

People-Centered Innovation or Culture Evolution?

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We very much like stories of products and services that show the advantages of people-centered innovation approaches over pure technological innovation. In our community it is widely recognized that companies that take on a people-centered approach, are more successful on the market.

But what really differentiates people-centered innovation approaches from technology-centered innovation models? This is a long lasting debate, which has so far produced useful reflections, insightful methodological improvements in our practices and, yet, not so conclusive insights.

I would like to add my own observations to this debate by looking at how the theory of biological evolution can aid the understanding of the evolution of culture and therefore better mark the possible paths that human-centered innovation can take.

Inspired by the work of geneticist Cavalli Sforza (see Cavalli Sforza, 1981; 2004), who shows how biological evolution can be used to explain the cultural evolution, I have developed a conceptual framework to explain how human-centered innovation occurs within cultures.

I hope that my analysis will contribute to the understanding that innovation normally requires more than just a group of innovators that transform previous life conditions. Biological evolution shows us the many evolutionary variations on innovation that a given culture can manifest, besides those initiated by smart innovators.

In order to frame innovation strategies, we need to investigate the evolution of cultures. When we pursue people-centered innovation strategies, we do in fact determine possible directions of cultural evolution. This is the key differentiating factor

between the technology- and the people-centered innovation cycles.

In the former case, either there is no vision of the possible evolutionary forms that the innovation strategy can shape, or the vision is too simplified. The Homo economicus is one of the dominant rationales of the technology-driven innovation approaches and it contrasts with the Homo biologicus vision of the people-centered ones. In the first, human behaviors and choices are simply driven by expectation to get more. Innovation for the Homo economicus is based on the desire to reach a more advantageous position.

Instead, in the people-centered vision, human behaviors are driven by actions and routines that sustain people's aspirations to improve their living conditions and to reduce possible loss in their daily lives.

Yet, user-centered design (UCD) strategies can also fail cultures, either by missing opportunities or by embracing untested assumptions. Therefore, the most difficult challenge for any innovation strategy is to understand cultures so that it can bring about meaningful change.

There are two polar approaches to people-centered innovation. On the one side, there are those people-centered processes that build on an understanding of existing cultural values and belief systems, to provide the conditions for positive emotions and for behaviors to be more tuned to given contexts of use. Here, innovation is incremental and corresponds to evolution paths that select "natural" directions for a large user base.

Examples of this process are the Apple's iPod and iPhone which were introduced as incremental innovations within existing

categories of products. Some more radical innovations from the same company, like the Lisa computer in the early 1980s and the Newton PDA in the early 1990s, were not so successful even though they were targeted to a large base of customers as well. Why Apple was not able to find the right innovation path by following a radical approach in those cases is an interesting question.

At the other pole are those innovation processes that aim to create new behavioral patterns by building upon conditions of use which do not necessarily already exist within a given group, community or market segment. Here, innovation is more radical and corresponds to evolution paths that occur spontaneously within small groups of users that develop new solutions to old problems.

The distinction between the two poles within the innovation process provides a fresh look at another debate still active in design circles: the extent to which a design direction causes only desired effects. Sometimes, this kind of “deterministic design” has been set against user-centered design (see Verganti). However, the common observation that people use artifacts in ways that these were not designed for has a great appeal in our community (see Dan Lockton – Design with Intent).

Design, after all, can imply costs that we cannot easily estimate initially and that sometimes cause undesired consequences (see Shedroff, 2009 and Sachs, 2000 for a more detailed analysis).

This has also been widely discussed in sociological literature and we have recently witnessed some dramatically negative examples of the human ability to evaluate the risks of innovation in a global economy (see Beck, 2008). The evolution of culture therefore is not always foreseeable. The good news however, is that we can at least identify the type of evolution a given culture is undergoing, and use this knowledge to develop appropriate innovation strategies.

Evolutionary Models of Cultural Change

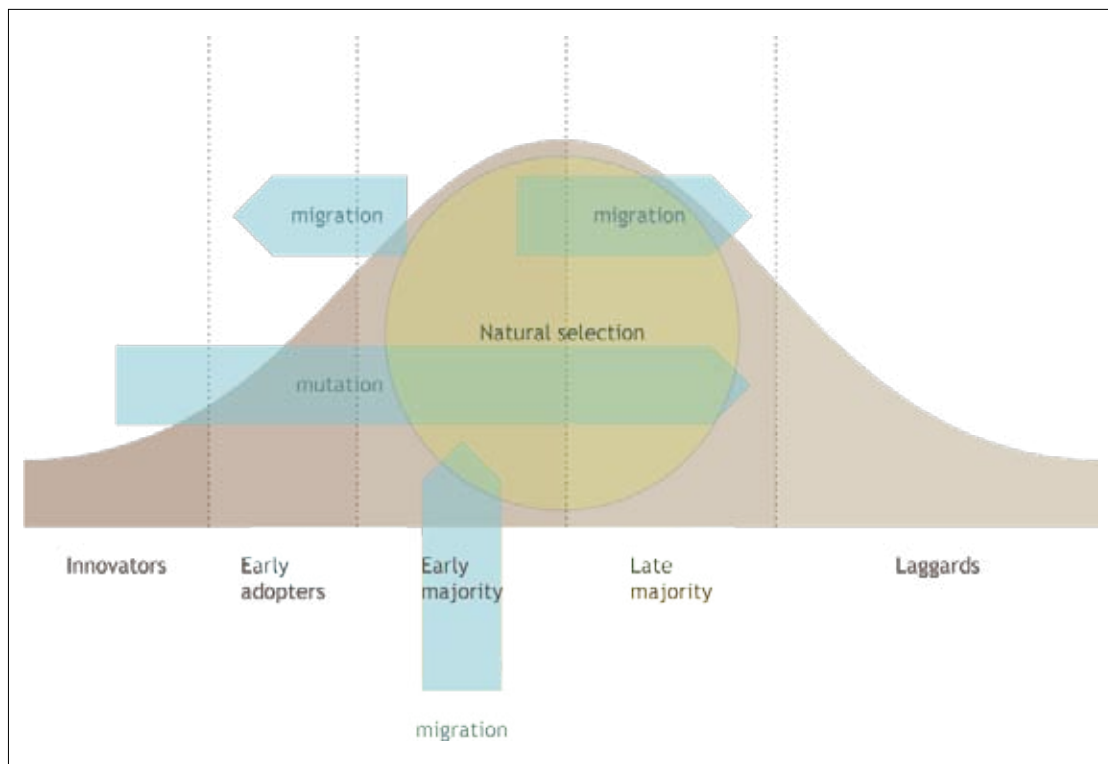
The theory of biological evolution is a very helpful approach, as it can be applied to the analysis of culture evolution (and therefore, innovation) to identify the possible forms that innovation can take. It can provide a



general framework to understand how cultures change and how we can discover and assess that a particular culture is changing. In particular, Cavalli Sforza (2004) has shown how four patterns of evolution -- mutation, natural selection, migration and drift (see figure 1) – are key to our understanding of cultural evolution and change

Mutation is a very small change within a given value system. Mutation is a rare event that can occur in any culture and/or community. In other words, it cannot be avoided. Mutation can cause either positive or negative consequences. While, according to Cavalli Sforza, biological mutations may or may not necessarily be transferred genetically, in cultural evolution, people can voluntarily choose to propagate a given mutation. Mutation is a diversifying force as it creates new directions and unexplored paths. An example of a mutation-based innovation process is the use of tags for social bookmarking. This was the radically new solution that Joshua Schachter found to his problem of keeping track of the huge amounts of notes on thousands of bookmarks on Muxway, a blog-like web site, known also as the antecedent of del.icio.us (see Smith, 2008).

Natural selection is the main force that controls the evolution of culture within groups and communities. It is the pressure that operates on a given system of values and beliefs in order to select those behaviors that best fit the environmental conditions of use. In other words, it is the natural process through which a given design direction gets selected. There are many good examples of design and usability practices that have been used to foster a natural selection of ideas. An example is the Nokia “Ringo phone” (also called the “bimbo phone” as a humorous way



of expressing that anyone could use it), an early concept that evolved into the “navigation key” concept and allowed the diffusion of easy-to-use mobile phones within a large majority of users. Another example is the Blackberry system, which makes it easy to read, manage and send e-mail from a mobile device. RIM wanted to enable e-mails outside of a computer and worked persistently to eliminate any barriers in the configuration of the e-mail system on mobiles and to enable easy typing through advanced interaction tools and keyboards. Blackberries were initially conceived for professional profiles and are now also spreading out of this initial market target, because other communities of users are ‘naturally selecting’ the idea of using e-mail while mobile. Any time new directions are selected they can spread very quickly based on cultural grounds. The natural selection of ideas and directions allows for the reduction of accidental variations within a given culture. It is therefore quite easy to support this evolutionary force by creating the conditions that allow the reinforcing of desired behaviors and choices.

Migration is the meshing of behaviors and attitudes that can lead to a change of values or new differentiations within communities. However, its main effect is to reduce differences among heterogeneous groups and cultures (see the BB example

above). Multicultural societies result from migration processes. In these groups migration produces a reduction of inter-cultural differences, by merging two cultures into a new distinctive group. Migration can also exert contrasting pressures to the pre-existing natural selection forces.

Finally, drift is the mechanism in which populations tend to move towards genetic uniformity over time. In the evolution of cultures it can be considered as a barrier to the entrance of new values within a given cultural system. Drift plays a big role in monocultures and in authoritarian societies. However, it can have both negative and positive consequences, depending on whether an internal or external perspective is assumed. An example of drift in HCI is represented by the early browser Microsoft Explorer and more generally by all proprietary software systems that do not reveal the source code and therefore do not allow decompilation and/or any kind of software modification.

Evolution is both the transformation and differentiation of groups. The study of these transformations and their related differentiations are the core activities of the ethnographic research in our field. In fact, human cultures always evolve, by definition. As a consequence, innovation strategies can contrast, accelerate and mitigate the evolution of cultures both within and between

groups or communities, by reinforcing the natural selection of new ideas. Sometimes, innovation processes can trigger a culture evolution. In that case, innovation strategies can help to model behavioral change, for instance by building the right economic premises, such as new niches and new business models, and then guiding the cultural evolution in a particular direction.

The people-centered strategies of cultural change

In our Interaction Design community we often assume that the Rogers' model of innovation (Rogers, 1995) (see figure 2) shows the only direction that market innovation can take. That is, innovation starts among innovators and only then it can move to other clusters of people. We therefore uncritically assume that innovations happen because of innovators; say, people that are not satisfied with existing solutions. We also believe that other groups will be able to profit from the new solutions by changing and or adapting their behaviors to the new usage conditions, in a sort of cascading model of innovation.

However, this representation of innovation describes only one form of culture evolution; the most radical one, a mutation caused by innovators. As described above, the evolution of culture and of behaviors can also follow other paths and even radical innovation models will still need a coherent strategy to enable the new direction to become mainstream.

As a consequence, the methodologies that can support the two different innovation poles that I discussed earlier on are not exactly the same. Companies are often lacking a map showing them when and why they would need these practices, what the right methods are at a given moment of their market presence, and what the evolution paths are that can best help their innovation strategies.

Innovation strategies should consider the possible evolution models that a given population (or part of it) enacts over its lifecycle. Understanding cultures and values calls for longitudinal methods. Researchers observing local cultures and their stable values are necessary in order to assess how the culture is changing under the pressure of evolution models and patterns. Shorter

and narrower investigations which aim at capturing elements of culture can help to probe specific research questions and to assess and validate existing assumptions.

The success of new ideas is always substantiated by a clear understanding of cultural and behavioral constraints, how they change under the forces of evolution, and which directions these changes are taking.

Therefore, it is worth distinguishing between innovation models that are based on the involvement of people in the idea generation from the models that get inspiration from the observation of people in their environments.

In the first case we try to innovate by triggering a participatory, voluntarily pursued act of willingness, aimed at introducing shifting usage conditions and possibly new values (i.e., mutation).

By observing people in their natural habitat, we instead aim at introducing new integrations of existing products so as to foster a better adaptation of existing values to the new usage conditions (i.e. to create the conditions for migration or drift to take place).

In both cases, innovation should favor the natural processes of people's idea selection so that it can become a natural selection kind of evolution, and therefore resist and endure.

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