

Afghanistan Maps

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After September 11, and the beginning of the US action in Afghanistan, The Washington Post Art Department had to publish maps of Afghanistan on a regular basis. Almost daily, we created a map containing the events of that day. But usually, though the map had the same basic underlying relief map, the overlaid information varied enormously, sometimes showing major roads, sometimes minor roads as well, sometimes towns, or the extent of the Northern Alliance, or provinces, etc.

We knew from the start that we should construct a map with recorded parameters so that all new information could be projected to fit the original. As the war evolved, we had to keep information up to date and in geographic position, and more data had to be generated and registered to the map accurately.

Among our stable of geographic applications, we use Azimuth to store our geographic data and generate the vectors that appear on our maps. It is a plug-in to a full-featured CAD application called VectorWorks. Using VectorWorks, Azimuth gains considerably from the CAD interface, however, it also lacks much of the functionality of a full-featured GIS. As the author of the plug-in, working for the art department of The Washington Post, I fashioned Azimuth to fit the particular needs of cartographers working within a graphic environment. It stores data on a layer in a VectorWorks document scaled to latitude and longitude. Data can be selected in the standard graphic method, click and drag, etc., and plotted according to selected parameters. The plotted map appears in a layer or layers above the data layer. The standard GIS is aimed at technical output, engineering, marketing, etc. For us the gains of CAD outweigh the loss of most, but certainly not all, GIS features. Because of the extensive GIS databases, we need to convert GIS data and store them in Azimuth documents, by no means a direct, simple process.

Production of our Afghanistan database illustrates the importance of Azimuth's and VectorWorks CAD interface. It is typical for us to generate a wide variety of data on subjects for our news maps. We digitized and converted information for the Afghan permanent database. Digitizing and deprojecting traced vectors and points is a straightforward process that can be done within deadline constraints. In doing so, VectorWorks CAD functionality was important using Snap to point, Clip, Add and Intersect Surfaces. We can then modify our data by moving, adding and subtracting vertices as well as adding lines, polygons, symbols and text right into the data layer. We did much of this for both temporary and permanent data. Because data bases are visual, appearing as drawn elements on a data layer, we can edit visually or we can make changes in an Object Info palette as exact coordinates.

To produce each of our maps for the day's edition of the paper, here are the typical kind of steps we took. We selected the proper database or bases. Then the appropriate "Classes" of data were turned on or off, comparable to ArcView functionality. If data in one Azimuth data base document was needed in another document, the data was selected and, using VectorWorks "Paste in Place" feature, placed the other document in exact geographic position. Vectors were then projected and exported as EPS vector files and brought into Freehand or Illustrator. For our various versions of Afghanistan maps, we generated a relief plate from DEMs,

and noted in the Freehand document the exact projection and parameter settings used in Azimuth to produce the map. So, using those Azimuth parameters we can open the map any time in the future and be able to create new, matching vector information. Most important, this avoids the attempt to copy vectors from a one Freehand document and try to force it to fit to another map. Settings can also be kept within the Azimuth document. So any data can be replotted, to match an existing map.

The large map of Afghanistan that we used for maps that ran anywhere from one-third the width of a page to the full width is shown here (Figure 2). Our relief plates were converted to our chosen projections using either Geocart or Morph but these two methods are not discussed here. Once the projection was chosen for the relief, the plate was produced and ready for vector overlays.

At this point, the relief was imported into Freehand and made note of the projection parameters of the relief plate 9 (Figure 3) (I also use the "File Info" feature of Photoshop to record the projection parameters and DEM files used in the relief document itself).

This gave us all the information we needed to produce any additional vector overlays. As our data bank grew for the Afghanistan area we continued to project and add more overlays for our Afghan map.

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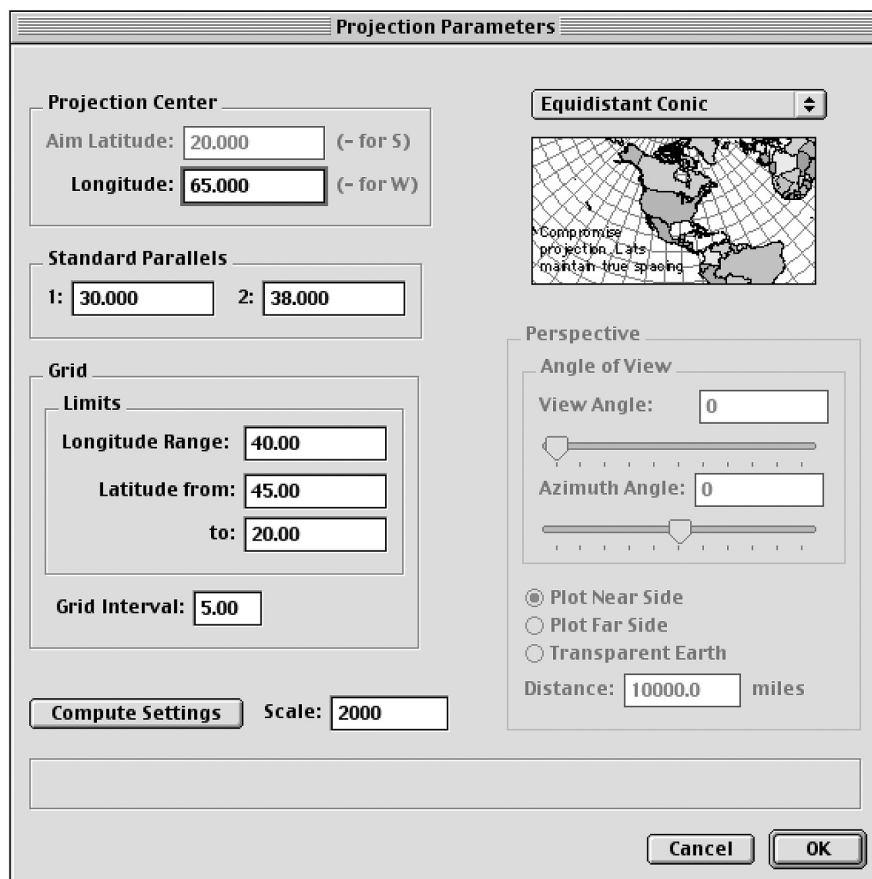


Figure 1. The Set Projection dialog contains all the information needed to reproduce the map such as these settings for the Afghanistan map.

All of our data for areas around the world accumulate by this same method. Maps for the newspaper often don't correspond to the kind of information found in GIS data banks. When we do use such standard GIS

vectors, we see the familiar problem of unconnected vectors, the often-encountered mass of points, one on top of another and the unfortunate unclosed polygons. Again, we make use of VectorWorks CAD tools to convert the data to a more useful form for our databases. By doing this once and integrating it within the Azimuth document, it never needs to be done again for subsequent documents, Afghanistan or otherwise.

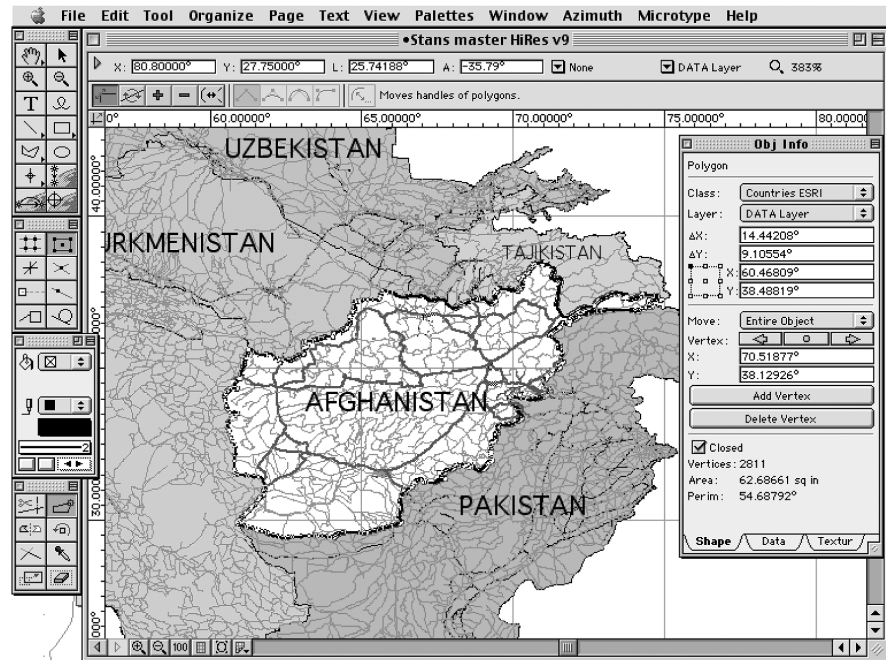


Figure 2. This is the Data Layer in Azimuth containing our "Stans master HiRes" data. The Afghanistan border is selected to show the information in the "Obj info" palette. Note the lat/long rulers and readout.

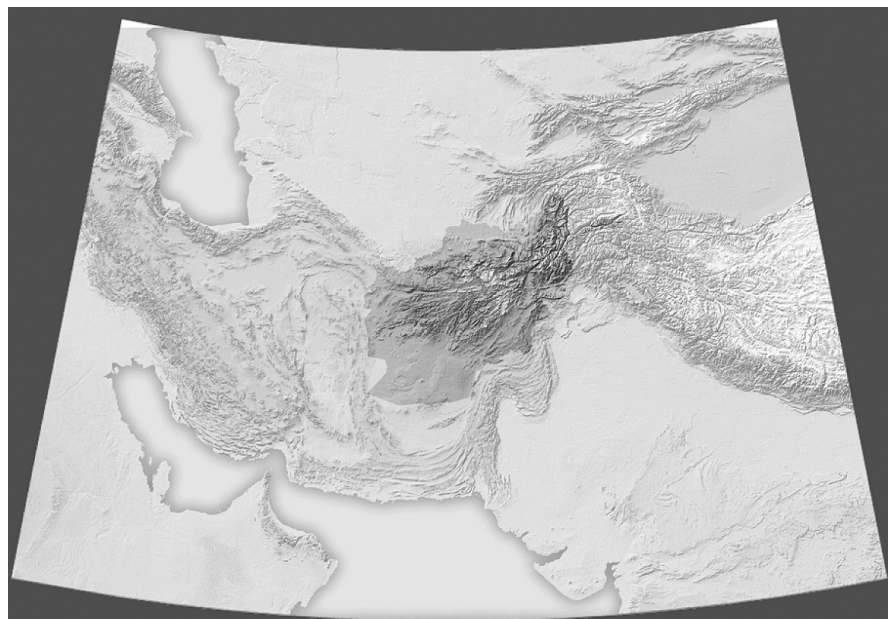


Figure 3. Here is the relief plate we used for maps for Afghanistan capable of being inclusive of all of Pakistan, Iran and much of the Soviet republics.

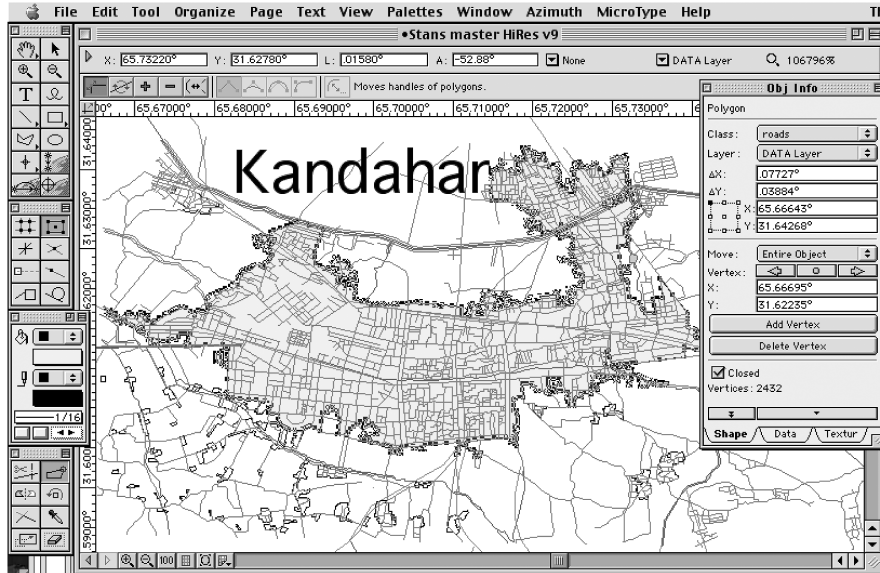


Figure 4. Zooming into Kandahar in the same database and selected is the outline of the city built up area.

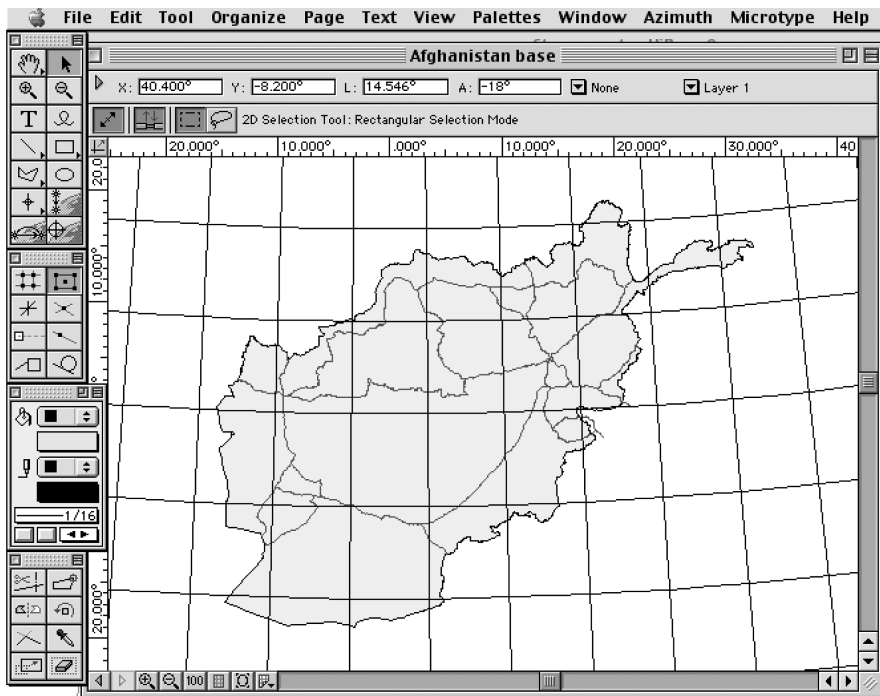
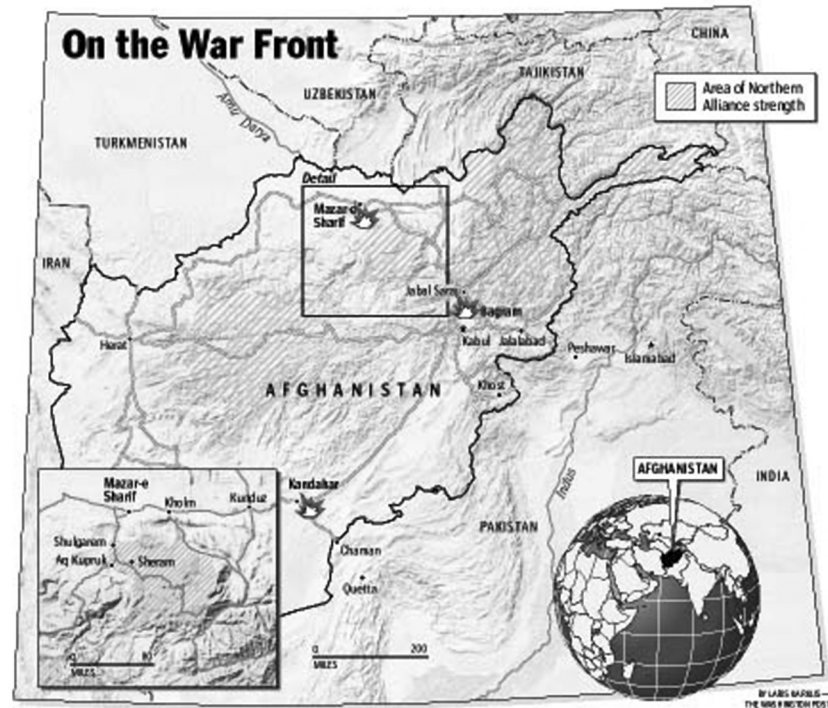


Figure 5. A plotted map of Afghanistan, its major roads and a 2-degree grid.



Mazar-e Sharif

■ After taking control of several nearby villages, the Northern Alliance opposition said its forces were about to launch an attack to capture Mazar-e Sharif. Taking the city would be crucial for the opposition to gain control of northern Afghanistan.

Kabul

■ Opposition leaders said they would await the outcome of the battle for Mazar-e Sharif before moving on Kabul, the capital. U.S. planes continued to bomb Taliban front lines near Bagram.

Bombing yesterday

■ Taliban positions outside Kandahar came under heavy U.S. bombardment.

■ U.S. bombers again pounded Taliban lines 20 to 30 miles from Mazar-e Sharif.

Figure 6. Final published map.