

Memo

Date: July 8, 2022

TO: UESI Geomatics Division
- EXCOM
- Education Committee

FROM: Earl F. Burkholder, PS, PE, F.ASCE eburk@globalcogo.com
Global COGO, Inc., Las Cruces, NM 88003 www.globalcogo.com

RE: Responding to request by Carol Morman and Diane Swecker for ideas to be discussed by a panel at the end of the October 2022 Surveying Conference – specifically. . .

Surveying Education and the Need to Fill Workplace Requirements

Throughout my career my goal has been to provide quality service to others: clients, students, colleagues, etc. I will always strive to provide correct information, but nothing is true because I said so. Each of us is responsible for what we believe and what we do with what we know. Presumably, learning is an on-going process for each person and the underlying issue is, “learning how to learn.”

The first Surveying Educators Conference I ever attended was the 1984 Conference in Fresno, CA. During the conference we were taken on a field trip to Yosemite. The sights were truly impressive but the lasting benefit for me was the ride back to Fresno sitting in a seat beside John D. McLaughlin. Among other issues, we discussed tensions between surveyors and engineers. His observation was that it is more important to ask the right questions than to have the answers. Since then, I’ve spent lots of time trying to ask better questions.

Surveying has been very good to me, and I appreciate both the career opportunities and the many excellent friends I’ve made along the way. My career started as a draftsman in 1968 and includes degrees from both the University of Michigan and Purdue University. I worked in a large corporate environment for 5 years, spent 25 years teaching upper division surveying in the college classroom, devoted 15 years to consulting (& self-employed), served 8 years as Editor of the ASCE Journal of Surveying Engineering, served as Chair of an ABET Commission, and various committee activities. I’d like to think I am familiar with both parts of the topic posed – education and workplace. On the other hand, I am a digital immigrant trying to compete with digital natives. The environment today is much different than it was when I retired only 12 years ago.

There are many ideas I’d like to share but brevity is one hallmark of good communication. Hence, the following are listed with the understanding that additional details are included in a more extensive document (subject to updates) posted at:

www.globalcogo.com/Ideas.html

1. The digital revolution has had an enormous impact of how people use spatial data.
2. Surveyors use spatial data extensively but so do many other disciplines.
3. In the USA, surveying has sole responsibility for private boundary locations.
4. The complexity of boundary issues goes from simple mortgage surveys to riparian litigation.

5. Diversity of career opportunities is one strength of Surveying. That makes it difficult to find a solution for which “one size fits all.”
6. Among others – at varying levels of rigor and complexity – surveying includes:
 - a. Data collection is a legitimate surveying business.
 - b. Data processing and analysis consumes talent of many.
 - c. Legal issues and research are essential (licensing/registration).
 - d. Development of standards/specifications and quality assurance policies.
 - e. Teaching/mentoring/research/publishing.
 - f. Running a successful business/agency/organization.
7. Educational requirements should be reflected in minimum job descriptions at all levels.
(Additional detail at web link above for this and following items.)
 - a. Associate degree – data collection and drafting
 - b. Baccalaureate – data analysis, project management, business, specifications
 - c. Advanced degree – teaching, research, standards/publications
 - d. Self-taught – whatever is needed for minimum job performance
8. But here is the biggie – SURVEYING WILL CONTINUE TO STAGNATE AND WILL NEVER BE RECOGNIZED ON PAR WITH OTHER PROFESSIONALS UNTIL WE DEMONSTRATE THE ABILITY TO ACCOMMODATE THE ABSTRACTIONS ASSOCIATED WITH USE OF 3-D DIGITAL SPATIAL DATA!
9. Suggestions and food for thought:
 - a. Big picture view of 3-D spatial data – <http://www.globalcogo.com/setepaper.pdf>
 - b. Poster presented at 2016 AGU conference – <http://www.globalcogo.com/poster.pdf>
 - c. Abstraction/technology/practice/policy – <http://www.globalcogo.com/abstraction-1.pdf>
 - d. Role of a model – <http://www.globalcogo.com/role.html>
 - e. Latest trend is “digital twins” – <http://www.globalcogo.com/GSDM-and-DT.pdf>
 - f. Presentations to SaGES, including 2022 – <http://www.globalcogo.com/SaGES-items.html>

Or anyone can visit the Global COGO, Inc. home page and navigate to many items. Inquiries/discussions will be accommodated with the best of intent.

Carl F. Burkholder