

The Irish Times

Friday, October 28, 2011

Our age of 'endarkenment'

GRAEME MAXTON

THE RECENT DEATH of Apple's Steve Jobs provides us all with an opportunity to reflect. Not only on what life, and death, can mean, but also about our level of innovativeness today.

Apple's iconic devices are often held up as symbols of modern humankind's creativity. The latest iPad or iPhone make it easy to assume that our level of innovativeness is strong, that we are still making big leaps forward, going boldly where no man has gone before. But we are not.

In reality, we are taking tiny baby-steps as a species, and even some of these seem to be backwards. Rather than living in an age of scientific wonder, our level of innovativeness is actually falling and has been in steady decline for decades.

According to work carried by Dr Jonathan Huebner, a physicist working at the Pentagon's Naval Air Warfare Center in California and published in the New Scientist, our rate of technological innovation peaked a century ago and has been declining ever since.

Huebner believes, quite reasonably, that the more minds there are, the more innovation there should be, all other things being equal.

On this basis, the rate of technological progress we are making today is barely better than in the 1600s. The rate of innovation peaked in 1873 and has been declining ever since. Extrapolating into the future, Huebner predicts that by 2024 our rate of innovation will drop to levels last seen in the Dark Ages.

According to Huebner, this is partly because we have already found 85 per cent of the fundamental technologies that are feasible. If science and technology were a tree, we have already found the trunk and most of the branches. It is easy to think this may be right. Many of what we consider to be inventions today are not really very ground-breaking. Apple's phones, tablets and computers are certainly cool. But they are also just improved versions of products that have existed for decades.

It is the same in many other areas of science too. The genome project, which will eventually map our genetic world and hopefully bring us new medical breakthroughs, is only possible because of the discovery of DNA – more than 50 years ago. The jet engine, the atom bomb and the silicon chip are all decades old too. So is the internet.

Of course we are still doing big things. The Large Hadron Collider in Switzerland may take us into uncharted territory in particle physics one day. The International Thermonuclear Experimental Reactor in France could generate power in the same way as the sun when it is complete. Satellites are being sent beyond the farthest reaches of our solar system.

But in a history chronicling the past 30 years, very few of our inventions would be seen as major leaps forward. Most are only small steps, refinements to developments that are decades old. We are not taking the steps as bold as those needed to discover gravity, new continents or the principles of flight.

This is a shame, because there is still so much to discover. We finished exploring most of the terra firma in our world more than 150 years ago but have only just started looking properly at the sea, the largest part. We still do not understand consciousness and know very little about what is in the universe around us.

So what is wrong?

There are three possible explanations for our loss of innovative momentum and direction. The first is Dr Huebner's belief that we have found most of the tree of knowledge already, though that may prove to be a foolhardy claim. When we understand so little about so much, there seem to be major branches of the tree yet to discover.

The second constraint on our rate of innovativeness is economic. The third is that we are simply not being ambitious enough.

Modern economics is certainly holding us back. When economics meddles in science, profit and the "business-case" suddenly loom large, fuzzing minds. Technologists and scientists are driven by what can be marketed and consumed, not by what will improve our world.

This is why we think of Apple's products as innovative, when the company is really just a developer of consumables like so many others. This also explains why America's particle accelerator, Tevatron, was shut down last month. Budget cuts made necessary by the financial crisis, mean that scientific advancement has to pay. Similarly, Nasa's budget is being reduced and there are efforts to privatise space travel instead, putting big business on the bridge. This leaves weapons development as the main focus of US research instead.

Moreover, economics, at least the way we think about it today, has given us the wrong goals, and not just in science. Because our progress is now measured in terms of the rate of economic growth we can achieve each year, not in terms of the betterment of society or the pursuit of knowledge, we are chasing the wrong objective.

The third problem is our level of ambition or rather the lack of it. Compared to the time of the European Enlightenment, 200 years or so ago, when ideas flourished and humankind made giant bounds ahead, our vision now seems to extend little further than the ends of our noses.

The Enlightenment brought us modern science and reasoning. It encouraged everyone to think about how they could improve the world, creating a seed bed of ideas that grew into a giant forest of thoughts, sustaining us for generations.

If we are to change, we need more of that sort of thinking, that sort of ambition.

It is not just that we have the opportunity to move humankind forward, to discover so much that is not yet known that should motivate a change in our ambitions either. We are going to have to raise our sights for other reasons too.

When scientists and doom-mongers talk about future oil shortages or the depletion of copper, zinc, rare earths or dozens of other natural resources, there is a tendency for the non-scientific among us to dismiss these claims. We assume that our "innovativeness" will somehow provide solutions when they are needed. We will find another form of energy and replace the copper, zinc and other metals with something else.

Yet this ignores scientific reality. When the world's raw materials have gone, they have gone. We cannot recreate basic metals, no matter how clever we are. Nor can we step up

to the scale of these problems while we are constrained by the thought that an iPad is a big step forward.

The tasks in front of us are large. The challenges of climate change. The loss of many resources. The need to feed, house, employ and provide fulfilling lives to seven billion people when we live on a planet with the capacity to hold at least two billion fewer.

If we are to address these challenges successfully, we need to raise our game. We need to take more than little steps again. We need to think about the tasks ahead in a different way, with different objectives. We need to reignite a sense of wonder again, to stimulate curiosity and promote the thrill of exploration. We all need to become enlightened again, by the idea of the new.

Graeme Maxton's latest book, *The End of Progress: How Modern Economics Has Failed Us*, is published by Wiley. It has been nominated for the Financial Times and Goldman Sachs Business Book of the Year Award 2011