Editorial

In recent years technology has become ever more present in our lives. Not only has it become indispensable in scientific research and in the laboratory, but it has also become impossible to imagine our homes, schools, workplaces, public buildings, and cities without it. Today so-called 'emerging technologies', which in general refer to the technological fields of nanotechnology, biotechnology, information technology, and cognitive science and technology, are on the rise. By facilitating the convergence of emerging technologies (sometimes labelled NBIC-convergence) proponents of these technological fields envision radical progress and even radical augmentation of human capacities. Developments have also brought about more specific fields of technology, such as artificial intelligence, robotics, 3D printing, stem cell therapy, gene editing, blockchain technologies, immersive media, and quantum computing. The list is getting ever-longer and new specialisations and branches are emerging all the time.

However, emerging technologies are not only characterised by radical novelty, fast growth, and a potentially high impact, but also by increasing uncertainty and ambiguity. Moreover, embracing interdisciplinarity has not only fostered technological and scientific progress but has also increased the possibility of developments that are very difficult to anticipate and, hence, are difficult to assess in terms of their impact. In addition, experiments in little basement rooms that allegedly have resulted in the development of Apple computers and Microsoft software (leaving aside the question whether these stories are apocryphal) have been, one could argue, professionalised by start-ups springing up like mushrooms all over the world, which promises further innovation.

There is also another aspect that is becoming increasingly relevant in debates concerning emerging technologies: although technologies are becoming ever more present and invasive, the digital technologies that are currently being developed are actually fading away from sight. Although a great part of the network that constitutes the current computer era is already invisible to us (wires, base stations, servers, antennas, satellites, etc), in the upcoming years the 'computer as we know it' is expected to 'dissolve' in a new generation of technologies, technologies that will move from our desktops and pockets to our environment, merging into all kinds of objects and material infrastructures.[1]

Adding to the intrusive force of technology, information and communication technologies will not only be embedded in devices that we explicitly 'use' but increasingly become an intrinsic part of the material environment in which we live.[2] These developments are paving the road for pervasive technological environments that will be

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1 S E Bibri, *The shaping of ambient intelligence and the Internet of Things* (Atlantis Press, 2015); M Weiser, 'The computer for the Twenty-First Century' (1991) Scientific American, 94–104

2 C Aydin, M Gonzales and P P Verbeek, 'Technological Environmentality' (2018) Philosophy and Technology, 1–18

ever more seamlessly and unobtrusively integrated in our lives, technological environments that will reveal their functionality by sensing and predicting behaviour, as well as adapting to and also influencing people.

The increasing degree of technological uncertainty, ambiguity, complexity, and invisibility that is produced by these multi-layered sociotechnical developments, has once and for all marked an end to an era of ethic councils and advisory boards drafting lists of do's and don'ts. At the same time, there has never been a greater need for thorough and intensive deliberation and debate about emerging technologies. The combination of radical novelty, fast growth and prominent impact, on the one hand, and increasing uncertainty, ambiguity and invisibility, on the other hand, highlights the urgent need for accurate and thorough analysis, serious review and in-depth discussion. Choices made today might irreversibly determine the course of our lives and planet. How do we recognise the enormous complexity of an emerging multi-layered technological infrastructure and, at the same time, prevent becoming a plaything of contingent influences and forces? And in what way can we cultivate a critical disposition that guides us in distinguishing the benefits from the harms?

This is the backdrop that justifies the need for the establishment of Delphi. Delphi is a pioneering interdisciplinary review of emerging technologies that focuses on the influence of radical technological developments on society and our human condition. It encourages experts from the fields of science and technology, ethics, economics, business and law to engage in inclusive, thoughtful – and sometimes unsettling – debates on the opportunities and challenges created by technological progress and disruption. Delphi aims to create focal points that enable thinkers and doers from academia, government and industry to find one another and develop and discuss big picture views. It wants to move beyond empty buzzwords and shallow popular publications and, at the same time, offer diverse, in-depth and concise contributions in an accessible language.

This first issue opens with two forewords from representatives of the regulatory and business world. Specifically, Paul Nemitz of the European Commission and Anna Zeiter of eBay reflect on the added value that Delphi will bring to those working in government and in industry. In the *Article* section Armin Grunwald, Takashi Izumo, Jean-Aymeric Marot, Sean Devine and Sean Blanchet will respectively reflect on self-driving cars, whether robots should be granted property rights, human enhancement technologies and the use of nootropics. The section is concluded by Celine Melanie A. Dee who addresses the topic of copyright protection of AI-generated art. In addition to our main articles, each issue of Delphi will include a section focusing on startups that are having a significant impact on the way we live and work. The inaugural issue of *Startup Digest* features three interviews with startups applying blockchain technology in new and interesting ways. Finally, the issue concludes with a review of Annie Lowry's new book *Give People Money*, which explores ways in which we could address the technological impact on the future of work.

At this point, I would like to thank the scholars and practitioners who kindly agreed to serve on the Editorial Board of Delphi. The time and effort they put into this inaugural issue made the difficult task of launching a new journal a rewarding experience. I would like to conclude this editorial by asking you to join our discussion! If you would like to contribute to a future issue or would like to provide feedback on this issue please get in touch.

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