

Networks of Innovation

We are moving towards a networked innovation economy and it is becoming increasingly important to understand those social processes that underlie innovation and technological change. The traditional concept of innovation emphasised the role of heroic innovators who were understood to be the key actors in the emergence of new technologies, products, and services. The history of technology is packed with stories of inventors and entrepreneurs fighting against odds, solving problems, realising opportunities, and finally making the future real.

Well, reality, strictly speaking, was never created that way. Instead of heroic innovators, the future of new technologies was often created by heroic users who misused new products and technologies for their own particular purposes. Almost always the dominant uses of new technologies became as a surprise to inventors and entrepreneurs.

You know: Telephone was to be a medium for broadcasting concerts, church services, advertisements, and lullabies; The World Wide Web was to be a document management system; Short message service in the GSM was to be used to let the phone user know there was voice mail waiting.

Engineers and entrepreneurs almost always seem to get it wrong. This relatively simple observation made me curious. How, actually, new technologies become real? What theoretical approaches could we use to build a better theory of innovation? In particular, I was interested in connecting research on social learning and knowledge creation to innovation and technology studies.

To build elements of such a theory I focused on the analysis of the emergence of some key Internet-related innovations. The rationale was simple: although Internet-related innovations may be special in the sense that they are inherently networked and software-intensive, in the network society such innovations will play an increasingly important role. If the Internet, email, and the World Wide Web, for example, were key innovations of the last century, certainly it would be interesting to understand how they became what they are. Linux was also an interesting case. Its open source

development model relied extensively on social and technical networks and seemed to break the assumptions of the conventional theories of innovation and economy. So I decided to do an in-depth study on the evolution these technologies.

The position from where I approached these questions was perhaps somewhat exceptional. I guess I was among the first Finns to join the Internet. My first book on hackers and computer networks came out in 1987, the same year that I was recruited to the knowledge technology group in Nokia Research Center. For over twelve years, I lived at a busy crossroad of science, technology, business strategy, and organisational development. Since the early 1990s, I had been working intensively in knowledge management, both in theory and in practice, at the same time trying to make sense of the transformation of the information society. From that position it was relatively easy to see how important it is to connect theories of social change, learning, sense making, and technology development. Moreover it was clear that such a study would have implications for technology policy, innovation management, and, for example, intellectual property rights.

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