

Human development and technology: some observations on the responsibility of engineers and the role of (development) ethicists

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Development ethics and technology: a gap

The 2009 conference of the International Development Ethics Association “will focus on how various social actors can and ought to take responsibility for acting on poverty and expanding human development”. Not surprisingly, the call-for-papers mentions citizens on the one hand and organizations (business, political or civic) on the other hand. I would like to draw attention, however, to a specific group of actors present within many organizations and able to contribute to human development, but so far mostly neglected in discussion on this topic: engineers. The lack of attention being paid to the role of engineers in discussions on justice and development is matched by the lack of attention being paid to the technologies that they create. Having reviewed over 60 publications of academics on development ethics and related normative areas, such as global justice, I had to conclude that technology is a subject that is largely absent in this body of literature¹. An overwhelming majority of the publications reviewed did not mention or discuss technology at all, as if it has no relevance. Some authors do mention technology, but only quite briefly and in a very limited way². I

¹ Including publications from the period 1980-2007. I would be most grateful to anybody who could point out relevant publications that do address this topic – I acknowledge that it is very well possible that I have overlooked some.

² Here are some examples of technology being discussed in development ethics and global justice literature:

- As something contributing to the capacity of “well-ordered peoples” to assist “burdened societies”, but also as something which may make an international agreement morally suspect, because there are large technological differences between the parties involved (Reidy 2007).
- As evaporating ad hoc limitations on donations based on proximity; we are now able to efficiently provide assistance to the distant needy over long distances (Blake 2005).
- As something which should be “appropriate” for the culture or people in question (Crocker and Linden 1998) and something which should be suited to the needs of the poorest (Desai and Redfern 1995; Dower 1983).
- As a means of production, with technological innovation leading to a growth in productivity (Weinstock 2005; Narveson 2004a; DeMartino 2000), or – less positively - as causing unemployment / jobless growth (Desai and Redfern 1995; Dower 1983).

found this outcome of my review confirmed by the work of Strijbos (2002) and Selinger (2009), who both identify a gap in the literature as well. Apparently there is hardly any work addressing technology in the field of development ethics and global justice and, vice versa, hardly any philosophers and ethicists getting involved in debates about, for example, technology transfer to developing countries. And the sparse publications that do address this gap, do so in an unsatisfying manner (says Selinger) or show a “naïve conception of technology” (Strijbos).

One might be surprised about this, because technology has from the onset played a significant role in the practice of development cooperation, so much even that it was initially, in the 1950s, largely equated with ‘technical assistance’ in order to bring about ‘modernization’. Later on, in the 1970s, there was the so-called ‘appropriate technology’ movement raising critical questions about technology (e.g. Schumacher 1973; Willoughby 1990). In 2001 the UNDP devoted her annual Human Development Report to the theme ‘making new technologies work for human development’ (UNDP 2001). Recent attention for technology and innovation can, for example, be found in the so-called ‘Base of the Pyramid’ movement (e.g. Kandachar and Halme 2008), which proposes that companies start innovating with the poor as customers in mind, assumingly leading to both poverty reduction and profit. I do not mean to give a complete historical overview here of (thinking about) the role of technology in development cooperation, but just to mention some examples that make plausible that technology has always played a significant role in this area, although – admittedly – with precarious success. On the one hand it is fairly obvious that technologies are able to make significant contributions to development and poverty reduction – we only need to think of the contributions that technologies already have made in areas like health care, agriculture and sanitation. On the other hand, there are of course numerous examples of technologies and technological projects for or in developing countries that have failed, for many different reasons. And although technology has a large potential to contribute to poverty relief and development, in virtually all cases technology comes – as in the West – with negative side effects and risks.

Why then has so little normative reflection taken place on technology and development? Why have social scientists been investigating issues pertaining to development and technology for a long time, but have development ethicists and theorists of global justice not done so? What probably plays a role is that the

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- As causing – through the development of new technologies, patents and import substitution by the rich countries – economic marginalization of developing countries (Dower 1998).
 - As simply explaining “the situation of the world’s poor” – they have “less developed technology” and as something neutral, which can easily be adopted by any primitive people, if only their governments would not hinder them (Narveson 2004b).
 - As something which is needed – in both the South and the North – to make more efficient use of natural resources, without causing environmental problems or being unsustainable (Crocker and Linden 1998), or – on the contrary – as causing environmental problems and destroying natural resources (Dower 2004).
 - As a pre-condition for globalization – especially innovations in transport and ICT are mentioned in this context (Dower 2004, 1998; Singer 2002; Desai and Redfern 1995).
 - As demanding a transformation of what is meant by politics, economics and international relations – think of “the control of nuclear weapons, of the spread of information technology, of the application of genetic engineering” (Desai and Redfern 1995);
 - As something that should be more readily shared by multinationals operating in developing countries (Desai and Redfern 1995);

Only a couple of publications do discuss technology in somewhat more depth, although still not always in a satisfactory way. This is, however, not the place to discuss these publications in detail and explain why their treatment of technology is not satisfactory.

discipline of development ethics is quite young itself – only about 20 years according to Dower (2008) – and because of that perhaps development ethicists have not had the opportunity yet to engage with all topic that are relevant to their discipline. Another relevant factor is probably that even in the West the field of ethics of technology is relatively new, despite the fact that throughout history technology has had immense social impacts. Franssen, Lokhorst and Van de Poel (2009) explain this by pointing out that there exists a “widely spread picture of technology as being instrumental, as delivering instruments that will be used ‘elsewhere’.” In this instrumentalist view of technology “values are the domain of the users of the technology”, technologies provide mere means towards the ends that users choose. Instrumentalism results in the so-called neutrality thesis, which “holds that technology is a neutral instrument that can be put to good or bad use by its users.” The instrumentalist perspective “implies, basically”, they say, “a positive ethical assessment of technology: technology increases the possibilities and capabilities of humans, which seems in general desirable.” Engineers and the technical artifacts that they create are then not likely to be considered in ethical reflections on technology. However, instrumentalism is nowadays rejected by most philosophers of technology and the ethics of technology is a quickly growing field in which both concrete technologies of different kinds and (the responsibility of) engineers are core objects of study.

So does this field of ethics and technology have any relevance for development ethics? I would think so, considering that – as mentioned before – (1) technology plays a very important, but also often contested, role in poverty alleviation and development processes and (2) the neutrality thesis of technology has been shown to be untenable. I would thus like to argue that development ethics, being concerned with “ethical reflection on the ends *and means* of socioeconomic change in poor countries and regions” (Crocker 1998, emphasis is mine), ought to reflect on technology in relation to poverty reduction and development. Crocker mentions that some people fear that development ethics would become “too ambitious and diffuse” if its scope is widened too much: “If development ethics grew to be identical with all social ethics or all international ethics, the result might be that insufficient attention would be paid to alleviating poverty and powerlessness in *poor* countries.” Fair enough and obviously I do not mean to make a plea for a full merger of both fields of ethics. We could discuss further to which degree development ethics should pay attention to technology, or the ethics of technology to development, although my priority would be to make sure that pressing ethical problems are being addressed, rather than solving disciplinary boundary quarrels. And the topic of ethics, technology and the global poor is, I believe, currently not addressed enough. Having said this, let’s now turn to the role that engineers can play and the responsibility that follows from that role.

The responsibility of engineers

The responsibility of engineers is a topic that has recently received quite some attention within the ethics of technology. Much of the older work is looking into so-called backward looking responsibility, which is connected to concepts like liability and blameworthiness (e.g. for the Bhopal disaster in 1984). Some problems exist, however, because many of the traditional conditions for ascribing such responsibility are, for different reasons, “hard to meet in engineering practice” (Franssen, Lokhorst, and Poel 2009). It seems to me, however, that the topic of this conference is rather referring to forward-looking responsibility, since it speaks of “taking responsibility for *acting* on poverty” (emphasis is mine), instead of *having acted* in a certain way. Interestingly, a shift in emphasis towards this forward-looking responsibility can currently be noted within the field of ethics of technology (Doorn forthcoming). “Responsibilities, in this view, do not take

specific actions of persons as their object”, so Doorn explains, “but they rather have the character of obligations to see to it that a certain state of affairs is brought about (or prevented).” She considers this to be a consequentialist perspective on responsibility; When ascribing responsibility, the most important criterion is efficacy or whether the resulting responsibility distribution leads to solving the problem at hand or to the best possible outcomes (as opposed to fairness as the most important criterion for ascribing backward-looking responsibility). Engineers are then obvious ‘candidates’ for carrying forward-looking responsibility, in light of their expertise and power that enables them to make a difference in the world (both for the better and for the worse).

This shift in thinking about the responsibility of engineers seems connected to a shift in the field of ethics and technology at large. Ever since the empirical turn within the philosophy of technology (Kroes and Meijers 2000), ethicists of technology have started to study concrete technologies in their contexts of application, as opposed to the first generation of philosophers of technology talking about ‘technology’ in general (arguing for example that technology is alienating). And, as mentioned before, technological instrumentalism is rejected nowadays by many ethicists of technology, because they have come to realize that technological artifacts are very much value-laden, quite independent from decisions that users make³. They have come to realize that the details of design are very significant from a moral point of view. It is in the design phase of new technologies that decisions can still have a large impact on ethically relevant outcomes⁴ and one could argue that the capacity of engineers to make this difference gives them matching responsibilities. Thus, the process and practice of technological design is nowadays an object of ethical reflection (Franssen, Lokhorst, and Poel 2009). According to Doorn, emphasizing forward-looking responsibility means paying more attention to “engineering as a *responsible* practice”, a practice where “societal responsible engineering” takes place. What this entails exactly and how can we bring about such practices is a matter of on-going investigation within the ethics of technology. One point of attention is that although engineers carry a responsibility, it is often difficult for them to fully identify and oversee the moral implications of their work and the design decisions they make. That is why ethicists of technology are nowadays sometimes engaged in what has been labeled ‘ethical parallel research’, where an ethicist is ‘embedded’ in the R&D process and so contributes to timely ethical reflection (e.g. van der Burg 2009 explains the ideas behind and challenges in this type of research). And that is why, for example, many technical universities have made ethics a mandatory course in their engineering programs: to increase the sensitivity of engineers to ethical issues and their ability to reflect and act on these.

Now let us return again to the topic of development and poverty. It seems to me that if poverty reduction and development are the outcomes we aim for as a (global) society, it is a good idea to assign a considerable amount of forward-looking responsibility to engineers, not just to citizens and various types of organizations. The reason is that technology has, *at least in principle*, a large potential to contribute to these goals and engineers are, given their knowledge and skills, exactly in the position to use their creativity to come up with new technologies that contribute to achieving these goals. Furthermore, all technologies – including the ones that were created with other purposes than poverty reduction in mind – may in principle

³ As Franssen, Lokhorst and Van de Poel (2009) note, “the value-ladenness of technology can be construed in a host of different ways”. This is, however, not the place to discuss this in more detail.

⁴ One emerging idea in the ethics of technology is that of ‘value sensitive design’ (van den Hoven 2007; Cummings 2006). Similarly, I have elsewhere proposed a capability approach of design for development, which I have labeled ‘capability sensitive design’ (Oosterlaken 2009).

also have negative (side)effects on development processes and poverty reduction. Preventing these unwanted outcomes as much as is possible and reasonable is also part of the forward-looking responsibility of engineers. What is required, of course, is a proper understanding amongst engineers of what poverty and development entail. It is here that ethicists have can play a role as well, namely to facilitate this kind of reflection, amongst others by offering relevant concepts, approaches and analyses. If we want engineers to act on poverty and take values related to human development properly into account, it would be good – in relevant cases - for ethicists of technology to also become a bit of a development ethicist. Likewise, development ethicists should, I believe, become more involved in discussions surrounding technology for developing countries. The capability approach of Nussbaum (2000) and Sen (1999) has, for reasons that I have already discussed elsewhere (Oosterlaken 2009), a large potential to contribute to closing the gap that was identified in this paper.

Let me now conclude this paper with one brief example, the Spoken Web. I would like to emphasize that I have not studied this case in any detail yet. I merely sketch some first observations and thoughts that occurred to me after first reading about this new technology. Yet I think this will suffice to serve my modest purpose in this paper: to illustrate (a) the sort of work to which ethicists of technology could contribute and (b) that engineers have the potential to make a difference for better or worse in development and should hence be encouraged to actively take responsibility.

A case: the Spoken Web as the answer to illiteracy

In the past decade much attention has been paid to the potential of ICT to contribute to poverty reduction ('ICT4D'). Expectations are high; the iconic example in the media is the poor farmer that has now, thanks to his cell phone, access to information about crop prizes. Philosophers of technology rarely engage in such debates⁵. Here I would like to draw attention to one of the newest things in ICT4D, namely the so-called 'Spoken Web' which is currently being developed by the IBM India Research Laboratory (IRL) in New Dehli. The Spoken Web:

“aims to transform how people create, build and interact with e-commerce sites on the World Wide Web using the spoken instead of the written word. The Spoken Web is the World Wide Web in a telecom network, where people can host and browse 'VoiceSites', traverse 'VoiceLinks', even conduct business transactions, all just by talking over the existing telephone network”. (Aggarwal 2008)

The idea of the spoken web builds on the fact that (1) many poor people in developing countries are illiterate and therefore by definition not able to use the world wide web, even if they had computer access and that (2) cell phone access is now widely spread, even among the very poor. It is “an attempt to bring the power of the internet to rural India” (Ananthaswamy 2008). On first thoughts it seems that engineers are taking their responsibilities here by putting their knowledge and creativity to good usage, positively contributing to poverty reduction and development. However, it would be too soon to arrive at such conclusions. The technology is still in its early phases and this is a case that has not been investigated yet in detail. I would

⁵ With Evan Selinger being one of the notable exceptions. He analyses the case of so-called 'phone ladies' in Bangladesh being empowered by the Grameen phone project, critically discussing what empowerment means and what technology contributes to it (Selinger 2008, 2009)

just – making use of the capability approach - like to highlight some initial points that may deserve further attention.

Firstly, as is the case with most technologies, the details of design probably matter. The idea of the Spoken Web can be technically realized in many different ways and which one it will be is not irrelevant from a capability perspective. One positive detail in current efforts to realize the Spoken Web seems to be the amount of attention that the IBM team is apparently paying to making it easy for people to create their own voice sites. The first efforts were apparently quite successful. Researchers from the IBM Indian Research Lab report on a test where 12 micro-entrepreneurs (such as a plumber) were asked to create a voice site for their business. Ten of them are said to have been able to do so within a few minutes, after just a short explanation (Agarwal et al. 2008). If IBM's spoken web team manages to successfully further develop this part of the technology, it would be very positive in terms of people's capabilities and agency. They would be able to create their own voicesites, instead of just using those created by others. A spoken web that makes this feasible for almost everybody seems, *ceteris paribus*, be better in terms of expanding people's capabilities than a spoken web in which making voicesites is just something for big businesses or the educated few. But even within this aspect of the Spoken Web, the further details of design matter. People will probably remain dependent upon 'templates' provided by others and these may in turn be developed in ways that are more or less in line with people's real needs. Taking a capability approach may also lead to questions about how much genuine participation by the poor themselves does take and ought to take place in the development of a technology that is supposed to improve their quality of life (although cynics might argue that the sole purpose of the technology is to open up new markets for IBM). Questions might also be asked about the space in which the development success of such initiatives is assessed – is this in terms of adoption rates (resource distribution – still an often used metric in ICT4D), user satisfaction (utility), or capability expansion?

We may also, taking a critical stance, ask whether there are really no negative side effects or risks to be expected from this new technology. New ICTs have given rise to many ethical questions in a western context and to assume that they are only a blessing to the poor, considering their dire need, would be naïve at the least. For example, there might be a conflict between the short-term and long-term effects of the Spoken Web on the capabilities of the poor. We refer here to a possible conflict that was already identified by Selinger (2009) in relation to mobile phone projects in developing countries:

“...if literacy campaigns are typically successful because potential students expect to be able to improve business relations and stay in touch with distant relatives by knowing how to read and write, then it becomes reasonable to wonder: Might using phones to accomplish these ends counteract the educator's agenda?”

Selinger provides some anecdotal evidence from Haiti to show that this is not a far-fetched concern. This question becomes even more urgent with the introduction of the Spoken Web. In the short term it may contribute to the expansion of all sorts of capabilities of people that are illiterate and therefore not able to use the internet. Yet if it takes away the direct stimuli for learning how to read and write, it might in the long run be harmful to the further expansion of people's capabilities beyond a certain level that can be reached with the help of mobile phones and the Spoken Web. On the other hand: applications for mobiles phones

have already been developed to increase literacy. Could we – or rather, engineers taking responsibility here - come up with ways to make the Spoken Web contribute to literacy?⁶

Further empirical and philosophical research into different contexts of application and into different varieties of the technology is necessary before we can draw any conclusions on the matter. Philosophers of technology are well aware of that ever since the 'empirical turn' took place in their field. Capability theorists would argue for the same context awareness in addressing such issues. Hopefully this paper has made a convincing case that it would be worthwhile to pursue this type of research at the intersection of ethics, technology and development in this case and other cases.

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⁶ After my presentation at the conference Daniel Paré, a communication scholar, pointed out to me that his is quite a narrow interpretation of literacy (i.e. skills to read/write). In his discipline, literacy is often seen much broader, as the ability to find and understand information. I thank him for his valuable comment and regret that I have not had the chance to discuss this further with him. Obviously, the definition of literacy that one applies will matter for the evaluation of the case. Yet it seems to me that this does not dissolve the need to investigate such cases carefully from an ethics perspective, even though the Spoken Web may initially seem unproblematic when one applies this wider definition of literacy. I would argue rather that what the *best* definition of literacy is, will depend also on our answers to questions about what good development is.

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Post-conference addition

Both attending the conference and reading David Crocker's new book (*Ethics of Global Development – Agency, Capability and Deliberative Democracy*, 2009) have made me ponder about the following question: where does 'development & technology ethics' take place? In this paper I base my claim that hardly any attention has been paid to ethics, technology and development on two quite limited bodies of literature: academic, English-language publications in development ethics and ethics of technology (although the former is emphasized more than the latter). Yet this claim has been challenged in several ways.

Firstly, at the conference I was introduced to Luis Camacho, a philosopher of technology from Costa Rica who is also engaged in development ethics. He has written mostly in Spanish, although he also has some English-language work that he promised to send to me. I look forward to reading it and readily admit that there may be a lot of relevant work in Spanish and other languages that I have no access to unless I learn to master more languages – although during a little internet search after this meeting I found the book *Philosophy of Technology in Spanish Speaking Countries*, (Carl Mitcham, 1993) to which Camacho made a contribution. This will allow me and other people interested in the topic of this paper to have at least a peek into what is going on elsewhere.

Secondly, David Crocker – whom I also had the pleasure to meet at the conference – includes in his book a chapter in which he situates development ethics as an integral part of what he has calls "development theory-practice". He convincingly argues for a development ethics that goes "beyond theoreticians and include development policy makers, politicians, activists, journalist, and citizens." Seen in that light, was not at least a part of the 1970s appropriate technology movement *implicitly doing* development ethics in critiquing the role of technology in development and proposing practical alternatives? And more recently, was Indian activist Vandana Shiva (2001) then not doing development ethics when she criticized the UNDP's view on technology as it was revealed in their *Human Development Report 2001*, which had as a subtitle "making new technologies work for human development"? It may then seem that I have been looking too much at academic contributions.

Thirdly, there are disciplinary divides within (English-language) academia that I may not have bridged sufficiently in this paper, considering my emphasis on the places where academic ethics *formally* takes place, namely as a sub-discipline of philosophy. Yet in response to my Spoken Web example Sandra Smeltzer, a communication scholar, commented that there already exists a huge amount of 'critical' literature about ICT for development. Of course my claim was, although I have chosen to illustrate my point with an ICT example, about technology in the broadest sense and not only about a specific technological domain. This being said, I admit that I do not have a good overview of all work on technology / ICT for development taking place in other disciplines than philosophy and ethics. Yet it is likely that geographers, communication scholars, and academics from other empirical fields sometimes also engage with their topic in a philosophical/ethical way. Smeltzer's comment actually fits in nicely with Crocker's book, as he also discusses the linkages between research taking place in ethics and in the empirical disciplines.

Rather than disqualifying my paper, I see these three points as future challenges or points of attention for the sort of research that my paper calls for. David Crocker suggests that "some development theory-practices are better than others insofar as they explicitly include and successfully integrate the various components" and his book in combination with the conference helped me to form a broader and more explicit picture of those components.