

Nine Principles of Evolutionary Innovation

By Charles Leadbeater

Not surprisingly, many established companies, used to a slower pace of change, regard the search for innovation as highly unsettling. Executives usually claim they want their lumbering, inward looking organisations to become fleet footed, imaginative and entrepreneurial; they just do not know how to make it happen. And just to complicate matters further, often they have little incentive to change, because invariably their companies are built around profitable product lines.

These executives recognize that incremental innovation is not enough, yet fear that radical innovation is too risky. What can be done?

The best way for large organisations to work through the dilemmas posed by innovation is to borrow from the most powerful innovative force in the world: biological evolution. Companies should design a process of evolutionary innovation from within by using eight principles borrowed from biology as a guide.

Principle One: Diversity

In biology diversity is produced by random genetic mutation. Innovative businesses create diverse portfolios of ideas and knowledge sources.

Companies should begin the process by unlocking internal sources of new thinking. Shell does this by helping employees develop and present proposals for potential funding within the company at special "ideas fairs". 3M is

famous for encouraging employees to spend 15% of their time developing their own ideas.

Ideas can also come from outside sources – customers, suppliers, competitors, potential partners, educational institutions and others. Even companies with strong cultures that discourage seeking and acquiring ideas from outside should create “knowledge supply networks” to complement internal sources and provide intellectual support for both existing and future capabilities .

The revival of the US semi-conductor industry in the 1990’s was partly driven by its creation of an intelligence network at university laboratories through which companies recruited bright students. These young turks brought radical ideas into the heart of corporate development programmes.

In this context, high employee turnover is not a bad thing. Indeed, the most innovative US companies in this industry had a far higher rate of turnover of bright young people than their Japanese and Korean counterparts with life-time employment contracts. Those companies with low labour turnover risked missing opportunities to bring in new ideas.

Principle Two: Selection

In biology a process of natural selection identifies the more effective mutations. In business competition is the ultimate arbiter of effectiveness.

However, within many organizations, the criteria for evaluating new business proposals are often opaque at best and at worst designed to preserve existing routines and reinforce past success. Innovative companies, on the other hand, have open selection criteria, in which promising ideas attract

resources, just as promising entrepreneurs in Silicon Valley attract venture capitalists.

Knowledge only advances if good ideas are selected and poorer ideas rejected. Moreover, people must feel confident enough to propose a new idea, and they should not feel demoralised when they are rejected. Selection procedures need to reward good efforts as well as good proposals, to encourage people to come forward again.

Principle Three: Replication

Once selected, a good idea has to spread. It will not succeed if it is trapped in a narrow niche. Biological evolution's mechanism for replication is reproduction - the genetic transmission of inherited characteristics over many generations. Successful species are good at replication. A business organisation passes on the equivalent of its genetic code in a far less exciting way, by turning a good idea into a new product, process or routine.

That is how new ideas become embedded in organisational knowledge so they can continue even when the originators have moved on. Companies may have to appoint technology integrators, service producers, new product drivers, to take forward this process of replication and reproduction.

Principle Four: Co-evolution

An organism will succeed only if it is fit for the environment in which it has to survive. Companies also co-evolve with their environment -- the markets they compete in, the people they recruit, their partners and suppliers. Companies that can shape their environment enhance their ability to evolve successfully. Innovative companies seek environments that encourage innovation.

A good example of corporate co-evolution is the way that companies set standards in global industries. Matsushita adopted a conscious policy of co-evolution with partners to establish VHS as the standard for video. It licensed VHS technology freely to other consumer electronics companies, which widened the initial distribution of the technology, co-opted competitors who may have been developing their own products and sent a positive signal to suppliers of complementary products. It also helped to generate a sense of momentum behind VHS which became the standard for the industry because it was co-evolved by Matsushita and its partners.

In Internet services many companies are trying to co-evolve with their consumers, through open source software than consumers can help devise and upgrade. An innovative company needs to co-evolve with early adopters and leading edge niche markets, as well as profitable established markets.

Principle Five: Unlearning

A species dies out when its cannot to adapt to a changing environment. It is not just that they cannot develop new capabilities to suit their new environment, they cannot get rid of old habits designed for their old environment. This fate befell many dinosaurs as the earth cooled.

Successful companies develop strong routines and processes, which are reinforced by investment and praise. When the environment suddenly changes these companies find it hard to adapt because they have been so successful in the past. Core strengths quickly become core rigidities in a rapidly changing environment. Often the obstacle to innovation is a company's inability to discard routines, product lines, relationships and assumptions, which made it successful in the past. Xerox was slow to respond

to the threat of low-cost Japanese plain-paper copiers because it was apprehensive about cannibalising the profits from its high volume copiers.

Companies must be prepared to initiate “unlearning programmes” to expose the tacit assumptions that underpin their business models. That often means exposing corporate conventional wisdom to sceptical questioning from younger staff or outsiders.

Principle Six: Disruption

Biological explosions such as the appearance of multi-cell organisms in Cambrian period 550 million years ago have taken place in unusual environments with climates in transition. The same is true in business: Long periods of incremental change can give way to explosions of intense innovation caused by complementary changes in competitive pressures, technology and regulation. That is why companies need to be hybrids, capable of continual incremental innovation but also radical re-invention.

A good example is the way that Standard Life, the British insurance company, became one of the fastest growing retail banks in the UK by moving swiftly into electronic banking by creating a stand-alone unit, with its own management, culture and style. British Airways is trying to pull off the same trick with Go, its low cost European airline, which it is developing as a sub-brand in parallel with its mainstream business. Dixons, the leading British consumer electronics retailer, created Freeserve, the UK’s largest Internet Service Provider worth about £1.6bn when its was floated. by creating space within its organization where radical innovation was possible.

Principle Seven: Simplicity

The most successful species have bodies built to simple structural rules. Most animals are descended from worms. Think what it is like to be a worm: it makes sense to have your mouth at the end which hits the food

first and your anus at the other end so that you avoid inadvertently eating waste products. That defines a front and a rear. Most animals move over land or the sea-bed. Gravity means it makes sense for the back to provide rigidity with a fin or a backbone, while the belly which moves over the ground is rounded and supple. To prevent an animal going round in circles its usual for the left side and the right side to be a mirror image of one another. Species which follow these simple rules of design are successful because they rule out exotic and over-elaborate mutations which are unsustainable.

Successful companies seem to follow simple rules and embody clear values, which allow people scope for entrepreneurship and innovation. Some of the most innovative companies - Cisco, Sybase, Science Applications International - are modular. They are made up of self-managing units, operating with considerable discretion but within clear parameters, for instance governing capital investment. These simple rules impose a basic shape on the company but encourage self-management and motivation within a decentralised organization. Networked organisations need clear simple rules to hold them together.

Principle Eight: Spare capacity

One of Charles Darwin's most important arguments was that successful organisms had spare capacity. Evolution is only possible because successful organisms -- as well as organisations -- **are not perfectly honed machines.** **They** bristle with multiple possibilities.

If animals were perfectly developed, with each limb or organ doing one thing and one thing perfectly, then successful evolution would be next to impossible. Change in one feature would automatically destabilise the entire finely tuned organism because no other part could compensate or take up the strain. Perfection does not work in business either. In other words, evolution offers little support for business process reengineering taken to the extreme.

Principle Nine: Timing

Evolution teaches us that chances of timing play a vital role in bringing out the value of apparently superfluous characteristics. Evolution is full of stories of organisms with features that developed for one purpose but eventually found another, even richer role, in a different environment. Feathers, for example, may have first evolved from reptile scales as a superior form of heat insulation. Only later did feathers come into their own to allow fast running reptiles to become birds.

The inventors of the telephone and the computer spectacularly failed to foresee how they would transform daily life. Video tape was first developed in the US by a company called Ampex, to record programmes broadcast on the east coast so they could be seen later on the west coast. Ampex did not see how an invention, could, with modification, serve a domestic market. A business unit created for one purpose within a large organization, can take on a different life in at a later date in a changed environment. The British company Centrica started life as the notoriously inefficient, domestic service arm, of the then state-owned British Gas

company. After privatisation and following a de-merger from the main gas business, Centrica is rebranding itself as a one-stop shop for domestic services, ranging from heating and plumbing to repairing domestic appliances, televisions and car break-down. Skills and technology developed for the de-regulated gas market are being made more valuable by deploying them across a wider range of markets.

Innovation can be daunting especially viewed from within a large corporation. But it can become more comprehensible and manageable viewed from an evolutionary perspective.

Not every insight from evolution can be carried over into business, of course. The Cambrian explosion may have been no more than a “*whoosh*” in geological time -- but that means it took several million years to unfold. And when it comes to innovation, time, even on a more modest scale, is a luxury most corporations do not have.

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