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“ 75% of our readers have a college degree. ”


"BRINGING BUSINESS TO THE BLUE RIDGE REGION OF VIRGINIA"

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Surrogate universities and industry galaxies

By [Deborah Nason](#)

Heike Mayer is turning conventional economic development wisdom on its head.



Virginia Tech professor Heike Mayer, advocate of 'industrial interconnectedness'

The Virginia Tech assistant professor says that having a high-tech research university in a region was always considered a necessity for high-tech success. But while an urban studies graduate student in Portland several years ago, she says, "I realized that this was a high-tech region without a major research university."

Consequently, she studied the development of Portland's bustling high-tech economy and concluded that two large companies (Tektronix and Intel) had, over decades, been playing the role of what she calls "surrogate universities." These anchor companies, whether intentionally or not, had been serving as "entrepreneurial incubators." Mayer's research discovered large networks or "galaxies" of companies whose founders had all been employed by one of the two large companies.

Perhaps surprisingly, Lynchburg's growth pattern has been similarly influenced over the decades by its own two high-tech anchors-General Electric (which later spawned heavy-hitters such as Ericsson and others), and Babcock & Wilcox (the ancestor of BWXT, Framatome and Areva). These companies became the centers of their own galaxies: the former, wireless-focused; the latter, nuclear-focused.

While Roanoke businesses have exploited the proximity of Virginia Tech over the years, the area's ITT Industries Night Vision has served a surrogate university role in the development of the Valley's fiber optic business community. Carilion Health System, through the activities of its Biomedical Institute, has the potential to develop into a surrogate university, building a regional network of biotech companies whose founders have ties to Carilion.

"I looked at the Silicon Valley and Boston economies, and looked at their major ingredients," continues Mayer. She determined that surrogate universities, like their academic counterparts, supplied three essential "seeds for growth," including:

- * Labor and talent. "You have to attract a talented pool of high-tech labor, such as people in engineering and marketing," Mayer says.
- * Innovation and knowledge creation. There should be a focus on innovative R&D.
- * Entrepreneurship. "Companies have to give employees room to be creative, in a focused way, with tools to commercialize ideas and technology-whether inside or outside the [organization]."

Mayer's theory resonates with Jonathan Whitt, executive director of the Region 2000 Technology Council. "We certainly have enough data that supports this model," he says. "We're a hotbed for wireless technology companies."

Like Portland, "it certainly has happened here, on a small scale," agrees Bill Guzek, former Ericsson employee and president of the Region 2000 Technology Council. The original GE facility in Lynchburg has spawned now-large area companies such as M/A-COM, Andrew Corporation and the late Ericsson facility. These in turn have spawned other start-ups.

"The demise of Ericsson was a tipping point" for those who had an entrepreneurial spirit, Guzek says. He could think of about a dozen companies that resulted. "The [anchor] companies not only had the R&D, but they helped to educate the engineers that spun off or started these other companies."

Catherine McFaden has observed this firsthand. She is the executive director of the Business Development Centre, a business incubator located in Lynchburg. Of 15 high-tech start-ups in the last 10 or so years, nine have been related to either the wireless or nuclear fields. Seven of these are still in business, employing 55 people. Wayne Lewis, owner and founder of Blue Ridge Test in Forest, is an example of an Ericsson "refugee." In fact, he was one of the last few employees left with the company when it closed its doors in 2003. He estimates that, at its height, Ericsson employed some 400 engineers, among its approximately 3,500 employees.

He began his own start-up part-time in 2002 and went full-time in January 2004. An electrical engineer, he now employs two full-time and two part-time engineers. Lewis and his employees design and develop software and hardware for automation.

Though most of his customers are outside the region, some of his activities serve to bolster the local high-tech economy. For example, he has partnered with another local start-up to jointly attract business. And Lewis is loyal to the area: "I could live anywhere, but I wanted to stay in Lynchburg," he says.

Nuclear galaxy

Matt Ales is co-founder of Novatech, a 10-year-old start-up in Lynchburg which designs and fabricates systems and components for nuclear, aerospace and other industrial markets. He is a former employee of BWXT, a descendent of Babcock & Wilcox.

Speaking about the local nuclear technology business community, he says, "I think we're in a slow expansion mode ... [But] I expect to see an acceleration of this trend in the next 10 years, driven mainly by Areva, due to a renewed interest in commercial nuclear power plants."

Over the past 25 years, he has observed the interplay between the nuclear and wireless anchor companies. "As Ericsson grew, we'd see an exodus from Babcock & Wilcox. And as Ericsson declined, it flowed back the other way. He adds, "There is a surprising amount of cross-pollination between the two industries. For example, robotics-Ericsson used them for assembly and Framatome [now Areva] used them for remote inspection." Ales notes another economic effect engendered by the two large companies. "Lynchburg probably has more high-precision [high-tech] machine shops per capita than any other city in the U.S."

Fostering growth

With fostering growth in mind, Mayer describes the importance of a "regional innovation milieu," supported in Portland by several factors, including:

- * Growth of local competition. This "pushed employers to do better business." * Influx of outsiders. Competitors and suppliers from outside the area noticed the increasing high-tech activity and set up shop in the region.
- * Growth of support services. These included specialties such as public relations, temp agencies, patent

lawyers and venture capitalists.

* Supportive public policy. "Portland gave tax breaks to Intel to encourage it to further invest in the region [by building] new factories and labs."

Guzek describes the importance of graduate education as a support service. The anchor companies "imported engineers, thereby creating a need for graduate-level continuing education." To support this need, the Center for Advanced Engineering was established in Lynchburg in the mid-'80s. Another aspect of Mayer's theory concerns what she calls "comets"-companies that move into an area, attracted by the "buzz" of increasing activity and prosperity. Whitt has seen evidence of this recently, citing several wireless technology companies moving in from places like D.C. and San Francisco because of the area's reputation, and its supply of underemployed skilled workers (due to Ericsson's massive layoffs).

Without realizing, the Region 2000 Technology Council has been working towards building an "innovation milieu." Says Whitt, "We're not trying to build a facility with fuzzy marketing to attract outside businesses. Instead, we're trying to build a business network, centered on wireless-related businesses."

In fact, he says that the region has recently dramatically revised its economic development equation. Lee Cobb, economic development director for Region 2000's economic development partnership, says, "We are [now] spending 30 percent of our time marketing the region and 70 percent of our time directly supporting the businesses we have."

Fiber optic galaxy

Ken Ferris has been involved with the fiber optic community in the Roanoke Valley for over 20 years. Now vice-president of IHS Energy and president of the NewVa Corridor Technology Council, he worked for FiberCom, a start-up spawned from ITT Night Vision, for 15 years. "Fiber optic activity at ITT was a bubble," he says. "It hit its peak employment around 1981, with about 200 employees" focused on this new technology. "Had things turned out differently in those early years, this region might have become a nationally known region for fiber optics," he says. However, a number of fiber optic start-ups did emerge in the past 20 years, influenced by companies that descended from ITT, or spun off from Virginia Tech research centers.

Says Ferris, "My educated guess is that regional fiber optic companies are generating maybe \$100 million dollars a year." He adds, "Out of ITT-and those 200 people-a lot of things happened." Should we be trying to grow the fiber optic industry in this region? "Although fiber optics is still recovering [from the technology bust]," he says, "we should be focusing on an emerging technology, rather than one that's 30 years old."

The bridge

Dennis Fisher bridges the old and new through his 20-year stint with ITT and his four-year leadership of the Carilion Biomedical Institute (CBI). In discussing the idea of surrogate universities in the Roanoke Valley, he contrasted the two major economic players.

"With ITT, fiber optic R&D was more inward-directed. It took a torturous path from basic research in the 1960s to commercialization in the late '80s." Looking at Carilion Health System as an incubator for entrepreneurship through CBI, he says, "As an R&D-business connector, CBI is more outward-directed-its goal is to take research and apply it to commercialization." Mayer's model could be applied to Carilion as an emerging surrogate university, in that the organization is fostering knowledge creation (by seeking and soliciting ideas), attracting talent through the same process, and encouraging the creation of start-up companies.

Fisher points out that Carilion is unusual in that it has made itself accessible to outside ideas. Indeed, says Andy Muelenaer, Medical Director for CBI, "It's not easy to just show up at a hospital to talk about your idea." He adds, "We act as a conduit for non-medical researchers to have access to the hospital. We're attracting companies to the region."

Based on her findings, Mayer suggests some strategies for regional planners:

- * Target business attraction efforts to strategically attract research and development intensive firms.
- * Be constantly informed about these firms' dynamics and organizational developments and their influence on local start-up activities.
- * Keep better information on local and regional entrepreneurship.
- * Maintain a database on startup activity, and design programs and policies to support these entrepreneurs.
- * Provide the conditions for a supportive and entrepreneurial innovation milieu.

(Deborah Nason is a contributing editor for the Business Journal.)

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