



# Evolution v technology: influencing natural selection

What can evolution teach us about our attitudes to technology? Gambica's deputy director\*, Steve Brambley, has some ideas.

**E**volution – it's the reason we are here today and a powerful process for causing incremental improvements in all species. However, humankind has evolved to the point where we are now in a position to influence our environment and develop technology at a much faster rate than natural selection.

Survival of the fittest is a slow and random affair in the natural world, but needs to be a more proactive process in industry.

There's no doubting the importance of biological evolution in the existence of modern humans and our journey from the earliest life forms to mammals and hominids. It does however have two defining characteristics that we should explore further.

Firstly, it is a random process, relying on happy accidents rather than deliberate design. Evolution depends on random and accidental genetic mutations in the reproduction process. Some of these mutations might improve the survival and reproduction rate of the offspring, and become a dominant trait of future generations. Other mutations might be a disadvantage and the offspring don't survive or reproduce to spread this genetic accident across the species. Other mutations may be entirely neutral and have no impact. Either way, it's a game of wait-and-see – a genetic roulette wheel.

Secondly, it is slow, compared to our timeframe as individuals at least. We (*homo sapiens*) only appeared about 200,000 years ago with our cousins the Neanderthals becoming extinct only 30,000 years ago. Compare this with early humans (our genus *homo*) starting 2.3 million years ago, primates at 85 million years, mammals at 250 million years, vertebrates at 525 million years and the earliest life forms some 4,000 million years ago. A beneficial mutation may take many, many generations to randomly occur, and quite a few more to spread across the species. In our individual lifetimes we won't witness a species-wide transformation.

In the comparatively short time that humans have been around, instead of just waiting for change, we also made changes happen, increasingly so in more recent times. We have improved our own survival rate and longevity through science and technology at a much quicker rate than evolution could. Advances in medicine, nutrition and sanitation in just the past 100 years have changed the face of the world and led to a threefold increase in the global population.

If we shrink the scale of this model down from one of entire species and many generations, the evolution v technology comparison can still be made at the level of business and industry. Much like any natural ecosystem, with predators, rivals, food chains and natural disasters, the business world is also a competitive environment. Those best adapted to their habitat and situation are the most likely to thrive and generate growth. However, while nature favours those best adapted by gradual

evolution, economics tends to reward those who adapt themselves rapidly to their environment.

Just as factors such as climate change or habitat destruction can test a species' adaptability, so economic stability, energy prices or regulatory change can have an impact on industry. When the environment becomes harsh, there are two options – hunker down and wait for the ice age to pass, or adapt to the changes and seek out opportunities in the new conditions. The former is the austerity approach, stopping activity and cutting investment, waiting for better times to take a risk. The latter is the growth approach, taking the opportunity of a challenge to become better, faster and stronger.

Automation is an example of a technology that can be used to improve the flexibility and adaptability of a business to make it better, faster and stronger. Whether it is improving quality, reliability, repeatability, accuracy, throughput, energy consumption or productivity, the outcome is an improved bottom-line and a platform for growth.

In uncertain economic times, businesses cannot afford to wait for change and shouldn't ignore the development opportunity that automation technology offers. ■



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