

Does Innovation Drive Use of New Technology?

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HD Radio is a wonderfully elegant technology that is on the minds of many professionals in the broadcasting industry. Thousands of our brightest engineers and scientists spent years making it a viable technology. From the perspective of technical wizardry, digital broadcasting is as novel as television and FM were in their time. And like many these engineers, I too am proud of the radio products that I have invented during the last 4 decades. Technology creates careers, wealth, and culture.

Studies about the history of technology almost always focus on the creativity of a few brilliant inventors. We are thoroughly familiar with the history of the airplane, internal combustion, semiconductors, contraception and computers, just to name a few. Many of these are connected to epochs: industrial revolution, information revolution, biology revolution and atomic energy. Academic researchers, popular journalists and best selling authors write extensively about these magic periods. As a culture, we admire those unique people who were ahead of their time in conceiving that which did not yet exist.

However, not only is their perspective limited but it may only be a minor part of the full story. Hidden beneath an analysis of technology is a set of assumptions and questions that are seldom articulated.

Does the inventive process really drive our culture? Do we really understand why some innovations changed our society while others became historical footnotes? Think of the millions of patents that describe inventions that were never even built. There are thousands of companies that produced novel products for a short time before they disappeared. How many of the original dot.com companies are still around? Do you remember the hula hoop?

On the other hand, some technologies appear to last forever; new technology does not necessarily bury the old. The pencil as we know it, and still actively used today, was first created in its current form in the 14th century. The bicycle first appeared in the 1870s. Albeit continuously improved, our modern automobile was invented in the late 19th century. The sheets on my bed are still made with the same basic methods of weaving that have been used for thousands of years. While adventurous travelers move rapidly from city to city on magnetic levitation trains, policemen in New York City still move through crowds and traffic on horseback. How can we explain the longevity of the lowly pencil and paper in the face of seven centuries of technical progress?

In his new book, *The Shock of the Old: Technology and Global History Since 1900*, David Edgerton provides a refreshingly simply alternative to our preoccupation with the elegance of new devices. We should think of technology as being driven by its use not by its creation. Use-based analysis assumes that the old and the new always exist at the same time and that the behavior of users determines if technology will spread. While inventor, engineers and manufacturers can put new choices on the table, users determine the relevance of any particular choice. Innovators have surprisingly little influence on how users will integrate an invention into their lifestyle. More than one technology has been used in ways that were never expected.

HD radio is a perfect example of a new technology that exists in parallel with dozens of earlier technologies. Marketing and advertising have only a limited ability to make a product successful if the users do not wish to choose it. Novelty always has a short lived lifetime. The user is always king. If history is a guide users will simply vote with their feet, as they did with the iPod, automobile CD radios and live concerts.

Edgerton goes on to comment, “a use-centered account also refutes some well-established conclusions of innovative-centric history. For example, it undermines the assumption that national innovation determines national success; the most innovative nations of the twentieth century have not been the fastest growing.”

Innovation takes place at the very beginning, but long-term success is influenced by culture, life-style and personal preferences. Over the life of a technology, continuous improvements that adapt to the evolving needs of users prolong the value of that technology. Improvements may be minor. This view contrasts with the image of the brilliant engineer dreaming up a new revolutionary product. Flexibility and adaptability to an ever-changing value system determines success.

We might think that the experts in a use-centric view would be those professionals who specialize in marketing. But many of them sit in their offices reading reports from massive surveys without ever actually meeting the natives. Consider that Margret Mead was only able to describe the values of life-style of the people of Samoa by living with them. This now brings me to my favorite question: where are all the applied anthropologists and sociologists who are willing to live with our audience and report back to us on their values and choices? Although there are already thousands of articles about HD radio, I rarely find one based on fieldwork — living with listening audiences.

While new technology sometimes obliterates the old, such the CD ending LP records, more typically, old and new co-exist for very long periods of time. In western Ireland, people still perform traditional music in their local pubs on classical instruments. While riding the bus to work, these same people may well listen to popular music on synthesized electronic instruments from their iPods. A primitive headphone exists in parallel with an expensive surround-sound home theater.

Innovation creates choices. Even with its incredible sophistication, the computer has not replaced the pencil in certain situations. The pencil survived but it never returned to its kingly status of the 14th century. And like the pencil, terrestrial radio, with or without HD, is likely to remain a viable choice for centuries if it adapts to the shifting use patterns of our audiences. Will broadcasters embrace flexibility in order to remain relevant to the life-style of our user-audiences?