



The Pace of Technology

The common impression of an increase in technology has been due to the sheer volume of new technologies released, but now the pace of the technology life cycle is about to catch up.

There is a widely held view that the speed of technology is ever-increasing. Just look around you, with the mind-numbing flow of life-extending devices, gadgets for the kitchen and the shed, seemingly endless hand-held tools of communication and miscommunication, the way in which so many aspects of life are being so rapidly transformed.

But this commonsense view has long been challenged by the scholars of technology through their analysis of the “life cycle of technology”. This concept describes the typical pattern of growth of a technology from its inception in an R&D laboratory through stages of development, commercialisation, marketing and consequent financial reward.

Not that the process is quite so linear and simple. Much of innovation is stimulated by the identification of new needs, which drives a search for new or existing technologies that can be adapted to meet that need.

Nevertheless, the technology life cycle has proven a useful framework for examining both the relative times required for various technologies to be developed and implemented, and the financial rewards over the lifetime of a given technology.

What the former shows is that with the exception of very mature technologies like steel and concrete, the average time

from inception to commercial return is of the order of at least 25–35 years. This appears to be almost universal.

Take lasers. Invented in the 1960s, Charles Townes described the phenomenon as “a solution waiting for a problem”. Thirty years later they were in widespread use as pointers, cutters (materials and humans), scanners (barcodes), CD players, weapons and light shows (increasingly replacing the ancient technology of fireworks). Optical fibre, developed in the 1970s, has only in the past 10 years become a central means for light transmission and is now the keystone of our National Broadband Network.

But the important point is that the common impression of the increase in technology results much more from the sheer volume of new technologies being developed rather than from an increased rate of their implementation. In economist’s terms, we have dramatically increased the supply of technology but not the productivity of its development.

This is almost a conundrum. Technology, the supposed generator of increased productivity, has not been subject to the same pressures.

However, in the past few years there is evidence that this has been changing in some industries. But it is not at the technology production end. Rather, what has changed is the speed and effectiveness with which potential customers have been acquainted with the possible value and application of new technologies.

For example, the number of users of Facebook grew from ten million at the beginning of 2007 to a staggering one billion in 2012. These growth rates are replicated, and exceeded, by many other start-ups such as Groupon, Pinterest, PCTools.

The message is that the adoption rate for new technologies and the services they deliver in the industrialised world, and increasingly the developed world too, has taken a great leap. The cause is obvious – the connectivity offered by the internet to both potential customers and to sources of new knowledge.

So maybe, as a result of a technology-based but largely social innovation, the productivity of technology development can be substantially enhanced.

Company strategies need to take full account of the possibilities of transforming their speed and effectiveness of innovation. Perhaps research proposals should be required to demonstrate their connectivity model. Industry policy needs to be rethought from one based on slow adoption over 30 years to the new faster possibilities.

Can we predict how it will happen? No, but an informed conversation about the possibilities would seem to be in the national interest of preparing for an uncertain future.

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