

Three professions with one goal—Mapping!

—Melinda Peacock

We live in a “Get it Now” society. We want information now, and we want it fast. But to keep up with this fast-paced world, we need to know our history. Otherwise, the young generation will never appreciate that high-speed access used to be the on-ramp to the freeway, a flat screen was on windows to keep the bugs out, spam was only found in a can, and call waiting was the line outside a phone booth.

With every year going by, history is passing us by too. Few are left who can tell the stories of the World Wars, the Great Depression, the world’s first binary computer, the first airplane, the first compass—or even know how to use a Gunter’s survey chain. Knowing the fundamentals of the past will help to lead us into the future. This future will be founded upon the decisions we make in the board rooms, on deals concluded over dinner, on opinions expressed in e-mails.

Our relationship with the future is a choice! We can face the future by stepping back, staying put, or going beyond what we are used to and “embracing” the future. For the choice we make as professionals to be truly “informed,” we should, said Mike Ronczkowski, manager of Homeland Security with Miami-Dade Police Department, at the 2009 ESRI User Conference, always “verify” and “validate” the information at our disposal, and “cooperate” with others.

Ronczkowski’s focus on “verify, validate, and cooperate” resonated with me, particularly when I tried to understand the links between the Professional Land Surveyor (PLS), Cartographer, and the GIS Professional. Even though they each represent a distinct set of knowledge, skills, and responsibilities, these specialized fields of the geospatial science, cannot, to my mind, be separated.

One of the links that holds them together became obvious when I spoke with the employees of the U.S. Forest Service at the ESRI UC. I was excited to hear that they have moved into computerized mapping, using ArcGIS.

Back in 1993 when I worked in the USFS engineering department in Ogden, Utah, we were scribing roads and rivers on orange peel layers and producing negatives from a plat-maker in the dark room. We used a Leroy guide for lettering and did line work with a Rapidograph ink pen. A map then really consisted of map layers, usually about 24. Each layer respectively

represented roads, rivers, text, and contours—just like the layers that produce a map within a GIS today.

So, when I got home, I called Steven Dodds, manager of the USFS-National Automated Land Program, and a PLS and GIS specialist, to “verify” my assumptions about the processes used to produce data layers. He told me that many of the old map layers have been archived by converting them into an electronic file format (geodatabase). The negative and photographic film layers have been recycled to recover silver.

The NMAS (National Map Accuracy Standards) is one of the guides the USFS uses for horizontal accuracy, which must be within 40 feet for a 1:24,000 scale map. Dodds said obtaining positional accuracy on the ground is costly, but it is absolutely vital for accu-



River Road, a feeder road of Southern Parkway leading the new St. George City airport in Utah.

rately mapping property and infrastructure, especially in areas with fast-paced urban development.

And it’s in this realm of positional accuracy that the Surveyor, the Cartographer, and the GIS Professional cannot be separated, because all three are working toward a common goal—to map a subdivision, a city, a region, or an entire nation, accurately!

At the USFS, the Surveyor handles the land base accuracy, the GIS developer inputs the ground data into a data base, the



Cartographer adds components (text & symbols) to the data, and the result is an accurate, professional map.

“Project-level data need precise data spatially,” said Dodds. “A GIS is an analytical tool, used to analyze information only.” If GIS professionals input recorded deed information and survey plat measurements, the GIS can be used to produce informative, more accurate maps.

I witnessed this first hand as a Certified Cadastral Mapper working for my County Recorder’s Office. One of the most frequent requests we received was to define property acreage for owners. The ArcMap maps would be fairly accurate when the property was on level ground, but on a hillside or when there was an elevation change, the approximation could be way off, and the “ground-to-grid” issue would come into play.

The Licensed Land Surveyor is the only professional in the geospatial field qualified to guarantee survey grade accuracy. Hence, not being a licensed surveyor, the recorder would put a disclaimer on the ownership maps produced. A surveyor is a great source of knowledge with regard to the fundamentals of legal property descriptions and measurement accuracy. I believe we should bring this knowledge to the young people already working in or aspiring to enter the field of geospatial data acquisition, analysis, and visualization.

The GeoMentor initiative unveiled at the 2009 ESRI User Conference provides an avenue for volunteers to introduce young people to surveying, geography, and GIS. It would seem that a certain level of mentoring and so “taking down of communication barriers” between the measurement and visualization professions might be useful.

Imagine how much better we would understand the contributions each specialty in the geospatial world could make to mapping our world, if surveyors were to mentor GIS cartographers

about the basics of land surveying and the GIS cartographers were to keep surveyors up-to-date about the basics of GIS. We cannot assume others know what we know. The lines of communication must stay open between the geospatial professionals, at all levels, to achieve the goal that’s common to all of us in the geospatial field—map where we are, what’s around us, and how the geography data that we collect, analyze, and visualize help the citizens of our country and people in general.

We have made huge technical strides in tearing down some barriers. Without them, the farmer would still be using a single plow instead of being firmly planted in the age of automation; the surveyor would make his measurements with the survey chain rather than a transit, or a data collector, or the total station; the cartographer, instead of holding on to a mouse and calling up data from remote databases to create visualizations, would still be hunched over a table drawing his maps with a quill; and the GIS developer could not have come up with software that assists the federal government and the states to govern better, the businesses to increase their revenue from better routing, and all of us in the general public to be geographically empowered. The sharing of information and innovations that draws participants to the ESRI annual conference should occur between all geospatial professionals.



There is so much work to be done—the IFTN (Imagery for the Nation), a seamless cadastre for the United States, and the daunting task of creating a record of all the world’s property and owners (approximately 4.5 billion). These and many other projects can only be achieved with the collaboration among surveyors, cartographers, and GIS professionals.

Eventually, a logical way of interfacing between these professions will occur. Let’s consider what’s possible, what we can achieve together, and how can we deliver services that are the best, the most qualified, and professional. For that’s what it means when we say “verify, validate, and cooperate” in pursuance of that which we do best—Mapping!

Right-column image: U.S. Internet Infrastructure. [Map by Zina Deretsky, National Science Foundation; adapted from maps by Chris Harrison, Human-Computer Interactions Institute, Carnegie Mellon University. www.chrisharrison.net]