



# Co-evolution

Not much happens by itself.

**S**OME hummingbirds have oddly curved bills. By no mere co-incidence, those bills are well-suited to getting nectar from plants with similarly curved deep-throated flowers. The pollinating birds and the nectar-supplying plants evolved together, the one influencing the other and vice versa over countless millennia. It's a phenomenon commonly observed in nature.

Such co-evolution is not restricted to relations between two species. All living beings co-evolve with those around them in the big ongoing swirl of modifications and feedbacks.

So it is with ideas too. Although our culture prefers to assign thinking to separate boxes of specialist expertise and to celebrate individual achievements, the reality is more complex and more promising.

Isaac Newton, for example, was among the most exceptional individual geniuses of all time. But he did not get his law of universal gravitation sitting alone under a tree getting bonked on the head by falling fruit.

The apple episode happened in 1666, when Newton was home from Cambridge waiting out the last big wave of bubonic plague. He wouldn't have his universal gravitation theory worked out in publishable form for another 20 years. During that time, Newton shared learning from and with a host of other great innovators who were challenging received ideas in physics and mathematics. He was also exploring other branches of philosophy, plus alchemy and dissenting religion.

Newton had good grounds for his famous assertion: "If I have seen a little further it is by standing on the shoulders

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of giants." And this too was a line that he adapted from predecessors and shared with others of his generation.

Albert Einstein seems to have been a more extreme case of the individual outsider genius. He couldn't get a university job and in 1905 made a series of great contributions to physics, including the special theory of relativity, in his spare time while working as a patent clerk in Zurich. But he was well read in the latest theoretical and experimental work, and surrounded by colleagues interested in new thinking not only in physics and mathematics, but also in other revolutionary fields. One of his close friends was Friedrich Adler, a physicist and radical socialist who in 1916 assassinated the Austrian prime minister as a protest against the country's war policy.

Moreover, the convention-upsetting work of both Newton and Einstein rose with and influenced other roughly parallel innovations. Newton's work inspired and reverberated with co-evolving ideas that posed reason against old dogma in politics, natural history, philosophy, religion, economics, chemistry and, eventually, medicine. There was great individual

variety, but the combination was solid enough to be labelled the Enlightenment.

In turn, Einstein's challenge to the simpler reasoning of Newtonian physics became a contributing part of the larger circle of co-evolving counter movements in many fields throughout the 20<sup>th</sup> century. It is not much of a stretch to see ecology, gestalt psychology, jazz, colonial revolts, the women's movement and Aboriginal rights as examples in a multitude of inter-related and mutually influential responses to the conventions of the time. They did not coalesce into a new Enlightenment, but they were as much of a legacy to the 21<sup>st</sup> century as the dominant orthodoxies of globalized economy, commercial science and reckless hubris.

All this puts a different light on the many and varied initiatives for change today. Most of these efforts seem reactive and fragmentary, too small and too marginal to prevail against entrenched interest and habitual behaviour. But beneath the surface of the diverse and isolated experiments in participatory governance, systems science, ecological economics, precautionary regulation, micro credit, adaptive management and slow food, there are common themes and shared understandings.

Like the revolutionary ideas of Newton's time and Einstein's, like the hummingbirds and the flowers, they are co-evolving, hopefully into something better fitted for life on Earth. 🌱

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