Animated Images:
A New Tool for Web-Based Anthropology

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In its effects on anthropology, the internet has come in two waves. The first, beginning in the early 1980s, was email. Email has been an enormous convenience but it has not been responsible for substantial changes in the articles and books that are the principal end-products of anthropological research. The second wave, first sighted 3 years ago and just now crashing to shore, is the worldwide web. It is quickly become clear that the worldwide web does not merely offer a more convenient way to do business as usual, but a means to create qualitatively different scholarly products. A recent review of anthropological resources on the internet, published simultaneously in hard copy (Schwimmer 1996a) and on a journal web web page (Schwimmer 1996b), exemplifies one property unique to web-based scholarship: the ability to provide instant access to sources being discussed. Here I describe another: dynamic graphics, or "moving pictures", which offer a unique means of depicting complex, sequential, or spatial patterns that are often a topic of anthropological study. Known as "animated GIF" files, these graphics are relatively easy to construct, and are viewable by common web browsers.

GIF is one of two image file formats viewable by web browsers such as Netscape, Explorer, and the viewers offered by online services. GIF files are considerably smaller than formats such a BMP, TIFF, and PCX because each image uses its own palette of only 256 (or less) colors. GIF files offer some interesting capabilities for web use. One is ability to have the transparent background that has become common on web pages. Another is the ability to be grouped into a larger GIF file that automatically displays them in sequence -- the animated GIF. (The other web image format, JPEG or JPG, are usually much smaller than GIF files but lack these features.)

Virtually any image processor can create GIF files from scratch or convert other formats to GIF. Adobe's Photoshop is the best known choice for advanced users, but this is a relatively expensive program even at academic discount. There are many inexpensive or shareware image processors will are adequate for most anthropological uses.

An animated GIF is built of a series of GIF images which function like frames in a movie. As the frames will be displayed sequentially, the series requires the same sort of continuity as an animated film; e.g., elements that are not meant to move must remain in exactly the same place. In animations requiring smooth motion, elements should advance the same amount between each frame. (For such images, Photoshop is especially useful because of its strong layering capabilities, allowing multiple images to be displayed together at varying levels of opacity.)

Once the series of GIF images has been created, an animator program is required to create the animation (future versions of some image processors will undoubtedly have this capability). Two downloadable animation programs are GIFBUILDER and GIF CONSTRUCTION SET .

To create the animation, one uses mouse clicks to indicate the images and their order, and to insert a control frame before each image. The control frame contains several changeable settings, most importantly the time each image is to be appear. Animators have built-in viewers. The process is simple.

One use of animated GIF's is to highlight patterning in complex graphs. Hutcheson (1996), for instance, shows that

when U.S. zip codes are broken down by percentage of population composed of African- Americans, complex spatial patterns are brought forth by animation (see Figure 1).

What works with points on a chart would work equally well with points on a map. An obvious use of such animations is the depiction of settlement pattern change. Figure 2 shows settlement patterns at 5 points in time. The image is cumulative, with each new layer appearing in a distinct color while older layers become desaturated.

Animated GIF's can also illustrate changing shapes in ways that are impossible with a static set of maps. An example comes from my own research on settlement and land conflict in central Nigeria. Using ethnographic and remote sensing data, I have constructed a history of territory and landuse for Tiv and Kofyar farmers in frontier area that has had multi-ethnic immigration over the past few decades. An unexpected finding has been that, in contrast to the well known "predatory expansion" in the Tiv homeland (Bohannan 1954), Tiv hamlets have been stationary for over 50 years. Indeed, it is the Tiv who have been encroached *upon* (at least in their view), prompting increasing acts of intimidation on their part.

But in presenting this (Stone 1997), I found that neither statistics nor a map series gave an adequate picture of the scale and shape of territorial changes, even with map aids such as arrows to call attention to key areas (Figures 3a-c). Figures 3d and 3e are animated GIFs based, on the static images and with intermediate frames and additional labels added.

We are obviously heading into a period in which the concepts of publication and web-based scholarship will change. But there is no need to wait until the dust settles to begin exploration of the use of web-based tools. Animated GIF images are one example of a such a tool, one that allows depiction of phenomena that could not be depicted in pre-web forms of scholarship.

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HOME PAGE