

The Scholarly Pursuit of Construction Knowledge

Yvan J. Beliveau and Paul L. Knox
Virginia Polytechnic Institute and State University
Blacksburg, Virginia

Opening comments at the April 2002 Associated Schools of Construction 38th conference.

Key Words: Teaching, Scholarship, Community, Academic Mission

Yvan Beliveau's Comments

Welcome – to Southwest Virginia to Roanoke, Virginia – and to the Blacksburg area later tonight. I hope you find our little bit of the world as beautiful and exciting as most of us who share our homes here.

It is with great pride and a pleasure for Virginia Tech to host the yearly ASC conference.

I would like to introduce Paul Knox, Dean of the College of Architecture and Urban Studies. After Paul has given his comments, I will present some additional thoughts and pose some question to consider during this conference.

Paul Knox's Comments

Welcome to this year's meeting of the Associated Schools of Construction. It's both a privilege and a pleasure to have you here, and I hope that you will have a rewarding experience.

This year's theme - "The Scholarly Pursuit of Construction Knowledge" - is very appropriate to our time. Most people would agree that one of our principal responsibilities in the schools is to act as pathfinders, through basic and applied research, to ways in which the construction profession can become more effective.

Your meeting here is especially timely for us: those of us from Virginia Tech will be listening carefully to every word, since our President has recently announced ambitious new goals in terms of research productivity for the whole university.

Every few decades a group of new technologies comes along and disrupts the old order. I'm personally very interested in how each new technology system undermines the established order of things and creates a new geography, with new winners and new losers in terms of economic growth and development. Each new technology system also presents unprecedented new opportunities for research and practice in almost every field.

1790 - 1840: Early mechanization based on waterpower and steam engines, the development of cotton textiles and iron working, and the development of river transport systems, canals, and turnpike roads.

1840 - 1890: The exploitation of coal-powered steam engines, steel products, railroads, world shipping, and machine tools.

1890 - 1950: The exploitation of the internal combustion engine, oil and plastics, electrical and heavy engineering, aircraft, radio and telecommunications.

1950 - 1990: The exploitation of nuclear power, aerospace industries, and electronics and petrochemicals; and the development of limited-access highways and global air routes.

The latest clutch of disruptive technologies emerged circa 1990 - the exploitation of solar energy, robotics, microelectronics, biotechnology, advanced materials, and information technology. New information technologies have helped create a frenetic international financial system, while transnational corporations are now able to transfer their production activities from one region of the world to another in response to changing market conditions. Construction, like law, accounting, advertising and other professions, have become global in scope, and are in the process of being organized around radically new business practices. Products, markets, and organizations are both spread and linked across the globe. Governments, in their attempts to adjust to this new situation, have had to seek new ways of dealing with the consequences of globalization, including new international political and economic alliances.

My point here is that this new technology system also offers the possibility of re-casting both our disciplines and the associated professions.

At almost all good research universities, faculty are already tunneling out under the old disciplinary and institutional walls to form new relationships. We need to open the gates and let them build highways. We need to cultivate strategic alliances. It will be difficult but it will likely turn out to revitalize university research rather than damage it.

Currently, about 80 percent of all basic research and about 17 percent of all R&D faculty in universities undertakes work in the United States.

Over the past 20 years, overall industry funding for academic research has expanded at an annual rate of greater than 8 percent.

I don't have the data, but I suspect that in Construction the figure is much lower.

Worse still, governments and businesses don't allocate very much at all for research in our field. Yet constructing the built environment accounts for more than 8 percent of Virginia's economy - more than agriculture, more than health, and more than the military.

It's up to us, of course, to persuade government and industry that they need to fund our research.

That's the first step. But as we then ratchet up our research efforts, there are some important issues that we shall have to confront.

In relation to research training:

- What are the keystones of research competency in Construction?
- How can we attract more of the top students into research tracks in Construction?

There are, though, some much broader questions that we shall soon have to confront. Much of higher education has come to operate on a sort of instrumental individualism. Many academic fields have come to accent the marketability of their technical skills while de-emphasizing their contribution to society and civic life. There has been a great deal written over the past few years about The University Inc.: universities as knowledge factories; and the consequent undermining of universities' independence.

One important question, therefore, is: Can we use and channel our research in Construction to help reinterpret the sense of public purpose for our time and to initiate a recovery of the university's identity in the mind of the public?

These are all issues for the near future. Meanwhile, it is clear that research is already of fundamental importance to our health and well-being as academic institutions. Research propagates an atmosphere of innovation and risk-taking, and the results of research generate new knowledge that sustains the development of our academic disciplines. Basic research also provides the foundation for outreach programs and the catalyst for learning environments that are enriched and enlivened by faculty who are engaged in cutting-edge intellectual inquiry.

The greater the reputation of our schools in terms of research output, the more competitive we can be in attracting the best faculty and, in turn, the best students. A benign, cumulative, spiral results: having the best possible faculty and students not only enhances our reputation but also results in more sponsored research; which in turn helps to fund equipment and infrastructure; which attracts the best faculty and students.

Yvan Beliveau's Comments

I will talk a little on background issues for the conference. Then I will present some thoughts on myself. Then I will pose some questions, which I hope will spark some discussion among you. I hope that this is the reason you came to critically discuss issues of relevance.

As a land-grant university, this is a place to meet other people with interest in educating future builders. It is the place to discuss issues on how to do that better. It is a place to meet good old boys/girls of our club and to form new clubs among ourselves as we look to improve and engage in intellectual dialog.

The theme of the conference this year is “The Scholarly Pursuit of Construction Knowledge”. I particularly would like to look at the three cornerstones of Education: Teaching, Scholarship, and Community. Here at Virginia Tech most people call it teaching, research, and outreach, as we follow our land-grant university mission.

We look at education in these three cornerstones as our focus as we hope that this event will provide critical dialog to this holistic educational ideal. These three areas are in fact all a part of the whole.

Now a Look At Why I Am in Academia

I love building buildings. Even today, I engage in conceptualizing, dreaming, and building these ideas. It is in my blood - it may always have been there.

I moved from industry to academia because I felt that little improvement or change was happening in the world in which I was engaged. I felt that things were done poorly and always the same. I was always running too hard with little time to reflect and effect change. I wanted to be part of beneficial change and I launched into an academic career.

The first issue I faced when I moved to academia was the lack of credit for industrial experience in the academic world. No matter where you have been, in academics, degree rules. A 24-year-old Ph.D. equals a 36 year-old practitioner/Ph.D. Same salary except the 36 year-old practitioner/Ph.D. can hardly stand the slowness of the academic pace. He or she has had no time to reflect in the past; therefore, does not know how. But in time as this 36 year-old practitioner/Ph.D, I learned to appreciate the academic world, but I would never exclude the practitioner world - they are both needed to produce the next generation of builders. Working together with mutual respect for one another and giving value to one another, we can tackle the overall issues of education, teaching, scholarship, and community. I hope we do not go the way of engineering and move to islands of specialization with no one to understand how it all works. However, the opportunity to work together can engage and expand both the practitioner and theorist.

Now I have a list of questions that cause me concern as I look at the future of this organization and my role in academia. I hope to pose several of these questions here. I will not provide answers; however, you will no doubt see biases in the formulation of these questions. My hope is to create dialog which if successful might lead to change.

1. How do we advance this discipline of construction at the academic table? How can we be viewed as an equal member at the academic table?
2. How can we improve the construction industry through the scholarly pursuit of construction knowledge?
3. How can we best educate future builders with inquisitive minds? And how can we work with industry to help the practice through scholarship and community.

4. Are we going to educate or are we going to train?
5. What are the challenges of the construction industry of the future?
6. What is ASC's role in scholarship and community? Will we let engineering, architecture play with academic pursuits and we will only train our students? Or will we create practitioner / theorist teams of players and give it a "go and have some of the fun?"
7. Will we let design-build (the process/design immersion) become a scholarship arena that we have little say in? Will we let Engineering/Architecture do the scholarly pursuit and have all the fun?
8. Will we let industrialization (IT, hard tools, process) become a scholarship area that we have little say in?
9. Will we adopt the concept of to schedule, rather than the concept of to plan – the planning process that outputs a schedule?
10. Will we adopt the concept of estimating with other people's unit prices? Or will we adopt the concept of process design to determine how it should be done better and then apply cost?
11. Will we rush to preach Construction Certification, statutory protection, and push for professional status? Or will we look to maintain our value added status rather than hourly fees with no risk? Will the world accept a no risk contracting system?