

Lecture Notes, Module 10

GEOG 319/658

Animation

Fall 2014

Slide 1: Introductory slide

- We were running out of time and weren't able to cover all of the topics we originally had planned on. We decided to talk about animation because I'm (Terry Slocum) a cartographer and think it is an important topic and have experimented with this before in another course.
- Last semester I taught some material on animation in an advanced cartography course. I had to select a portion of that for this course. Thus, I decided to cover the four topics shown here.

Slide 2: Defining the term animation

- Ask them to attempt to define animation
 - What do you think of when someone says "I want to create an animated map" or "I viewed an animated map"? What are the characteristics of an animated map?

Slides 3 and 4: The textbook definition for animation

- Animated maps are maps that are characterized by continuous change while the map is viewed
 - Does this come close to what they suggested?
- A key issue is how much interactivity is involved (cover several examples)
 - Consider the [NASA coldest place animation](#)
 - As I said, last spring I taught an upper level cartography class in which we explored a variety of topics, one of which was animation; I asked students to find animations on the Web; this is one that a student found
 - Several purposes
 - NASA is a good source animations
 - Example of an animation in which there is very little interactivity
 - Consider Peterson's " [spatial trend animation](#) " (21-9)
 - Show the changes in the % of the pop in various age groups in Omaha
 - Idea is that these data might vary spatially
 - We can play this, but it is very hard to follow
 - One reason is the poor quality of the areal shading (this is a dated animation)
 - Instead, we can step through a frame at a time
 - Is this animation or is it something else?
 - I might call it [interactive mapping](#)
 - Interactivity here is of course very limited
- Consider the [MapTime \[s1\]](#) software, which we are going to use as the basis for exercise #10
 - This is software developed by Steve Yoder as essentially his Master's thesis
 - Although a bit dated, the software is a good illustration of a package that allows you to create an animation with your own spatiotemporal point data
 - Talk about visualizing changes in population for 196 U.S. cities over a 200-year period
 - Below is a rough summary of some key commands; there is a complete set of tutorials in the Help system for this software
 - Use File and Open Data to open the USPOP.CSV file from the SampData directory
 - We can create an animation
 - Select File and New Animation
 - Click Define Animation
 - Click Add to access window for adding key and intermediate frames
 - Stress adding intermediate frames, something maybe we should do with JavaScript, but probably can't due to speed of calculation issues (MapTime [can](#) do this)
 - Select Tools and User Text; right click and select Add linked text
 - Run the animation
 - You will probably want to slow it down a bit
 - We can interact in the sense of changing the speed and go through a frame at a time

- Or we can interact by pointing to locations and getting values (show)
 - Tools Track ID and Z
 - This is just an example; this software is even more flexible
- So we've looked at just a few animations
 - Stress that we see a range of interactivity, from very little in the Coldest Place animation to quite a bit with the MapTime program.
 - There is an issue of when the term "animation" applies; does it apply when we drag the scroll bar in Maptime and have full control over speed?

Slide 5: Categories of Animation

- These are the categories that David DiBiase et al. developed and which I largely chose to use in my textbook *Thematic Cartography and Geovisualization*.
- I have placed those dealing with change first because I think these are most common

Slide 6: Animations Emphasizing Change: Two common types...

- Time series is by far the most common and so I have placed it first
 - Temporal data is often considered particularly appropriate for animation because the changes in real world time can be matched to display time in the visualization
 - [Dot map of population changes in the world over time](#)
 - For classroom use, only select a portion of this
 - Which of the three we looked at previously are time series?
 - Only MapTime
- Flyover is another common approach
 - We use Google Earth in our introductory 104 class
 - Who has used it on their own?
 - Peterson provides an example in animation 21-4

Slide 7: Animations Emphasizing Location

- If we are listing these in the order of commonality, perhaps this should go last

Slide 8: Animations Emphasizing Spatial Distribution

- We hold time constant and instead of looking at changes over time, we purposely make changes in the spatial distribution to emphasize the pattern of the distribution (where are the highs and lows?)
- Sequencing on a choropleth map
- Peterson's spatial trend animation that we looked at
- Portions of the Coldest Place (e.g. changes in the vertical exaggeration)
- Peterson's illustration of methods of classification (animation 21-6)
 - Show it.
 - Is this useful??
 - This is a natural lead-in to our next section

Slide 9: III. When to use animation....

Slide 10: Peterson's statement regarding using animation

- What do you think?
- I'm sure that as you've used the Web, you've seen a variety of animations
 - Were they always useful?
- Let's look at another example Peterson provides...Animation 21.10
 - Work with the upper right legend
 - All maps classed; as we move the cursor over the legend elements, we quickly see the different maps appear (it is an animation under our control)
 - Or we can focus on the method of classification, again under our control
 - Are these sorts of animations/interactivity useful? How else might we do this?

Slide 11: Key alternatives to animation

- Go through the definitions
- Use MapTime as an illustration
- Create a small multiple for just 1900, 1950, and 1990
 - Select File and Multiple Static Maps (use Ctrl and select to get individual maps)
 - Reduce animation window
 - Make the 1950 window small
 - Use Window and Size/Arrange Map Windows to position frames of the small multiple
- Suggest that we can see obvious growth from 1900 1950, but not so much from 1950 to 1990
 - In the animation, there was a hint of population loss for some cities...we wonder how much
- We create a change map...
 - Create one for 1950 to 1990
 - Select the Data Table
 - Select Data and Calculated columns
 - Choose options that will create a % change map
 - Select File and New Map to actually display the new data
 - Note how obvious the changes are now
- My point is that you shouldn't use animation just because it can be done; does the animation enhance your understanding of the spatial pattern? If it doesn't, is there an alternative (e.g., small multiple or change map) that will enhance understanding?

Slide 12: General Approaches for Creating Animations

Slide 13: General approaches...

- This is my view, which may be too simplistic
- Think about the animations that we viewed
 - They either allowed us to see a series of frames with no interactivity or they permitted some form of detailed interactivity with individual frames
 - How do we create these different approaches?
- Certain forms of software seem to be more oriented toward one approach
 - I have not created frame-based animations, but reading on the Web, it appears that programs like Quicktime Player and Photoshop are more oriented towards the frame-based approach
 - In contrast, programs that involve some code development have a lot more flexibility
 - Flash is the classic example that many folks have pointed to
 - Unfortunately, I have not used it, but my impression is that the learning curve is not quite as steep as some programming languages
 - JavaScript for us is the obvious solution
 - As Peterson says, one of the problems is that the online mapping services like Google Maps did not consider animation as a main consideration when designing the APIs. So we are going to see some problems in working with animation in this context.

Slide 14: Go to exercise #10

- Show what the resulting animation will look like. You don't necessarily need to create an animation that looks exactly like ours. The color of circles and method of overlap might be different. The location of the buttons and their names may differ. The identifier for the year might be different.
- Take a look at the csv file...
- Take a look at the JSON file...
- Hand out the skeleton file...
- Mention the need for the jquery file
- (1) Stress creating documentation that introduces the program
- (2) year-Panel etc.
 - This is CSS; you've done a little bit of this; you could read more on W3 schools

- Now go through each of the other main steps...

[s1] Need to get Mel to set up link
