Science fiction or science fact?

Many science fiction writers have depicted technologies that later became realities. Steve Brambley, deputy director of Gambica*, believes that one British writer foresaw the development of what we are now calling Industry 4.0.

The question is often posed: "Does art imitate life, or does life imitate art?" In the literary genre of science fiction, it is often that life eventually imitates art; facets of our everyday life may one day end up resembling the forward-looking novels of the past.

As the authors look into the near or distant future, they imagine what might be possible, and in time, engineers, scientists and entrepreneurs develop technology that turns what was previously a dream into reality.

The World Wide Web, mobile telecommunications, video calls, digital books, headphones, prosthetic limbs, CCTV and touch-screen technology, were all written about by the likes of Arthur C Clarke and William Gibson, many years – even decades – in advance of them even starting to become possible.

Jules Verne predicted the moon landing more than 100 years before it became reality, in an era when steam trains were cutting edge. H G Wells imagined automatic doors back when Queen Victoria was still on the throne and homes did not yet have electricity.

One of my favourite science fiction authors, the late Iain M Banks, wrote a series of novels set in the Culture universe. It's been described as a vast space opera and deals with many social, political and economic themes across a plethora of planets and species. The reason I mention it is not that I'm now writing a book review column for *Drives & Controls*, but for the technological environment that is central to the story lines. It is set in a post-scarcity economy where people don't need to work because their advanced technology manufactures, controls, repairs and provides everything by itself, and even for itself.

A good example is that of the Culture habitats – planets, orbitals and spaceships, each with its own artificial intelligent controller, a Mind. Some of the ships are vast, carrying billions of people across the universe at incredible speed. The Mind controls everything that happens, including the automatic manufacturing of other ships, machines and materials. The machines build the machines that build more machines. The ships reconfigure and repair themselves, navigate themselves and make their own decisions, often consulting other ship Minds. They make social, political and even military decisions with autonomy. The people simply amuse themselves, while the machines do all the work.

So, when I read or hear about Industry 4.0, the Internet of Things, smart manufacturing and machine-to-machine communications, I can't help but think that Mr Banks was onto something when he started writing his books back in the 1980s. Not only did he imagine the technical potential for autonomous manufacturing systems that communicate with each other; he projected the ability to provide greater levels of customisation and smart products.

It truly fits the definition of Industry 4.0 as the "networking of human beings and smart objects" and "convergence of the physical world and virtual world". Taking things a step further, it also explores the social impact of such technology, on how much power and rights we delegate to autonomous systems.

An interesting element of something like Industry 4.0 is how it affects employees and the work environment. Central to the vision of the German working group that gave rise to Industry 4.0 is the impact on society and the environment. It is not only seen as part of a manufacturing strategy, but a way in which work can become more flexible, rewarding and generates growth and therefore security. Work-life balance and employee age are considerations in the vision of an interactive, interdisciplinary working environment. The goal is to give employees greater opportunity to engage and make decisions in a more self-organised structure.

As the UK naturally takes it own look at how we will integrate similar thinking into our manufacturing community, it certainly seems very important to remember that the fourth industrial revolution is not only about the technology, but also about the people. ■

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