Designing Great Maps for Print and Image

Larry Orman and Allen Carroll
About this workshop series

#1: Print/image (also Thurs., 10:30am, 15a)

#2: Web/mobile (Weds., 1:30pm, 16b)

@AllenCarroll, @esri
@LarryOrman, @greeninfo
#designgreatmaps, #EsriUC
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About Larry and Allen

Larry Orman, founder, GreenInfo Network
• Magic marker map maker for years, pre-GIS
• 19 years NGO advocacy, 20+ in geotech world
• Maps are a powerful lens for seeing the world

Allen Carroll, Esri Online Content Mgr.
• Family cartographer and navigator since age 5
• 27 years at National Geographic, 12 of them as Chief Cartographer
• Believer in the power of maps to inform and inspire
Why we’re here
We’re inundated with data but starved for meaning
This? ... or this?
What we’ll cover in this session

1. Why good map design?
2. Visual perception
3. Communication and map design
4. Design process, before/after
5. Common pitfalls
6. What to remember
Caveats

Focus = GIS-based display maps

NOT:

• Illustration/publication
• Web/interactive (Allen’s session)
• Cartographic technique
Not HOW to do,

But how to **know** what to do
Good Map Design – why we’re here
Who are we?
What do we all want?
But . . .
Good Design Matters

→ Maps ARE communication – must persuade, inform

→ Maps can take big efforts ($, time)

→ Maps are hard for people to understand

→ Professional credibility from product quality

→ Competition for attention – display maps losing out!
Best maps ever
A quiz for you
Over the past five years, Sierra Watch has created remarkable conservation outcomes for a valley that was once planned for massive development.

- **Sawtooth Protoboard Ranch**
- **French Connection Way**
- **French Connection Target**
- **Barring Primitive Land**
- **Develops Profiteers**
How Visual Perception Works
How your brain perceives

PRE-ATTENTION <1 second
ATTENTION 1-3 seconds
COGNITION 3-20 seconds +
<1 second
Color, shapes, contrast

1-2 seconds
resolve objects

>3 seconds
engage content
First **glimpse** is critical for engagement
Field of vision

Page sized map/image

Poster sized map
Tracking **movement** of eyes
Design for eye movement
Communication and Design
Is map design just cartography?
Figure 4.3 Shape, size, structure, fill and orientation—graphic variables of point map symbols.

Qualitative feature characteristics are mostly expressed by the shape of the point symbol. The size of the map symbol is used mainly for expressing amount, importance or other indications of the feature. The size
Communication design elements

Audience + Intent/Story + Format + Strategy
Who is your audience?

What is your point?
1. Imagine your audience . . .
Imagine your real audience . . .

Willing to learn, but busy
Intelligent, but maybe not map savvy

Maybe Morgan Freeman . . .
(the good Morgan Freeman)
2. Your point is . . ?
Use *storytelling* for your point

- A message
- A sequence of telling
- An audience in mind
From raw data to story
From raw data to story
What’s the **point**?

No **story**, no point
Story: “A little forest left, one big opportunity”
Format: Where and how will your static map be seen?

Close up working poster  Small publication image  Page size atlas

Media event >
Strategy for Map Design

1. What type of product?

2. What goal?
Strategy for Map Design

1. What product?

2. What **goal**?
Strategy for Map Design

Choose a balance

Focus: Simple - Complex
Time: Quick - Long
Design Process
Design gives voice to our information
DESIGNING a map . . .

(Assume story and audience)

1. Process
2. Concept
3. Composition
4. Layout
5. Branding
6. Cartography
1. PROCESS of Visual Design

1: CONCEPT + Data Test
2: Composition SKETCH
3: Draft FRAME
4: Draft MAP Content
5: FULL Draft, Test
6: Refine, TEST
7: Finalize
1. PROCESS of Visual Design
2. Concept

**Sketch** main message and key elements using **layout** tools (or just a pencil!)
3. Composition . . .

How visual space works

- overall balance
- rule of thirds
- negative space
- flow/eye movement
4. Layout

Grids:

- align
- apportion
- balance
5. Branding

Simple look & feel
Color
Logo
(fonts)
6. Cartography

Design to support the story!
6. Cartography

Design to support the story!
6. Cartography

Design to support the story!
6. Cartography

COLORS: support message, hierarchy, and play well together

Thanks, Gretchen Peterson & Cindy Brewer!
6. Cartography

LABELS

fonts, sizes, colors

Use a **systematic** approach for labels
TECHNIQUES – Map in Title Bar

- Determine final **extent** of the map (any changes = new shapefile)
- Create a **shapefile** of title bar (create a graphic of your title bar, convert to shapefile)
- Use the **Erase tool** on title bar, inputting shapefile you want to extend into the title bar
TECHNIQUES – Feather Boundary

1. Run Buffer wizard on outline feature – 10+ rings

2. Select options for buffers styles - coastal fades use the “Outside only” option.

3. Add a field for the transparency values – use field calculator to divide or multiply the buffer values, with most transparent as highest number (0-100), least transparent ring as lowest.

4. Use Symbology tab of Layer Properties to select color.

5. Click Advanced Transparency - select transparency values field. Each ring of the buffer will be displayed as the color you selected with that percent of transparency.
If design doesn’t feel good in your heart, what the mind thinks doesn’t matter
Extreme Makeover

The GIS Edition
FIGURE 4. Final output for the agricultural farmland stakeholders screening model. Classifications presented for the farmland model include protected and built-up areas (masked as light grey). Red dashed boundary depicts solar stakeholder opportunity area. High conflict areas appear as shades of green, with the red, yellow, and orange representing areas that are not considered least conflict by the agricultural farmland group.
Protected Areas Database of the U.S. (PAD-US) - Land Management
How do you *know* a design is good?

- 3 second test
- Formal critiques
- Pay attention over time
- Compare yours to others’
Good design . . . Nyt.com
Good design . . . infographics
Map Design

Pitfalls
Common Pitfalls

✓ Undefined overall message
✓ Everything at once - no hierarchy
✓ Passive titles
✓ Disorganized grid
✓ Poor color choices
✓ Overdefined elements (boxes..)
✓ Element-size relationships
✓ Fonts, label systems
Everything at once
(no hierarchy)
Passive & extended titles

“Wetlands of Hamilton Township”
Percent Under Age 18, 2010

One or More Races Including American Indian or Alaskan Native

American Indian/Alaskan Native Young People, 2010

Population under 18 by county

(In legend: One or more races including American Indian or Alaska Native)
Disorganized grid
(conference posters...)
Poor color choices
Overdefined elements
(or, neatlines gone wild)
Confusing font
Hierarchies

The everything wrong map . . .
Element – size relationships

Legend
Scale
(and north arrows)
It’s not hard to improve – just **better is good**

**Existing and Potential Sites for Health Facility Investigation Division**

**FACILITY TYPE**
- First item
- Second item
- Third item

**HEALTH FACILITIES**
- First item
- Second item
- Third item

**ROUTES BY AREA**
- First item
- Second item
- Third item
Good design matters
What to Remember
→ Maps are **stories** that unfold in **layers** of perception

→ See through **audience** eyes, from the beginning

→ **Direct the eye** through your map story

→ Remove and **simplify**

→ Always grow **your** design skills
Resources

• Esri Bookstore!

• Tumblr, Google search (caveat emptor . . . )

• Your own examples file

• Teach others and learn more yourself
Open Discussion

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