

Rochester, NY, and the Rise and Fall of Technology

by George Friedman - October 23, 2019

Last weekend, my wife and I visited our grandson (children were subsidiary to this visit) who lives in Rochester, New York. He and his family live close to the Erie Canal. The canal is now a placid body of water, the mechanics of a canal no longer intrusive except for the overhead guard gates and the canal a bare reminder of the time in which it represented the height of technological sophistication and in which it seemed a permanent feature of American life. It is now a picturesque body of water, made lovely by the decision a few years ago to recover its dignity, and where tour boats will take you on a tour to learn about its history. (A couple of years ago, one could even have caught sight of an enormous shipment of beer tanks from China that were too large to be transported by road, traversing the canal.) But it is also a reminder that in technology, all that towers passes away.

Construction on the canal began in 1817 and was completed in 1821. It connected the Great Lakes, and therefore what is now the American Midwest, with the Hudson River, which flowed south to New York Harbor, and distributed the agricultural products and minerals of the Midwest to the world. The land to the west was the future of the United States, but it was difficult to access. The Appalachian Mountains are extraordinarily rugged, and building roads across them was difficult. Even finished roads were difficult to use, despite the best efforts of Daniel Boone and his colleagues. The United States had to create economic links to the west in order to settle it and to allow it to prosper.

This was a time when the United States was focused on reengineering its geography, on creating roads north and south that could carry mail and supplies, on connecting rivers and building canals. But no undertaking was more ambitious than the Erie Canal. It was built by muscle power, but it was built in only four years. The technology was not in the movement of dirt, but in the design that allowed for barges, ports on the lakes and the offloading of goods into a river. The genius was in the plan for executing the design and in the sheer arrogance of thinking it could be done. It transformed the United States, extending it deep into territory it owned but could barely use.

I suspect that it was unimaginable to those who built the canal that it was but a temporary moment in American history, and that new technology, the railroad, would render it as obsolete as dial phones were made by cellphones. The psychology of technology glories in feeling superior to the past, yet finds it difficult to believe that all the innovations that appear so permanent will themselves pass away into a past that will be treated as an amusing irrelevancy. Their moment will end too. But then

that is the strength of the United States. It is unsentimental about the past and believes that it is creating the future. It is doing so, but the creators will rarely get the glory. The Erie Canal and the technology that created it was over, and the past was neglected.

Rochester teaches more than one lesson on technology. In the 20th century, it became the capital of a transformative technology that I will call vision management. What humans had seen for all their history was something that was lost in faulty memory, or imperfectly reproduced by pen and ink. Rochester was the town where vision was tamed, captured and perfected. Three companies dominated the landscape. Eastman Kodak turned technology that had been known for decades into a consumer product by transforming the chemical nature of film and then the camera into something that became universal. Ordinary people could own what they had seen. Xerox allowed the easy mechanical reproduction of documents by capturing their image and implanting it on paper. Finally, Bausch & Lomb perfected the mass production of lenses with which to make glasses, and then contact lenses.

It was lenses that made Rochester a high-tech center of the world. The lens could capture reality or documents, or improve vision. The basic scientific concepts were not developed in Rochester, but it was there that they were perfected and married to other technologies to transform society. Pictures, copying and vision transformed our experience of the world. But just as the iPhone's genius was in imagining what could be marketed and integrating existing technology into a new product, these companies' genius was in their ability to take older technologies and transform them to create new industries.

Until the 1990s, Kodak seemed eternal, as did Xerox and Bausch & Lomb. Kodak could not believe that chemically based film would ever be surpassed by digitally captured and stored images. Xerox believed that paper documents would always be captured on paper. Bausch & Lomb did not grasp the new technologies for making and fitting lenses. Actually, that's not completely true; Kodak, Xerox and Bausch & Lomb all finally grasped that the technologies they were using were being bypassed, but they grasped it too late, and now none of them exists but Bausch & Lomb, purchased by a private equity firm.

For Rochester, these three companies provided guarantees of lifetime employment and the pride of being at the cutting edge of technology. It is natural that one city should have contained all three companies. After all, they were doing the same things in different ways, and suppliers and employees were to some extent interchangeable. The city had built itself on the technology of capturing and reproducing the visual world, but what had seemed so solid and permanent dissolved,

much as the railroads dissolved the significance of the Erie Canal. For Xerox and Kodak, their names had become synonymous with their technology; we Xeroxed copies and bought Kodak cameras, whether or not we were using their products.

America is ruthless, and business as a whole can imagine anything but its obsolescence and irrelevance. The American countryside is dotted with cities that were once economic centers and are now hollowed out memories. Sometimes they recover, but rarely back to the point where their names symbolized a culture of technology, and where that technology symbolized the essence of America's future. The automobile still exists and Detroit is recovering, but gone is the time when Detroit was understood to be the center of the technology, and the automobile technology represented the indispensable reality of the nation. Once passed, those times rarely recur.

We speak of Silicon Valley with the same awe in which Rochester was once held. Silicon Valley is at the heart of the microchip culture, and we believe the microchip culture will always be here, only more so. American history is dotted with such places. They all come to be then pass away. America shrugs. It has seen this many times. The old technology and its businesses, with exceptions of course, cannot imagine their own irrelevance.

This is the strength, and the weakness, of American culture. The culture demands building a canal, and then it discards it. Other nations hold on to their past. This makes life there perhaps more bearable, but limits the possibilities that ruthlessness opens up. But in the U.S., it creates a geography of places that found themselves in the path of history. But it also creates places like Austin, near where I live. The self-confident bravado you find in Austin is sobering. It cannot imagine that in the future it will find itself like Rochester, struggling to restore some measure of significance after finding itself on the wrong side of history.

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