

Improving Responsibility, Responsible Improvements

Christopher Coenen

Published online: 15 November 2018
© Springer Nature B.V. 2018

The current December issue of *NanoEthics: Studies of New and Emerging Technologies* is very important to me in various respects. This editorial will attempt to show why it might become so for you as well.

First of all, this issue is particularly meaningful for me on account of its final contribution, the original version of which had been single-authored by the late Toni Pustovrh [1], with whom I had the great pleasure to work from the early 2010s on. I am deeply grateful to Franc Mali, his mentor, and Simone Arnaldi, one of the scholars who worked most closely with him, for their willingness to become co-authors of the article after his death, thereby making it possible to publish his final work. It is part of a special section on responsibility and human enhancement guest-edited by Arnaldi to which I will come back below.

This issue also features a paper that belongs to one of the new categories of article about which you will find more information on our journal's homepage. It is an article in the 'Invited Contribution' category and, since it also deals with the topic of human enhancement, perfectly complements our special section. Its author is the renowned German scholar Richard Saage, a leading expert on, among various other topics, the history of utopian thought. I will also come back to Saage's paper below.

Before saying a few words about the articles in this issue, I would like to share some reflections with you on responsible research and innovation (RRI), drawing in part on what I have learned from two ongoing research projects: the European Union (EU) Horizon 2020 project *VI-DAS*, and the German national project *INOPRO*, which is funded by the German Federal Ministry of Education and Research (BMBF). *VI-DAS*'s aim is to contribute to progress in the field of intelligent driver systems that can monitor a driver's state and behaviour in order to improve collective safety. The project also addresses legal, liability, and emerging ethical and societal aspects, including new risks and chances, as well as public concerns and hopes. Interaction with the insurance industry, as a key stakeholder group in this field of new and emerging technology, is central to the project. A similarly interesting and specific situation with respect to the inclusion of stakeholders exists in the field to which the *INOPRO* project is devoted, that of (increasingly 'intelligent') limb prostheses.

Both projects have made it even clearer to me that attempts should always be made to tailor RRI approaches to the specificities of the field of science and technology in question, and to the stakeholder landscape and its specificities in particular (on this issue, see also [2], in which Armin Grunwald and I look at quantum technology in this vein). Meaningful, effective interactions between key stakeholder groups appear to be most relevant in many fields if the best impacts are to be achieved. Of course, this does not preclude less targeted RRI practices or broad public outreach activities, but stakeholder engagement activities often need to be

C. Coenen (✉)
Institute for Technology Assessment and Systems Analysis
(ITAS), Karlsruhe Institute of Technology (KIT), POB 3640,
76021 Karlsruhe, Germany
e-mail: christopher.coenen@kit.edu

prioritised in order to raise the chances of RRI being beneficial to society at large. Such success will often mean satisfying the needs of the social groups most affected by, or most in need of, the technological developments in question. The further refinement of RRI practices and how they are tailored to specific fields of research and development is all the more important in such a context.

But back to the contents of the present issue of our journal: it starts with a methodologically oriented article by *Marianne Boenink, Lieke van der Scheer, Elisa Garcia, and Simone van der Burg*. The authors point out that the involvement of patients in deliberations about, and the design of, (translational) biomedical research may increase the quality of research and development in this area. In their article, they focus on a method that can be applied in this context and is based on the use of discussion cards. Building on what is now the quite long-standing tradition of such methods in deliberations on RRI and similar topics, the authors have used discussion cards to facilitate a substantive, systematic, structured, and at the same time open exchange of opinions. After reviewing the potential challenges of patient involvement, Boenink and colleagues argue that any method intended to involve patients in translational biomedical research should enable patients (1) to put forward their experiential knowledge, (2) to develop a rich view of what an envisioned innovation might look like and do, and (3) to connect their experiential knowledge with the envisioned innovation. They then describe how they used the card-based ‘Voice of patients’ discussion method, and discuss the extent to which it satisfied these requirements when it was used in four focus groups. The authors conclude that the method is relatively successful in mobilising patients’ experiential knowledge, in stimulating their imaginaries of the innovation under discussion, and to some extent also in connecting the two. With the publication of this article by Boenink and colleagues, *NanoEthics* therefore continues to feature pieces about methods of involvement in communication on research and development (see, for example, the articles in this year’s second issue in which, among others, Marjoleine G. van der Meij and colleagues presented the results of work in this area). Moreover, the article is an example of the further refinement of RRI practices, and the ways they are tailored to specific fields of research and development touched on above.

The next article in the present issue, which was co-authored by *Rickard Arvidsson, Max Boholm, Mikael Johansson, and Monica Lindh de Montoya*, sheds light on graphene research, a field much talked of since Andre Geim and Konstantin Novoselov won the Nobel Prize in Physics in 2010 for their groundbreaking experiments with this two-dimensional material. Graphene is also of much interest for researchers in the field of nanoscience and nanotechnology. The article by Arvidsson and colleagues focuses on the risk perceptions and risk discourse of both graphene researchers and innovation advisors. When reading their fine study, those familiar with societally controversial fields of science and technology will recognise the similarities between the risk discourse on this fascinating new field and risk discourses on other fields. The authors, for example, point to a dilemma that RRI discourse creates: denying the risks of graphene makes researchers irresponsible due to a lack of risk awareness, while affirming the risks of graphene makes them irresponsible because they become inured to such risks while working with the material every day. Offering a detailed analysis of the positions of representatives from two key groups of actors in this field, the article certainly has great potential to help shape responsible graphene research and innovation practices. *NanoEthics* would be delighted to receive further submissions on this highly relevant topic.

An article by *Inge Böhm, Arianna Ferrari, and Silvia Woll* in the present issue deals with yet another truly fascinating topic in new and emerging research and development: in vitro meat (IVM). IVM is meat produced not by slaughtering animals but by applying tissue-engineering techniques. The authors, whose study is based on a series of interviews with experts and stakeholders in this field, focus on visions of the future, thereby contributing to a line of research covered in our journal for quite some time (see, for example, our first two issues of 2017). Having noted that IVM is presented by many innovators as the most realistic and sustainable solution to the problems of current meat production and consumption, Böhm and colleagues interviewed five experts (in tissue engineering, bioengineering, in vitro-meat research, and food technology), as well as representatives of seven stakeholder groups (animal rights activists, environmental activists, the food industry, policymakers, fast-food chains, organic food producers, and conventional food producers). After discussing the topic of and discourse on IVM, the

authors present and examine the results of these interviews. In them, the interviewees commented on the innovators' vision and developed their own visions of the future. The authors emphasise the interviewees' differing points of view, but also conclude that the majority appeared to be convinced that there would be several, parallel options for IVM innovation in the future, and that the future of IVM should always be considered in the context of broader topics, namely the future of meat and the future of food in general. Once again, this is a fine example of a study that may inform future activities aimed at the responsible, societally beneficial development of a potentially disruptive technology. Furthermore, by publishing this article, our journal continues its tradition of featuring pieces on technoscientific development relevant to animal ethics and related fields of study (on this tradition, see for example the first issue of 2015).

The same is true for the article by *Korinn N. Murphy and William P. Kabasenche* that discusses animal 'disenhancement', a topic for which this journal has been the major forum of scholarly exchange and debate since the early 2010s. In order to mitigate animal suffering in industrial food production, biotechnology companies are pursuing the development of genetically disenhanced animals. The authors offer an argument against disenhancement that draws upon parallels with human disenhancement, ecofeminism's concern with the logic of domination, and a relational ethic that seeks to preserve a meaningful relationship between farmers and their animals. In addition to this, they respond to two arguments in favour of animal disenhancement: one grounded in the non-identity problem and one that argues disenhancement is the best we can do to protect animal well-being right now. Besides being a highly original and significant contribution to the scholarly discussions about animal disenhancement, the article by Murphy and Kabasenche is also a perfect read together with other articles in the present issue, because it reminds us that treatments conducted with the aim of enhancing or disenhancing animals are, or at least should be, very important background elements in the current discourse on human enhancement. As argued in the editorial of the first 2015 issue of *NanoEthics*, I believe the triangle of humans, animals, and technology to be of crucial relevance to studies of new and emerging technologies as well.

There is yet another highlight in the current issue of our journal: it is a great pleasure and honour for me that

it also includes an article by *Richard Saage*, an eminent scholar whose books I have been reading since secondary school and with whom I have been engaged in a dialogue that has greatly shaped my thinking over many years. This is particularly true for this article, which addresses a topic I believe to be of the utmost importance for the study of new and emerging technologies, and their impacts on the relationships between human corporeality and technology: the philosophical anthropology developed in a strongly interdisciplinary manner by philosophers, biologists, and others in the German-speaking countries since the 1920s. This remarkable school of thought, whose most relevant representative was Helmuth Plessner (1892–1985), has experienced a revival in countries such as Germany and the Netherlands and to some extent the English-speaking world in the present decade; and I am keen to support it by publishing further high-quality articles on the subject in future issues of this journal. Saage argues that, as it was developed by Plessner, Adolf Portmann (1897–1982), and others, philosophical anthropology still – perhaps even more so today than in the past – constitutes an important alternative to both anthropological essentialism and scientism. The author makes this claim on the basis of a thorough analysis of two key documents in discourse on human enhancement from the early 2000s that are perfect examples of these contrasting approaches. From his perspective, what we can learn above all from philosophical anthropology is that, on the one hand, decisions about the future of human nature lie in the hands of humanity itself and will be taken through societal deliberation but, on the other hand, if it is to take these decisions in a responsible manner, society will have to recognise the pre-human, evolutionary origins of its existence as something that has developed over time and is not its own creation; and it will have to be fully aware of the individual and societal consequences of radical attempts to reshape the human body. If a new philosophical anthropology is to be developed for our times – something that is increasingly seen as a desideratum and an endeavour in which bright, inquisitive minds from philosophy, the social sciences, the humanities, and the arts would need to work together with natural scientists, engineers, and physicians –, Saage's acute analysis will be a fundamental text.

The special section in the current issue is also complemented perfectly by *Francesco Paolo Adorno's* book review, in which he presents and discusses a work by Laura Cabrera, one of our journal's editors. In this

book, human enhancement is rethought with a focus on its societal aspects. Referring to Cabrera, Adorno emphasises that advanced human enhancement technologies could harden forms of social hierarchy, and become tools of manipulation and coercion. In consequence, he argues, it might be attractive to follow her argument that forms of social enhancement can be developed to counter or avert such perils.

The special section on responsibility and human enhancement guest-edited by *Simone Araldi* also deals mainly with broader societal aspects of human enhancement. Since Araldi very skilfully summarises the contributions to the special section, their relations with each other, and the motives behind this selection in his introduction, I will only briefly mention here that the special section includes an article by *Guido Gorgoni* on RRI, human enhancement, and the actual and potential interrelations of these two topics, a highly original analysis by *Darian Meacham and Miguel Prado Casanova* of the role of pink noise in coupling relations between humans and cognitive artefacts (and subsequently in responsible innovation concerned with cognitive artefacts and human-artefact interfaces), an article by *Simone Araldi* himself in which he makes a contribution to the reflection on and further development of RRI methodologies, in a nice coincidence focusing on the techno-moral scenario approach pioneered by Boenink and others [3, 4], and the article by the late *Toni Pustovrh and colleagues* mentioned above, which looks at pharmacological cognitive enhancement (PCE) in the workplace, and whether workers made ‘better’ by PCE would also be ‘better humans’ in the normative sense of human enhancement.

Given that I spent relatively little time with Toni Pustovrh, I cannot claim to have been a personal friend, but he was a dear and close colleague. When, amid the usual madness of stressful, pseudo-competitive work in academia, we found time to talk

about more fundamental matters, I not only learned about a passion he shared with me – the love of natural mountain landscapes and the way one experiences time in them, something so different from modern work life –, but I also realised how high his hopes for human enhancement technologies were. I am moved by the fact that, at the end of his life, he thought with such depth and thoroughness about how these hopes could be translated into reality without perpetuating and further intensifying the rat race into which work life often degenerates. As he writes, humans are not only workers: they also have goals, aspirations, obligations, and desires in other areas of life and society, and only fostering specific cognitive capabilities that are valuable in the working environment can thus affect their life beyond work and may also have wider societal impacts. I invite you, and those among you with capitalist or transhumanist inclinations in particular, to delve into the ideas set out in this remarkable article.

References

1. SYNENERGENE (2017) In memoriam: Dr Tony Pustovrh (1979–2017). <https://www.synenergene.eu/news-item/memorial-dr-tony-pustovrh-1979-2017.html>. Accessed 5 October 2018
2. Coenen C, Grunwald A (2017) Responsible research and innovation (RRI) in quantum technology. *Ethics Inf Technol* 19(4):277–294
3. Boenink M, Swierstra T, Stemerding D (2010) Anticipating the interaction between technology and morality: a scenario study of experimenting with humans in bionanotechnology. *Studies in Ethics, Law, and Technology* 4. <https://doi.org/10.2202/1941-6008.1098>
4. Swierstra T, Stemerding D, Boenink M (2009) Exploring techno-moral change: the case of the ObesityPill. In: Sollie P, Düwell M (eds) *Evaluating new technologies*. Springer, Dordrecht, pp 119–138