Politics and History
An interview with Mark Monmonier
Conducted by Jeremy W. Crampton, Los Angeles, March 2002

Spatial surveillance

JC: I’d like to thank you very much, Mark, for agreeing to be interviewed. I think it’s a good opportunity to hear your views on a number of issues to do with your own work and also with the field of cartography. I understand actually that you’ve not only just published a book called Bushmanders and Bullwinkles but that you’re actually going to be publishing another book— is it later this year?

MM: Yes, Jeremy, the publisher plans to have it out in September.

JC: And what’s it about?

MM: Basically, Spyng with Maps examines a variety of different geospatial surveillance technologies, ranging, let’s say, from intelligence satellites to weather satellites to the use of overhead imagery for detecting marijuana “grows”— both indoor and outdoor— to the use of aerial photos for measuring the size of fields back during the era of the Agricultural Adjustment Administration, to dataveillance technologies, to GPS-based tracking technologies and the infamous Digital Angel, to such things as cell phone tracking, crime mapping, and the use of websites for notifying communities about sexual predators. There are a variety of different policy issues here, and I guess I try to assess the extent to which one’s location can or should be an aspect of personal privacy.

JC: How did you get interested in, let’s say, surveillance from a spatial point of view? Was it a particular event?

MM: Hmmm. A paper I wrote for Cartographic Perspectives was concerned with webcams, but I had already begun the book before writing the paper. I have a longstanding interest in geographic technology and policy issues, but exactly when and where the idea came to me is hard to stay. I proposed Spyng with Maps after my publisher proved less than enthusiastic about a project I call “maps that say no”— the use of maps basically to restrict people’s access to space of different types. It’s a good topic, and if I live long enough, I’ll still do it, or something similar.

JC: “Maps that say no” is an interesting subject, because maps are generally presumed to say “yes, this is how things are.” I’m thinking here of deliberately confusing maps for political reasons— not just the odd missing detail, but as a deliberate strategy in order to disturb how we think about space. I just
heard, for example, about a 1960s anarcho-tourist group ‘Scramble!,’ which produced deliberately confusing maps of cities and gave them out to tourists. Have we overlooked the use of maps as resistance?

MM: I’ve never heard of Scramble! or their deliberately distorted maps. Anarcho-tourist group? You mean they don’t like lots of tourists or the things that merchants/developers do to attract tourists? Sounds a bit nasty, not to mention perverted—-they enjoy helping folks get lost? Probably not very effective. Might even attract more tourists. Let’s hope anarcho-tourist groups don’t try faking aeronautical charts!

“How things are” can include prohibitions such as areas where you can’t dig (because of buried utilities lines), build a Mcdonald’s (because of residential zoning), or fly an Iraqui Air Force plane (because of a “No Fly” zone). Maps can be used by citizens to resist proposals for locally objectionable land uses. These maps typically dramatize impacts. And sometimes the project’s proponents’ maps can be exposed as flagrant lies or otherwise ridiculed. (I looked into New York State’s flawed effort to site a low-level radioactive waste dump. The Siting Commission’s maps were so bad they played into opponents’ hands.) Maps can also be used to exaggerate a threat— military or environmental— and this can go beyond mere rhetoric to disingenuous misinformation.

JC: This raises the question how the events of September 11 played a role in your book in terms of making data less available to the public at the same time that there might be an increased awareness of the possibilities of spatial surveillance.

MM: Well, the manuscript was already out for review on September 11, and the referees noted that somehow or the other, I had to address the attacks, and I did. Certainly there is a concern about the restrictions on access that have been proposed as a result of September 11, but I think the jury is still out as to how much, if anything, should be done. It seems logical not to have floor plans of nuclear power plants rather readily available, for instance. But a lot of the information is already out there. Various users have already obtained copies of potentially sensitive maps and data, and we have map libraries and internet archives. Part of the problem would seem to be bureaucrats with a cover-your-ass mentality, who are afraid that geospatial data might remotely help terrorists— along with everyone else. So to be cautious, these nervous Nellies protect their posteriors by hiding information from the general public. A compromise strategy under active consideration is the use of the FOIA (Freedom of Information Act) process to screen out potential users who cannot articulate a good reason for having
the data. In the long run, though, this approach will be no more effective than the Maginot Line. But it might not hurt to make access to some type of geodata a bit more difficult for terrorists. I’m sure we’ll see changes, but how far-reaching they’ll be is anybody’s guess.

JC: What were some of the most interesting spatial surveillance technologies that you came across in your research?

MM: Some, I think, are largely hypothetical and probably will remain so. A case in point is the Digital Angel, which has several different levels, the least problematic of which is a wristwatch Grandpa might wear if he has Alzheimer’s and his children fear he might wander off. The idea is to put a small GPS receiver on his wrist and link it to the wireless communication system so that you can keep track of where he is. The concept is similar to technologies for placing people under house arrest or to restricting the movements of sex offenders or people on parole. GPS has limitations, though. It doesn’t work well indoors, and parolees who try sufficiently hard can no doubt slip their digital leash. If the subject is an old person, the system could be used to monitor his or her vital signs. What’s frightening is the possibility of linking the monitor to a GIS and setting no-go boundaries so that the child or other subject who steps into a forbidden zone receives an auditory signal or phone call—or perhaps an electric shock or e-pinch.

JC: So it would actually administer pain to the body as they transgress on certain spatial no-go zones, around schools perhaps.

MM: Yes. As a means for electronic detention for criminals, corporate or otherwise, it sounds Orwellian, but I’m not convinced it’s any worse than putting people in prison. And if GPS-based monitoring really works, it could prove far more humane than some of the ways society deals with criminals. There is a potential for abuse, of course, especially by parents who micromanage their kids’ movements. Parents have a responsibility, of course, but it’s largely a responsibility to teach kids to know why they should stay away from certain places.

Another Digital Angel scenario involves a chip inserted under the skin. Out of sight, it might be a way to thwart kidnappers. Beware, though, of kidnappers who are not only electronically savvy but handy with a scalpel. Other hypothetical situations are equally scary. I think it was Jerry Dobson who suggested the possibility of the child who turns 18 having a taking-out party, instead of having a coming out party.

JC: Frankly this does sound Orwellian. I think it was Jerry Dobson who used the phrase “geoslavery” to
refer to a possible society in which there is abuse of not just an over-enthusiastic parent but the state itself regulating and intruding into our private lives much more than it does at the moment. Do you agree with that? Do you think that the potential for abuse by the state is actually much more worrying than over-enthusiastic parents?

MM: There are ways in which the state could abuse its power. I’m not worried. There are many things that the state might do that would worry me, and geoslavery, however daunting, is nowhere near the top of my list.

JC: What would worry you?

MM: Pre-emptive nuclear strikes.

JC: Isn’t that to dodge the issue? Obviously there are few things as worrying as nuclear war. But we might still be concerned with how the state uses surveillance to regulate and order its population, and how geospatial technologies play an increasing role in that regulation. Many writers on privacy, for instance, highlight the radically increased ability for databases to mesh together and be interoperable.

Isn’t that what’s new and dangerous about these technologies? Not “misuse” but, precisely, “use”?

MM: It’s a problem and a worry, of course, but quite well covered in the privacy literature, often to the point of paranoid exaggeration and myopic technological determinism. And clearly there are cases in which the state should not only employ surveillance but control unacceptable behavior. Examples range from minor zoning-law violations to violent sex offenders.

JC: So something that is not to do with surveillance necessarily at all?

MM: Surveillance, I guess, is part of it. I suppose what might worry me also would be the state’s failure to take full advantage of technologies that might protect its citizens. I fully believe that geospatial technology in general is value neutral. I know people who disagree with this point of view. But can you the automobile is value neutral? Cars are often used, not deliberately in most cases, to kill or injure people, and vehicles in a sense help enslave people by putting them into a commuter workforce. And then, of course, there are tanks and other armored vehicles, not to mention mobile artillery. If one wants to look for technologies that are bad, look at handguns, which have gotten way out of control in this country. It’s hard to say whether or not it’s too late to do something about it. We have these Second Amendment crazies running around claiming that it’s all right for people to have automatic weapons, which I think is a total and utterly unconscionable misreading of the Second Amendment, which basically says that states can have a National Guard.
JC: One of the earliest critiques of GIS, for example in Pickles (1991), was that technologies are never neutral in that they are always situated within particular sets of power relations. We never find technology in a “neutral” situation. If Pickles is right, doesn’t it imply that we still need to critique geospatial technologies in order to uncover those power relations?

MM: Such a critique seems trivial insofar as it’s the situation that makes a technology good or bad. Plumbing is good when it solves an otherwise messy public health problem, for instance, and bad when it facilitates Nazi gas chambers. Of course, we need to critique the use of geospatial technologies. And we also need to critique the critique of geospatial technology.

Remapping and politics

JC: Let’s turn to your last book, because there are some interesting overlaps in these two pieces of work. Your last book was a cartographic study of redistricting. This is a very political and politicized topic, as you know. Do you therefore consider yourself to be a political cartographer?

MM: No. I would apply the label political cartographer to people who draw election district maps, at least as I would use that term.

JC: So you don’t think that there is any kind of deep meaning to that phrase, political cartographer?

MM: Deep meaning? Not really. Mostly it’s a glib phrase, at least when applied to the configuration of legislative districts and congressional districts, or indeed administrative districts and school attendance zones. These can all be highly political in a sense, and they can be used to control power or to channel power toward one party or the other, toward one group or the other.

JC: In the last chapter of Bushmanders and Bullwinkles you reach back to some of the ideas of Lani Guinier, particularly the idea of multimember districts, which might diffuse some of the very partisan debates about redistricting that we’re facing as a country now at many different spatial scales. You don’t necessarily see that as a politically informed cartography or a cartographically informed politics at all?

MM: Multimember districts, particularly when combined with proportional representation and weighted voting, could provide a much fairer and more stable system than what we have now. Democratic governments could avoid contentious redistricting controversies by defining stable, geographically meaningful boundaries and not having to change them every 10 years because of different rates of population change. If you establish multimember congressional districts, for instance,
and allow people living within those districts to elect representatives using ‘choice voting’ or some other form of proportional representation, each person would be able to have much more influence than now on the election of at least one member of the House of Representatives. We certainly have the technology to make voting and ballot-counting quite efficient— it need not take weeks and weeks to determine the winners. And we could avoid the Supreme Court’s mindless obsession with exact population equality— a good standard for correcting the abuses apparent in the early 1960s, to be sure, but utterly absurd when pursued to extreme with inherently flawed census data. With multimember ‘superdistricts’ we could avoid ridiculously irregular districts like a few in North Carolina in the early 1990s and some others in Georgia in the most recent remap.

Multimember districts can avoid highly contorted election districts crafted to serve purely partisan goals. It’s intriguing that the Supreme Court gave the green light to this kind of gerrymandering in declaring unconstitutional some highly contorted election districts drawn up after the 1990 census to help elect minority candidates. Basically the high court said that shape is not important as long as boundaries are not delineated principally on racial grounds. But if geography matters— and I’m convinced it does— it It would be a lot better to have rational, established boundaries for multimember districts, each with a collective clout proportional to its population. Multimember districts got a bad reputation when they were used decades ago to let a small majority of the population can elect all members of a district’s delegation. Another key ingredient is ‘weighted voting’ so that in a three-member district with 3.6 times the population of an average, ideal district, each of the three members would cast 1.2 votes. With choice voting at the ballot box and weighted voting in the Congress or state legislature, we can have geographically meaningful districts, stable boundaries, and demonstrably fairer elections fully consistent with the one person/ one vote principle. In a sense it’s a recipe for letting voters district themselves.

That said, I’m not optimistic anything is going to change. But writing Bushmanders helped me appreciate a much better spatial approach to representative democracy. Many people say it’s too alien and thus not terribly realistic. I disagree. You can kind find similar electoral schemes in Europe as well as earlier in our own history, and if you put yourself in early nineteenth-century America, you’d surely have a difficult time envisioning the mess we have now. I don’t say that anything is impossible. It would be nice to devise a more equitable and efficient political regionalization without losing a war—which is another way, of course. If the U.S. lost a war, we could easily deal with the problem of our
state anachronistic boundaries, which are a historical burden painfully evident to folks in Upstate New York and southwestern Connecticut.

JC: I think it's intriguing. I think you offer a vision of politics as not necessarily one of arbitrary borders but one which might capture meaningful communities in which people live rather than just where a line is drawn that's not meaningful to spatial communities and neighborhoods.

MM: You're right: people can belong to a community that is scattered and not easily enclosed by a simplistic geographic boundary. Politicians and journalists criticized Lani Guinier for some other recommendations that she had made. Many of her critics had never looked carefully at what she had written. The fact of the matter is, if you have a system that facilitates racial representation, it doesn't mean giving minority candidates an unfair advantage. Under a system of multimember districts and choice voting, African-American voters might decide to support a white woman or a Hispanic male, and there is nothing to prevent white males from voting for African Americans or Asians. I've done it.

JC: How often does it happen in practice?

MM: I think it happens with increasing regularity. An increasing number of people are willing to look beyond skin color.

JC: Some of the questions to do with what you call remapping are similar to the debates this country had concerning the census and the statistical sampling issue. Hannah (2001), for instance, argued that counting people is more “political” than voting--resources and decisions are increasingly made on how many people in certain categories are counted. Are we becoming a nation of passive “countees” rather than active voters, and isn't this part of state surveillance?

MM: Yes on both counts (so to speak). There are different ways to count the population, with different effects on revenue sharing and legislation, and a reliable count must is a foundation of representative democracy.

... It’s amazing how rapidly statistical sampling went up in smoke. The intriguing issue here is that the Census Bureau, for some reason that I don’t fully understand, seems to be sitting on the results that they generated. Various newspapers have used FOIA to request the statistical estimates, and the Census Bureau does not want to give them up. Why they’re doing this doesn’t make a darn bit of sense, other than the fact that I guess it could be embarrassing because the Bureau itself put a lot of emphasis on sampling as the most reliable way to reduce both the undercount and the overcount. I’m sure that if those data were released, the public would consider the results embarrassing insofar as
sampling becomes extraordinarily tricky when you’re dealing with small areal units. And the counts based on sampling forecast would fractional people—an obvious outcome when you think about it—which some people might find troubling. But I wouldn’t because sampling would probably yield a better count for aggregates like congressional and legislative districts. If anything, the Census 2000 sampling controversy demonstrates that counting people is an enormously difficult task, and getting it right is tricky and expensive. It seems that this time around, in 2000, they actually got it a lot more right than they did in 1990, simply because the federal government was willing to spend a lot more on a so-called “actual enumeration,” and they were willing to do this primarily because a Republican Congress felt that an estimated census would help Democrats. But it’s hard to say whether it would.

JC: Do you mean that it’s unclear whether it would or not?

MM: Yes. It’s unclear because basically you can identify people’s political persuasion and past voting history, but whether or not they go to the polls in the next election is another story. A statistically adjusted census would help some jurisdictions as far as federal aid might be concerned, but even there, I don’t think this time around that municipalities really have much cause for concern than they had in 1980 or 1990. One big difficulty, of course, is that a census is a snapshot, and federal agencies have other ways of estimating population that are far more accurate once one gets more than a couple of years out from a census enumeration itself. Censuses also pose some other problems, if you recall what happened with September 11. The census didn’t really tell you how many people were actually down there, how many undocumented and illegal workers, for example. Moreover, the census tells you pretty much where people sleep, not where they work. Which raises other questions about voting and taxation: for instance, New York City would like to tax people who work within its borders but sleep elsewhere. It makes sense that these workers should contribute to the cost of running the city. But they should also have a stake in municipal elections, which is not going to be an easy issue to deal with.

JC: It’s an interesting example of the spatial complexity of our lives. A simple census map of income might not be able be very revealing because it’s based on where people live rather than where they earn that income, which is a point that Lucky Yapa has often made. Maps of poverty, for example, show where they live but not where they’re underpaid at work. So “poverty” is at work, not home.

MM: But you could also argue that part of where they liver for census purposes is, in a larger sense, another worksite.
History of cartography

JC: Well this brings us quite nicely to another topic that I want to address, and that’s the history of cartography in the twentieth century, of which the census is obviously a significant part. I believe that you were asked to do this very early on by David Woodward?

MM: By David and Brian Harley, actually, and this was—oh my gosh, it must have been back in the 1970s. I sort of lost track because at one point, we came up with an outline for Volume 6, and I was the principal person (but not the only one) involved in drawing that up. But it sort of languished because Volume 1 took a long time. And Volume 2, which proved to be much bigger than Volume 1, took even longer. Brian unfortunately died in the early 1990s, and now David sees himself getting older, and he’s wondering how this is going to end, if in fact it does! So he appointed three coeditors for Volume 4. He’s going to be the principal person involved with Volume 5, and I’m going to be the coeditor for Volume 6. David’s also restructured Volumes 4, 5, and 6, which will be encyclopedic in structure and content rather than collections of narrative essays. Articles will range from as short as 500 words up to about 10,000 words, but there will not be many longer ones. This strategy should make Volume 6 more comprehensive, let us bringing in contributors from a wider range of countries and finishing it within a reasonable period of time, and—this is probably the greatest justification—making it a useful reference, which is the History’s fundamental objective.

JC: What do you think, speaking overall, will Brian Harley be best remembered for? What is his legacy?

MM: I like his guide to Ordnance Survey products—although hardly reflective of his best critical scholarship, it’s a delight to look at and reread. He was a nice person, a jovial person. He got many people to think about questions that they hadn’t been thinking about before. It’s a shame that he died at age 59. Had he lived, his views on things would no doubt have evolved, and he would have had a much greater influence on contemporary cartographic thought, including the critique of GIS. It’s almost like his essays are frozen in time. It’s a shame that his book (Harley, 2001) came out so long after his death. I’ve reviewed it for Cartographic Perspectives, and one of the things that struck me is the introductory essay by John Andrews. When you read that and then you read what Brian says, you really have a different take on Brian’s viewpoints, and I’m not certain I would like to have that happen in my case. But he definitely made an impact, and his death was a loss.
JC: One of the debates that has surrounded the publication of the History of Cartography series is whether there has been an overall vision or theory, if you like, behind the volumes. What's your opinion on theory?

MM: Well, I'm not sure what you mean by overall vision or theory. At the simplest and probably most important level, its vision is giving scholars something that is systematic and useful. This goad is going to be a lot easier, I think, for volume 5, covering the nineteenth century, than it is for Volume 6, on the twentieth century, because facts, processes, artifacts from the nineteenth century have by now surely gelled, which hasn't yet happened—not fully at least—for the twentieth century. By contrast, the issue of theory is tricky, which raises the question: What is theory in the context of map history and cartography in general? One take on theory is the conceptual framework, a structure intended to help you to understand something; an example is David Woodward's 1974(?) framework. Other theories are intended to inform map design; for example, if you pay heed to Bertin's visual variables, you should produce maps that are more reliably decoded than if you had ignored Bertin. That's the kind of theory that works. I'm a bit leery about other concepts that go under the name of theory in, say, human geography or social science. "Theory" is used to justify critical appraisals, and a lot of people in our discipline spend a significant part of their time critiquing other people in the discipline. What bothers me is that these critiques have little if any relevance to mapping policy. Through its silences this approach suggests that policy is immaterial. Critical analysis can indeed inform policy, but many of its cartographic practitioners seem to have blinders on. In my view what they see as theory is pointing them toward activities that are far less socially and politically useful than they could be.

JC: You see theory for theory's sake rather than for the sake of policy and politics.

MM: Yes, basically. Policy and politics can have an effect that this type of theorizing seems to ignore. Why don't I like theory? Initially because of psychophysics. I entered academic cartography when psychophysics--Flannery's proportional circles, for example--was being touted as highly promising. If we build on it, its proponents implied, we will eventually make map design far more efficient and reliable. For a while--but fortunately not for long--I bought into the paradigm. But by the late 1970s it was apparent that the psychophysical approach was largely worthless. Which is not to denigrate the systematic study of map design: there's a lot that one can learn through a systematic examination of map symbols and evaluation experiments of various types with human subjects, but that's more empirical than theoretical. Nowadays when I confess to being skeptical about theory, I'm especially
concerned that proponents of social criticism of cartography don’t really seem to be very committed to communication. They litter their essays with elitist language, which I don’t think takes anybody, except maybe them, further down the road toward understanding. I say understanding rather than truth. If anything, I am probably as skeptical as anyone as to exactly what we mean by truth. And I think some of the social criticism is raising issues that need to be raised, but in the context of policy.

JC: One of the critiques of the history of cartography, for example, by Cordell Yee (2000) has been that it favors an interpretation of maps as text, and thus detracts from the “proper” study of maps as artifacts in history. What’s your opinion on that?

MM: I don’t view this as an either-or situation. Any attempt to say “you have to do it this way, and you can’t do it that way” is extremely short-sighted. But having said that, I think that the interpretation of maps as text invites or allows an interpreter or scholar to inject his or her biases—a criticism of the artifactual approach, too, of course. You just can’t get away from bias. I realize that probably sounds extraordinarily wishy-washy, but if there is a “Harleyan” view that is distinct from a “Yeean” view, both of these viewpoints would tend to be exclusionary, which I find objectionably shortsighted.

JC: Has that been at least one of the reasons why Volume 6 will be encyclopedic in nature, the desire to include multiple perspectives and avoid exclusionary viewpoints?

MM: I think you’d almost have to. The goal of Volume 6 is to be useful as a reference work. Even there, if you have an article on a certain topic, and if one person is going to write that article, there is the possibility that the article will reflect the way he or she sees it. But with many more shorter articles (rather than few longer narrative essays) the overall history can reflect a wider number of viewpoints. Moreover, there will also be articles examining particular viewpoints, and these need balance.

JC: Are you happy with the fact now then that it is encyclopedic?

MM: Definitely. The prevailing approach—narrative essays—for Volume 6, would leave too many gaps because restrictions on the page count would seriously limit the number of contributors. Look at what was done in Volume 1, which was able to draw on considerable existing research on cartography in the pre-Renaissance. The twentieth century is much more complicated, and existing work by comparison lacks both breadth and depth. Another problem is that a narrative essay has a thread, telling a story. In order to keep the narrative coherence of that story, the author must present facts in a way that tend to make the larger body of facts less accessible to researchers who really want to find out about maybe this chunk or that. I say this from the standpoint of a researcher myself. My current
The project is a book with a tentative title “Mercator's Legacy.” It’s a biography, not of Mercator himself but of the Mercator projection, basically taking it through the transverse case as well as the space oblique modification and looking at the Peters controversy. I’ve found it hard to use Volume 1 for parts of my work covering medieval maps If the volume had been encyclopedic, it would have been more useful. I’m not criticizing the people whose articles I consulted, but the information they could offer would have been notably more accessible for my needs had an encyclopedic strategy been used.

JC: I guess there are two different ways of thinking about what a history of cartography does for scholarship. One is an encyclopedic one, where the facts are at your fingertips. The other, though, is where narratives actually think through issues in the history of cartography that can only be done in a more sprawling way. So there's sort of a fact-based record, and then there's one which is how do we interpret it, and what does it mean.

MM: An excellent point. But remember, though, facts and interpretation are not mutually exclusive. Our problem is that you can do only so much within 1,500 pages. One of the things that we found with the exploratory essays, where there is a 10,000-word limit, is that many of our authors have sufficient material for a book, and in some cases, what we received was somewhat like a book in its early stages—at least last fall, when several of the draft essays were considerably longer than 10,000 words. And the authors could easily have made them longer. But this is where the Exploratory Essays Initiative was really successful, and we've told the National Science Foundation this. The project’s success lies not only in the added knowledge that their work would bring forward as a possible contribution to Volume 6, but also in actually getting people started on the books they need to write—narrative essays much longer and richer than the old format would allow.

JC: The History of Cartography itself opened up new avenues of cartographic research, for example by broadening the concept of the map across different cultures. Would your volume on the twentieth century have to take account of how scholarship on the history of cartography changed during the twentieth century?

MM: You could look at the four books that are in print—Volume 1 plus the three books of Volume 2—as well as at the Project as a whole, which has brought increased visibility to the history of cartography. Volume 6 is far from underway. David and I currently have a small project, the Exploratory Essays Initiative, which is intended to stimulate interest in the history of cartography in the twentieth century, an epoch that has receive far less attention than the Middle Ages or the Renaissance.
Which is puzzling: scholars in economic history or political history, for instance, don’t shrink from looking at even last year. In matters of presidential history, they don’t even shrink from looking at last week! Historians who insist on using archives might require thirty years of aging and organizing, not the century or so needed to make maps rare and collectable. What a shame, really, that many more academics in different fields and subfields are not looking more carefully at historical aspects of geospatial information: how it came about, how it’s used, with what impacts, and so forth. So to answer your question: one part of it, but a small part, would indeed be the history of cartographic history itself.

JC: When do you anticipate that Volume 6 will be published?

MM: Well, there’s a big “if.” In January 2002 we sent the National Science Foundation a proposal with a work plan that starts 1 September 2002 and runs for 5 years. If they fund us, Volume 6 will be underway—which is to say that the University of Chicago Press will have a completed manuscript in five years. Lord knows how long the Press will take after that, but if the referees are not to whiney the manuscript would be in production within five or six years.

JC: So 2007 approximately?

MM: Say 2008 to be safe. Timing will be tricky because there is also the matter of both books in Volume 6 coming out simultaneously. That’s a big set, which most likely would sell for about $300 at current prices. When you’re talking about 1,500 pages, having that in a single book would be as physically awkward to handle as an unabridged dictionary. You wouldn’t want to drop it on your foot! Chances are pretty good that Volume 6 would be out before Volume 4, and that 4 would be out before 5. The other question which you haven’t asked, I will: What happens if it’s not funded?

JC: I’m too polite to ask that!

MM: Then perhaps some corporate angel might step forward, or maybe the project waits for the next generation of map historians. Why should a corporation fund it? A sense of obligation with a bit of benign corporate advertising thrown in, I suppose. If a corporate patron thinks what David and I are doing is intellectually honest and useful, Volume 6 could be a significant part of its corporate legacy. I think that as far as the NSF is concerned, we have a viable work plan, and we have a product which will be useful to many types of scholars, educations, and the curious public, which has what they’re concerned with in terms of wide impact, which in turn would then make the research and editorial work for Volume 6 an excellent use of Foundation money. It’s going to have a wide impact, not just
the year it comes out and the year after that and the year after that, but probably for the next 25 or 50 years, until someone else comes out with a better, more complete interpretation. And when they do, Volume 6 would surely be a valuable starting point. Another reason why the NSF should fund it is that David and I have a decent track record for the current grant we have.

JC: What would be the topic that you would most like to see addressed in Volume 6 that you don’t believe is addressed sufficiently at the moment?

MM: The extent to which map design matters, and this goes to a variety of different things, which is to say that maps can communicate information; they can reveal patterns; they can attract interest; they can support a particular political point of view. That I guess is at one level. Then look beyond that in terms of the map’s effect on the betterment or the worsening of humankind. It’s a complex situation, and somewhat iffy. We might also bring up the question of the Peters map, and raise a question—I think Waldo Tobler raised this yesterday at the Volume 6 Symposium—of how many people died as a result of the Mercator projection? You could try and answer that I guess at different levels, some of which could get a little bit ludicrous. For instance, to what extent did a navigational tool support the slave trade? But as a potentially propagandistic view of the world - does the projection really matter? Indeed, does map design really matter? Do maps really matter? I think they do!

I’ve heard, as I am sure you have, that cartography as geographic subdiscipline is moribund. I can recall one time I thought of a “macro cartography” and a “microcartography.” In this schema microcartography is map design, and there’s always going to be a need for map design. Cartography is going to remain important, and can play a role in a critical examination of GIS products. In its applications and products, GIS has many shortcomings. Many people who are using it, not to mention some who are teaching it, don’t really have a good sense of what map designs work well and which are likely to fail miserably: questions in the realm of microcartography. There’s also a macrocartography that embrace photogrammetry or photo interpretation, remote sensing nowadays, and GIS. But many people, I’m sure, think of cartography as an undergraduate course in which one draws maps in pen and ink. But this that way of drawing maps has changed—it’s no longer there. What’s left then? Is has cartography become GIS? It’s a moot point. I guess a lot of people in the GIS arena wouldn’t agree that what they are doing is cartography. There’s also the annoying tendency among academics to rename things, as occurred when we went from geographic information systems to geographic information science, to geospatial technologies, a term that acknowledges that the important role of
GPS and what’s called “location-based services.” If you look beyond GIS, you’ll see a wider enterprise in which GIS as we know it now (mostly buffering and map overlay) is a relatively small part of macrocartography.

**GIS and society**

JC: This is a question that one of my students was interested in: What do you think should be the role of GIS companies in promoting or providing cartographic principles with other instruction? She was regretting that there is very little cartographic/ map design pedagogy in some of these courses that companies like ESRI provide.

MM: Which I guess is the principal company these days— the 600-pound gorilla. Ultimately these industry pedagogues will come around, I’m sure. Cartographic principles— map design theory, if you will— is something that ESRI and similar firms could easily exploit as a marketing point. They could easily have manuals— in some cases they already have— concerned with map design, and they could put map design to work in designing the software, especially in the user interface, to help GIS users make maps that are more reliable for personal analysis and public communication. It’s a problem that one company is so heavily dominant that it doesn’t have a competitive incentive to do this.

Economists would argue that if we had three major players, there would be a competitive advantage in trying to consciously to create more informed users and to provide them with design support in the interface and online as well as through short courses. The design imperative is far less apparent than it should be. I’m hopeful but am not going to hold my breath in hope of rapid change. Part of the problem— if you want to say there’s a problem— is that maps can be pretty robust insofar as even bad maps often “work” at some level. Unfortunately, bad maps can work too well among people who know their data and who are designing maps for themselves and for other people who already know their data. It’s when they take their maps public that flawed designs invite misinterpretation and create other difficulties.

JC: So there’s a kind of social indebtedness to map interpretation and map use beyond just the Flannery circles that you were mentioning before.

MM: Sure. Take a look at weather maps, which are extraordinarily complicated. They violate a few principles of map design, but this doesn’t make them useless for trained meteorologists. Take, let’s say, NexRad radar maps. People using these day in and day out can really internalize their codes. What’s
more these maps also work with the general public because they’re presented frequently and in an
viewing environment where someone who knows what he or she is talking about is providing the
interpretation. And because radar weather maps are seen so frequently, people who are weather
junkies very quickly learn that there is such a thing as green rain.
JC: Yes, and flashing red storm centers. There have been a number of, after September 11 especially,
a number of reconfigurations of the line that divides publicly available data from sensitive data. One of
my students was interested in whether you have an opinion of the recent agreement between the U.S.
and Space Imaging to limit public access to satellite data collected over Afghanistan.
MM: That was an interesting strategy insofar as the DOD could have invoked shutter control, and told
Space Imaging to deny anyone imagery of the area—period. Instead, the military bought themselves an
exclusive contract—however lucrative the deal, Space Imaging apparently could not refuse their offer.
I suppose this approach sets a better precedent than shutter control. But would there really have been
a problem if newspapers, say, had tried to follow what was going on from space? Probably not.
What’s tricky, of course, is that Ikonos, through off-nadir viewing, can greatly cut the revisit time as
well as home in on certain areas of the client’s own choosing. But would Space Imaging really sell the
imagery to terrorists—to people who live in caves, as George Bush says? That seems an unlikely
scenario, but the Administration was no doubt worried about CNN or another media outlet revealing
the military’s plans or exposing an operation that turned out badly. What’s interesting, too, is that
Space Imaging is licensed to put up another satellite able to capture imagery with a resolution of half a
meter. You can’t get a whole lot better. Experts have figured that intelligence imagery can get down to
about 10 cm, which can reveal quite a lot. The tricky point, of course, is that a low-orbit satellite
doesn’t offer the long “dwell time” that field officers crave—a satellite that stays over the target area
24-7. But by controlling the skies, American forces can get much of what they need using fixed wing
aircraft, including drones.
JC: One of the shocking things in some of the fictionalizations of these issues, like the movie “Enemy
of the State,” is a rogue NSA director who, for personal, private reasons, can redeploy satellites
suddenly from one orbit to another in real time to follow a person through the streets of D.C.
MM: Well, you’d surely use your hydrazine pretty darn fast, and greatly shorten the satellite’s useful
life. Geostationary satellites work over the equator, but not over D.C., and a full constellation of
imaging satellites seems needlessly expensive—just not economically feasible. It would seem far easier
to grab the guy unawares and implant a chip under his skin!

JC: What’s your opinion of the various GIS certifications that are being touted? One of the recent stories that has been making the rounds has been a case in your home state, New York, where a municipality that wanted to map fire hydrants with GPS was prohibited from doing so because its people weren’t licensed surveyors!

MM: It was a local planning department in Warren County. I am really upset that a state agency would take seriously the complaints of the whiny land surveyors who complained that these people were surveying without a license. Certainly you need to have a licensed land surveyors if you’re going to mark off property boundaries for construction or a subdivision, and certainly in a metes and bounds state like New York, it’s necessary to have measurements made by people who understand deeds, that is, legal descriptions of real property. But there’s no need to hire a licensed surveyor to go out and locate fire hydrants. Volunteer firemen or paid municipal firemen can do the job. In geology and geography we call this field work! Now I don’t think the surveyors’ complaint will go very far. There’s ample precedent for engineers and other non-licensed field crews mapping infrastructure. Even so, land surveyors and ACSM [American Congress of Surveying and Mapping] have been a little bit full of themselves because they have to go through a licensing process. Well, so do barbers and cosmetologists.

A lot of people believe that certification might be coming in GIS. Yet we don’t certify municipal officials, except perhaps city engineers who might need a PE (Professional Engineer) license. GIS certification can be useful in the same way that a bachelor’s or master’s degree is useful—in excluding some people who are unlikely to have relevant training. It’s easy to carry credentialism too far, surely, and it’s hard to say exactly what the certification means, unless you have a board charged with evaluating those who are certifying people on the local level. The thing that’s tricky, of course, is that GIS is changing rather rapidly, which raises the question of what someone who is certified must do to maintain that certification? Using GIS software is not quite like a commercial pilot’s license though. What are the consequences of a flawed analysis? You’re not going to crash a plane. I guess if anything, I would like to see GIS become more user friendly to the point where any municipal official or elected official, or indeed a private citizen, could go in and interrogate a system. The problem there is not so much certifying people who use the system but basically having good documentation for the data. In this sense metadata is far more important a policy issue than certification.
JC: I think certainly organizations like URISA do envisage some kind of nationwide standard, and they will be the backstop, as it were, to somebody being genuinely GIS-certified.

MM: Which creates more power for the certifying organization—sounds cynical, I know. But will certification be uniformly beneficial? You’ll still have people doing field biology who aren’t GIS certified, I would think, and when they try to publish their results to a peer-reviewed journal, I doubt that the peer-reviewers will say, “Oh no, this isn’t right. You can’t do this. You don’t have GIS certification.”

JC: So do you think it’s a waste of effort right now or is misdirected effort on the part of fairly important segments of the GIS community that are trying to react to this perceived threat by surveyors?

MM: URISA’s doing this is a bit like university faculty at a state university joining a union because every other group of state employees has one—not the best reason to have a union, even though the union might prove worthwhile. In the final analysis so much depends on how it’s done. One problem with credentialism is that it’s fundamentally elitist—aimed at keeping other people out, or keeping other people’s students out. Moreover, if you can cut down the number of the certified people, the folks with certification can charge more for their services. That’s a rather cynical view, I know.

JC: One of the arguments I’ve seen, for example, that Dave DiBiase has transmitted to me, one of the reasons he’s involved in this is because he would rather it be cartographers defining what goes into a certification than a land surveyor’s notion of cartography. Do you think that’s a valid point of view?

MM: I would imagine a lot of people pushing for certification have good motives, and the consequences of some flawed GIS analyses might even prove them right. Even so, it’s like the academic equivalent of protective or pre-emptive incorporation, whereby a suburb that is fearful of being swallowed up by an encroaching city tries to avoid annexation by incorporating. In this case, though, I think that it’s the suburb that’s a lot bigger than the expanding city—asking GIS users to get a surveyor license, even a low-level one, is a bit like a porpoise swallowing a whale. Look at the way GIS is growing. What’s ESRI’s stake in certification. There’s an advantage now, of course, in being an ESRI-certified instructor. And it’s possible that more colleges might want to have their courses taught by faculty who are ESRI-certified instructors. And that’s not bad. This could, however, give ESRI more power than is really appropriate. ESRI courses—not the college type, but the kind the company offers—generally don’t have testing involved. Anyone who sticks it out gets a certificate, a piece of
paper, and that’s a credential of sorts.

One thing that I don’t see being addressed here is the issue of liability, which is often a question of representation and the normal state of the art. There are few legal precedents, though. The principal liability cases relevant to geographic information involve lawsuits against a company that was repackaging federal data—selling aeronautical charts, actually—and became liable for two aircraft accidents because it claimed its charts were more useful than the government’s format. I can imagine people selling GIS services becoming much more careful in their advertising or much more devious in their disclaimers. There is also the issue of bonding to protect the client if something goes wrong. I respect David’s view that certification is a likely scenario if not inevitable. If certification happens, I hope geographic expertise has a major role in its development. But I don’t have a crystal ball.

JC: Thank you once again.

References


