Toward a Theory of Technological Mediation
A Program for Postphenomenological Research

Peter-Paul Verbeek

Appeared as:

Verbeek, P.P. (2016). **'Toward a Theory of Technological Mediation: A Program for Postphenomenological Research'**. In: J.K. Berg O. Friis and Robert C. Crease, *Technoscience and Postphenomenology: The Manhattan Papers*. London: Lexington Books. ISBN 978-0-7391-8961-0, pp. 189-204

1. Introduction: Theorizing Technology

Over the past decades, the philosophy of technology has developed into a new subfield of philosophy, with its own domain of inquiry, journals, conference series, educational programs, and forms of societal relevance. But, remarkably, the various approaches that have developed in the field have hardly matured into systematic theories. A typical introduction to philosophy of technology (Dusek 2006, Kaplan 2009), indeed, does not give an overview of the most prominent theories, but rather of the main issues in the field, like technological determinism, technological rationality, and the ethics of technology. Even though there are some good exceptions in subfields of philosophy of technology, like Andrew Feenberg's 'critical theory of technology' (2001) and the 'dual nature theory of technological artifacts' developed by Peter Kroes and Pieter Vermaas (Kroes and Vermaas 2002), the time has come to develop a broad theory of technology.

At the same time, the empirical field of Science and Technology Studies (STS) has developed from an 'empirical detour' to answer philosophical questions regarding science and technology into an established field for the empirical investigation of scientific and

technological practices. But in this development, its originary philosophical ambition seems to have moved to the background. STS could benefit from a reconnection with philosophical theory, in order to develop new ways to understand the social roles of science and technology. Besides deconstructing the networks of relations that constitute scientific facts and technological artifacts, which is the focus of much STS research, new empirical approaches are needed to the ways in which technologies help to shape knowledge, morality, et cetera.

In this chapter I will sketch the outlines of a program to develop such a theory in the basis of the post-phenomenological approach philosophy of technology: a theory of "technological mediation" that builds upon Don Ihde's analysis of human-technology relations (Ihde 1990). Postphenomenological studies (Ihde 1993; Selinger 2006; Rosenberger 2008; Verbeek 2008; Rosenberger 2012) typically have at least two things in common. First of all, they study technology in terms of the *relations* between human beings and technological artifacts, focusing on the various ways in which technologies help to shape relations between human beings and the world. They do not approach technologies as merely functional and instrumental objects, but as mediators of human experiences and practices. And second, they *combine philosophical analysis with empirical investigation*. Rather than 'applying' philosophical theories to technologies, the post-phenomenological approach takes actual technologies and technological developments as a starting point for philosophical analysis. Its philosophy of technology is in a sense a philosophy 'from' technology.

In my own work (Verbeek 2005, Verbeek 2011a, Verbeek 2011b), I have developed the postphenomenological approach in the directions of agency, ethics and philosophical anthropology, exploring how technologies help to shape moral actions and decisions, and how 'human enhancement technologies' like brain implants and tissue engineering urge us to reconceptualize the boundaries between the human and the technological and to rethink the concepts we have to understand the human being. This

has resulted in first elements of a theory of technological mediation, conceptualizing various ways in which the boundaries between the human and the technological are fading and how the concept of mediation can help to analyze human-technology relations.

By now, it is time to take the postphenomenological approach one step further. The phenomenon of technological mediation deserves to be studied in a more comprehensive and systematic way, covering the full depth of the various dimensions of the relations between human beings and reality. But in order to arrive at such a theory of technological mediation, one crucial step needs to be made. In all attention for the mediating roles of *technologies*, the processes of appropriating these mediations by *human beings* have remained largely unstudied. In order to develop a full understanding of processes of mediation, we should not only study 'what *things* do' (cf. Verbeek 2005) but also how *humans* give meaning to these mediations – both empirically and conceptually. How do scientists actively engage with perceptual technological mediations when interpreting reality? How do moral decisions take shape in the active interplay between material mediations and human appropriations?

In the adjacent field of Science and Technology Studies, processes of technological mediation have been studied as well: several scholars in the field have been working on 'material agency', but detailed studies of the phenomenon of technological mediation are typically missing in their analyses. Karen Barad's highly important work on 'intra-action', for instance, is closely related to the postphenomenological idea of the 'mutual constitution' of 'subject' and 'object', but it does not explicitly address the mediated character of this intra-action (Barad 2003). In postphenomenological theory, the media of this mutual constitution, and the dynamics of their interactions with human agency and the phenomena being studied, have a central place. Similarly, Andrew Pickering's concepts of the 'mangle of practice' and the 'dance of agency' focus on the interplay between human and material agency, but only indirectly address processes of mediation. His well-known analysis of the interplay between

the actions of scientists and the activities in Glazer's bubble chambers, for instance, could be augmented with a detailed analysis of the ways in which visual presentations of bubble tracks help to constitute the phenomena being studied and the ways in which scientists study them (Pickering 1995).

And while the work of Ian Hacking, to give a third example, explicitly thematizes the roles of scientific instruments like microscopes in the production of scientific knowledge, it mainly focuses on the resulting reality-status of the entities investigated in this way (Hacking 1983). To this highly important work a theory of mediation can add an in-depth study of the technological mediations and appropriation processes involved in knowledge production with the help of scientific instruments. Fourth and last, Bruno Latour's work on technical mediation (Latour 1994) offers a set of concepts to study how programs of action get translated when human beings form associations with technical artifacts. But, as will be elaborated below, his symmetrical approach to humans and nonhumans makes it impossible to investigate the hermeneutic dimension of processes of mediation: the human appropriation of technological mediations around which specific 'objectivities' and 'subjectivities' crystallise.

In Science and Technology Studies, therefore, the phenomenon of technological mediation has remained an underdeveloped theme, while the postphenomenological framework to investigate technological mediations is in need of methodology and expansion. How, then, to develop a theory of mediation that makes possible an empirical-philosophical conceptualization of the role of technology in the relations between human beings and reality?

2. One more turn after the material turn

Until recently, and for good reasons, the postphenomenological approach has invested most of its energy in analyzing the relations between humans and technologies, and the mediating roles technologies play in

the relations between human beings and the world. One of the central ideas in the development of the postphenomenological approach, after all, is that we need a 'material turn' in philosophy of technology (Verbeek 2005; Ihde 1993): we also need to study *things*, rather than merely focusing on *humans*. By now, it is starting to become visible that this focus on materiality also has its limitations. In the 'material turn', the ways in which human beings *appropriate* technological mediations tends to remain underexposed. Mediation theory, therefore, needs one more turn after therefore material turn. Having shifted its focus from human understandings of technology toward the materiality of technologies, we now have to move toward to technologically mediated human beings. In order to understand how technologies mediate knowledge, morality and metaphysics, we should not only study technologies, but also the ways in which human beings give meaning to their mediating roles.

The empirical method of Conversation Analysis (CA) offers a highly interesting possibility to investigate this process of 'interpretive appropriation', by studying the verbal and non-verbal interactions between human beings in relation to technologies. Conversation Analysis studies how, in the interactions between human beings and their environment, a meaningful 'world' is constructed (Edwards & Potter 1992; Edwards 1997; Hutchby 2001; Lamerichs & Te Molder 2011). Just like Latour's actor-network theory and Ihde's postphenomenology, conversation analysis has its basis in phenomenology and ethnomethodology. But where ANT and postphenomenology have tended to downplay the specific role of the subject in human-technology relations, or even refuse to think in terms of subjects and objects, CA makes it possible to bring the mediated subject to the center again – albeit in an a-modernist and non-humanist way, because of its integration in a postphenomenological framework. By studying how human beings make technologies epistemologically, ethically, and metaphysically relevant in conversations and interactions, it becomes possible to understand more of

the dynamics of human-technology relations, and the interplay between technological mediations and human appropriations.

The method of Conversation Analysis, therefore, adds a dimension to the postphenomenological approach that was missing in order to arrive at a theory of technological mediation. Moreover, CA can also be seen as the missing link between the empirical approach of Science and Technology Studies and the philosophical approach of Philosophy of Technology: it provides a solid empirical basis for further philosophical analysis of the ways in which technologies help to shape the various dimensions of the relations between humans and reality.

In order to develop a theory of mediation, moreover, the postphenomenological approach should connect itself explicitly to the main subfields of philosophy. A good start would be to focus on *three dimensions* of the relations between human beings and reality: the dimensions of knowledge, ethics, and metaphysics. These dimensions loosely correspond to the three questions that Immanuel Kant saw as the most central ones in philosophy: (1) what can I know?; (2) what ought I to do?; and (3) what may I hope for? The third question will be taken quite freely and broadly as a question about transcendence and metaphysics: how to understand human experiences of what is beyond the grasp of human making and understanding, and what are the most fundamental concepts with which to understand the world?

Connecting these three questions to the phenomenon of technological mediation does not only make it possible to expand our understanding of the social and cultural roles of technology, but also to establish closer connections between the philosophy of technology and other subfields of philosophy. Studying mediation along these lines will shed more light on the constitutive role of technologies in the epistemological, ethical, and metaphysical dimensions of human experiences and practices.

But rather than following Kant's transcendental method, a postphenomenological theory of mediation has an 'empirical-philosophical'

character, connecting to and expanding the 'empirical turn' that has played an important role in the philosophy of technology over the past 15 years (cf. Achterhuis 2001). Empirical-philosophical work does not base itself on the philosophical tradition and conceptual analysis only, but takes the study of actual practices and situations as a starting point for philosophical analysis (cf. Mol 2002). Rather than applying pre-given philosophical theories to technology, it lets technologies challenge existing frameworks, using empirical work as a basis for developing new concepts and frameworks.

In order to develop a theory of technological mediation, therefore, we need to investigate how and to what extent actual technological mediations of knowledge, morality, and experiences of transcendence urge us to develop new conceptual frameworks. And for this, we need to expand the work that has been done in postphenomenological research over the past years and augment it with an empirical dimension.

3. Epistemology

A first line of research focuses on the epistemological dimensions of technological mediation: how do technologies help to shape our ways of knowing and understanding the world? In Science and Technology studies, processes of knowledge production have always been a central theme, and various empirical approaches have been developed to understand the dynamics of these processes, of which Actor-Network Theory (ANT) has become the most influential. The role of technological mediations in these processes has remained underdeveloped, though.

To be sure: the concept of mediation does play an explicit role in ANT, to indicate that entities are no neutral 'intermediaries' but active 'mediators' that change situations, relations, and processes. But, unlike postphenomenology, ANT does not explicitly address the hermeneutic dimension of mediations: the ways in which technologies actively help to shape human interpretations of the world. ANT studies processes of mediation 'from the outside': as interactions between agents that can be

empirically observed and analyzed. Its explicitly symmetrical approach to human and nonhuman agents makes it impossible for ANT to address processes of mediation 'from the inside': from the perspective of the experiences and interpretations of human beings who have a technologically mediated relation to the phenomena they are studying. The postphenomenological approach does not accept this radical symmetry – even though it does not accept the modernist subject/object split either.

In postphenomenological theory, the core epistemological idea is that technologies help to shape the reality of the phenomena that are being studied. Technological mediation is no phenomenon that takes place 'between' a pre-given world of objects and pre-given human subjects. Rather, human beings and their world are constituted in the 'act' of mediation. The epistemological consequences of this relational metaphysics have been labeled as "instrumental realism" (Ihde 1991) and "material hermeneutics" (Ihde 1998). Scientific instruments mediate the reality of the world of scientists; our hermeneutic understanding of the world takes shape in interaction with the material objects that mediate our relation to the world. The content of scientific knowledge and human understandings of the world cannot be separated from the mediating technologies that help to shape this knowledge and understanding.

Other authors have thematized the role of instruments in the development of scientific knowledge as well. The work of Peter Galison (Galison 1997) and Davis Baird (Baird 2004) also investigates how instrumentation contributes to scientific knowledge – ranging from measuring devices to imaging technologies. Still, they do not explicitly analyze the dynamics of the mutual constitution of 'subject' and 'object' in the mediated relations between scientists and phenomena. For this reason, Don Ihde's 'material hermeneutics' forms an important addition to the – equally important – innovation that Actor-Network Theory (ANT) brought to epistemology (Latour 1987), and to existing analyses of the roles of instruments in scientific practices. While ANT opened the

possibility to study the constitution of realities in empirical ways – remotely based on the phenomenological-anthropological approach of ethnomethodology – postphenomenology added a hermeneutical perspective to empirical philosophy. Rather than studying the networks of relations between actants from a quasi-external standpoint, postphenomenology makes it possible to address processes of mediation 'from within': in terms of perceptions and interpretations that can help to shape intentions and actions.

Yet, in order to develop a theory of epistemological or hermeneutic mediation, we need to make one step further. After having opened an empirical way to study the mediated character of the human understanding of the world, and after having articulated the hermeneutic structure of this mediated relation, it is now time to study empirically the content of this hermeneutic structure. How do technologies help to shape the reality that scientists are studying, and that human beings are experiencing in their daily lives? And how do human beings make sense of this technologically mediated reality?

Conversation Analysis provides the missing link here. CA makes it possible to study empirically how the mediating roles of technologies help to shape specific understandings of reality, and how specific 'subjects' and 'objects' of knowledge are constituted in their technologically mediated relation. While postphenomenological research until now has focused on understanding the mediating roles of technologies, CA makes it possible to investigate how human beings who use scientific instruments give meaning to the mediating roles of technologies and to the mediated realities they help to constitute. By studying the conversations and practices around mediating technologies, we can gain more insight in the ways in which users take up with technological mediations; how they develop creative ways of appropriating these mediations and integrate them in existing practices and interpretive frameworks; how they see themselves in relation to the mediating technologies and to the phenomena they are perceiving or studying. CA then functions as an

'empirical hermeneutics': an instrument to study processes of mediation 'from within'.
Interesting case studies here are brain imaging technologies and antenatal diagnostic technologies. How do neuroscientists arrive at knowledge about the brain on the basis of brain imaging technologies, and how is this knowledge of the brain subsequently translated to knowledge about human functioning - such as the effectiveness of educational programs or systems, the impact of psychotherapy and psychopharmaca, or the development of adolescents? The method of conversation analysis can help to study the mediating roles of technology in the constitution of the brain, the creative appropriation of these mediations by neuroscientists, and the ways they translate brain images into claims about human functioning. In the realm of antenatal diagnostic technologies (fetal imaging technologies, amniocentesis, the recently developed blood test for Down's syndrome, pre-implantation genetic diagnostics), interesting questions concern the ways in which these technologies help to constitute the reality of the fetus and the relations between fetus, expecting parents, and health care professionals.

4. Ethics

A second line to develop further is the mediated character of morality. In my own work, I have put much effort in thinking through the ethical dimensions of the phenomenon of technological mediation. In my recent book *Moralizing Technology* I have developed the concept of 'moral mediation' to analyze how technologies mediate moral actions by helping to shape specific practices and experiences. The paradigmatic example in this study was obstetric ultrasound and its role in moral decisions regarding abortion. Ultrasound constitutes the reality of the fetus in a radically new way, which brings new ethical questions and responsibilities, and reorganizes ethical practices and decisions. From such a postphenomenological approach, moral agency cannot be located in human beings only, but also includes technological artifacts.

This exploration of the phenomenon of moral mediation was only a first step, though. While the focus in *Moralizing Technology* was primarily on the question to what extent technologies can be described in terms of moral agency, we now need to proceed to build a theory of technologically mediated morality. In all attention for the empirical study of *technology*, the empirical dimensions of the ways in which *human beings* take up with technology has remained underdeveloped. The recent revival of 'good life ethics' in the philosophy of technology (Borgmann 1984; Brey 1998; Swierstra 2000) and the increasing attention for 'subjectivation and technology' (Rose 2006, Brenninkmeijer 2010, Dorrestijn 2012) requires a closer empirical investigation of the normative relations humans have with technologies. How can the complex interplay between the technological disclosure of reality, the technological mediation of practices, and human moral actions and decisions be understood? And what does this imply for the ethical assessment of technologies, and for the ethics of technology design?

The *objectives* of such an investigation, therefore, are threefold. First, it is important to
understand the dynamics of technologically mediated morality, by developing a framework to conceptualize how technologies mediate moral actions and decisions, and how human beings actively develop a relation to these mediations. Second, the aim is to develop a practical-ethical framework for *assessing* technologies, by identifying and analyzing the ethical questions and issues regarding technologies. And third, it is important to develop a tool for *designing* effective and morally justifiable mediations into technologies.

Understanding and evaluating moral mediation

Within the postphenomenological approach, some work has been done already on the phenomenon of moral mediation. This work either focuses on the technological mediation of morality (Verbeek 2011) or on the processes of subjectivation in which human beings 'design their lives' in

interaction with technological mediations (Dorrestijn 2012). In both approaches, however, two crucial aspects of the ethical dimension of technological mediation remain underdeveloped. First, the dynamic interactions between technological mediation and human appropriation requires more (empirical) investigation. How do technologies help to shape moral actions and perceptions, and how do human beings take up with these moral mediations? Second, the consequences of the phenomenon of moral mediation for the ethical assessment of technologies needs to be thought through. Conversation Analysis, again, can help here to investigate how technology users perceive and critically appropriate these moral mediations, and how the 'everyday morality' regarding new technologies takes shape.

Two controversial technologies can help to illustrate this: a chip for gender selection and the Google Glass project. The gender selection chip is developed by Loes Segerink, in the lab-on-a-chip group of the University of Twente, headed by Albert van den Berg. It is based on the fact that X-chromosomes are a bit longer and therefore heavier than Y-chromosomes; on the nanoscale this difference in weight is significant and useful for separating the two types of sperm cells. The technology has the potential to become available at a large scale and a low price; therefore, the social effect is likely to be quite substantial if the technology would indeed be introduced. (At present, to be sure, gender selection is forbidden in many countries.) Google Glass is an augmented reality technology that provides users with a 'second layer' of information when they wear it: they can get information on objects and buildings they see, and potentially also about human beings, when the technology would be equipped with face recognition technology; they can exchange messages, take pictures and record videos, and surf the internet 'in the background' of one's activities.

Both technologies will play important mediating roles in our normative frameworks, as they are likely to have an impact on our responsibilities and values regarding our offspring, and our ways of

engaging in the public sphere. At the same time, they are socially controversial, which makes it all the more relevant to investigate the 'everyday morality' regarding these technologies to facilitate normative discussions about them, and to inform practices of technology design, use, and policy-making. Interestingly, Google Glass is already there and will be introduced on a large scale in 2015, while the gender selection chip is still in development, which makes it possible to investigate how normative reflection could be integrated in the development and, possibly, the social introduction of the technology.

In order to investigate this dynamics of moral mediation and appropriation, it is necessary to study how the gender selection chip and Google glass play a mediating role in people's moral frameworks. By making the gender of our offspring a matter of choice rather than fate, images of masculinity and femininity, parent-child relations, and possible also social structures, will change. And Google Glass will change our perceptions of and engagement in public space, the value we attach to specific forms of communication, knowledge, social relations, et cetera. In close relation to this, it is important to investigate how this expanded analysis of moral mediation has implications for the assessment of technologies. After all, when our moral frameworks are not independent from the technologies themselves, this has consequences for the ways we can do ethics of technology. The technologically mediated character of human morality makes it impossible to give ethics the role of an external judge, assessing from outside which technologies are acceptable and which are not. The frameworks of assessment take shape in interaction with the technologies they are supposed to assess. There is no 'outside' of technology from which we can ethically reflect on technology; ethics can only take place 'from within' our technologically mediated situation (Verbeek 2013). Rather than *assessing* technologies from an external position, therefore, an ethics of technology based on mediation theory should be directed at *accompanying* the intertwinement of humans and

technologies 'from within', focusing on the quality of human existence-with-technology (Hottois 1996, Verbeek 2011a).

Also in this context, Conversation Analysis makes possible an interesting expansion of the postphenomenological framework. With the method of CA, it becomes possible to study how human beings make technologies morally relevant in their conversations. Rather than starting from pre-giving normative frameworks that can be applied to technology, it starts from identifying and analyzing normative issues that arise in people's 'everyday morality'. Such analyses can be the basis for a practical method to support ethical reflection on (new) technologies. Often, the 'everyday' moral considerations, frameworks, and arguments regarding technologies remain implicit and unspoken. By making them explicit and analyzing them in terms of ethical theories and the theory of technological mediation, people's implicit normative concerns become available for moral discussion and reflection. Rather than assessing technologies in terms of pre-given ethical frameworks, this approach of 'ethical accompaniment' generates questions that are articulated 'from within', connected to everyday practices of design, implementation, and use. By making people's practical moral concerns explicit, and analyzing them in terms of ethical theory, they become 'available' for reflection and discussion to users, designers and policy-makers.

In order to assess Google Glass and the gender selection chip, the central issue is how human beings make these technologies morally significant in their conversations about and interactions with them. How to understand these everyday moral concerns in terms of ethical theory? And how to facilitate ethical reflection of users, designers, and policy makers regarding these technologies?

Designing mediations

Moreover, beside *understanding* moral mediation in more detail and developing a new method to *assess* such mediations, mediation theory also makes it possible to *design* moral mediations. Technologies are

increasingly used to influence people's behavior in desirable directions. This phenomenon is often called 'nudging' (Thaler and Sunstein 2008) or 'persuasive technology' (Fogg 2003): technologies can 'nudge' or 'persuade' users to behave in specific ways. In my earlier work (Verbeek 2011) I discussed why this 'mild' form of influencing people's behavior can be defended as morally justifiable. But now it is time to investigate how mediation theory, augmented with Conversation Analysis, can be used to *design* effective and morally defendable mediations. How can mediation theory inform design practices in such ways that they can effectively and desirably contribute to the realization of specific moral values?

By answering this question, mediation theory can make a significant contribution to the growing field of value-sensitive design (Friedman 2002). At the same time, though, mediation theory provides a radically different normative account of the relations between users and behavior-influencing technologies than most other accounts. Rather than defending the autonomy of technology users – like the 'libertarian paternalism' of the nudge approach and the 'transparency' of the persuasive technology approach do – it takes the mediated character of human existence as a starting point, and focuses on enhancing the quality of the (inevitably) mediated character of human actions and decisions.

5. Metaphysics

The third dimension of mediation to be studied in order to develop a theory of mediation is metaphysics, taken in the broadest sense as studying the most fundamental notions and concepts with which we understand the world. This metaphysical dimension can be addressed from two different angles. On the one hand, we need to investigate the mediated character of metaphysics: how do metaphysical frameworks, in terms of which human beings approach reality, take shape in interaction with technology? On the other hand, we also need to develop a metaphysical framework for understanding the phenomenon of

technological mediation itself – a 'metaphysics of mediation' – and compare it to other metaphysical frameworks, e.g. in classical phenomenology and actor-network theory.

Mediated metaphysics

In order to understand how technologies help to shape metaphysical frameworks, a good starting point can be to focus on the relations between technology and religion, more specifically on the ways in which technologies help to shape human experiences of transcendence – of what is beyond the grasp of human understanding and manipulation. While there has been a lot of discussion about *science* and religion, the discussion about *religion* and technology is much smaller (cf. Borgmann 2003; Szerszynski 2004; Nye 1994). And here, mediation theory can make an innovative contribution.

The analysis that German philosopher Karl Jaspers made of the phenomenon of transcendence can be a starting point here (Jaspers 1932). Transcendence, for Jaspers, is a 'mode of being', rather than something that 'exists' itself. Besides being as an 'entity' ('things' or 'objects') or as 'existence' (humans or 'subjects'), there is also the phenomenon of being itself: there mere fact that entities are there, and that their existence cannot be entirely reduced to our interventions and understanding. All entities and human beings have this dimension of transcendence: part of their being escapes interpretive frameworks and technological interventions. Human existence, for instance, has a transcendent dimension, because it happens to us, rather than being the product of our own intervention; we find ourselves in our own existence, just like we find ourselves in the world in which we live.

In order to study the relations between technology and religion, therefore, we need to investigate empirically and phenomenologically how technologies help to shape experiences of transcendence. Technological manipulation might seem to be at odds with receptivity for transcendence, but in fact the two have a close relationship. Technology plays a profound

role in the ways in which human beings experience transcendence – even to the point that technology can be said to provide an explicit answer to transcendence. Dutch philosopher Jos de Mul, for instance, convincingly analyzed how technology, just like Christianity and Greek mythology, can be seen as a way of dealing with fate, with things that are beyond our control (De Mul 2008).

Mediation theory can offer an additional way to study the relations between technology and religion, by investigating how experiences of transcendence always have a technologically mediated character, and how technological interventions can be seen as mediator in our relation to what is beyond the grasp of human understanding or manipulation. Congenital diseases, for instance, move from the realm of fate to the realm of individual responsibility when it becomes possible to intervene technologically in them.

The key question here, therefore, is: how do technologies mediate practices and experiences involving transcendence? To what extent does technology exclude transcendence, and to what extent does it leave room for it? How does technology help to shape experiences of transcendence, and the transcendent character of the human being and of life itself?

A good example here is brain technologies. What role do fMRI imaging and brain activity measurement devices play in religious experience? What does it imply for religious experiences if they can be connected to specific forms of brain activity? How do 'brain-reading technologies' like neurofeedback result in new practices of 'meditation'? Also in the field of antenatal technologies, religious dimensions abound. How do gender selection and antenatal diagnostic technologies help to shape the ways in which human beings experience life as a 'gift' (Sandel 2004) versus as something 'makeable'? IVF and antenatal genetic interventions seem to bring the transcendent origin of the human being entirely within human reach. What does this imply for the transcendence of life itself?

Again, combining Conversation Analysis with postphenomenological analyses of mediation can offer new insights here. From a post phenomenological point of view, the central focus could be on the ways in which technologies help to shape experiences of transcendence, while conversation analysis makes it possible to investigate how human beings take up with these mediating roles. How does knowledge about 'religious brain activity' help to shape religious experience? How do human beings give meaning to the impact of neurofeedback on their daily lives? How do gender selection technologies and antenatal diagnostics reorganize the boundaries between fate and responsibility, between transcendence and makeability?

The metaphysics of mediation

Besides studying metaphysics, it is also important to investigate the metaphysical implications of the mediation approach. Mediation theory can offer both an empirical and a metaphysical alternative to existing approaches in the philosophy of technology and Science and Technology Studies. Just like (classical) phenomenology and Actor-Network Theory it aims to overcome the modernist separation of subject and object (Latour 1993). But, just like Actor-Network Theory (ANT), it does not see 'postmodernism' as a solution, since the postmodern reduction of objectivity to subjectivity in fact merely reinforces the subject-object dichotomy.

Yet, as said, there is a crucial difference between ANT and postphenomenology. While ANT overcomes the subject-object split by giving up on the subject-object distinction and speaking about human and nonhuman 'actants' in a 'symmetrical' way, postphenomenology holds on to an asymmetrical approach to humans and nonhumans. Yet, this does not imply that it would start from an *a priori* separation of subject and object. Rather, it sees subjectivities and objectivities as the *outcomes* of processes of mediation. Without *separating* subjects and objects, it keeps up a *distinction* between them – and it is precisely this distinction that

makes it possible to address technological mediations and human appropriations along distinct yet closely connected lines, and to approach objectivities and subjectivities as the results of mediations rather than their starting points.

Mediation theory, therefore, does not only have epistemological and ethical implications, but also entails a new position in the discussion about the limits of modernism. It is important, therefore, to investigate its metaphysical origins and implications. How to position and understand the postphenomenological approach in relation to the history of phenomenology, including the work of Husserl (intentionality), Heidegger (hermeneutics, nonmodernism), Merleau-Ponty (perception and human-object relations), Harman (object-oriented philosophy) and Latour (amodernism, modes of being)?

References

Achterhuis, H. (2001). American Philosophy of Technology: The Empirical Turn. Bloomington: Indiana University Press.

Baird, D. (2004). Thing Knowledge: A Philosophy of Scientific Instruments, Berkeley: University of California Press

Barad, K. (2003). 'Posthumanist Performativity: How Matter Comes to Matter'. In: Signs 28:3, pp. 801-831

Borgmann, A. (1984), Technology and the Character of Contemporary Life. Chicago / London: University of Chicago Press

Borgmann, A., 1995, 'The moral significance of the material culture', in: Technology and the Politics of Knowledge, A. Feenberg and A. Hannay, eds., Indiana University Press, Bloomington/Minneapolis, pp. 85-93.

Borgmann, A. (2003), Power Failure: Christianity in the Culture of Technology. Grand Rapids, MI: Brazos

Brenninkmeijer, J. (2010). 'Taking Care of one's Brain: How Manipulating the Brain Changes People's Selves'. History of the Human Sciences 23:1, 107-126

Brey, P. (1998). 'New Media and the Quality of Life.' Techné: Journal of the Society for Philosophy and Technology 3:1, 1-23
Dorrestijn, S. (2012). The Design of our own Lives. Technical Mediation and Subjectivation after Foucault. Enschede: University of Twente (dissertation)
Dusek, V. (2006). Philosophy of Technology: An Introduction. London: Blackwell
Edwards, D. (1997). Discourse and Cognition. London: Sage
Edwards, D. & J. Potter (1992). Discursive Psychology. London: Sage
Feenberg, A. (2001). Critica; Theory of Technology. Oxford: Oxford University Press
Floridi, L. en J.W. Sanders (2004), 'On the Morality of Artificial Agents'. Minds and Machines 14:3, pp. 349-379
Fogg, B.J. (2003). Persuasive Technology: Using Computers to Change What We Think and Do. Elsevier
Foucault, M. (1990). The care of the self – The history of sexuality: 3. London: Penguin Books {1984}
Friedman, B, P. Kahn and A. Borning (2002). Value Sensitive Design: Theory and Methods. Seattle: University of Washington, CSE Technical Report 02-12-01
Galison, P. (1997). Image and logic: a material culture of microphysics Chicago: University of Chicago Press
Hacking, I. (1983). Representing and Intervening, Introductory Topics in the Philosophy of Natural Science. Cambridge, UK: Cambridge University Press.
Heidegger, M. (1951), 'Das Ding'. In: Vorträge und Aufsätze. Pfullingen: Neske
Heidegger, M. (1969). Discourse on Thinking (trans. J. M. Anderson and E. H. Freund). New York: Harper & Row.
Heidegger, M. (1976). 'Brief über den Humanismus'. In: Wegmarken. Gesamtausgabe 9, pp. 313-364. Frankfurt am Main: Klostermann {1947}

Heidegger, M. (1977a). The Age of the World Picture. In: The Question Concerning Technology and Other Essays. New York: Harper & Row. {translation of Die Zeit des Weltbildes. In: Holzwege. Frankfurt am Main: Vittorio Klostermann, 1950}
Hottois, G. (1996). Entre symboles et technosciences. Un itinéraire philosophique. Paris: Seyssel
Hutchby, I.. (2001). 'Technologies, Texts and Affordances'. Sociology 35: 2, 441-456
Ihde, D. (1979). Technics and Praxis. Dordrecht, Netherlands: Reidel.
Ihde, D. (1990). Technology and the Lifeworld. Bloomington: Indiana University Press.
Ihde, D. (1991). Instrumental Realism. Bloomington: Indiana University Press.
Ihde, D. (1993). Postphenomenology. Evanston, IL: Northwestern University Press.
Ihde, D. (1998). Expanding Hermeneutics. Evanston, IL: Northwestern University Press.
Ihde, D. (2010). Heidegger's Technologies: Postphenomenological Perspectives. Fordham University Press
Jaspers, K. (1932). Philosophie. Heidelberg: Springer.
Kaplan, D. (2009). Readings in the Philosophy of Technology. Rowman and Littlefield
Kroes, P. A. and A. W. M. Meijers (2002). The dual nature of technical artifacts: Presentation of a new research program. Techné 6 (2), 4-8.
Lamerichs, J. & H. te Molder (2011). Reflecting on your own talk: the Discursive Action Method at work, in C.
Antaki, (Ed.). Applied conversational analysis: Intervention and change in institutional talk (pp. 184-206). Basingstoke: Palgrave Macmillan.
Latour, B. (1987). Science In Action: How to Follow Scientists and Engineers Through Society, Harvard University Press, Cambridge Mass., USA

Latour, B. (1992), 'Where are the Missing Masses? – The Sociology of a Few Mundane Artifact'". In: W.E. Bijker and J. Law, Shaping Technology / Building Society. Cambridge: MIT Press
Latour, B. (1993). We have never been modern (trans. C. Porter). Cambridge, Harvard University Press
Latour, B. (1994), On Technical Mediation - Philosophy, Sociology, Genealogy. In: Common Knowledge 3, 29-64.
Latour, B. (1999). On Recalling ANT. In: Actor-Network Theory and After, ed. J. Law and J. Hassard. Oxford: Blackwell
Latour (2005). Reassembling the Social: an introduction into actor-network theory. Oxford: Oxford University Press
Latour, B. (2013). An inquiry into modes of existence: an anthropology of the moderns. Harvard: Harvard University Press
Mol, A. (2002), The Body Multiple: Ontology in Medical Practice. Durham, N. Ca., and London: Duke University Press.
Mul, J. de (2008). De domesticatie van het noodlot. De wedergeboorte van de tragedie uit de geest van de technologie. Kampen: Klement.
Nye, D. (1994). American Technological Sublime. Cambridge, MA: MIT Press
Pickering, A. (1995). The Mangle of Practice: Time, Agency and Science. Chicago: University of Chicago Press
Potter, J. (1996). Representing Reality: Discourse, Rhetoric and Social Construction. London: Sage
Rose, N. (2006), The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century. Princeton University Press
Rosenberger, R. (2008). Perceiving Other Planets: Bodily Experience, Interpretation, and the Mars Orbiter Camera. Human Studies 31 (1).
Rosenberger, R. (2012). Embodied technology and the dangers of using the phone while driving. Phenomenology and the Cognitive Sciences 11:1, pp. 79-94.
Sandel, M. (2004). The Case against Perfection: Ethics in the Age of Genetic Engineering. Harvard: Harvard University Press.

Selinger, E. (ed.), Postphenomenology: A Critical Companion to Ihde. Albany, NY: State University of New York Press, 2006
Swierstra, T. (2000). Kloneren in de polder: Analyse van het maatschappelijk debat over klonen en kloneren in Nederland. Den Haag: Rathenau Instituut
Szerszynski, B. (2004). Nature, Technology, and the Sacred. Blackwell.
Thaler, R. H., & Sunstein, C. R. (2008). Nudge: Improving decisions about health, wealth, and happiness. New Haven: Yale University Press.
Verbeek, P.P. (2005). What Things Do: Philosophical Reflections on Technology, Agency, and Design. University Park, PA: Penn State University Press
Verbeek, P.P. (2008). Obstetric Ultrasound and the Technological Mediation of Morality - A Postphenomenological Analysis. In: Human Studies 31:1, 11-26
Verbeek, P.P. (2011a). Moralizing Technology: Understanding and Designing the Morality of Things. Chicago: University of Chicago Press.
Verbeek, P.P. (2011b). De Grens van de Mens: Over Techniek, Ethiek en de Menselijke Natuur. Rotterdam: Lemniscaat.
Verbeek, P.P. (2013). 'Resistance is futile: toward a non-modern democratization of technology'. Technè 17:1 pp. 72-92