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Studying Geography:

Introduction to Mapping

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Geographers' Tools

TOPICS in “INTRODUCTION TO MAPPING”

- Cartography
- Location Systems
- Maps and their Parts
- Geographic Information Technology
 - Remotely Sensed Information
 - Automated Cartography (mapping by software)
 - Geographic Information Systems (GIS)

EXAM 1 follows this section

Geographers' Needs

When studying the earth we need to be able to do three things:

1. **Collect data** (using specialized tools)
2. **Locate data that has been collected**
(using a grid spread over the Earth's surface)
3. **Portray data spatially** (using cartographic techniques to create maps)

The Map

The map is our special tool because it:

- 1.** Gives a wealth of **information** at a glance.
- 2.** Shows **relationships** between locations.
- 3.** Can be used to **influence** people by the visual components included in the map.

Cartographic Terms

❖ Map:

A view of the earth or a portion of its skin drawn to scale (proportion) on a flat surface.

❖ Cartography:

The art and science of map making.

❖ Atlas:

A collection of maps.

❖ Globe:

Spherical-shaped map or model of the earth.

Cartographic Terms

❖ Thematic map:

A cartographic representation of a particular subject; it is a special-purpose map.

❖ Cartogram:

A map that uses data other than land surface to portray the size of an area.

❖ Mental map:

A map drawn from memory representing a person's perception of an area (size, content and proximity of component parts).

Cartographic Terms

❖ Cartographer:

Mapmaker; portrayer of information.

Selects the information to be shown and
Decides how it will be portrayed on the map.

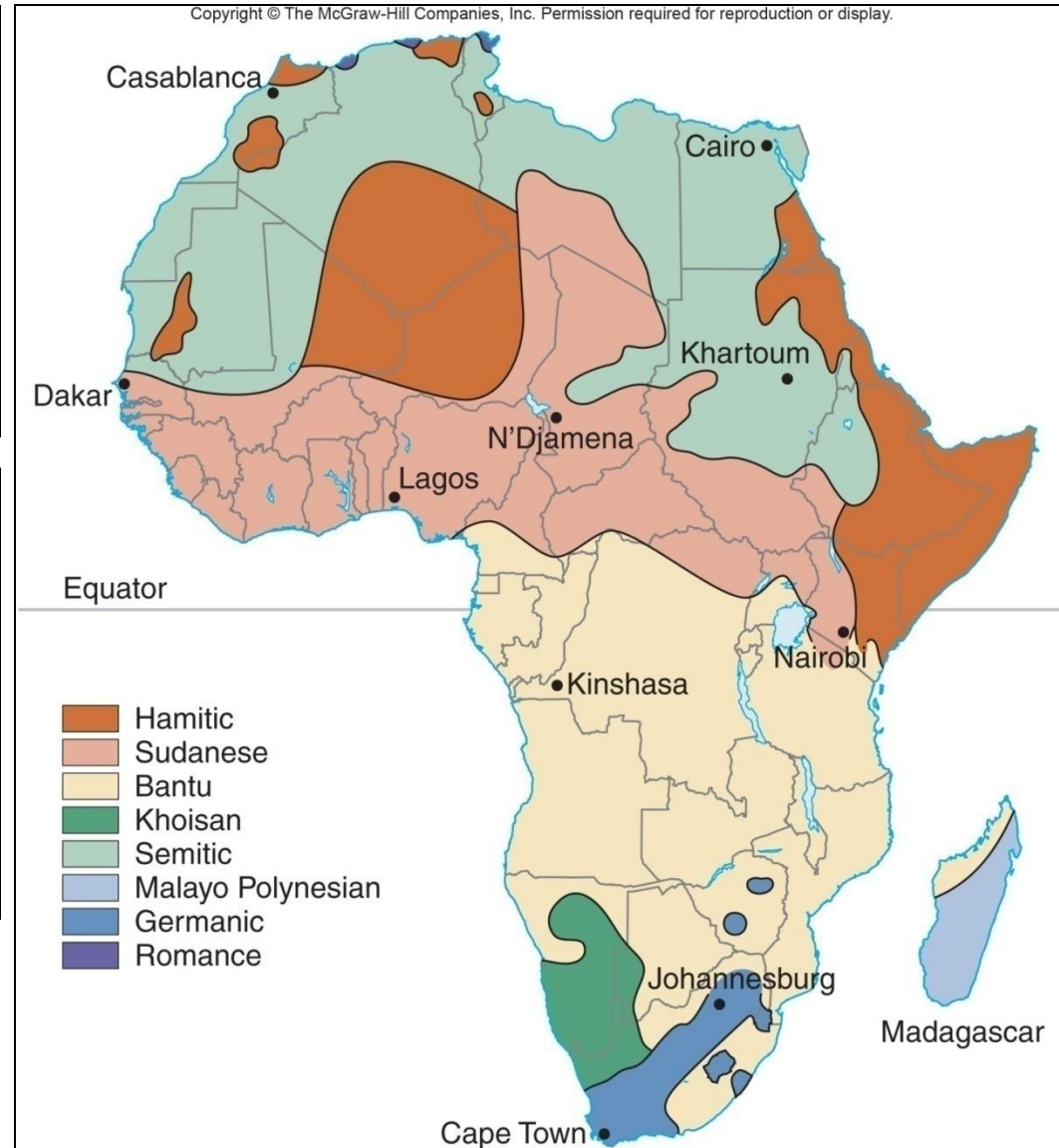
❖ Reader:

YOU, the interpreter of the information.

- *Therefore, you must be aware of the options a mapmaker has when creating a map.*

Thematic or Special- Purpose Map

A thematic map focuses on one subject or topic. Contains data or information that is relevant to the theme and omits other geographic material.



Cartogram

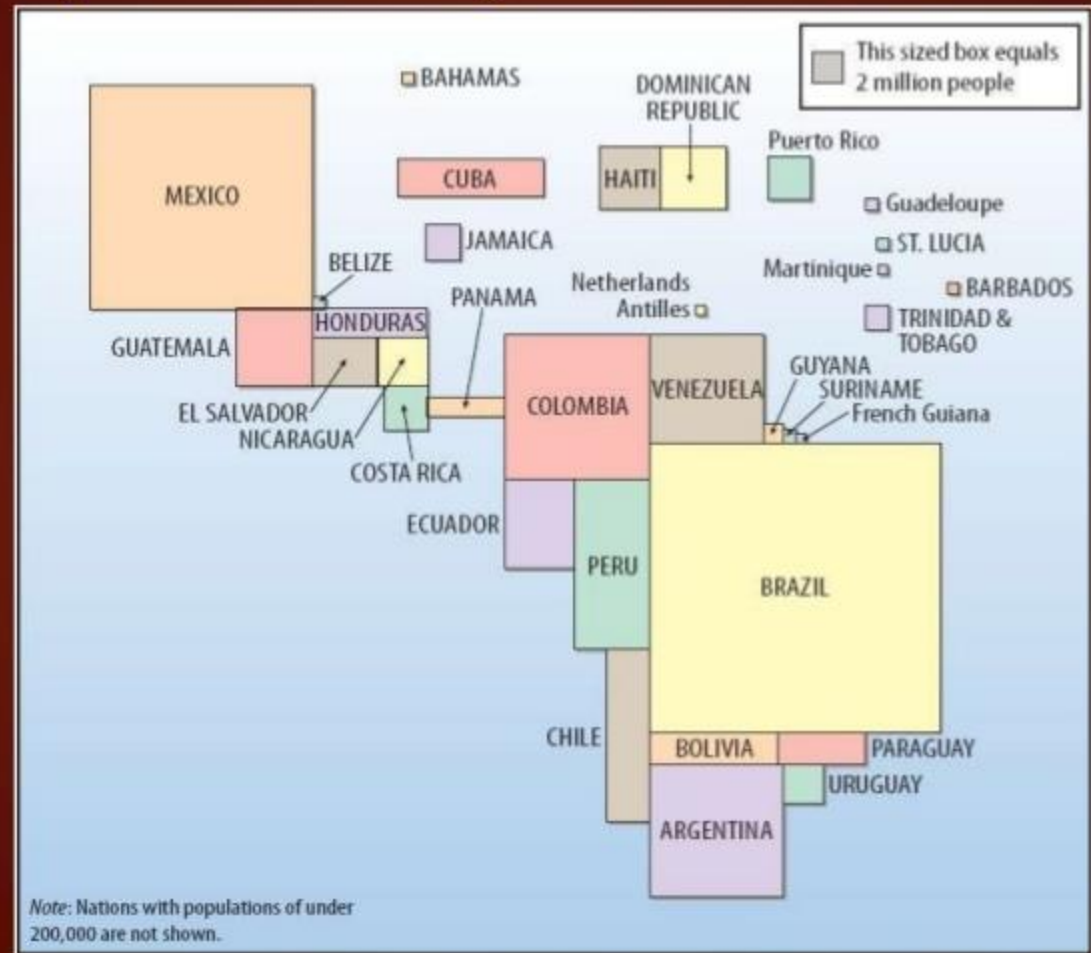
A **cartogram** is a map that uses data other than land surface to portray an area's size.

It **does not** represent true size or true shape.



Compare
Ecuador with Peru
and
Nicaragua with
Puerto Rico
on both maps.

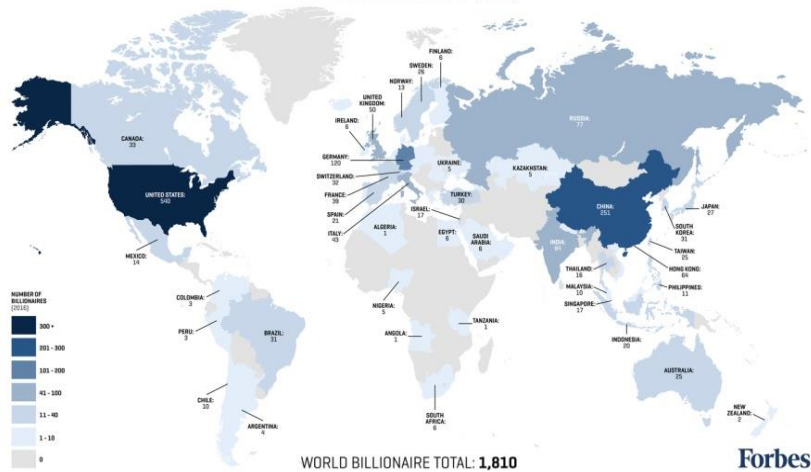
Population Cartogram of Latin America



Countries are drawn to size according to their population (above), **NOT** land area (left).

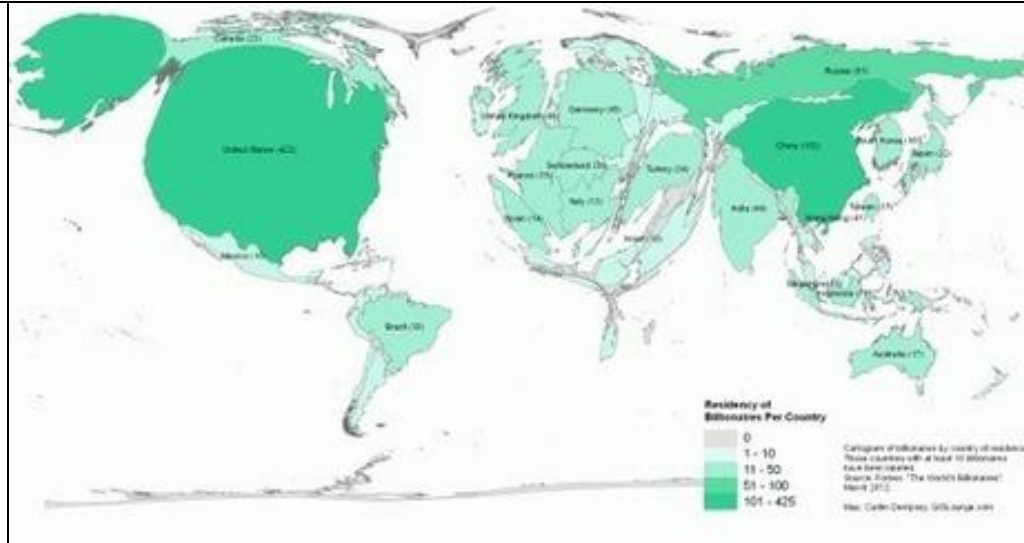
Mapping Billionaires

THE WORLD'S BILLIONAIRES
BY NUMBER AND COUNTRY (2016)



Standard Thematic Map:

Uses color intensity to show headcount within a country's land area and shape.



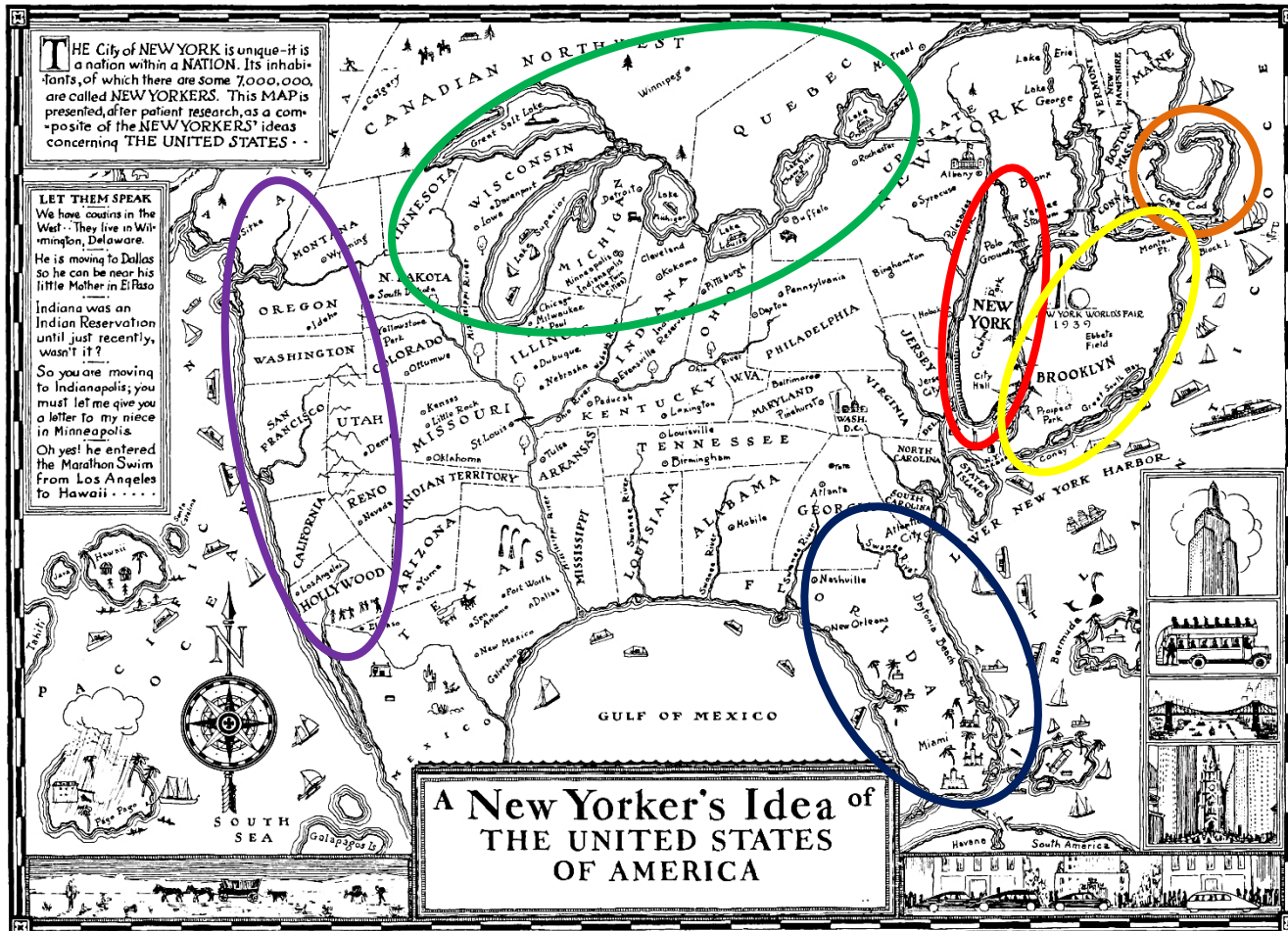
Cartogram:

The size of countries are drawn according to the number of billionaires, not land area.

Mental Map

- ❖ A mental map is an illustration of a person's perception of an area. It is drawn from memory.
- Distance, size and proximity are influenced by a person's **preferences** and **familiarity** with the area portrayed.

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Note the size and spacing of:

- Manhattan
 - Long Island
 - Cape Cod
 - Florida
 - Great Lakes area
 - West Coast area
- Compare to US map.



Map Design

- ❖ The map reader must be aware of the map-maker!

WHY?

- Because map-makers use cartographic generalization to create the end product.

- ✓ The **mapmaker selects** the information and subjects to be shown.
 - So what was omitted?
 - How is the information being portrayed?
- ✓ The map be influenced or limited by a number of **stylistic** factors **chosen by the mapmaker**.

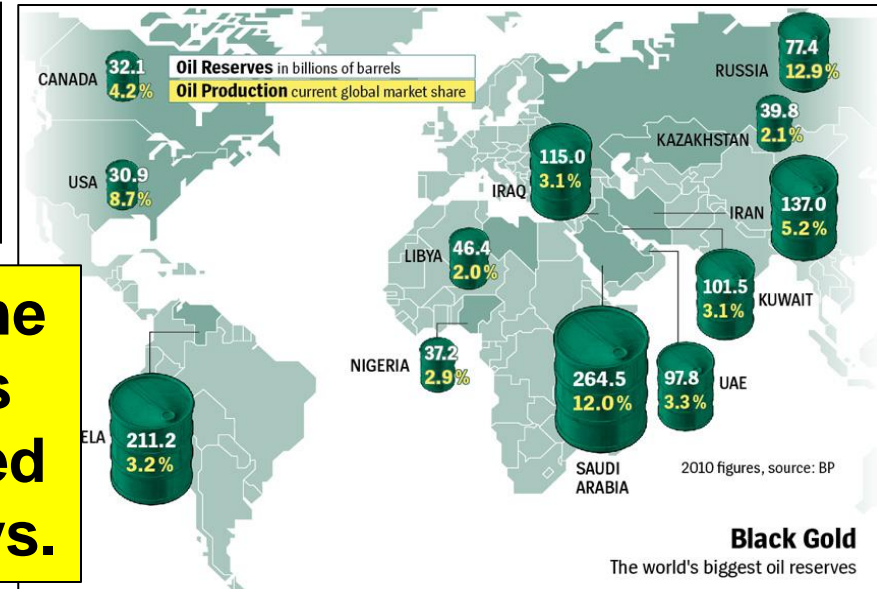
Oil Reserves

Proven oil reserves

Courtesy of BP



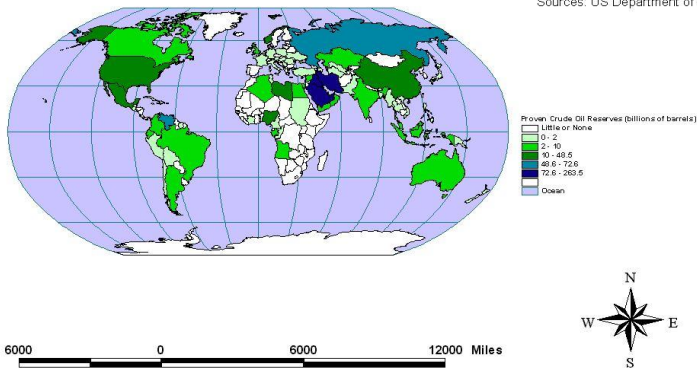
The same topic is portrayed four ways.



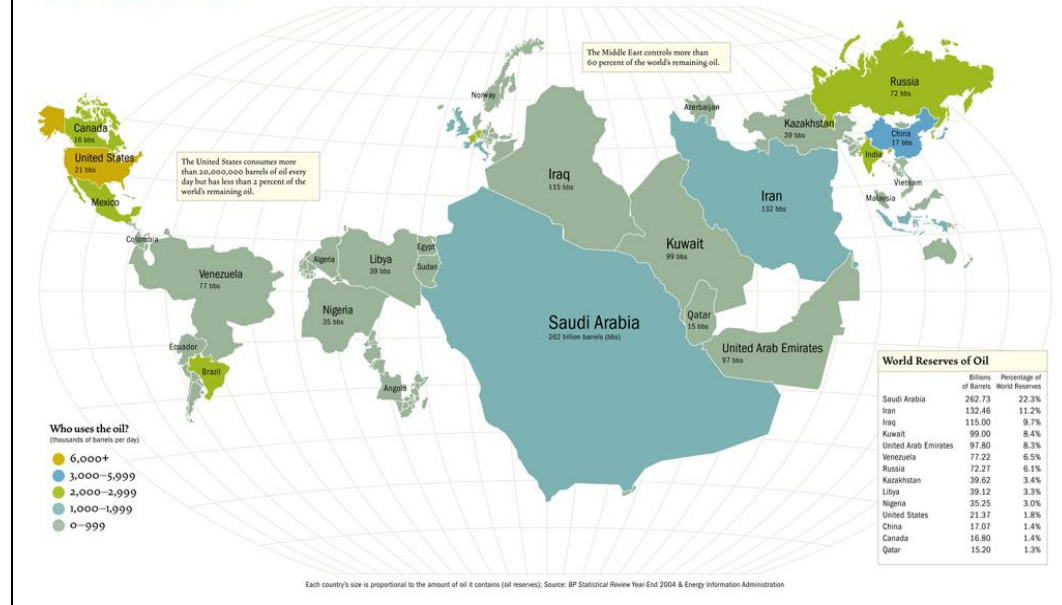
Black Gold
The world's biggest oil reserves

Proven Crude Oil Reserves (Billions of Barrels)

By Mary Brooks and Kabir Kumar
Sources: US Department of Energy



Who has the oil?



Cartographic Variables

1. **Scale**. The ability to show detail.
2. **Technology and Skill**. The ability to present detail.
3. **Data**. How accurate and reliable is it?
4. **Purpose**. What is the theme, goal or end-result of drawing this map?
5. **Psychology**. Use of leading colors, patterns, symbols and categories.
 - Are they **eye-catching** or eye-avoiding?

Cartographic Generalization

- ❖ **Simplification:** omitting details (no map shows everything, but what is omitted and why?)
- ❖ **Classification:** grouping; categorizing
- ❖ **Symbolization:** use of shapes, colors, patterns to represent information
- ❖ **Induction:** portrayal of generalized information between points of reliable and accurate information.

Cartographic Authorship

❖ **Compilation:**

Who is putting the data together?

❖ **Publishing:**

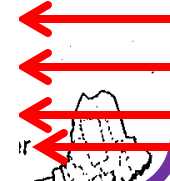
Who is responsible for getting it out to the public?

Cartographic Grouping

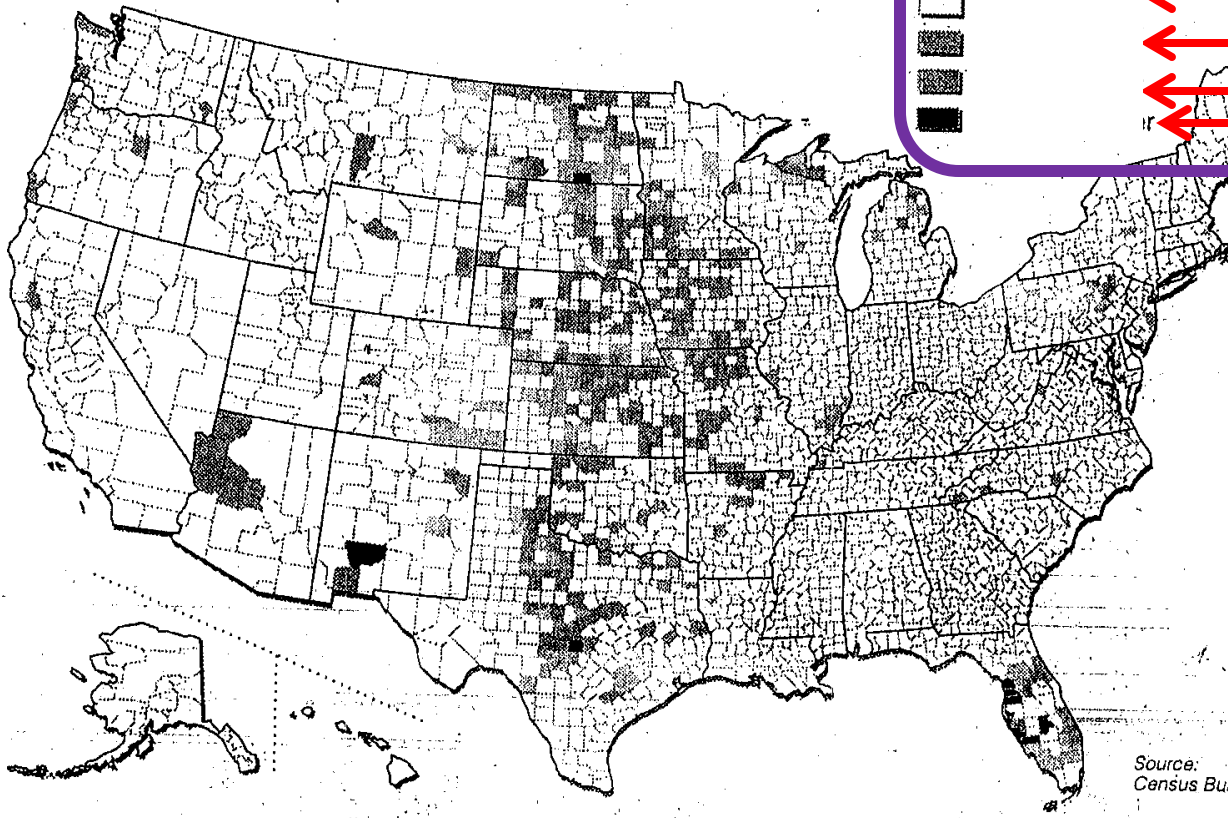
Staying Put on the Plains

While Sun Belt states like Arizona and Florida have large proportions of old people, much of the Midwest has high percentages of elderly as well, as young people move away from rural areas. In many counties, elderly now make up one-fifth to one-quarter of the population.

KEY
**Percentage of the
population age 65 or older**
By county:



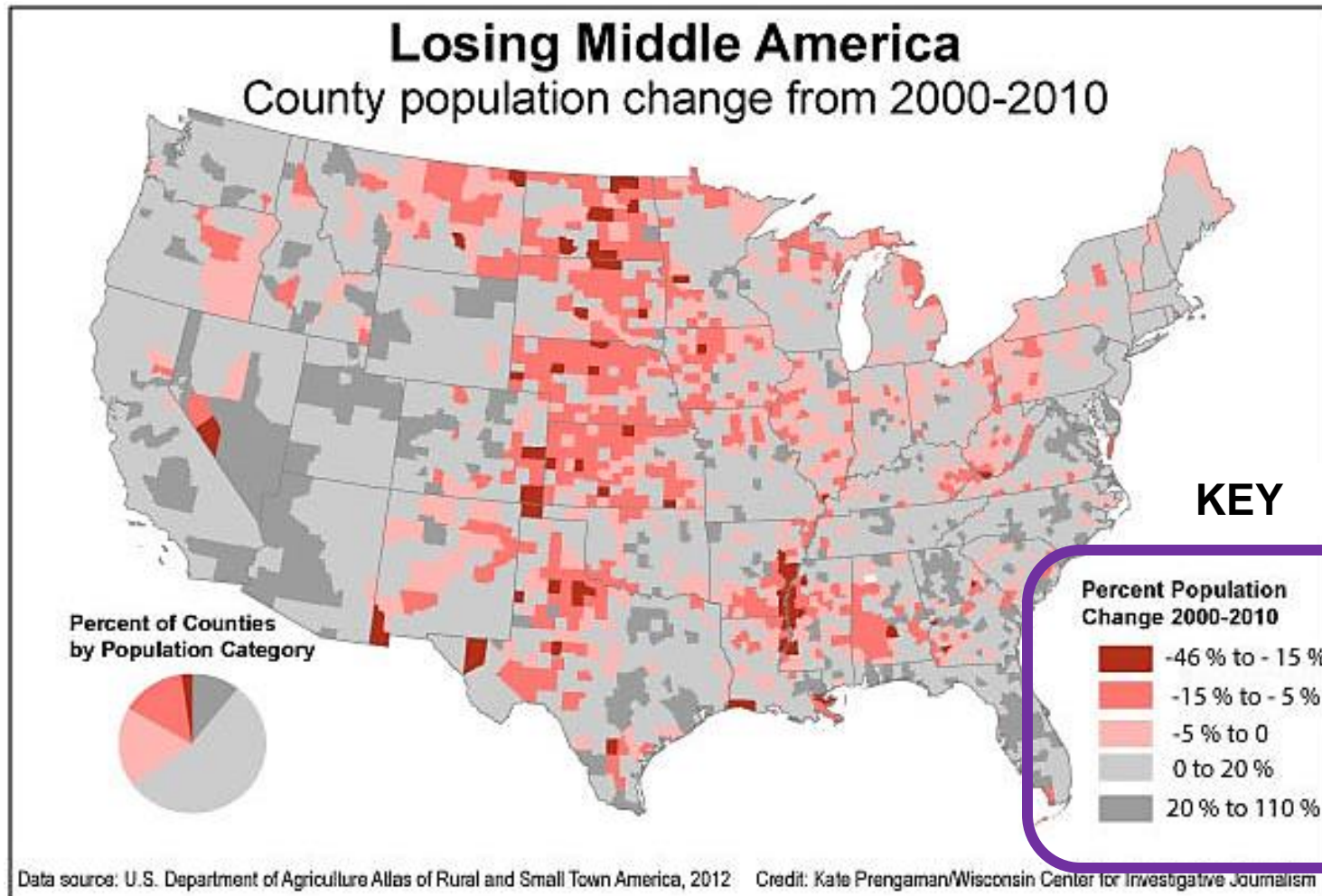
Seeing 4
shades of
gray, what
do you
assume?



Source:
Census Bureau.

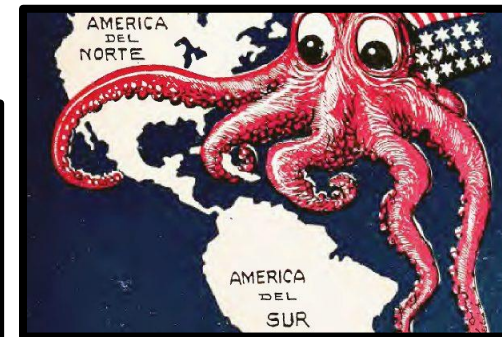
The New York Times

Cartographic Grouping



Cartographic Symbolization

Use of the octopus symbol on political maps



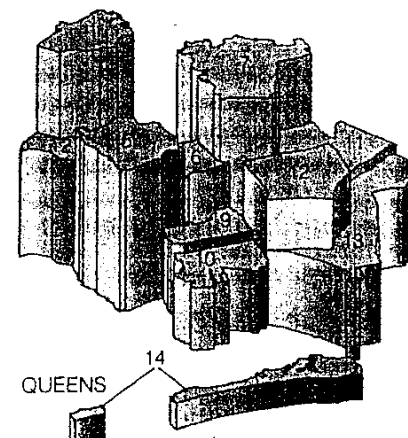
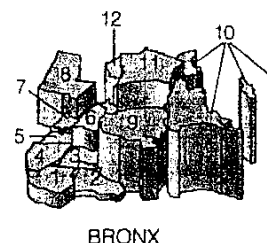
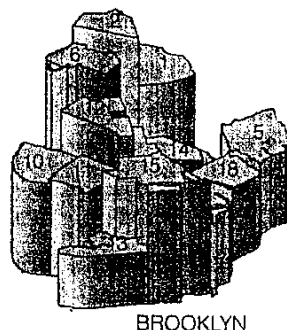
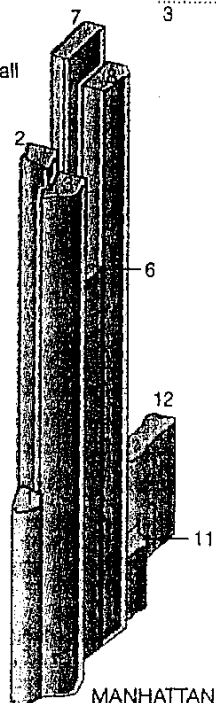
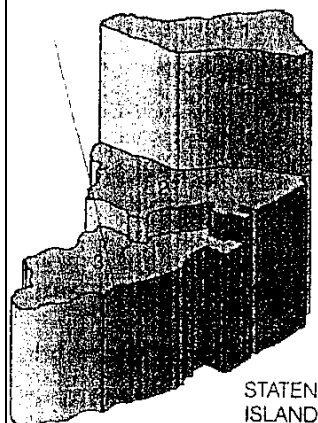
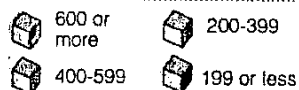
<http://atlanticsentinel.com/2017/08/the-octopus-in-political-cartoons/>

Cartographic Symbolization: Use of 3-D Shapes

Sounding Off

Total noise complaints from each community board to the New York City Department of Environmental Protection in the fiscal year that ended July 1. Not all community board districts can be seen.

NUMBER OF COMPLAINTS



Staten Island

1	357
2	195
3	161

Manhattan

1	263
2	713
3	684
4	602
5	639
6	517
7	791
8	761
9	103
10	67
11	84
12	150

Brooklyn

1	167
2	216
3	53
4	26
5	98
6	194
7	84
8	35
9	56
10	126
11	131
12	181
13	69
14	130
15	152
16	13
17	50
18	90

Bronx

1	19
2	8
3	16
4	20
5	14
6	43
7	21
8	48
9	70
10	89
11	107
12	59

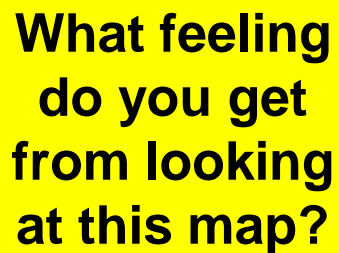
Queens

1	265
2	145
3	92
4	95
5	194
6	157
7	215
8	89
9	98
10	85
11	120
12	177
13	106
14	34

Source: New York City Department of Environmental Protection

This type of map uses volume to represent numbers of complaints. However, the 3-D symbols tend to block each other. In some locations they cannot be seen.

Use of symbolization and arrows.



Lines on this map connect points of equal value.

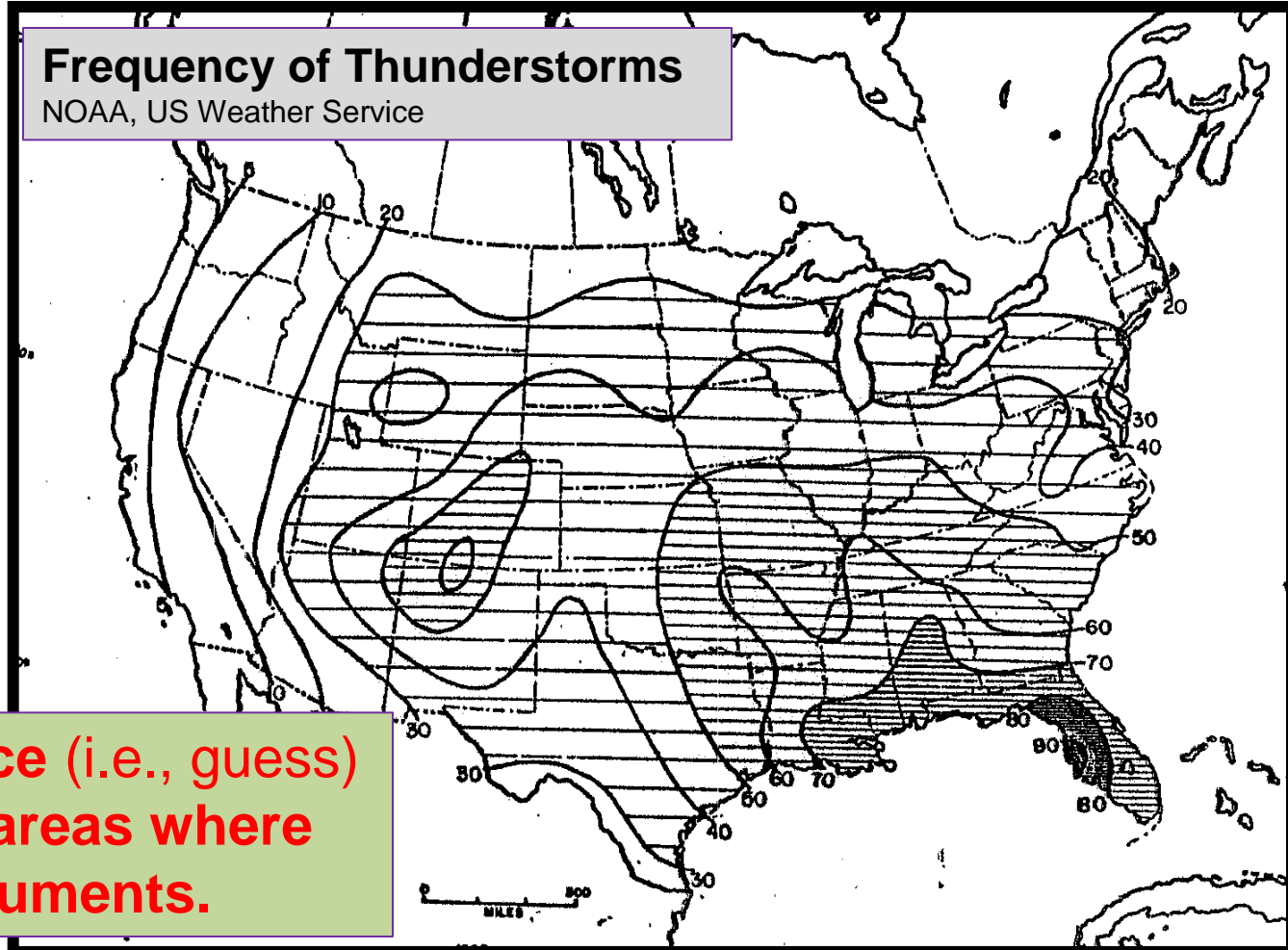
Thunderstorm data comes from weather recording stations which are scattered around the country.

Accurate data is only at the location of the weather station.

Cartographic Induction

Frequency of Thunderstorms

NOAA, US Weather Service



We need to deduce (i.e., guess) the frequency in areas where there are no instruments.

Authorship

Advertising: Selling Airline Seats

► *Helsinki: Gateway To the World*

A unique position at the top of the world – and quick and easy Finnair connections – makes Helsinki an ideal gateway for travelers to many key destinations:

SCANDINAVIA

Copenhagen
Gothenburg
Oslo
Stockholm

RUSSIA

Moscow
St. Petersburg

BALTICS

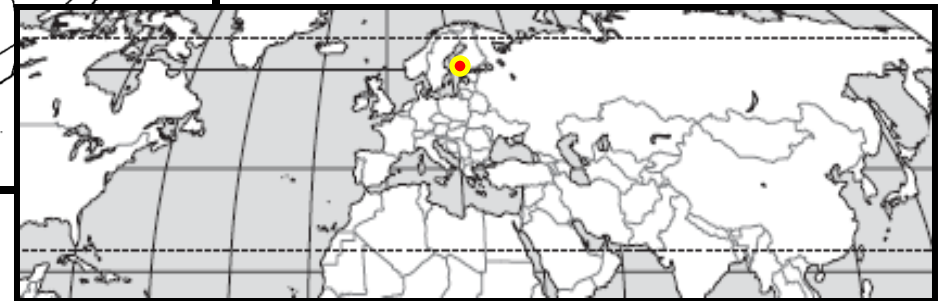
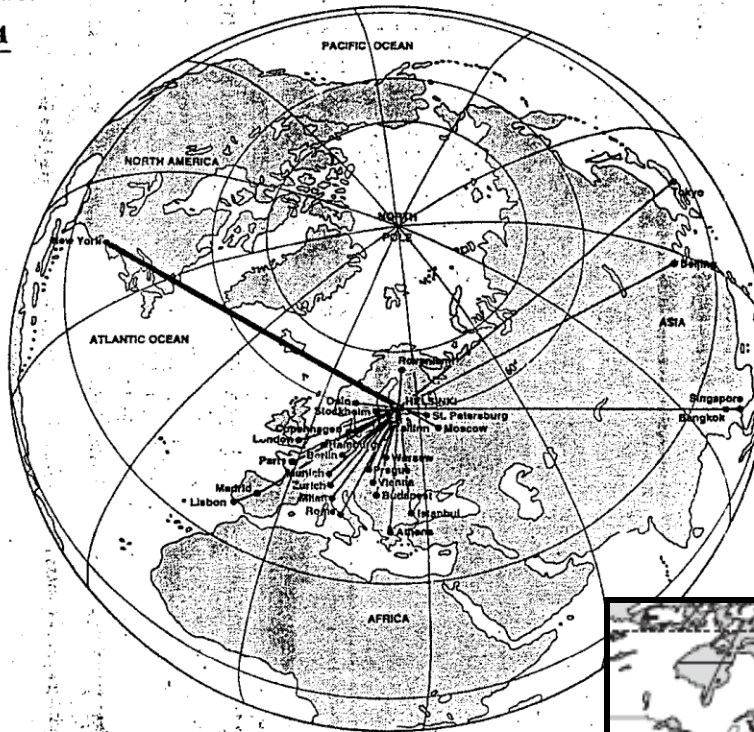
Tallinn

EUROPE

Athens
Berlin
Budapest
Frankfurt
Istanbul
Munich
Prague
Warsaw

FAR EAST

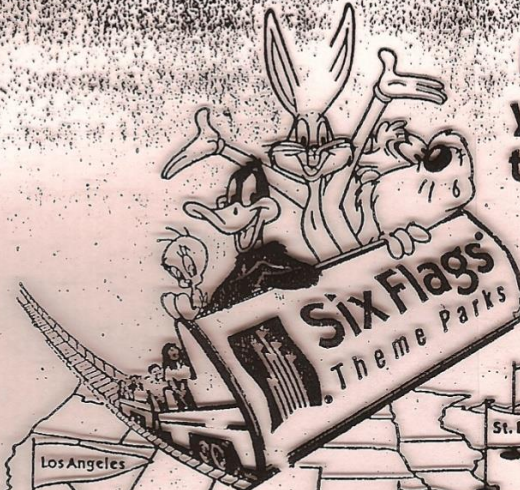
Bangkok
Beijing
Singapore
Tokyo




Authorship

Advertising: Selling Theme Parks

A World of Fun, Not a World Away.



No matter where you live or travel, there's a Six Flags near you!



the world's #2 theme park company...and gaining!

Six Flags Over Mid-America ST. LOUIS, MO (314) 938-5300	Six Flags AstroWorld HOUSTON, TX (713) 799-8404	Six Flags Great Adventure JACKSON, NJ (908) 928-2000	Six Fl... Magic Mountain VALENCIA, CA (805) 255-4100	Six Flags Great America GURNEE, IL (708) 249-1776
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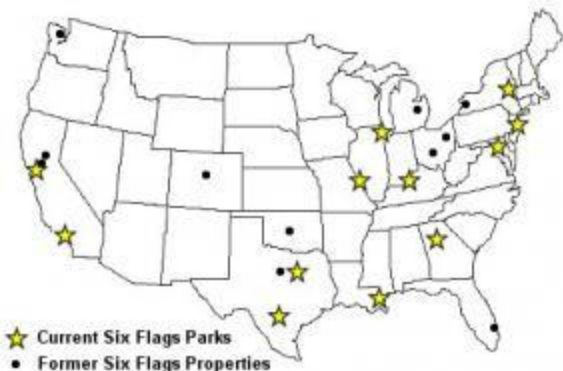
©1994 Six Flags Theme Parks, Inc. A Time Warner Entertainment Company.
KEY TUNES, characters, names, and all related indicia are trademarks of Warner Bros. ©1994.

← REALLY??

CLICK YOUR PARK!

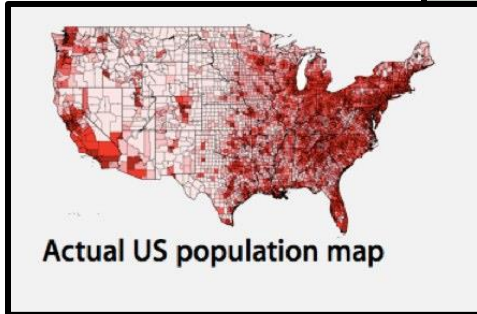


Six Flags Magic Mountain
and Hurricane Harbor Water Park

Using Maps to Compare Service:

Classic 2009 Verizon vs AT&T Dualing Ads



In 2009 AT&T and Verizon attacked each other in warring ads and in court. AT&T said map ads were misleading because it had nationwide voice and “somewhat slower” wireless service.

<https://i-cdn.phonearena.com/images/articles/294951-thumb/verizon-vs-att-vs-tmobile-vs-sprint-coverage-maps.gif>

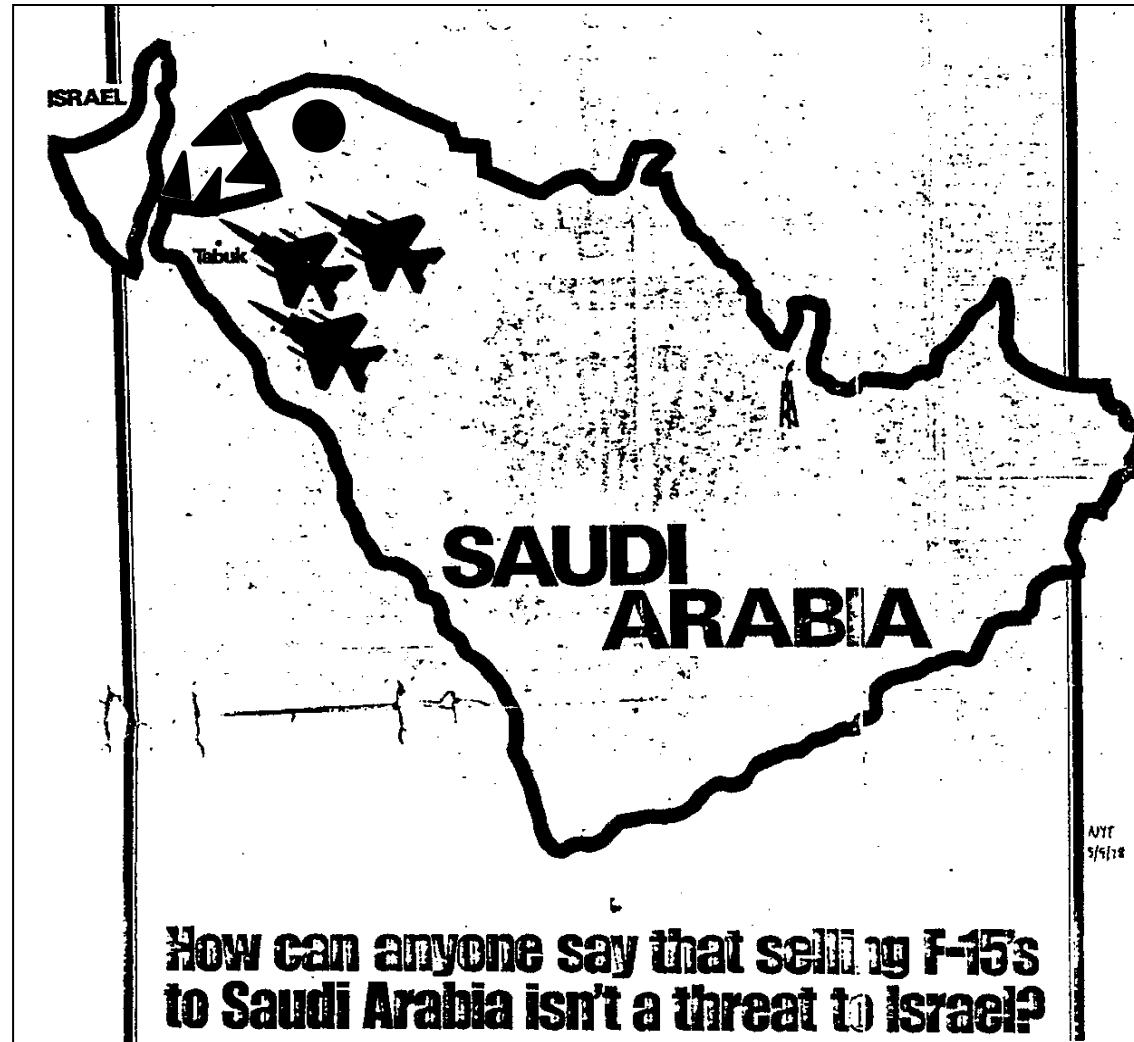
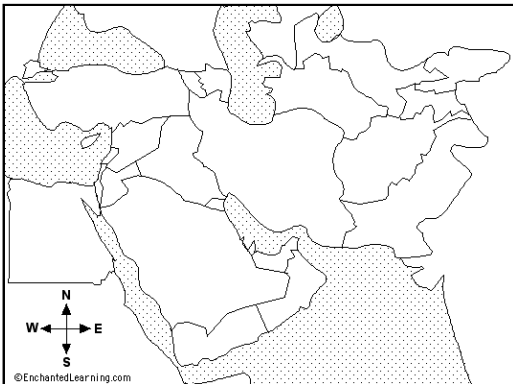
AUTHORSHIP

Point-of-View

Map

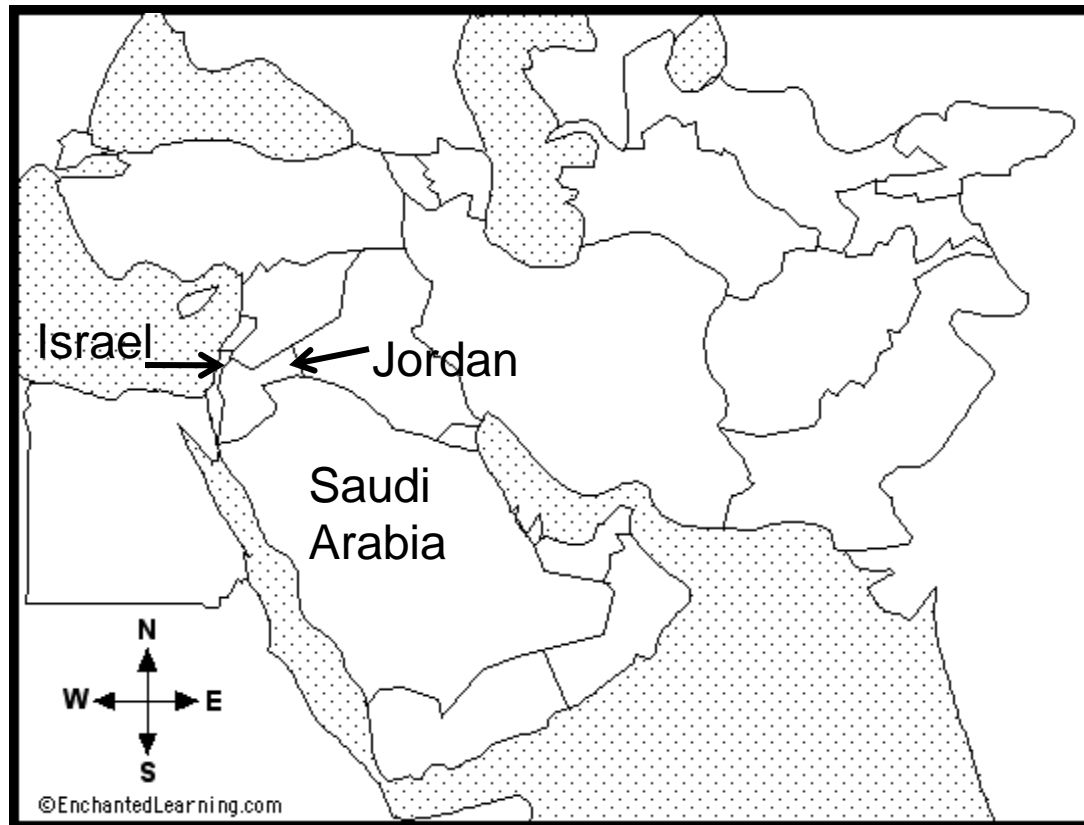
(propaganda)

Find at least six
subliminal symbols
on this map >>>>



Advertisement placed in the *NY Times* by the B'nai B'rith on 5/9/78 in an attempt to influence a US Congressional vote on selling fighter planes to Saudi Arabia.

Outline Map of the Middle East



N E X T

Location Systems