


## Editorial



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As we approach the first quarter of the 21st century, the Fourth Industrial Revolution (4IR) has become an important priority for universities and commercial and other enterprises worldwide. There is certainly hyperbole concerning 4IR, but undoubtedly the 4IR will have huge and wide-ranging implications for every person and all areas of human activity. Computers and data analytical systems will control almost everything imaginable and generally do a more efficient and, where relevant, safer job than humans alone might be capable of achieving. Over the years to come, educationalists, researchers, scientists and professional practitioners and clinicians will experience profound changes at an increasing pace. In the not-too-distant future, surgeries by humans alone will become uncommon. It seems unlikely that universities or traditional schools will continue to exist too far into the 21st century and primary, secondary and tertiary education will become more of a do-it-yourself activity. Knowledge and skills will become accessible in ways that are not yet available, and given that scientists are predicting that people alive today could live up to the age of 1000 years<sup>1</sup> or perhaps more realistically, at least, 200 years, the idea of obtaining a single educational qualification or lifelong career will soon disappear forever. Technology is generally becoming more sophisticated but less expensive with greater mobility and accessibility and this will have an impact on every person irrespective of where one resides or what one's economic status might be.

Technologies including artificial intelligence (AI) and the Internet of Things (IoT)<sup>2</sup> will radically change the Earth in ways that we can hardly imagine with both positive and negative effects. Vehicles will drive themselves and three-dimensional (3D) printers will become widely available in most homes almost irrespective of income. We will print our meals or computers and machines will prepare and/or deliver them to us. Our *smart* homes will be cleaned, maintained and protected by robots or machines and many household surfaces, appliances and even clothing will be self-cleaning (or disposable). Recently scientists have found a method to get energy from temperature differences between the warmer Earth and the colder outer atmosphere, with the result that energy generation is not confined to the time when the sun might be shining. Thus, our homes in the future will be supplied by energy that is collected and stored irrespective of weather or time of the day or night. Major advances in battery<sup>3</sup> and storage capacity mean that households will generate and sell excess energy to anyone who might need it (e.g. government-run electricity agencies, should they exist in the future). Entertainment and recreational industries will similarly be affected and magazines, newspapers, books and scientific and professional journals will move and change with the times. Mobile phones and televisions will both become obsolete and smart contact lenses and implantable digital devices will eventually largely or entirely replace phones and computer tablets.

Very exciting changes on almost a daily basis in many fields, such as medicine and health sciences, will dramatically change the world and offer solutions to many health disorders that both young and ageing humans and animals experience during their years of existence. Nanomedibots<sup>1</sup> will travel around in our bodies daily, monitoring our health and providing treatment (or an automated flying heli-ambulance with robotic paramedics should that become necessary). Long-lived individuals (centenarians) will become the norm rather than rare exceptions and people will, on average, live longer and healthier lives as they age more slowly because of science and medicine transforming modern life.

Research in scientific and other fields has already shifted to increasingly become a multi-disciplinary activity with people with diverse skills coming together to create new ideas and theories. Technology and AI will play an ever-expanding role in evaluating these new ideas and theories and different countries will cooperate to a much larger extent than has traditionally

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been the case; if they do not, they will simply be left behind as anachronisms and ignored.

Journals such as *African Vision and Eye Health* have their role to play in this continuous transformation of modern eye and healthcare and of the wide dissemination of new ideas and knowledge, and authors, reviewers and researchers who contribute to journals such as this one are a vital part of this transformative process.

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