Part III: Layout and Marginalia

Print

The first two parts of this lesson focused on designing and customizing the look of labels for your map. Now you will turn your attention back to the page layout. Map layouts need to be thoughtfully designed to best use the page space. Marginal map elements like a legend, title, and scale cannot be inserted completely as an afterthought. You must consider how these pieces interact with your data frames and labels.

Concept Gallery

Learn more about multiple frame layouts in the Concept Gallery.

A. Adding and Arranging Data Frames

Multiple Data Frames are often used to highlight a different portion of an area or show the geography at different scales.

1. Open a new practice map document, with at least the centre shapefile, streets shapefile, and a couple point shapefiles added. Rename the Layers data frame to Large scale.
2. Categorize and symbolize the layers as you see fit (e.g. symbolizing State College Borough might be useful for this practice document).
3. Zoom in on the Borough of State college to a scale of 1:10000.
4. Switch to the Layout View. Change the page setup to Tabloid, Landscape Orientation. Set up guides to create a 0.5 inch margin around the page.
5. Snap the Data Frame to the guides and reset the scale to 1:10000.
6. Use the Pan tool to move State College to the left half of the map.

   A simple way to add a new data frame is to click Insert > Data Frame. This method adds an empty frame in the center of the page. An easy shortcut to creating a second data frame with the same data as the first is to copy and paste the existing frame.
7. Right-click the Large scale data frame and choose Copy from the context menu. Right-click off the page and choose Paste. Notice the Table of Contents now shows two Large scale data frames. The active data frame's name appears in bold and is selected on the page.

8. Rename the active data frame to Small scale. Using the anchor boxes, resize the Small scale data frame to fit in the upper right quadrant of the page. Allow about 0.25 inch of the Large scale frame to remain visible along the top and right side edges.
9. Zoom out of the borough to a scale of 1:80000.
10. If you decide to show the same point symbols in both data frames, I recommend they not be different sizes (at least not use the same reference scale for their size). If you had a reference scale set, the symbols (and labels if you have any) will scale with the data. Remove the reference scale for the Small scale data frame, or change it to the new scale being used so the symbols appear the same in both data frames.
11. Open the Layer Properties for the Streets in the Small scale data frame. Symbolize only the interst and state roads, do not symbolize the local roads.
12. Open the Data Frame Properties for the Small scale data frame. Click the Frame tab. For Border choose 2.0 Point. For Drop Shadow choose 40% gray, and set Offset X to 4 and Offset Y to -4. Click apply.
13. Choose the Extent Indicators tab (still in the Data Frame Properties for the Small scale data frame) and select Large scale from the Other Data Frames field and click the right arrow button.
14. Click the Frame button to determine the properties of an extent rectangle. Specify a border line weight that has not been used in your layout so the rectangle is not confused with other lines. Also consider a color or style line (e.g. dashed) that is different from other lines in layout, but isn't too different so layout continues to have an overall style. That is, make the extent rectangle noticeable but try not to make it too high in the visual hierarchy either (e.g. bright red may be too saturated and bright depending on your other colors). Click OK to dismiss the windows.

B. Balancing Empty Spaces

Balancing a map layout is, in a way, a subjective process of trial and error. In laying out the elements of a map on a page you wouldn't cluster everything in a corner and leave the rest of the space open. Ideally, the process of adding and arranging elements creates a flow through the page. Think of the process like rearranging the furniture in your living room. If all of the furniture is against the walls, you have a big open hole in the middle of the room. Clustering everything together in the center or a corner doesn't work well either. On the page look at the elements as pieces that can be arranged. Be symmetric with open space and don't be against changing the extent or orientation of the geography to improve the design. In the previous steps I asked you to add a second data frame to your practice map and zoom out to see more than downtown State College. Most of these streets run diagonally, southwest to northeast. In this example we could have used the Data Frame Tools toolbar to rotate the geography to better match the frame dimensions. We also could have had the two data frames completely separate from each other, rather than one on top of the other. As you work through the next section, and add marginalia to your map, keep balance in mind.

C. Marginalia

All marginal elements are stored in the *.mxd file and are not part of the underlying data displayed on the map. All of these items are added to the map using the Insert menu. In many cases, when

you insert an element you are prompted through a setup wizard that initially defines appearance. Like annotation, once added to the map, marginal elements are always editable.

1. Insert a Title onto your map. Because you are working on a practice map, the text is unimportant, but remember that titles should be concise and descriptive (often containing info on what, where and when). Do not put the title in the .5 inches of clear margin space. You can have the title on top of the data, or shrink the data frame to place the title outside the data frame(s) yet inside the margins.
2. Insert a Legend. Whichever data frame you have active is the data frame the legend will be created for. Keep this in mind. Do you want a legend to fit both data frames, or is the data different enough to warrant two? Inserting a legend will open a wizard. Legends exactly reflect the Table of Contents. This means you need to change the wording in the layer names or data headings in the Table of Contents to what you want the legend to say (e.g. keep capitalization consistent and remove underscores from variable names). Also, it is not necessary to include all layers and symbols in legends if they are labeled in the map or would not be misconstrued. Also consider the ordering of items in the legend with regard to importance and visual hierarchy. Once the Legend is created, you can convert it to graphics for greater control of placement, text, etc. Right-click on the legend after it is made and select Convert To Graphics. Right-click on it again and click Ungroup.
3. Insert a North Arrow. The orientation of the arrow reflects the data frame (but specifically the central meridian of your projected data). Add arrows to both data frames if orientation changes between the two or if you think it would aid comprehension for the map user. Be thoughtful about the size and ornateness of the arrow. Small simple arrows often work well. Like every other element on your map, don't over design simply because you have a large palette of choice. Less is usually more. Also consider using a (desaturated) color that was used elsewhere in your map (e.g. drop shadow or other color used for layout or marginalia). The repetition of color and style contribute to a sense of design.
4. Insert a Scale Bar onto both data frames. You have a lot of design options when creating scale bars. Again, think about the purpose of the map and don't use overly bold styles if the background isn't busy. Also, consider what units and values are appropriate and easy for a map user to work with. Do you need to use the scale bar to measure distance, or is it for basic reference? Like north arrows, scale bars are often over designed.
5. Use your practice map to experiment with these elements. You will likely learn more about the controls and settings through trial and error than if I explicitly tell you what to do. By now you will probably notice that you are using the same properties and editor windows over and over. Look at all the options and tabs as you visit these windows - Esri has nested a lot of control into these layer of windows.

D. Apply These Topics to Your Map

1. Open your reference map document. Save your practice map if you want.
2. Add a second Data Frame to your Bellefonte map. The two data frames should be different from one another, and serve different purposes. For instance, a small inset data frame may show overview information or context, like in the example above. Or it may be you would rather it show more detailed information, and have the main map be the smaller scale frame.

A different data frame could also show two different areas. Or they may be the same scale and showing the same area but show completely different kinds of information for different purposes (e.g. one for evacuation, the other for services). Here are a few tips for distinguishing data frames

- Change the data used to suit the purpose. If you use two different scales of data in your two data frames, then scale back on labels, small roads, and other minor things for the small scale map, and include more information and data in the large scale map.
- Make sure attributes of the features and symbols that you want to have included in both data frames remain the same. Don't change colors between the two frames without it being clear. Don't vary the size of your symbols unless there is a reason why.
- If the spatial connection between the two data frames isn't completely clear, use an extent rectangle and small text like "see inset," etc., or use a leader line with the extent rectangle. But make it fit with your overall design, and do not obscure data or text, or make it too bold.

3. Add marginal elements to your map. Balance the layout logically. Take time to go back and make any edits that are appropriate.
4. Add a text credit for yourself as the cartographer and a citation for the data source: Pennsylvania Spatial Data Access, http://www.pasda.psu.edu (citing the data source and crediting yourself should be done for every map you make in this course - and should be considered whenever you make maps).

E. Export the Map Document as a PDF

ArcMap includes settings to export map documents in a variety of raster and vector formats. The intention of the project scenario is to print and distribute your reference map. For this reason the PDF format is the most suitable choice. Once you have completed the creation and design of your map (see the Lesson 3 Deliverables for details on map requisites):

1. Save your reference map file.
2. Click File > Export Map... From the Save as type: drop-down list, choose PDF (*.pdf). Explore the Options and look for two in particular - "Convert Marker Symbols to Polygons" and "embed All document Fonts." Make sure that both of these are checked.
3. Name your map "LASTname_FIRSTinitial_L3final.pdf" (using your name of course).

That's it for Part III... and Lesson 3.

See the next page for the deliverable details.

If you have any questions, please post them to the Lesson 3 Discussion Forum.