



Erin Aigner, at her desk at the New York Times

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GIS at the *New York Times*

Every day, the New York Times illustrates a few articles with very basic, black and white maps; most are 2 inch x 2 inch and a few are about twice that size. Space and color are at a premium in a daily paper. Every couple of weeks, however, the Times splurges on both to publish large, colorful, analytical maps produced by a very bright and talented young graphics editor with formal training in GIS and cartography—Erin Aigner.

A half-page map of the Middle East in the December 24 issue accompanied an article by Bill Marsh titled “What Surrounds the Iraqi Tinderbox.” Besides national boundaries and some relief, it displayed the size of the active and reserve military forces of five of Iraq’s neighbors, as well the size of the major religious groupings in each country. The credit named both Aigner and Marsh, illustrating the close working relationship between map-makers and reporters at the paper.

Aigner earned a bachelor’s degree in geography at the University of Oregon in 1999, then became a graduate assistant on the *Atlas of Oregon* project, working under Susan Hardwick, Jim Meacham, Stuart Allan, and Bill Loy. She returned to the University of Oregon for a master’s degree, which she received in 2002, with a thesis that critiqued choropleth maps and discussed alternative methodologies, then did an internship at the National Geographic Society. From there, she was recruited by *The Washington Post*, where she worked for the next two years, helping to bring it up to speed on GIS. Finally, after another brief stint at the UO, the *New York Times* hired her to do data-intensive mapping and graphics projects. “I do mapping for all sections of the paper—foreign, national, metro, occasionally even styles,” she says.

Last summer, when the paper was covering the war between Hezbollah and Israel, Aigner produced maps that provided background information, such

as population density. “As we got more information from reporters,” she says, “we figured out the ranges of missiles in the Hezbollah arsenal, so I made a buffer from the border of Lebanon to show how far the missiles could actually go into Israel.” This map was posted on the *Times* website and updated as the bombs fell. It allowed readers to scroll over the list of missiles to find out their range and toggle on and off layers showing terrain and the areas inhabited by various religious groups inside Lebanon. As the

headlines. “Everything that gets into the paper is done in Illustrator and output as an EPS,” she says.”

“Sometimes data sources are really straightforward, like the Census data,” Aigner says. “You know well in advance when they are going to be released.” Often, however, finding data requires “a little sleuthing,” as well as “massaging and processing” the data.

For a map accompanying an article on the anniversary of the 1906 San Francisco earthquake, Aigner’s assignment was to show the magnitude of

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war progressed, Aigner and her colleagues added information as time permitted. “It is always very dynamic,” she says.

The day the levees started to break in New Orleans, Aigner used LiDAR data to approximate which areas of the city were most likely to flood, and Census data to map residents by race and income. When information became available as to which parts of Mississippi’s Gulf Coast had actually been flooded, she worked with Gulfport’s GIS office which gave her data “pretty quickly,” she says.

Unfortunately, as soon as the city’s press office found out that the GIS team was giving Aigner data, it routed her back to the press office. This was “the death of the project,” she says, and a routine occurrence. As soon as she identifies herself as working for the *New York Times*, she is routed to public relations people, despite her insistence that she needs to talk to somebody “who knows how to use data, what GIS is, and how to make maps.”

Her job’s biggest challenge, however, is the constant time constraint. “I don’t always have enough time to completely stylize a map in the way that I would want to,” she says. “Sometimes it is a matter of triage.” She does the most important things first and then works on improvements as time permits, up to her daily deadline of about 7:30 PM.

“Sometimes the map alone shows the whole story,” Aigner says. As examples she cites a map she did of housing costs around the country and one based on Census data, showing shifts in the geographic distribution of foreign-born population, which she did in a day.

Aigner has a Mac and a PC on her desk that have separate monitors but share a single mouse and a single keyboard. She makes maps in ArcGIS, then brings them into Photoshop or Adobe Illustrator, where she styles them and writes the text and the

that earthquake. She first searched online for shake models that she could use, and then she called the U.S. Geological Survey. “I just wasn’t getting very far in actually getting the data that I needed,” she recalls. “I was eventually able to download a shapefile with the shape of the shake model and bring that into Arc, but I still really wanted the numbers.” Finally, she found a map in Google Earth that showed the location of the San Andreas fault line. She extracted the lat-long coordinates from the KML file, put them in an Excel file, brought them into Arc, and plotted the fault’s slippage. That map appeared in the paper four days later. To come up with nine distinctive colors for the classes that would read on the paper, she says, she “broke many conventions for color.” She used magenta for the fault line, graduating its width to show the amount of displacement. “Science maps are often some of the most fun, because you get to be a little bit more creative,” she says.

Sometimes, Aigner has to compile data from individual records, as when she mapped the clustering of sex offenders on Long Island in relation to laws restricting where they may live. Despite the fact that the data are public, she recalls, the New York State Department of Criminal Justice was “really hesitant” about handing over its data and told her that, legally, it could only present it online, one record at a time. “So we created a script that would click on each individual link, scrape out the information, and dump it into a spreadsheet for us, which then had to be cleaned up significantly. In the end, it was just an afternoon’s project and I got the entire Suffolk County data set.”

Plotting the data showed that registered sex offenders tend to live in clusters, because, while most landlords are reticent to rent to them, those who will often own large buildings. “So you sometimes get six or eight different sex offenders all living in one

A graphic

journalist's work

building,” she says. For Dubuque, Iowa, she did the reverse: She put a half-mile foot buffer around all the schools and day care centers, then overlaid the city limits. The resulting map showed that, because most of the buffers overlap, it is not legal for registered sex offenders to live in about 80 percent of that city. That article made the paper’s front page, under the title “Iowa’s Residency Rules Drive Sex Offenders Underground.”

“Mapping sometimes can influence what the point of the story is or even where the actual story is,” says Aigner. She cites the case of an article on people selling the rights to minerals on their property: Contrary to anecdotal evidence that the sellers were mostly poor, her analysis revealed that the location of oil wells correlated inversely with population density.

At the *Times*, Aigner explains, mapping has become well integrated into the editorial process. We’re represented by a graphics director at the daily meetings at 12:30 and 4:30. [He] is there, pitching stories and hearing stories, the same as the metro, national, and foreign editors. The graphics department meets every day, right after the daily noon meeting. We talk about what is going to be in the paper the next day and we pitch stories.” Because the *Times* has been widely recognized for its graphics, she adds, its editors are increasingly putting maps in the paper.

The day I interviewed her, Aigner was working on a map of Martin Luther King Boulevard in Newark, New Jersey. “I’m hoping maybe to use some census or crime data,” she told me. “The reporter has not gotten me the story yet, so I need to figure out on my own what is interesting. I will [then] have to make sure that his story and the graphic relate to each other.” She routinely discusses even the simplest graphic directly with the reporter who is writing the article it will accompany.

Are editors and reporters beginning to appreciate GIS as much as, say, photography? “I don’t know that there will ever be as many people who know GIS,” Aigner says, “but having GIS skills is definitely desirable. It feels sometimes that half of our graphics have a spatial or a map component.” While Aigner has the only ArcInfo license at the *Times*, the paper, she says, has “probably a dozen or fifteen ArcView licences.”

While Aigner almost always relies on external source data to generate maps, copyright restrictions often hamper the paper’s ability to accumulate a library of materials. “There are cases,” she says, “where companies will give us stuff and then ask that we destroy it after it’s been published. So, they’ll let us use it for a credit in the paper, but then they don’t want us to keep it as part of our library. That, actually, happens pretty regularly.”

When a breaking story requires outside expertise, Aigner and her colleagues work closely with the CIESIN lab at Columbia University and, for Census data, with Andy Beveridge, a sociologist at Queens College.

Does Aigner’s more analytical work sometimes inform the reporting? “On daily projects, there is often not enough time for that,” she says. “But on bigger ones, yeah, it does happen. If it is a story that has a spatial component, [reporters] sometimes want to see maps early on in their writing.”

Does she consider herself more a geographer or a journalist? “The longer I stay at the *Times* the more I consider myself a graphic journalist,” says Aigner. “At *The Post* it was much more just creating graphics or GIS work that supported the paper, but here I feel that I do a lot more of my own reporting. I make graphics using GIS that relate to current events and tell a journalistic story.”

Smart maps give policy makers the big picture

A new book showcases analytical maps created by the Library of Congress using powerful geographic information systems (GIS). The book explains how the maps help Capitol Hill legislators easily visualize and assess issues, trends, and crises.

Mapping for Congress: Supporting Public Policy with GIS, published by ESRI, presents some of the best examples of how the library’s Congressional Cartography Program uses GIS technology to analyze and map everything from the potential hazard zones around a proposed liquefied natural gas facility in New Jersey to the areas hit hardest by Hurricane Katrina flooding. The book, filled with colorful maps created using GIS, also defines GIS, explains its value, and describes how policy makers—at every level of government—could benefit from incorporating the technology into management and decision making.

The Congressional Cartography Program’s GIS staff produced more than 25 maps that dealt with transportation, social welfare, health care, environmental management, and other public policy issues. Congress members and other policy makers, often during committee meetings, use the maps to better visualize the scope of problems or issues before taking action.

In addition, maps of the United States created by ESRI staff using GIS software, demographic data, and Community Tapestry segmentation illustrate trends in technology, population, transportation, personal finance, education, and health. The maps demonstrate the visual power of data analyzed and mapped using GIS; for example, they may show the percentages and locations of, for example, people aged 85 and older; Medicare and Medicaid recipients; online shoppers, and much more.

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