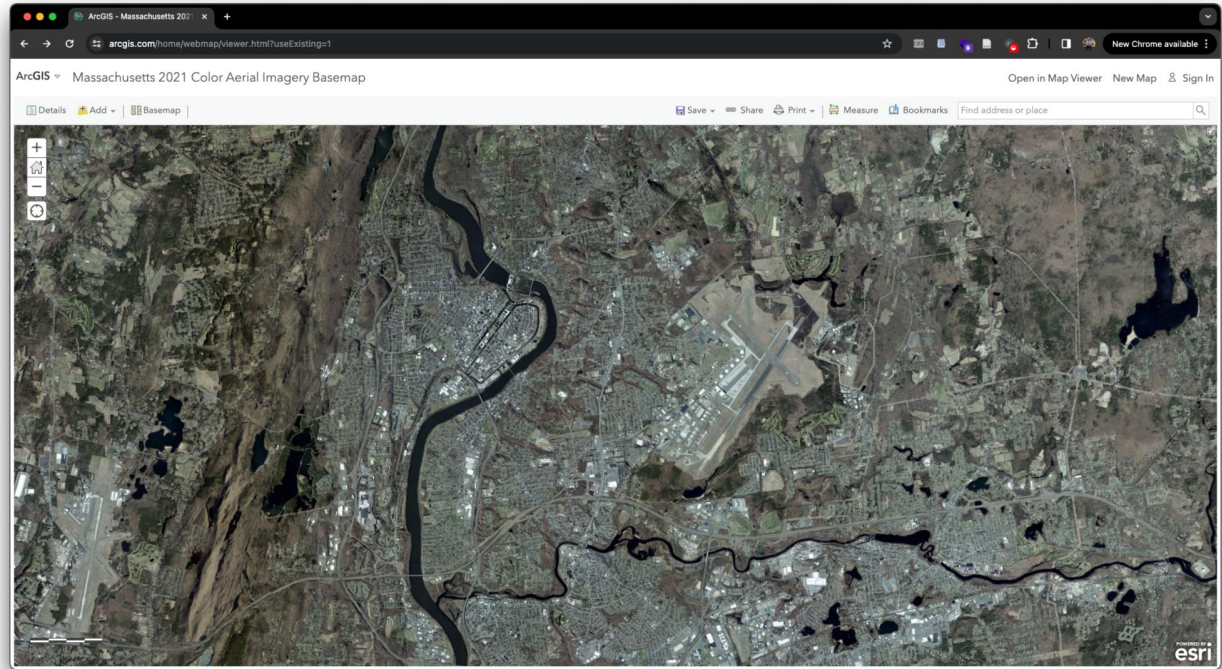
7

is this a map?

[source](#)

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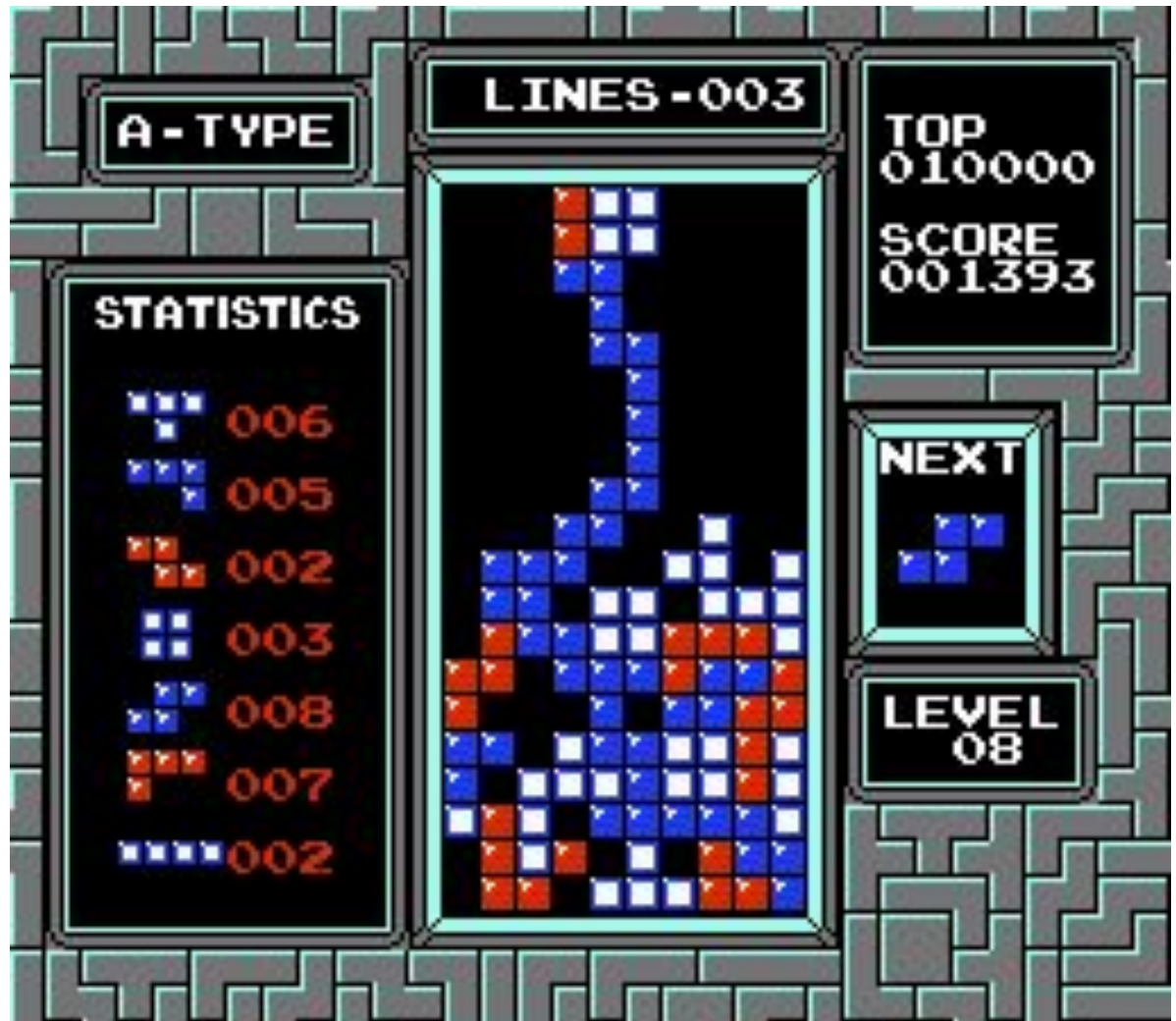
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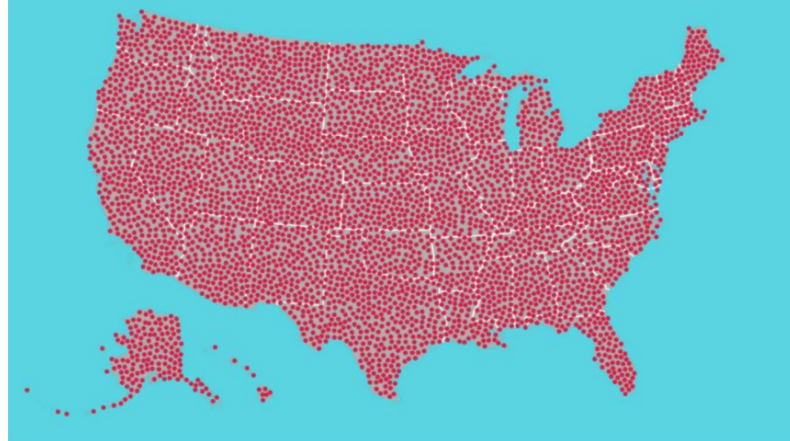
9

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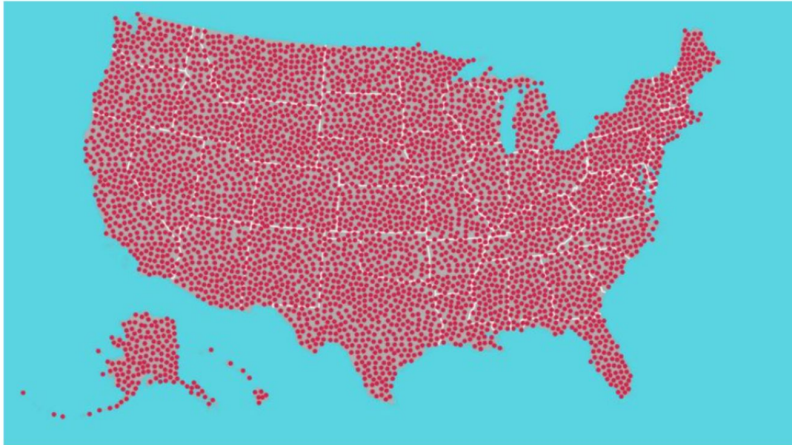
CLICKHOLE

LATEST NEWS POP CULTURE LIFESTYLE QUIZZES CLICKVENTURES VIDEO KIDHOLE EMAIL CLUB

STORE

We Put 700 Red Dots On A Map

OCTOBER 22, 2014



Some statistics can be so unbelievable, or deal with concepts so vast, that it's impossible to wrap our heads around them. The human mind can only do so much to visualize an abstract idea, and often misses much of its impact in the translation. Sometimes you just need to step back and take a good, long look for yourself.

That's why we just put 700 red dots on a map.

TRENDING NEWS

The Winning Streak Continues: Ayo Edebiri Has Been Awarded A 5-Star Vehicle Safety Rating By The National Highway Traffic Safety Administration
2.9k views | posted on January 18, 2024

4 Things I Wish I Understood Before I Went All Out Tailgating My Kid's Dentist Appointment
2.3k views | posted on January 17, 2024

Nature Is Amazing: This Species Of Salamander Has Evolved A Sell-By Date From 1992 So Predators Think It's Expired
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Um, Seriously? This Woman Who Just Killed A Child Thinks She's Ready For A Houseplant
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What Is a Map? Why We Can't Define It and Why It Doesn't Matter

If cartography is not what cartographers tell us maps are supposed to be, then just what is a map? A typical official definition of the map is that “it is a graphic representation of space” (International Cartographic Association, ICA). That definition is fine as far as it goes, but it tells us little about the way maps are used.

If critique examines the assumptions of a field of knowledge, as we saw in the previous chapter, then it would seem that a fundamental critique of mapping is to carefully examine this definition.

For instance, is the concept of the map one which is invariant across cultures, age, sex, etc.? In a simple experiment that Roger Downs performed in his introductory human geography class, he was able to show some very interesting things about maps. Downs showed a number of images to his class (say 40 different pictures), composed of images taken from geography textbooks, aerial photographs, historic maps, and so on. For each image, you had to respond “yes it is a map,” “no it is not a map,” or “? Don't know.”

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Each person viewing the image made a personal assessment as to whether it was a map or not. The results showed the following:

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Each person viewing the image made a personal assessment as to whether it was a map or not. ~~The results showed the following:~~

1. in a given group, some images were almost always seen as maps, some were almost always not seen as maps, and some images were sometimes seen as maps;
2. the degree to which people agreed that an image was a map increased with age.

but maps $\neq$ cartography

cartography has ~5 core principles:

scale

selection

emphasis

symbolization

generalization

Definition of a Map. From these principles we may try to define a map as a selective, symbolized, and generalized picture of some spatial distribution of a large area, usually the earth's surface, as seen from above at a much reduced scale. Most maps are lettered and related to a coordinate system.

the cartographic process

I

Tools and Equipment

Proper tools at the proper place in the proper condition will save time and nerves in map drawing, and can make all the difference in the quality of the product. The best eraser is worth nothing if it hides under the table, and the best pen does not work if clogged with dried ink.

The following items will satisfy the needs of this course and should be bought by each student. All these materials come in various makes and grades, as explained below. It is best to buy the highest quality so that the item will last, but if one cannot afford that at present, it is better to buy the cheapest than none at all. Borrowing from one's neighbor is not conducive to popularity.

Pencils, HB, H. Nail file for sharpener
Gillott pens Nos. 303 and 404
Round-writing pens, Nos. 3, 4, 5

Esterbrook Drawlet pens, Nos. 11, 12, 13, or equivalents
Round-nibbed pens in three sizes
Double-nibbed pen
Six penholders
Compass with detachable tips for pencil and ruling pen, and with lengthening bar
Protractor
Scale, 12 in. engineer's type (optional)
X-acto knife (optional)
India ink, black, waterproof
Set of colored pencils, wax base
Set of water colors
Sable brush, No. 4 (or Nos. 2 and 6)
Three sheets of one-ply Strathmore board, kid finish, large size or equivalent
Erasers, soft and hard, knead gum
Triangle, 12 in. long, either 30°-60° or 45°
T square, 24 in. long
Tracing paper, one block (12 by 18 in.)
Scotch (masking) tape
Slide rule

Some materials can be bought more economically by groups of about six students:

Rubber cement
White paint, opaque
Pounce (pumice powder)
Zip-a-tone of various patterns
Cellotype alphabets
Acetate ink (Artone or Craftint)
Cross-section paper
Ross board, No. 1
Craftint Doubletone sheets
Vinylite or Dyrte sheets, or equivalents
Glass-laminated sheets

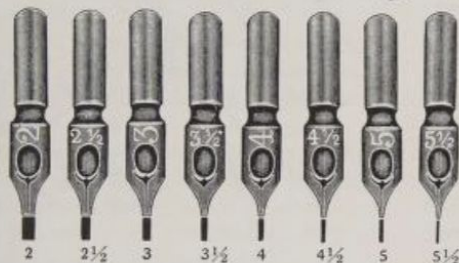
12

Coated film for negative scribing
Carbon pencils (Wolff crayons)

Some tools will be used for many years and can best be bought as permanent equipment by the department, one for every five to ten students:

Pivot (contour) pen
Road pen
Drop-bow compass
Beam compass
Steel straightedge
Large T square
Flexible curve
French curves
Proportional divider
Honing stone
Pencil sharpener
Lettering set
Pantograph
Planimeter
Stereoscope
Stapler
Electric eraser and shield
Tools for negative scribing

Round Writing



LEROY



Pen, Socket Holder and Penholder complete for freehand lettering



Barch-Payzant Lettering Pens,



Fig. 1.1. Some special pen points used by map makers. Leroy pens are numbered from 000 to 8; the 000 is very fine. Payzant pens are numbered the opposite way, No. 8 being the finest. Wrico pen is shown in Fig. 6.4. Double-nib, flat-nib, and round-nib pens (bottom) come in different makes and sizes. Note the difference between round-writing and round-nib pens. (Courtesy of Keuffel & Esser Company.)

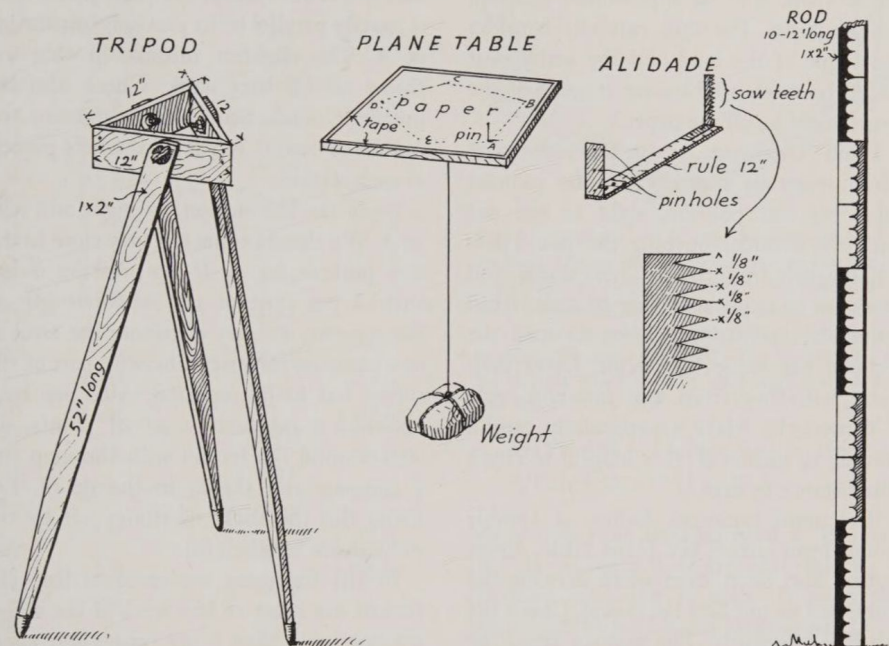


Fig. 4.5. Plane-table outfit can be made in shop, if no great accuracy is expected. Much depends on the exact cutting of the saw teeth.



1 of 9



Assorted Drafting Tools

Title Cartography tools

Year 1970s-1990s

Location David Judkins Weaver Papers, Norman B. Leventhal Map & Education Center

[View in Collection](#)

This case highlights transitions from the use of analog cartographic drafting tools—such as circular slide rules, lettering guides, curvimeters (used for measuring curves), and precise drafting compasses shown above—towards processes and gadgets that could create, analyze, and visualize **geospatial** data in a fraction of the time it would take for human hands to do the same tasks. In the pre-computer period, the most-used tools in a cartographer's toolbox were ones that helped create precise line widths, exact curves, and standardized shapes or lettering. Today, some of these tools will only be recognizable to many modern cartographers as icons that appear in buttons as part of software used to make maps—a familiar concept to those who recognize the floppy disk as a common icon for the “Save” button in many modern



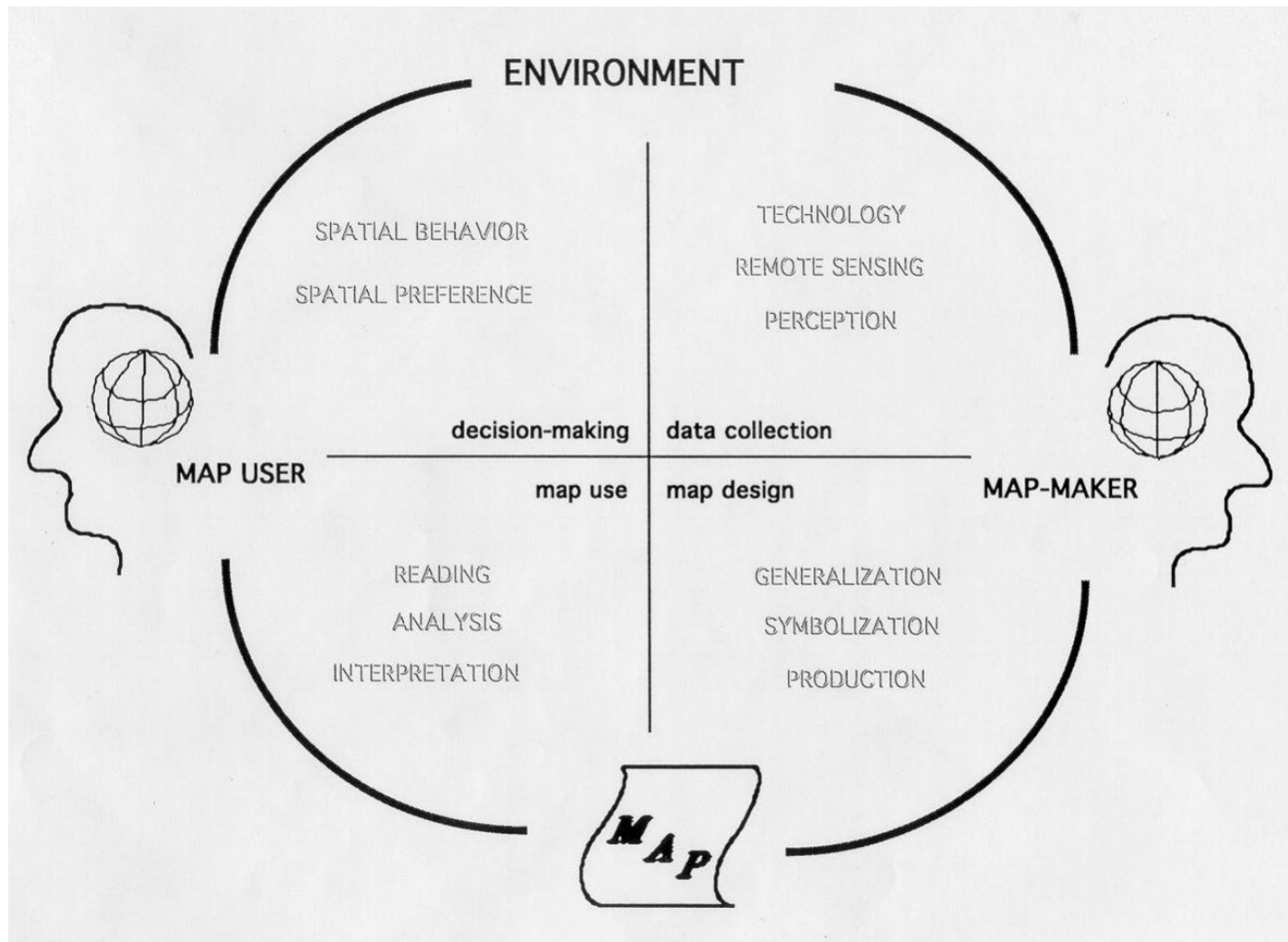
Illustrative site plan: Government Center urban renewal area, Massachusetts R-35

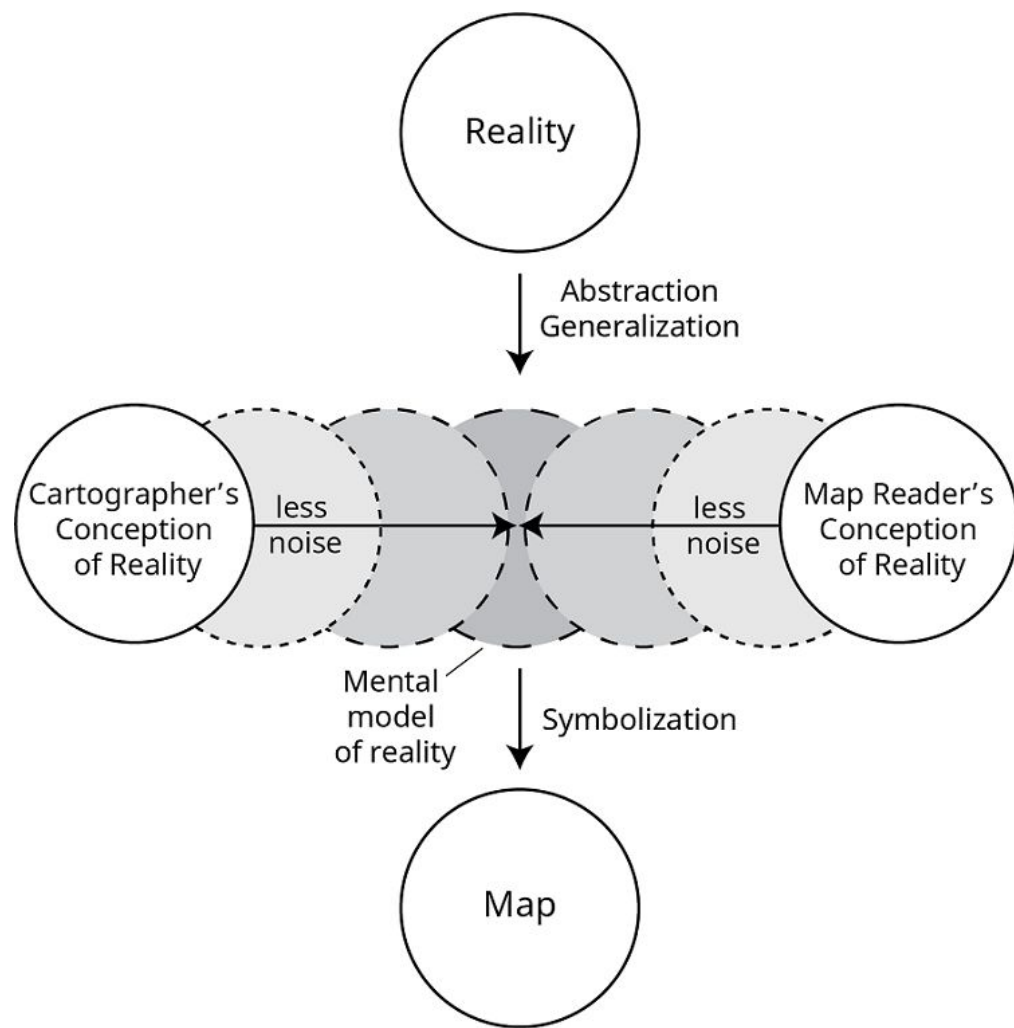
Title	Illustrative site plan
Creator	Boston Redevelopment Authority
Year	1968
Location	Norman B. Leventhal Map & Education Center

[View in Collection](#) 

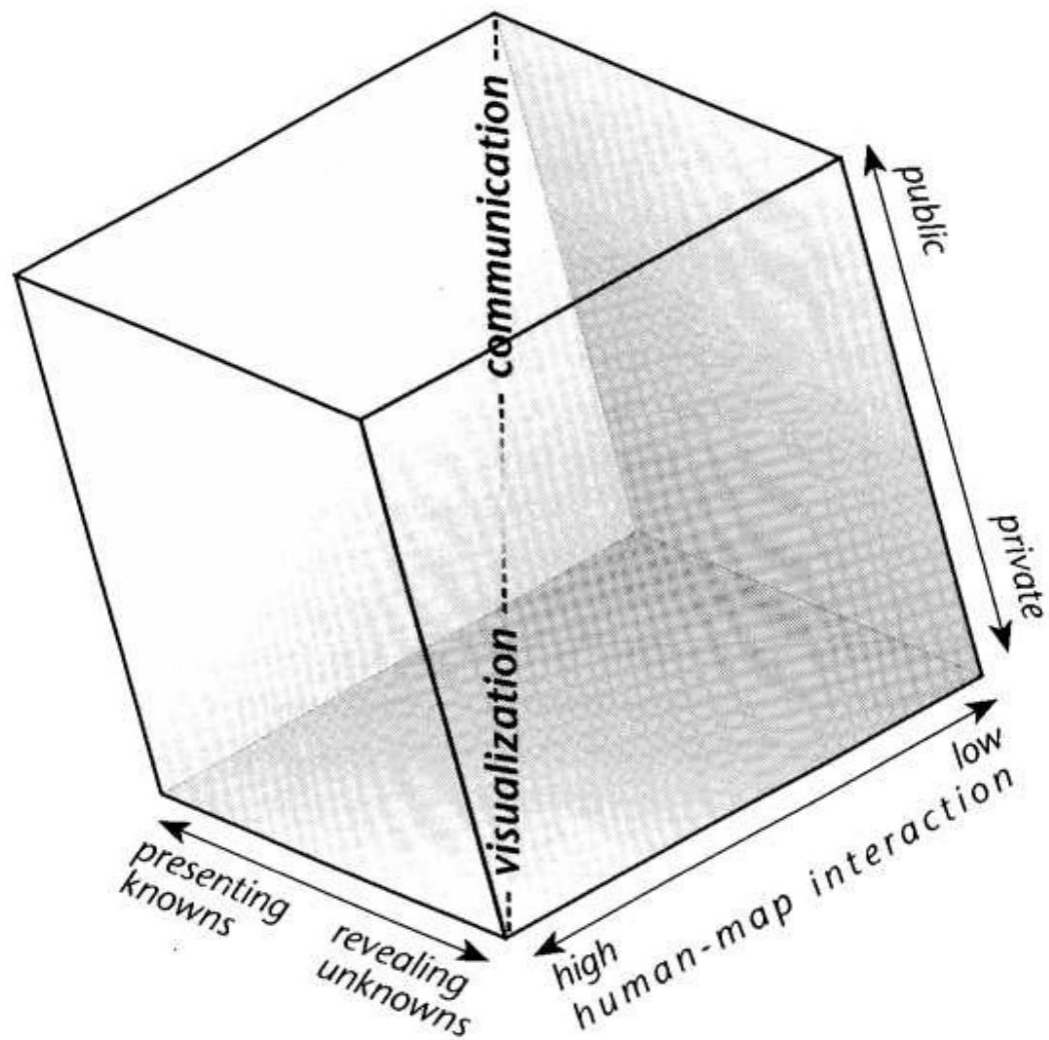
In this site plan, created by the Boston Redevelopment Authority (BRA) in 1968, color becomes political. Between the late 1950s and early 1970s, the BRA made hundreds of these [urban renewal](#) maps for various redevelopment projects in Boston. These projects were often fraught, as they tended to target lower-income and nonwhite

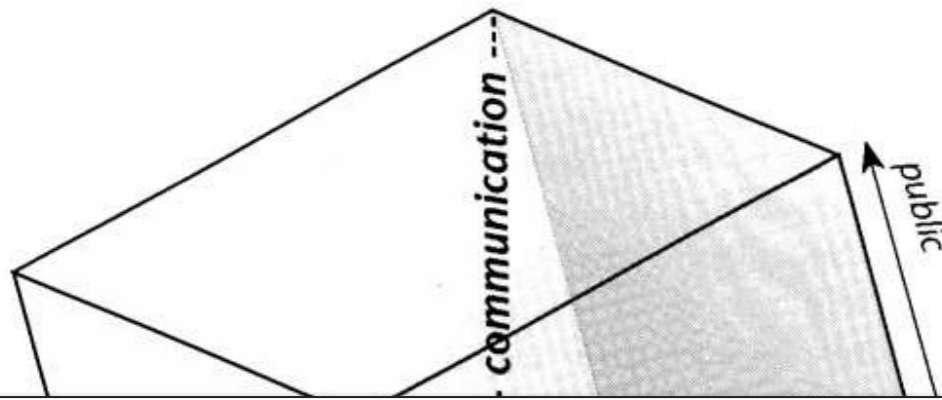
the map communication model



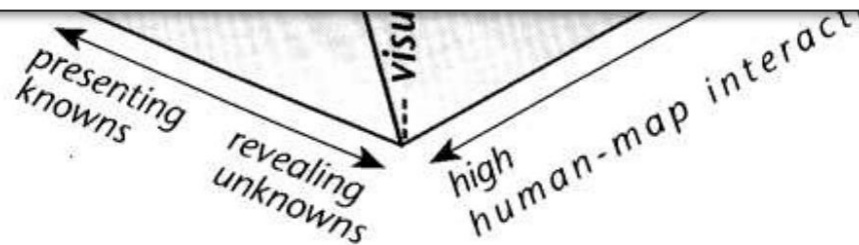


**the “cartography
cube”??**





The differences between visualization and traditional cartography can be captured using the concept of 'cartography cubed' (C^3) (MacEachren and Fraser Taylor, 1994). Cartography cubed is a method of understanding different kinds of uses of maps. The 'cube' contains three dimensions: private–public, high interactivity–low interactivity and, revealing knowns–exploring unknowns (see Figure 1). Traditional cartography has emphasized public use, low interactivity and revealing knowns, while visualization emphasizes private use, high interactivity and exploring unknowns.



**but maps *do*
things in the
world, too**

Virginia Purchas M^o 2. v. 1. p. 1. Smith M^o 2.



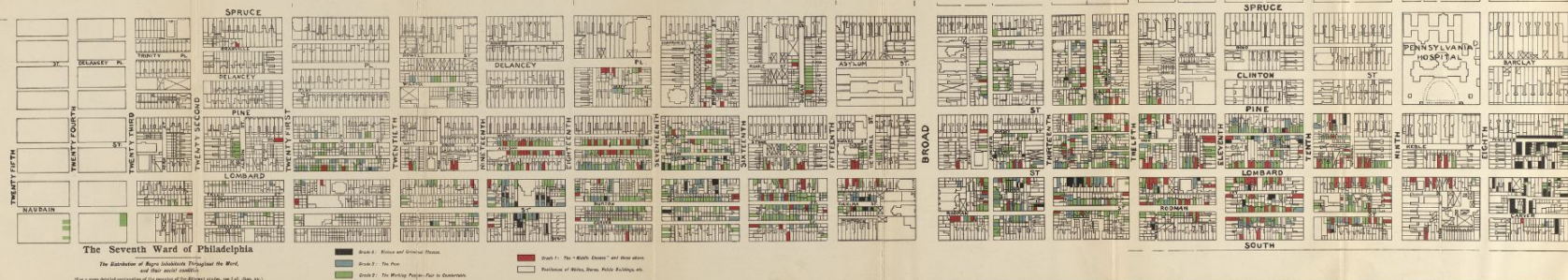
G3820 1606 .555 1866 39999 06668 0728

Scale, 17.1 square miles to 1.46 miles

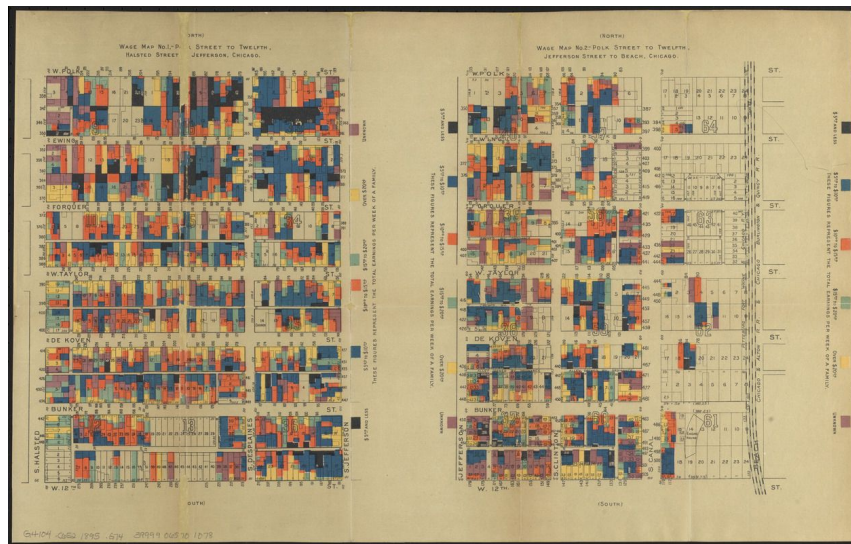
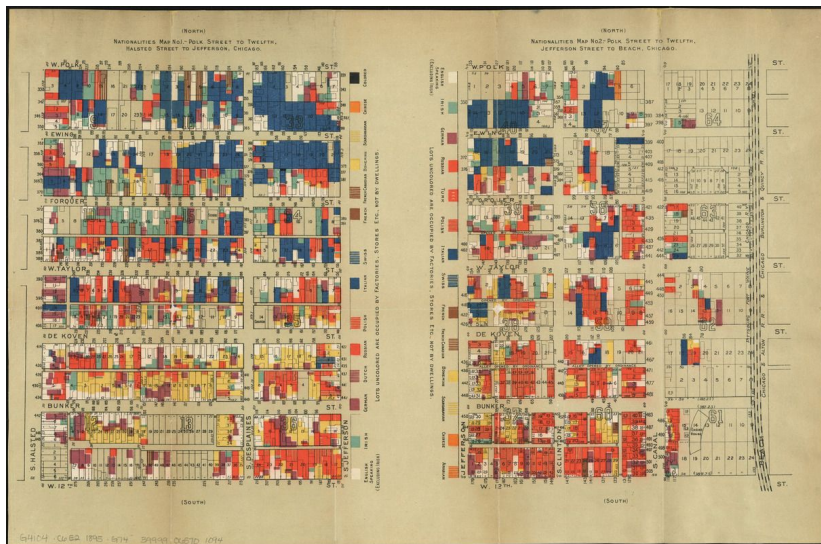
Map 1606-1608

Printed Dec. 18, 1911

15.8



62824-55-1 1917-18 30000 10000 10000





Kreide u. Eozän

Gondwana

Posttriass Hebungen

Silur, Devon u. Karbon

spät-eozoisch u. früh-paläozoisch

Gondwaniden u. Kap-Faltung

Granit

Grenze d. Mesosaurus

Andine Faltung

Brasiliden u. Post-Nama-Faltung



Illustrative site plan: Government Center urban renewal area, Massachusetts R-35

Title	Illustrative site plan
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[View in Collection](#) 

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MOVEMENTS OF A SAMPLE OF HOUSEHOLDS DISPLACED BY URBAN RENEWAL IN THE TRUMBULL COMMUNITY

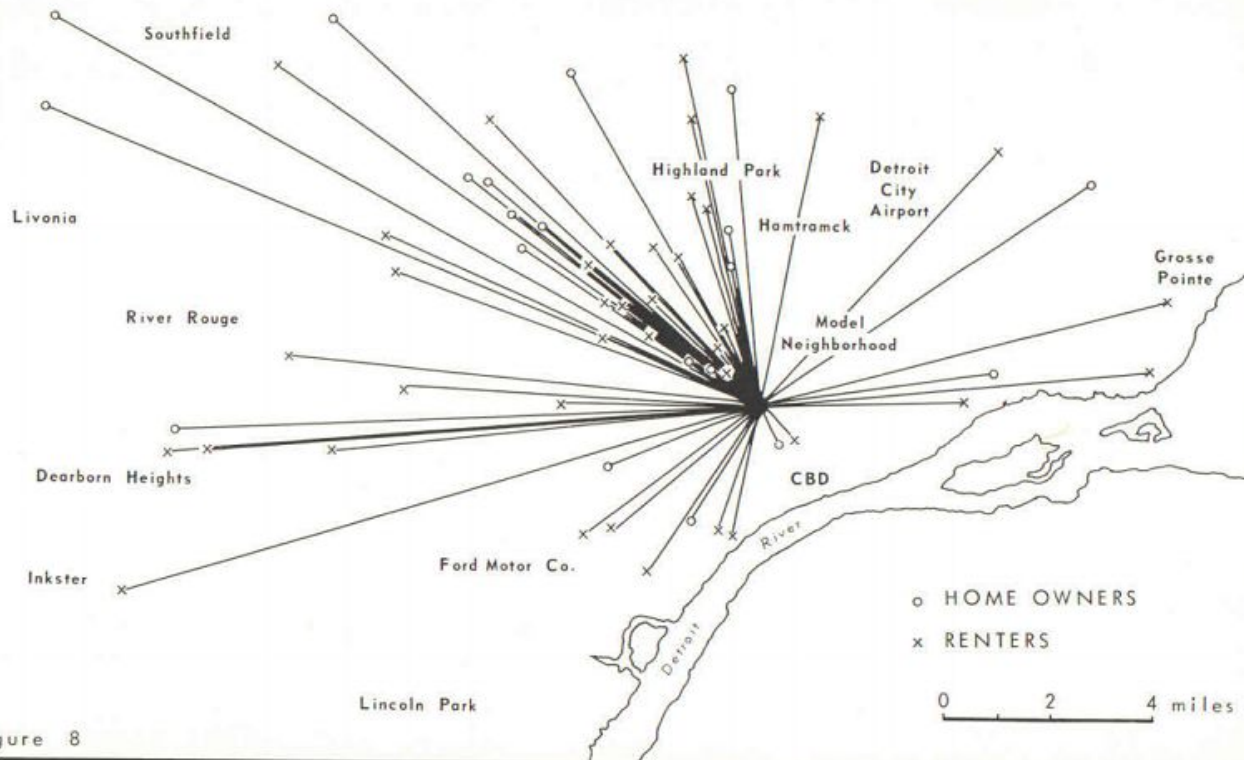


Figure 8

The map shows the Shenandoah River flowing through the region, with several tributaries like the Potomac River and the North Branch of the Shenandoah River. Key locations marked include Agitation, Letchworth, and Tazewell. The map also shows the Tazewell County line and the Shenandoah National Park boundary. A legend in the top right corner identifies symbols for various features: a red line for the Shenandoah River, a blue line for the Potomac River, a green line for the North Branch of the Shenandoah River, a yellow line for the Tazewell County line, a brown line for the Shenandoah National Park boundary, and a black line for the Shenandoah Valley Turnpike. The map also includes a scale bar and a north arrow.



Cartographical Theoretical Frameworks	Epistemological Basis	Timeframe	Key Thinkers
Map logic	Historical empirical analysis of cartographic practice	Late 1800s-1930s	Emil von Sydow Karl Peuckert Max Eckert
Functional	Behaviorist/positivist	1952-late 1960s	Arthur Robinson
Communication	Behaviorist/positivist	Late 1960s-late 1970s	Christopher Board Anton Kolacny Jacques Bertin Joel Morrison
Critique of communication	Cognitive/critical realist	Mid-1970s-early 1990s	Leonard Guelke Barbara Petchenik Mark Monmonier
Representation	Cognitive-semiotic/critical realist	Early 1990s-today	Alan MacEachren
Critical	Deconstruction/post-structuralist	Late 1980s-today	Brian Harley Jeremy Crampton
Post-representation	Phenomenological	Early 2000s-today	Rob Kitchin Martin Dodge