Abstracts of chapters included in the volume

The Capability Approach, Technology and Design

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Chapter 1 – The Capability Approach and Technology: Taking Stock and Looking Ahead - Ilse Oosterlaken

Abstract This introduction to the book The Capability Approach, Technology and Design consists of five parts. After a very short general introduction, I will first briefly present the capability approach, including the main concepts and debates about it. Next, I will – in an extensive literature review - take stock of what has been published so far on the capability approach, technology and design – what are the most interesting themes, discussions and ways of applying the approach? This will be divided in two sections: one on technology in general and one, more specifically, on ICT. Then I will highlight some interesting points and recurring themes from the different chapters of this book. I will end with some final reflections on the future of this emerging research topic.

Chapter 2 - Human Capabilities and Technology - Jeroen van den Hoven

Abstract The present chapter introduces and defends the Capability-Technology Affinity Thesis, i.e. the claim that there are close, but hitherto unexplored, relations between technology and the capability approach. After a general characterization of technology it provides three arguments in support of this thesis. Firstly, we show that research in the philosophy of technology in the last decades has demonstrated that views on human values and assumptions about human capabilities have been inscribed into technology. We describe how a value turn in thinking about design and a design turn in thinking about ethics come together in the beginning of the 21st century in what has been referred to as "value sensitive design". Secondly, we argue that there is an internal relation between the good life and technology. Thirdly, we defend an analysis of technology as an agentive amplifier of human capabilities. We conclude by drawing attention to the fact that research in the capability approach and technological design have been disparate and that this needs to be remedied in order for the capability approach to realize its full potential as a practically relevant ethical approach concerned with improving the fate of the global poor and the quality of life in the century of high technology.

Chapter 3 - Liberation from / Liberation within: Examining One Laptop Per Child with Amartya Sen and Bruno Latour - Kim Kullman and Nick M. Lee

Abstract Our chapter employs the One Laptop Per Child (OLPC) program as an empirical space for contrasting and comparing the writings of Amartya Sen and Bruno Latour. Through discussing these two authors, we open a theoretical passage between development studies and science and technology studies. We argue that Sen's ideas of development and human value may be productively combined with Latour's work on the shaping of human agency and sociability through technics and design. We claim that both Sen and Latour view development as a process of 'liberation within'—a careful reordering of everyday socio-technical relations—rather than as a process of 'liberation from' that seeks to transcend such relations. We

also point out conceptual commonalities between the two authors by discussing Sen's notion of 'conversion' and Latour's notion of 'translation', indicating that together they sensitize us to the collective aspects of development.

Chapter 4 – Evaluating Emerging ICTs: A Critical Capability Approach of Technology - Yingqin Zheng and Bernd C. Stahl

Abstract The present chapter sets out to provide a theoretical basis for evaluating the social implications of emerging ICTs, whose uses and consequences are often ambiguous and contradictory. Drawing on two distinct but related bodies of theory, namely the capability approach and critical social theory in information systems, the chapter proposes the Critical Capability Approach of Technology (CCAT). This approach to evaluation will be useful for policy makers, technology designers and developers, and consumers who have to consider the social consequences of technologies. The CCAT is applied to explore the possible implications of three examples of emerging ICTs: affective computing, ambient intelligence, and neuro-electronics.

Chapter 5 – "How I Learned to Love the Robot": Capabilities, Information Technologies, and Elderly Care - Mark Coeckelbergh

Abstract Information technologies seem promising when it comes to improving elderly care, but they also raise ethical worries, for example about privacy, human contact, and justice. This paper argues that the capability approach is a helpful tool to make explicit what is at stake in this context and to discuss the relevant ethical issues. However, it is also proposed that we modify the capability approach by adopting a non-instrumental view of technology that takes into account how par-ticular technologies change the meaning of the capabilities. This idea is further developed into suggestions for an ethical-hermeneutical interpretation of the capa-bility approach, which involves the use of techno-moral imagination. To illustrate this, the paper explores and discusses an elderly care scenario in which people's capabilities for social affiliation and engagement in relations with non-humans are transformed by information technology.

Chapter 6 - Towards a Sustainable Synergy: End-Use Energy Planning, Development as Freedom, Inclusive Institutions and Democratic Technics - Manu V. Mathai

Abstract Even as modern energy-society relations have produced unprecedented economic growth, they have ushered in a crisis of social inequality and ecologically unsustainable levels of resource and energy throughput. Despite the persistence of these drivers and impacts, conventional environmental responses interpret this crisis as insufficiently advanced modernity and prioritize more economic growth and more efficient technology. This conventional strategy represents a very narrow engagement with values and instead relies on technological optimism. It perpetuates the detachment of development and energy planning from democratic deliberation about ends. As such, it is an important enabler of the environmental crisis. In this light, the chapter identifies and discusses alternatives strategies and considers the synergy between them. The alternatives discussed include the DEFENDUS approach for energy planning, the Human Development and Capability Approach and the Sustainable Energy Utility as an institutional template. Together, along with "democratic technics," these alternatives can offer avenues to resist "more of the same" as a response to the environmental crisis. They invite us to critically reconsider the ends of growth and development and reclaim human-centered imagination and creativity for charting more sustainable and equitable realities.

Chapter 7 - Marrying the Capability Approach, Appropriate Technology and STS: The Case of Podcasting Devices in Zimbabwe - Ilse Oosterlaken , David J. Grimshaw and Pim Janssen

Abstract How can our knowledge of technology, including its design, be used to enhance the capabilities of all people? What is an appropriate technology? Can the choices people make about technology be embedded into the design process? Can the capability approach contribute to sustainable, appropriate technological solutions for development challenges? These are just some of the key questions posed in this chapter. First we position ICT development interventions as a useful vehicle for exploring the added value

of the capability approach. Second we introduce the case of podcasting in Zimbabwe to provide a practical example. We explain what a capability approach of such a case would entail. This is then rooted in the appropriate technology movement, to which the capability approach may contribute its theoretical framework. Next, it is discussed how insights and theories from science and technology studies may be helpful in better understanding the complex dynamics between technology and human capabilities. These discussions then lead to a section about technology choice, for which well-being and agency are important considerations. It is argued that deliberate technology choice is the key to answering the questions posed earlier.

Chapter 8 - From Individuality to Collectivity: The Challenges for Technology-Oriented Development Projects - Álvaro Fernández-Baldor, Andrés Hueso and Alejandra Boni

Abstract This chapter explores the contributions of the capability approach to technological aid projects implemented in small communities or villages. To achieve that objective we examine the evolution of technology-oriented development projects and the limitations of its current conceptualisation. After exploring the capability approach, we present a new framework for technology within the context of human development, the Technologies for Freedom (T4F). Throughout the chapter we introduce three case studies of power projects implemented in rural villages. The cases are funded by similar donors, and obtain the same results (ends) in the space of resources – a sufficient amount of energy for the communities. Nevertheless, the results differ in terms of processes (means) such as participation and empowerment of people. This chapter aims to show how technological artefacts (products, equipments, etc) and organizational processes and relationships are ends of community interventions; but they also represent the means that allow people to do and to achieve whatever goals or values they regard as important, enhancing the ability of the community to help themselves to make changes happen. And, what is more important, that people can collectively become agents of change rather than being simple recipients of aid. Thus, we conclude that technology-oriented development projects can be vehicles for expanding people's freedom (individual capabilities) but also to enhance their ability (individually and as a group) to pursue goals they consider valuable (agency).

Chapter 9 – Technology Choice in Aid-Assisted Parliamentary Strengthening Projects in Developing Countries: A capability approach - Malik Aleem Ahmed

Abstract Information capabilities refer to the freedoms of realizing functionings of 1) acquiring, 2) using and 3) disseminating information. Information and com-munication technology initiatives can be undertaken for designing an environment of information capabilities expansion in developing countries. I discuss that im-plementing parties of aid assisted parliamentary strengthening projects should keep in mind different conversion factors while taking ICT initiatives. Sometimes the implementing parties have to choose one technological initiative over another. In this chapter, the trade-offs between the parliamentary telecasting systems and Internet-based systems are analyzed by using the capability approach. It is demon-strated that taking this view might result in an alternate choice as benefits and li-mitations of initiatives are revealed. In certain scenarios, parliamentary telecasting systems can be preferred to the Internet related systems. In the second part of the chapter, I discuss that sometimes arguments are made, based on the economic de-velopment or utility maximization standpoint, for not investing in parliamentary telecasting systems in developing countries. I discuss that the arguments seem to lose force if observed under the Capability approach lens.

Chapter 10 - Design, Risk and Capabilities - Colleen Murphy and Paolo Gardoni

Abstract The design of complex artifacts, for example civil structural and infrastructural systems, is based on the premise that their performance can be predicted and evaluated with sufficient confidence for the engineers, clients and other stakeholders jointly to make intelligent and informed decisions. This requires a shift away from current prescriptive codes, which tend to be implicitly conservative and do not properly account for the consequences of damage or failure of an artifact, and toward a design process and design codes more firmly rooted in the realistic prediction of the probabilities of damage and failure, and the associated consequences. There is also a need for a risk-based design process and code that account in a normative and comprehensive way for the consequences associated to risks. This chapter proposes a

capability approach to design, herein called capability-based design. We argue that capabilities provide the requisite framework for conceptualizing consequences in risk assessment, evaluation, and management. Finally, a capability approach to design offers concrete guidance to engineers making design choices and balancing competing design constraints.

Chapter 11 - Re-Conceptualizing Design through the Capability Approach - Crighton Nichols and Andy Dong

Abstract The aim of this chapter is to identify what capabilities matter so that we can design an environment that resonates with our conceptions of good. Using the capability approach as our theoretical lens, we look at design in terms of its centrality in any notion of personhood, multidimensional indicators of the conditions of possibility for designing, and the instrumental freedoms associated with having the capability to design. We see this issue as orthogonal to those that consider how the capability approach can inform the design of technologies. We discuss the advantages of our approach over efforts in the humanitarian design community, which focus on building design capacity directly through training.

Chapter 12 – Processes for Just Products: The Capability Space of Participatory Design - Alexandre Apsan Frediani and Camillo Boano

Abstract This chapter explores the relationship between the process and product of participatory design. It argues that there is an unhelpful dichotomy that pushes the thinking and practice of participatory design through two separate schools of thought: planning versus design. This chapter suggests that advancements in overcoming such challenge can be reached by perceiving design through the lens of the capability approach. The concept of 'capability space' is proposed to explore the process and product components of freedom associated to participatory design. The chapter then elaborates on a series of normative values based on concepts from radical democracy and social production of space literature that aims at supporting the application of the concept of capability space. Design is embedded in the processes of deepening democratic practices by revealing power relations and navigating through dissensus.

Chapter 13 - Inappropriate Artifact, Unjust Design? Human Diversity as a Key Concern in the Capability Approach and Inclusive Design - Ilse Oosterlaken

Abstract Human beings differ from one another in countless ways. Within political philosophy this fact has been emphasized by the capability approach. A recurring example is that a bicycle often does not expand what a disabled person can do or be. Within engineering human diversity has been addressed by social design movements like universal/inclusive design. These movements seek practical solutions for its challenges, by creating products that do expand the capabilities of formerly excluded user groups. An example is a manually operated tricycle for disabled people in developing countries, or buildings that are accessible for wheelchairs. Using insights from analytical philosophy of technology I will first argue that the commonalities between both perspectives run deeper than one might think; The concern for human capabilities is deeply engrained in the nature of technical artifacts and engineering design. Secondly, I will give a philosophical account of the meaning of and grounds for statement like 'this bicycle is inappropriate for disabled users'. One might say that the capability approach and the inclusive design movement offer a forceful reminder to philosophy of technology of the importance of such statements in light of human diversity. However, to make a step from a judgment of inappropriateness to a judgment of injustice – as we do in the case of wheelchair-unfriendly buildings – requires further normative principles. The capability is able to contribute to this, considering its arguments for the normative value of some human capabilities.