

40

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What about the next 40?

Science and technology have shaped our world immeasurably - so how will it look in another 40? An intriguing and exciting question - we put it to some of our scientist friends, and their answers make for fascinating reading...

Missy Cummings
Director, Humans and Automation Laboratory
Massachusetts Institute of Technology

I predict that the next 40 years will usher in a new era of aviation – the rise of the unmanned aerial vehicle (UAV). Often called drones in the popular press, this name is misleading because it implies that such aircraft are remotely controlled by a human, who is in direct control of the aircraft. In reality, present-day military UAVs can takeoff, execute missions, and land without ever receiving any real-time human guidance. Indeed, even many commercial aircraft today have such capabilities.

The next 40 years will see dramatic improvements in autonomous guidance and control of UAVs such that not only will military airplanes reliably conduct missions with just high level guidance from humans, but cargo planes and helicopters will become unmanned as well. Companies such as FEDEX and UPS will no longer hire pilots, they will hire operators who will each “fly” multiple cargo planes at one time from a central command centre. We will see UAVs taking over other roles like persistent border patrol, wildlife and crop surveillance, emergency response (such as monitoring unfolding catastrophes like Fukushima), and even more nefarious roles such as a new kind of even more annoying paparazzi.

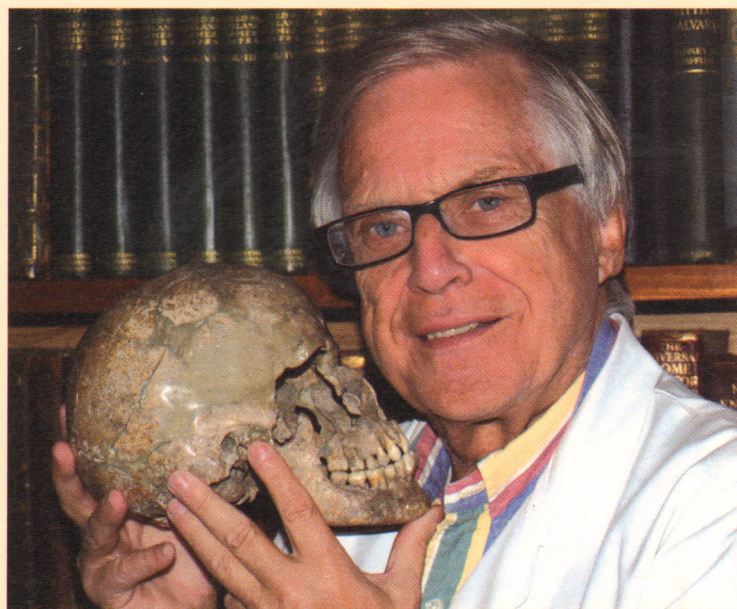
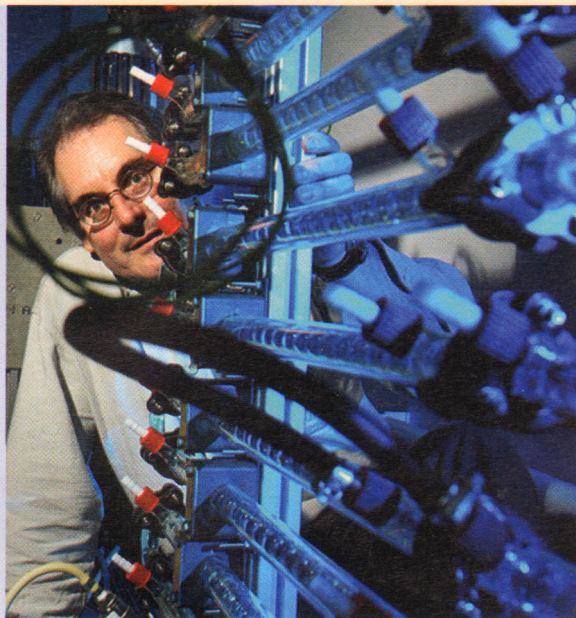
While there is no technological impedance to making commercial airlines unmanned as well, there are socio-technical issues to consider such as the notion of “shared fate”. Passengers feel better knowing that there is someone in the plane that shares their own fate and will do everything possible to save his or her own life. In addition, just because we won’t necessarily need a dedicated pilot to fly a commercial airline, we still will need some form of supervision for the cabin, perhaps in the form of the super flight attendant who monitors the robotic system that serves drinks and snacks, while also supervising the automation flying the plane!



Professor Chick Wilson, Chair and Head of Physical Chemistry, University of Bath

Last 40 years: The revolution initiated by the invention of the World-Wide Web, the scale of whose impact has frankly has been beyond science fiction.

Next 40 years: The increasing personalisation of medicine and other related services, with enhanced use of wireless sensing assisting the diagnosis, and of localised treatments (therapy patches) that are easy to apply and to tune for individual requirements.



Professor Brian J Ford

When they look back, future scientists won’t know whether to laugh or weep. Science in 40 years’ time will be firmly rooted in the purity of knowledge and the joy of its practical application. Real-world problems will be the focus. People won’t be able to use a ton of steel trailing a towering cloud of carbon dioxide to move themselves around; they will expect everyone to read, while lunacies like food waste and the fairy-tale world of the bankers will be distant memories. Hardly anyone will watch television.

The population (greatly reduced through global pandemics) will have realised that most major developments have always been initiated outside academia, not within it; the rebel will be celebrated, and innovation encouraged. Money for science will be measured and realistic. We have created a current system where we expect to extract funding – in huge amounts – from grant committees whom we titillate with technical terms. The public (including politicians) know so little science that they can easily be hoodwinked into supporting areas like high-cost particle physics, providing expensive executive toys for the cognoscenti who currently use a huge PR operation to blind people with pseudo-science.

In future we will concentrate on areas like palliative care of the dying and the biology of the living cell: clinical reductionism will have been replaced by realism. By then, society will have recognised that religion has no place in a mature society, and our safety lies in the security of knowledge. People won’t just go to medical school to learn medicine – it will be taught in schools from primary level. Children will be as familiar with microscopes as they are currently accustomed to war games on a monitor. They will know the species that surround them, understand health, disease, longevity and nutrition as never before. Science won’t be so much a subject at school, more a way of understanding life – and death, too. No longer will we allow people to become so excruciatingly ill that eventually they die from disease. Death control will be as familiar as birth control is today.

Above all, the confidence trickery of science funding will be over. Future science won’t be dominated by the hard sell, but the whole cell.