

Survival through Ethical Conduct

Joseph P. Burns, P.E.

P. O. Box 20452, Minneapolis, MN 55424

ABSTRACT: Our Society has examined, approved, and certified over 600 photogrammetrists, all of whom are committed to practice in accordance with the ASPRS Code of Ethics. While this is an admirable achievement, most experienced mapping firms have already learned that ethical conduct is the vital key to success in a business based mainly on the trust and confidence of its clients.

INTRODUCTION

YEARs AGO, when my eldest son expressed an interest in a summer surveying job, I spoke to our field chief about the possibility. He laughed and replied: "Sure, we can use him but aren't you afraid he might get to like it?"

Spoken in jest, nevertheless his point was well taken. Although I found aerial mapping work exciting, challenging, fast-moving, I couldn't honestly recommend it as a lucrative way of making a living.

For the past 15 years our Society has been trying to develop a practical way to instill and monitor ethical behavior among the several hundred small firms that largely make up the private mapping sector. Thanks to the devoted efforts of the Evaluation for Certification Committee, members of which have set standards, reviewed applications, and rendered prompt decisions to the applicants, we now have a cadre of over 600 Certified Photogrammetrists.

These members, who have been singled out as being competent, have each agreed to abide by the Society's Code of Ethics; this is indeed great progress and the Committee members are to be highly commended for their patient and time-consuming efforts.

At last, map buyers have a visible target for any complaints that may arise from careless or unethical behavior. Certification is becoming a mark of prestige, an honor and privilege to be guarded carefully, particularly because many federal agencies and other substantial map buyers are starting to specify the services of a Certified Photogrammetrist on their contracts. It seems obvious that the activities of this group will tend to improve the moral and professional tone of the private mapping sector.

And while over the years I've known a few charlatans who were capable of deals that would make a North African rug merchant blush, the great majority of mapping company owners I've known have been honest, hard-working individuals. I've found that most complaints against these people originate through misunderstandings rather than through malfeasance or incompetence.

In many cases owners entered commercial mapping after starting as pilots or photographers, field surveyors or stereo-compilers. They learned in the field that their actions could affect the quality and reliability of the final product, a belief that was usually carried over into the companies they started.

My personal belief after 35 years of close contact with firms, both successful and unsuccessful, is that the only sure way to build a consistently profitable and long-lasting mapping company is through a policy of frank and straightforward dealing. There is no shortcut, only a slow, deliberate process that eventually builds confidence, develops strong ties that lead to repeat business and a profitable operation in a difficult field.

When retailers or manufacturers enter the field, they are accustomed to thinking big. They hire key people who are often castoffs or opportunists and plunge into a strident advertising and public relations campaign. Invariably such tactics succeed for a time, but the lack of practical experience sooner or later causes real problems and they retire from mapping. One wealthy investor remarked bitterly after a disappointing year, "I've never known a business where you put so much in and get so little out."

The investment in equipment now reaches astronomical proportions, completely out of keeping with the modest return on investment. The critical period comes at the start, before the mapping company becomes large enough to afford proper quality control and careful editing. The owner frantically divides his time among administrative, marketing, and technical duties. Under these circumstances it is easy to overlook details, the kind that lead to disaster on occasion.

MAIN SOURCE OF COMPLAINTS

The most frequent source of complaints about map accuracy arise from the misuse of maps by clients. In the northern plains clients often order mapping in late fall when the sun angle is low and the oak leaves are still on the trees.

I once advised a company that under these adverse conditions mapped a 200-acre subdivision for \$1800 and ended up settling a lawsuit resulting from elevational errors for \$68,000. The original client knew and accepted the problems faced by the mapping company but the project was delayed and over the next seven years the maps changed hands twice. The three-foot vertical errors were not discovered until earthwork was underway, much too late to redesign grades and drainage plans.

In a more personally painful case, I once agreed over the telephone to rush out a "quick-and-dirty" sketch map from summer photography of a very small but valuable piece of lakeshore property. It seemed this firm needed something *that evening* for a council meeting. I should have been forewarned. My contact left the firm shortly after, and six months later these rapid sketches somehow got used for final design. When the heavy evergreen growth was removed, the topography bore little resemblance to our version, much to our client's embarrassment. We lost a client and I lost a good friend, the principal owner, who never spoke to me again.

Finally, a last horror story. In the sixties we undertook the mapping of an important hydroelectric project in a Third World country. To help our client get started, we made a reconnaissance "vicinity" map from high-altitude photography, using a 1:250,000-scale Air Force chart for vertical control. Later we made accurate maps of sites for two diversion dams and for the powerhouse which was located at the bottom of a 1700-foot gorge.

We did other accurate mapping of a 60-mile access road and a 120-mile transmission line. As you may have already guessed, 20 years passed before the project was funded and the very approximate "vicinity" maps were mistakenly used for important elements of the design.

When the question arose about elevational accuracy, it was quickly discovered that the maps in question had been clearly labeled "*Reconnaissance Map—Do Not Use For Engineering Design.*"

THOUGHTS ON QUALITY CONTROL

During my 17 years at our company, I was accused more than once of putting too much time and money into the maps, a charge that was not entirely baseless. At the outset we hired several young veterans and trained them under the G.I. Bill for a year in the field and the office. I personally checked each map that left our office and infuriated our chief draftsman by rejecting sheets that didn't look right. We picked out an area near Crystal Airport, clobbered it with control, and flew it periodically to test both cameras and plotters. We hired an unem-

ployed machinist and trained him to check and maintain our electronic equipment and even to check the adjustment of our projection-type plotters every few months.

We once, without quibbling, tossed out \$30,000 worth of maps on a large beltway project when our client found random errors in our maps that originated from intermittent vacuum failure of the camera.

Now all this cost time and money but eventually this care and attention, this responsible conduct, paid off. During the sixties we were consistently profitable and never-repeat-never-bid for work on a price basis.

Even though my attitude may have been a little extreme, I'm sure that most of the successful mapping firms are those who practice ethical behavior, who keep a tight watch on quality control. And while it is welcome news that we have 600 Certified Photogrammetrists, there is really no substitute for full awareness of the "persnickety" nature of our work where the contour interval is a tiny fraction of an inch and a moment's carelessness can lead to disaster in a field built largely on trust and confidence.

BOOK REVIEW

Geographic Information Systems: A Management Perspective, by Stan Aronoff. WDL Publications, P. O. Box 585, Station B, Ottawa, Ontario K1P 5P7, Canada. Softcover, 294 pages, 17 color plates, 14 black-and-white photographs, 97 graphs, charts, and illustrations, and 20 maps. Published 1989. Price: Canada CDN \$70, United States US \$60, other countries US \$65 or CDN \$74.

THIS WONDERFULLY CONCEIVED and well-constructed treatise consists of a preface by the author, and a foreword by Jack Dangermond. Following these discussions are chapters on "An Introduction to Geographic Information Systems," "What is a Geographic Information System," "Remote Sensing," "Data Input and Output," "Data Quality," "Data Management," "GIS Analysis Functions," "Implementing a GIS," and a "Conclusion." In addition, there are worthy appendices on "Abbreviations and Units of Measurement" and "Data Sources." I found both of these additions timely and useful. For those of us who deal with students and practitioners on a day-to-day basis, a handy reference for these types of information can be valuable indeed.

First, I want to describe the strengths of the book, which are many. The book is relatively complete, and deals with topics not handled elsewhere, such as organizational aspects of GIS and implementation. Both subjects follow directly from the subtitle of the book, and are necessary if an author is to discuss GIS from a "management perspective." Also, I really liked the tone of the book, which is subtly technical. By that I mean that the important technical issues are covered, but they are described in an understandable fashion. I am impressed with the author's ability to make fathomable discussions of statistical accuracy, data structures for spatial information, how input and output hardware operate, etc. A degree in mathematics is not needed to understand how the standard algorithms in a GIS operate. The explanations in the text are supported by the figures and tables which are well prepared and as understandable as any I have seen. The book is suitable for upperclass under-

graduates, or graduate students from another field who are interested in solid explanations of the major GIS issues.

The book has relatively few shortcomings, some of which are inherent in any work of this sort. Certainly, every aspect of every major topic cannot be completely covered in any book. More advanced students or graduate courses may want more extensive treatment of relational and object-oriented database structures. I would like to see more treatment of how external linkages to expert systems, prediction models, or other decision-making tools are made, and the ramifications of these connections. I would like to see more coverage of the issues of remote sensing/GIS linkages. The author alludes to this by including a chapter on remote sensing, but actually discusses the connections with GIS only minimally. These shortcomings are not omissions, only a decision by the author to discuss some topics more completely than others. One other disadvantage to many will be the cost. It seems a bit pricey for a softcover book, even with the excellent color plates. Those of us who must deal with students and the costs of higher education on a day-to-day basis are accustomed to higher than expected prices for books, but some will balk at the \$60 tag.

I recommend this work without reservation. It is the best overall introductory GIS textbook I have seen. It is as complete as possible, and, most importantly, well written and easily understood. I am already recommending it to all who inquire.

—Jim Smith
Dept. of Forestry
VPI & SU