ORGANIZATION OF MAP ELEMENTS
Map Elements

How many of them can you name?
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- date
- logo
- mapped (unmapped) area
- borders - neatlines
- graticules - grids
- map symbols
- labels
- direction (north arrow)
Map Elements

The elements used in your map, and their location and style, will vary depending upon the audience and message.
Map Elements

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Map Elements

Title

• Explain Purpose of the Map … the What, Where, When, etc.

• Simplify … Be Concise.

• Draw Attention to your Title
  – Explore your Font Library
  – Be Creative!
Map Elements

Title - Simplified

A Map of the Population Growth in the United States of America between 1980 and 1990 Displayed by County

with

1980-90 United States Population Growth by County

and

Colonies Controlled or Ruled by Spain on the Eve of the Spanish-American War

with

The Spanish Empire in 1898
Map Elements

Title – Fonts

Think “graphically” when choosing the font style for your title. It should complement the map … Old map, old font … Fun map, fun font … Technical map, straight-laced, no nonsense font.
Map Elements

Title – Use Subtitles to Further Explain Map Data

Mapping Paid Maternity Leave:
How many weeks do other nations provide compared to the US?

Source: nationmaster.com
Map Elements

Title – Be Creative … Try Cool Fonts

Quill Skill
THE ART OF SWORDSMANSHIP
Map Elements

*Title – Be Creative … Explore Cool Fonts*
Map Elements

Title – Be Creative … Explore Cool Fonts
Map Elements

*Title – Design to **GRAB ATTENTION**

MODERN WARFARE 2 CALL OF DUTY 4 MODERN WARFARE

MAPS IN CALL OF DUTY MW 3
Map Elements

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Legend

“On maps depicting the natural environment, the extent to which a legend is needed is an indication of the degree of failure of the cartographer.” (Shelton)
Map of Wolf River Unit of critical habitat for the fluted kidneyshell

This map is provided for illustrative purposes of critical habitat only. For precise legal definition of critical habitat, please refer to the narrative unit descriptions.
Map Elements - Legend

- Main Traffic Streets
- U.S. Highways
- State Highways
- County Highways
- County Boundaries
- Municipal Boundaries
- Public Schools
- Catholic Schools
- House Numbers
Map Elements - Legend

**MAP KEY**

- Federal Interstate
- Federal Highway
- State/Provincial Highway
- County Primary
- Principal Local Road
- Other Roads/Trails
- Railroad
- ORV Trail
- Non-Motorized Trail
- Snowmobile Trail
- Interchange
- Settlement/Village
- County Boundary
- Township Boundary
- Latitude/Longitude Line
- Public/Open Land
- Other Land
- Barrier-Free
- Battlefield
- Historic Fort

- Swimming Area
- Fishing Access
- Canoe Access
- Boat Ramp
- Marina/Harbor
- Lighthouse
- Airstrip
- Airport
- Airbase
- Bus Depot
- Rail Station
- Ferry Dock
- Hospital
- Shopping Area
- Tourist Info
- Trailhead-Snowmobile
- Trailhead-ORV
- Trailhead-Hike
- Trailhead-X-C Ski
- Trailhead-Bike
- Trailhead-Horse
- Downhill Ski Hill

- Local Park
- National/State Park
- Public Campground
- Nature Preserve
- Underwater Preserve
- Shipwreck
- Picnic Area/Rest Stop
- Scenic Overlook
- Gov’t. Office
- County Seat
- Ranger/Police
- Museum/Library
- College/School
- Church
- Cemetery
- Mine/Quarry
- Playing Field/Stadium
- Indoor Arena
- Golf Course
- Casino
- Waterfall
- Point of Interest
Map Elements - Legend

Legend to Map Symbols

- **Country**
  - Feature: Town
  - Symbol: •
  - Legend: town/village
  - Symbol: •
  - Legend: cities
  - Symbol: ✔
  - Legend: tower/fortress
  - Symbol: 🏰
  - Legend: castle
  - Symbol: 🏛️
  - Legend: country capital
  - Symbol: 🌞
  - Legend: windmill
  - Symbol: 🌲
  - Legend: forest
  - Symbol: 🏞️
  - Legend: lake
  - Symbol: 🌊
  - Legend: reef
  - Symbol: 🏖️
  - Legend: river
  - Symbol: 🏗️
  - Legend: canyon
Map Elements

• title (subtitle)
• legend
• **Scale**
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• credit note
• date
• logo

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• map symbols
• labels
• direction (north arrow)
Map Elements

Scale

**Scale**: the relationship between the “Real World” and the map.

Verbal, numeric, and graphic means of representing scale

1 inch equals 1 mile      1:63,500

Verbal, Representative Fraction, Bar
Map Elements

Scale

[Bar Scales]
Map Elements

How do Scale Bars fit into Map Design?
Map Elements

Area Scales
# Map Elements

## Map Scale – Sweet Spots

<table>
<thead>
<tr>
<th>Map Scale</th>
<th>1/40 inch represents</th>
<th>1 inch represents</th>
<th>1 centimeter represents</th>
<th>1 mile is represented by</th>
<th>1 kilometer is represented by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:2,000</td>
<td>4.200 ft</td>
<td>56.000 yd</td>
<td>20.000 m</td>
<td>31.680 in</td>
<td>50.00 cm</td>
</tr>
<tr>
<td>1:5,000</td>
<td>10.425 ft</td>
<td>139.000 yd</td>
<td>50.000 m</td>
<td>12.670 in</td>
<td>20.00 cm</td>
</tr>
<tr>
<td>1:10,000</td>
<td>6.952 yd</td>
<td>0.158 mi</td>
<td>0.100 km</td>
<td>6.340 in</td>
<td>10.00 cm</td>
</tr>
<tr>
<td>1:15,840</td>
<td>11.000 yd</td>
<td>0.250 mi</td>
<td>0.156 km</td>
<td>4.000 in</td>
<td>6.25 cm</td>
</tr>
<tr>
<td>1:20,000</td>
<td>13.904 yd</td>
<td>0.316 mi</td>
<td>0.200 km</td>
<td>3.170 in</td>
<td>5.00 cm</td>
</tr>
<tr>
<td>1:24,000</td>
<td>16.676 yd</td>
<td>0.379 mi</td>
<td>0.240 km</td>
<td>2.640 in</td>
<td>4.17 cm</td>
</tr>
<tr>
<td>1:25,000</td>
<td>17.380 yd</td>
<td>0.395 mi</td>
<td>0.250 km</td>
<td>2.530 in</td>
<td>4.00 cm</td>
</tr>
<tr>
<td>1:31,680</td>
<td>22.000 yd</td>
<td>0.500 mi</td>
<td>0.317 km</td>
<td>2.000 in</td>
<td>3.16 cm</td>
</tr>
<tr>
<td>1:50,000</td>
<td>34.716 yd</td>
<td>0.789 mi</td>
<td>0.500 km</td>
<td>1.270 in</td>
<td>2.00 cm</td>
</tr>
<tr>
<td>1:62,500</td>
<td>43.384 yd</td>
<td>0.986 mi</td>
<td>0.625 km</td>
<td>1.014 in</td>
<td>1.60 cm</td>
</tr>
<tr>
<td>1:63,360</td>
<td>0.025 mi</td>
<td>1.000 mi</td>
<td>0.634 km</td>
<td>1.000 in</td>
<td>1.58 cm</td>
</tr>
<tr>
<td>1:75,000</td>
<td>0.030 mi</td>
<td>1.180 mi</td>
<td>0.750 km</td>
<td>0.845 in</td>
<td>1.33 cm</td>
</tr>
<tr>
<td>1:80,000</td>
<td>0.032 mi</td>
<td>1.260 mi</td>
<td>0.800 km</td>
<td>0.792 in</td>
<td>1.25 cm</td>
</tr>
<tr>
<td>1:100,000</td>
<td>0.040 mi</td>
<td>1.580 mi</td>
<td>1.000 km</td>
<td>0.634 in</td>
<td>1.00 cm</td>
</tr>
<tr>
<td>1:125,000</td>
<td>0.050 mi</td>
<td>1.970 mi</td>
<td>1.250 km</td>
<td>0.507 in</td>
<td>8.00 mm</td>
</tr>
<tr>
<td>1:250,000</td>
<td>0.099 mi</td>
<td>3.950 mi</td>
<td>2.500 km</td>
<td>0.253 in</td>
<td>4.00 mm</td>
</tr>
<tr>
<td>1:500,000</td>
<td>0.197 mi</td>
<td>7.890 mi</td>
<td>5.000 km</td>
<td>0.127 in</td>
<td>2.00 mm</td>
</tr>
<tr>
<td>1:1,000,000</td>
<td>0.395 mi</td>
<td>15.780 mi</td>
<td>10.000 km</td>
<td>0.063 in</td>
<td>1.00 mm</td>
</tr>
</tbody>
</table>
Map Elements

- title (subtitle)
- legend
- scale
- Inset Map
- credit note
- date
- logo
- mapped (unmapped) area
- borders - neatlines
- graticules - grids
- map symbols
- labels
- direction (north arrow)
Map Elements

Inset Map – Location
Map Elements

Inset Map – “Change”
Map Elements

Inset Map – Additional Map Data
Map Elements

Inset Map – Cool!

... intersection with a mathematically inferred spheroid/ellipsoid/geoid/datum establishes the Height (Z) from the center of the earth to any point on the earth's surface.
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- **Credit Note**
- date
- logo
- mapped (unmapped) area
- borders - neatlines
- graticules - grids
- map symbols
- labels
- direction (north arrow)
Map Elements

Credit Note

Control by USGS and NOS/NOAA

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1953. Field check 1955

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zone 2
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue
To place on the predicted North American Datum 1983
move the projection lines 15 meters north and
89 meters east as shown by the dashed corner ticks
Map Elements

Credit Note

COMPILED IN THE DIVISION OF REALTY
FROM SURVEYS BY USFWS AND USGS
UTM ZONE 18, NAD 1927, METERS

HADLEY, MASSACHUSETTS  JANUARY, 2001
REVISED: 02/07/01

COMPILED IN THE DIVISION OF REALTY,
CARTOGRAPHY AND SPATIAL DATA SERVICES
FROM SURVEYS BY USFWS AND USGS
ADDITIONAL DATA FROM THE CITY OF VIRGINIA BEACH,
THE LANDMARK DESIGN GROUP, WILEY & WILSON, INC,
JOHNSON, MIRIMAN & THOMPSON, INC, & WOOLPERT LLP
UTM ZONE 18N, NAD 1983, METERS
PHOTO DATE : MARCH 06, 1994
HADLEY, MASSACHUSETTS  DECEMBER 2000
REVISED : 03/07/2001
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- **Date**
- logo

- mapped (unmapped) area
- borders - neatlines
- graticules - grids
- map symbols
- labels
- direction (north arrow)
Map Elements

Date

Increasingly specific dates:

1995
February 1995
25 February 1995
25 February 1995 20:45:16
Map Elements

Date with filename
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- date
- Logo
- mapped (unmapped) area
- borders - neatlines
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- labels
- direction (north arrow)
Map Elements

Logo

ALWAYS ensure you use a sharp, clear, non-blurry, legible, readable, etc. logo in your maps

... Especially when they are the logos of another agency or entity.
Map Elements

Resolution Matters
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- date
- logo

- **Mapped** (unmapped) Area
- borders - neatlines
- graticules - grids
- map symbols
- labels
- direction (north arrow)
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- date
- logo

- mapped (unmapped) area

**Borders - Neatlines**

- graticules - grids
- map symbols
- labels
- direction (north arrow)
Map Elements – **Borders & Neatlines**
Map Elements – *Borders & Neatlines*

Border & Neatline integrated
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- date
- logo
- mapped (unmapped) area
- borders - neatlines
- **Graticules - Grids**
- map symbols
- labels
- direction (north arrow)
Map Elements - Graticules
Map Elements — Graticules (Latitude / Longitude)
Map Elements – *Grids for Reference*
Map Elements – Grids for PLSS
Map Elements

- title (subtitle)
- legend
- scale
- inset map
- credit note
- date
- logo

- mapped (unmapped) area
- borders - neatlines
- graticules - grids
- **Map Symbols**
  - placenames
  - feature labels
  - north arrow
Map Elements – Map Symbols
# Map Elements – *Map Symbols*

<table>
<thead>
<tr>
<th>Points</th>
<th>Lines</th>
<th>Polygons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple marker</td>
<td>Simple lines</td>
<td>Simple fill</td>
</tr>
<tr>
<td>Font marker</td>
<td>Cartographic line</td>
<td>Gradient fill</td>
</tr>
<tr>
<td>Picture marker</td>
<td>Picture line</td>
<td>Picture fill</td>
</tr>
<tr>
<td></td>
<td>Hash line</td>
<td>Line fill</td>
</tr>
<tr>
<td></td>
<td>Marker line</td>
<td>Marker fill</td>
</tr>
</tbody>
</table>
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- graticules - grids
- map symbols
- **Labels**
- direction (north arrow)
Map Elements – Labels
Map Elements

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- scale
- inset map
- credit note
- date
- logo

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- graticules - grids
- map symbols
- labels

- **Direction** (North Arrow)
Map Elements

Direction (North Arrow)
Map Elements

*Direction (North Arrow) – Rule of Thumb*

An elaborate compass rose type north arrow is appropriate for small scale maps, whereas large scale maps lend themselves to a less ornate arrow style.
**Map Elements**

*Direction (North Arrow)*

*True vs. Magnetic vs. Grid North*

**True North**: the direction to the north pole of the earth.

**Magnetic North**: the direction a compass needle will point.

**Grid North**: the direction of the grid being superimposed.
Just one last thing regarding map elements
Remember ...

There should be a defensible reason for each element placed on a map and for its composition.

All the graphic elements are there to support the mapped area ... not overtake it.

... sometimes, less is more.
Book Recommendations

How Maps Work

Representation, Visualization, and Design

Alan M. MacEachren