

Book of Abstracts

Workshop: “We are on a mission”. Exploring the role of future imaginaries in the making and governing of digital technology

Friday, 27 April 2018, Berlin

Keynote

Imagine you are an iPhone, recharging: Technological imaginaries in fiction, policy and everyday life

S. Wyatt, Maastricht University

As more and more attention is given to mindfulness and digital detox, it was a surprise to hear my yoga teacher asking us to imagine being iPhones. It set me thinking (probably not the intention of my yoga teacher) about the multidirectional nature of imaginaries in the making and governing of digital technologies. In this lecture, I will examine different sources of future imaginaries – such as novels, films, metaphors, policy documents – and how they might affect designers, industrialists, policy makers, and (non)users (in all of their potential roles as citizens, consumers, patients, passengers). I will also pay attention to the recursive relationship between imaginaries and the realities they attempt to describe or construct.

Session 1: Conceptual Impulses

From Figurations to Scenario Building: Towards constructing a methodology for accountable imaginaries

G. Klumbyte & C. Draude, Universität Kassel

In this workshop we would like to explore the conceptual and methodological potential of feminist theory, and particularly the notion of ‘figuration’, for the development of socially-aware, ethical and productive account of the role of imaginaries in the building and development of digital technologies. Rosi Braidotti defines figurations as conceptual personae, ‘materialistic mappings of situated, i.e. embedded and embodied, social positions’ (Braidotti, 2011: 2). Figurations are material-discursive entities that account for particular historical, political and material locations. Donna Haraway in her work highlights that figurations stitch together meanings and practices. In her line of thinking, technologies are materialised figurations that bring together both actual physical technologies and clusters of meaning (narratives, discourses, imaginaries) surrounding them, which together form more or less stable assemblages or configurations (Schuman 2002). One of the first of Haraway’s own figurations developed in the 1980s was the cyborg, which she used both to account conceptually for the relationship between humans and technology, the power relations and biases

implicated in such relation, as well as to point to modes of ethical responsibility in the production and use of technologies.

For Haraway, both humans and non-humans actively participate in knowledge production as material-semiotic actors (Haraway 1991). Similarly then, the objects of knowledge – or of design, for that matter – are not simply ‘out there’, but are the result of complex interactions between material-semiotic actors and related discourses, imaginaries, materials, etc. In parallel to this, and closer to the practices of technology design, we want to draw on Madeleine Akrich’s notion of the de-description of technical objects (1992) and the role of scenario-building in engineering and computer science (see, for instance, Rosson and Carroll 2001). While technology design, from apps to more complex digital systems, utilises scenario building as a way of envisioning potential uses and thus design and functions of a technological object, Akrich points out that designers and innovators often inscribe ‘their own vision of (or prediction about) the world in the technical content of the new object’ (Akrich 1992:208), often unconsciously or without due reflection. Such visions are however not neutral but often constitute what in information technology design is called the ‘I’ methodology.

While in technology design multiple approaches have been developed to counter the biases stemming from such ‘inscription’ of visions (such as user-centred design, participatory design, reflective design), we want to explore possibilities of using the notion of figurations as conceptual tools to account for the relation between imaginaries and the design of digital technologies, as well as for creating more socially-aware and reflective scenarios for technology building and governance. With the question of ethics in designing and deploying computational systems, such as machine learning based tools for prediction and governance, coming to the fore, this work-in-progress analysis is meant to explore the ways that feminist theory can contribute to the theory and practices of scenario building, and accountability in the imaginaries of future digital technologies.

References

- Akrich, M. (1992). ‘The De-Description of Technical Objects’, in: Wiebe E. Bijker, John Law (eds.), *Shaping Technology/Building Society. Studies in Sociotechnical Change*. Cambridge, Mass: MIT Press, 205–224.
- Braidotti, R. (2001). *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*, 2nd edition. New York: Columbia University Press.
- Haraway, D. J. (1991). ‘Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective’, in: Donna J. Haraway, Simians, Cyborgs and Women. *The Reinvention of Nature*. New York, London: Routledge, 183–201.
- Rosson, M.B. and Carroll, J.M. (2001). *Usability Engineering: Scenario-Based Development of Human-Computer Interaction*. Burlington, MA: Morgan Kaufmann.
- Schuman, L. (2002). ‘Figuring Service in Discourses of ICT: The Case of Software Agents’, in: Eleanor H. Wynn, Edgar Whitley, Michael Myers, Janice DeGross (eds), *Global and Organizational Discourse about Information Technology: IFIP TC8 / WG8.2 Working Conference on Global and Organizational Discourse about Information Technology*, December 12–14, 2002, Barcelona, Spain.

Techno-imagination: Towards a theory of imagination as media practice

C. Ernst, Universität Bonn

Traditionally, the imagination of the ›future‹ of new media is understood in relatively linear terms. According to this perspective, new possibilities of media technologies and future forms of societies are made conceivable in discourses like Science-Fiction (e.g. Star Trek). Those imaginary possibilities can be objectified in media studies. They constitute a frame for technological development (e.g. in the laboratories of engineers, as ideas for future economies etc.). This view, which is currently dominated by theories from science & technology-studies (e.g. Trevor Pinch et al.), has found great acceptance in media studies. Various models describe the role of imagination in the design and conceptualization of new media and their role in future societies (e.g. Simone Natale).

However, the field of media studies shouldn't lose sight of the fact that media theory has – given its history in the 20th Century – developed its own theory of the relationship between media and imagination. Especially with the advent of the computer in the 1980s and 1990s, media theory discussed the relation between media and imagination in an quite interesting way. What if the problem of imagining future forms of media and their social consequences consists not only in interpreting various discourses on future societies or in anticipating current trends of technological development? What if the human faculty of imagination is affected by the medium used to imagine a future society?

A prominent example for this approach can be found in Vilém Flusser's (1920-1991) notion of »techno-imagination«. Flusser coined this term in order to understand the cultural effects of the use of computers as media. Assuming that imagination is ›always already‹ (to use the idiom of the 1980s and 1990s) affected by the media-technological conditions of its time, the problem to consider future effects of media presupposes a transformation or even a ›deconstruction‹ of the notion of imagination itself. Flusser's claims that imagination is shaped by the materiality and the symbolic conditions of the media being used to make a future state of affairs ›thinkable‹. In consequence, imagination is for Flusser not a given human ability, e.g. in the sense of Kant's faculty of »Einbildungskraft«. The opposite is true. Imagination is a media-cultural practice. As such, imagination is subject to media change. To image future media and their effects on society implies using ›new‹ forms of (media based) imagination as well.

This argument comes awfully close to the fallacies of radical skepticism. Nevertheless, its basic idea, which also can be found in the works of other ›classic‹ texts of media theory, is still interesting. In my talk I will read this position as an argument that aims at a theory of media practices of imagination long before the popular notion of ›media practices‹ was prominent. Relying on various authors and examples, I will try to discuss the scope of this approach, its limitations and problems, but also the potentials it has with regard to current developments in digital media and a future ›digital society‹.

Imaginaries and metaphors of a changing internet: Against the ossification of infrastructure

N. ten Oever & S. Milan, University of Amsterdam

The complexity of the Internet is ever-increasing: year by year, new layers of interrelated technologies sediment over existing ones. Newer technology is built over layers of legacy technology. While allowing great progress in terms of functionality and performance of the internet ecosystem, this stratification process

bring along a number of shortcomings: centralization of ownership, rise of proprietary middleboxes, a decrease in transparency and the ossification of the infrastructure, whereby ‘older’ technology becomes crystallized because ‘newer’ layers build upon it.

This complex process feeds on specific imaginaries—that is to say, collective visions of technology linking ‘intentions and projects as well as utopia and ideologies’ (Flichy, 2007, p. 4) and shaping design and governance discourses. Imaginaries are populated by metaphors of technology, or ways of thinking about the invisible when it generates visible consequences (Chun, 2011). Used to reduce the instability and the uncertainty of our technological present, metaphors “convey what the Internet is or might be”; most importantly, “sometimes today’s imaginary becomes tomorrow’s lived reality” (Wyatt, 2004, p. 244). Imaginaries and metaphors tend to obfuscate the inherent materiality of digital infrastructure, contributing to create “the digital sublime” amplifying the almost transcendent role attributed to technological infrastructure (Mosco, 2004).

This paper leverages critical internet studies and governance studies to a) explore how imaginaries and metaphors of a changing internet contribute to its shortcomings, and ossification in particular, and b) offer suggestions on possible ways out. We argue that certain negative features, inherent to the incremental development model of the Internet, are not sufficiently taken into consideration in the design of new internet protocols. Greater emphasis should be put on the impact of protocols and infrastructures on people’s lives, while ensuring these do not harm people’s ability to exercise their human rights. We suggest that a renewed, expanded imaginary grounded on human rights is the prerequisite for opening up the Internet architecture and infrastructure. A necessary move in this direction is to leverage the ‘Right to Science’, re-involving the academic community in the design and maintenance of the internet.

Cited works

Chun, W. (2011). *Programmed Visions. Software and Memory*. Cambridge, MA: MIT Press.

Flichy, P. (2007). *The internet imaginaire*. Cambridge, Mass.: MIT Press.

Mosco, V. (2004). *The Digital Sublime: Myth, Power, and Cyberspace*. Cambridge MA: MIT Press.

Wyatt, S. (2004). Danger! Metaphors at work in economics, geophysiology, and the Internet. *Science, Technology & Human Values*, 29(2), 242–261.

Of Data Cultures and F(r)ictions: Decentering Data Futures from “Internet Freedom” Community Networks

A. Chan, University of Illinois

Accounts of Big Data as the latest global technology to arrive for universal takeover have prompted a growing critical reactions among international policy makers and interdisciplinary researchers alike to expand “algorithmic transparency” and to demand “audits of algorithms” (Graham 2005; Sandvig, Hamilton, Karahalios, and Langbort 2014) to enable users and researchers alike amplified access to the underlying code of digital platforms and the personal data profiles they generate (Gillespie 2013, Ziewitz 2015). Yet even as such urgency has grown to make algorithms more transparent, legible, and regulatable for the projected “data subjects” via such strategies as standardize-able solutions to growing concerns around corporate data capture, feminist STS and critical data scholars have begun to diagnose their own concerns for a growing

“fetishization” of algorithms and data archives (Caswell and Cifor 2016, Crawford, 2016, Dourish 2016) that have left missing any treatment of the human actors, publics, and local institutions around which big data ecologies diversely function and are produced. What they stress seems to have been re-animated is a certain technological determinism to algorithms as new black-boxed technologies that can be read as removed from the embodied subjects they mean to represent - or the fleshy entanglements and affective ecologies in which they were developed (Crawford 2016, Punzalan and Caswell 2016).

This paper offers an ethnographic lens into two growing European internet freedom community and hacktivist conference sites – the Chaos Computer Congress in Germany and the Internet Freedom Festival in Spain. Each have played visible roles in fostering critical debates around data privacy, online censorship, digital surveillance among global Internet activist networks; but each deploy and reproduce pointedly distinct framings of technological agency and vulnerability, user and citizen, and governance and care, in order to do so. Taking a cue from feminist STS and critical globalization scholarship, then, this project argues for the need to develop methods and analytic lenses into Data Cultures and their frictions (Tsing 2004) that detours from an exclusive focus on big data as either a discrete technological system with universal impacts, or as a kind of abstracted technological force that can be read as removed from the local institutional contexts and local sites in which they were developed, used and deployed. It takes seriously the power of globalizing frameworks of Digital Universalism (Chan 2014) that project new digital technologies as imbued with inevitable impacts that would set local sites onto a single line of evolution towards a future already pre-determined by Western “innovation” centers, high-tech capitals, and celebrated industry actors. (Suchman 2011, Phillips, Irani and Dourish 2011) And it argues for the need, then, to attend to the diverse cultural practices and situated technologies (Haraway 1997) of local Data Cultures – and that alongside developing regulatory mechanisms– have been entangled in the politics of cultivating distinct visions around Data Futures – including ones that might be imagined as variously decentering dominant practices of data governance.

Citations:

Caswell, Michelle and Marika Cifor. 2016. “From Human Rights to Feminist Ethics: Radical Empathy in Archives.” *Archivaria* 81: 23-43.

Chan, Anita. 2014. *Networking Peripheries: Technological Futures and the Myth of Digital Universalism*. Cambridge, MA: MIT Press.

Crawford, Kate. 2016. “Can an Algorithm be Agonistic? Ten Scenes from Life in Calculated Publics,” *Science, Technology & Human Values*, 41(1), 77-92.

Dourish, Paul. 2016. “Algorithms and Their Others: Algorithmic Culture in Context.” *Big Data and Society*, 3 (2).

Haraway, Donna. 1997. *Modest-Witness@ Second-Millennium. FemaleMan-Meets-OncoMouse: Feminism and Technoscience*. London: Psychology Press.

Gillespie, Tarleton. 2013. “The Relevance of Algorithms.” In *Media Technologies*, edited by Tarleton Gillespie, Pablo Boczkowski, and Kirsten Foot, 167-94. Cambridge, MA: MIT Press.

Philip, Kavita, Lilly Irani and Paul Dourish. “Postcolonial Computing: A Tactical Survey.” *Science Technology Human Values*, 37 (1), 2012.

Punzalan, Ricardo L. and Michelle Caswell. 2016. “Critical Directions for Archival Approaches to Social Justice,” *The Library Quarterly* 86 (1): 25-42.

Sandvig, Christian, Hamilton, Kevin, Karahalios, Karrie, and Cedric Langbort. 2014. "An Algorithm Audit." In *Data and Discrimination: Collected Essays*, edited by Seeta Peña Gangadharan. Washington, DC: New America Foundation.

Suchman, Lucy. 2011. "Anthropological Relocations and the Limits of Design." *Annual Review of Anthropology*, 40:1–18.

Tsing, Anna. 2004. *Friction: An Ethnography of Global Connection*. Princeton, NJ: Princeton University Press.

Ziewitz, Malte. 2015. "Governing Algorithms: Myth, Mess, and Methods." *Science, Technology & Human Values*, 41(4): 3–16.

Computers as crowbars to change society: Images of computers and the future they will bring about in the early days of IT

K. Weber, Ostbayerische Technische Hochschule, Regensburg, Germany

The following article is very much influenced by Joachim Radkau's book "Die Geschichte der Zukunft" (2017), in which he shows that the future is always different from what one hopes for or fears. If at all, historical transformations only appear conclusive, explainable – even meaningful – in retrospect. This is presumably due to the fact that we reconstruct such lines of development in the light of our present knowledge. However, from the point of view of those who have acted in the past with a view to the future, it is usually true that things do not turn out as expected.

For example, Dutton and Danzinger (1982:1, their italics) write about the situation in the 1960s to 1980s: "Computers and electronic data-processing systems are major tools of modern organizations and components of many other technologies. Occasionally a dramatic image of the computer has captured the public's imagination, as did the uncontrolled and threatening computers in the films 2001: A Space Odyssey, The Demon Seed, and Colossus: The FORBIN Project." In popular media, computers have certainly had an ambivalent image since their invention, because they are often portrayed in such a way that they free themselves from people's power of disposition and control and instead do control or subjugate mankind (e. g. Ower 1974). Such almost apocalyptic views, in turn, often were faced with the hope that computers could be a tool for making administrative or production processes more efficient, cost-effective and also more humane. Even more far-reaching hopes were placed on the use of computers, such as the revitalisation of democracy through computer-aided participation (e. g. Krauch 1972).

That sounds like a deterministic view on technology in general and computers in particular, but it shall be demonstrated that computer development and social change are interwoven with each other without a clear direction of causality being discernible. In other words: Social conditions of a given time in history might enable, perhaps even promote, the development of technology in general and computer technology in particular, but vice versa it is also true that the available (computer) technology promotes social change – although this does not necessarily have to be positive in retrospect. What will become apparent, however, is that even in the early days of computer technology, the hoped for and/or feared opportunities and dangers of future technology led to social debates that could then influence the trajectories of technological development. Or to put it somewhat different: The images of computers shared in a given society probably always changed the trajectory of the development of technology but predictions based on such images are as uncertain as any other prediction.

References

- Dutton, W.H., Danzinger, J.N., 1982. Computers and politics, in: Danzinger, J.N., Dutton, W.H., Kling, R., Kraemer, K.L. (eds.), *Computers and politics: High technology in American local governments*. Columbia University Press, New York, pp. 1-21.
- Krauch, H., 1972. *Computer-Demokratie*. VDI, Düsseldorf.
- Ower, J.B., 1974. Manacle-forged minds: Two images of the computer in Science-Fiction. *Diogenes* 22, pp. 47–61.
- Radkau, J., 2017. *Geschichte der Zukunft: Prognosen, Visionen, Irrungen in Deutschland von 1945 bis heute*. Hanser, München.

Session 2: Methodological Innovations and Interventions

We built this city on proprietary algorithms: Revisiting Corporate and Governmental Imaginations of data-driven Public Management

M. Schäfer, Utrecht University

Songdo, PlanIt Valley or Masdar City were heralded as the future of urban planning and constituted the notion of entire cities planned, developed and provided turnkey by tech corporations for a not further defined or imagined residents. Today, these cities are almost as forgotten as they are behind schedule (Masdar City) or as they turned out to be less promising, liveable and attractive as imagined (Songdo City) or have never been built (PlanIt Valley). However, the corporate and governmental imagination of shaping cities and their management through the use of information technology is very much active today. Drawing from the now iconic smart city visions (see above) and the corporate promotion materials and the critical commentary it received (notably Greenfield 2013, Townsend 2013), this contribution investigates how these visions resonate in smart city initiatives in the Netherlands. Working for four years with municipalities in the Netherlands, provided an ethnographic view on the implementation of data practices in public management. On the backdrop of smart city visions as promoted by the major tech companies and amplified by a plethora of enthusiastic commentators, this paper investigates how technological imaginary (Flichy 2007) informs policy and eventually meets reality and pragmatic decision making.

As Participatory Action Researchers, we are confronted with technological imaginaries first-hand when working with policy makers, city employees or commercial companies. But often we are unable to categorize, situate and interpret these visions appropriately. As they are active agents of technological and social change, their role in shaping the understanding of policy makers, project developers, stakeholders and residents must be analysed. Our hope is to contribute to, but most importantly to learn about practical ways of identifying, categorizing, and situating these discursive elements. In conclusion, we would argue that scholarly inquiry should not only deconstruct technological visions, but find ways to inform the wider public to what extent their shared expectations in a technology are part of a mediated collective imagination.

Broadening Horizons: Shaping future technology solutions for rural areas – process design, speculative scenarios and needs orientation

H. Glatte, F. Schroth & G. Last, Center for Responsible Research and Innovation am Fraunhofer IAO

The farther we look into the future, the wider our view becomes: probable, plausible and possible futures lie next to each other in an ever-expanding space of opportunities. Shaping a preferable future requires a shared vision of possible developments. Decisions of the present can then be aligned accordingly. Through this approach future imaginaries become strategic instruments.

Our current research project "Broadening Horizons" aims at developing strategies for rural areas in order to establish them as sources of innovation. At present, urban spaces are regarded as key innovation drivers, whereas rural areas are perceived as rather adopting. Innovations originating in urban areas are often just transferred to rural regions with no regard to and consideration of their original chances, resources and needs. However, there are site-specific challenges and opportunities that facilitate their own solutions.

To create such specialized solutions for rural areas we developed a process model with design-based methods as presented below: First we devised future imaginaries for rural areas in a participatory way including as many perspectives on rural futures as possible. Secondly, we use these imaginaries and derived design interventions to assess needs of the local civil society in three pilot areas; and thirdly, we use these future imaginaries to shape technologies of the future that match rural needs and meet site-specific challenges as we feed them back into research processes.

To test this process model, we organized a one-day workshop in the Uckermark with 25 participants, civil society actors and diverse professionals from rural and urban areas. Guided by our design-based methods, the participants developed future rural scenarios which they drew from their original experiences. We currently enrich this material, derive narrative themes and combine it with the results of the technological foresight conducted by our partner Fraunhofer INT. By doing so, the expertise of Fraunhofer CeRRI in societal foresight is flanked and expanded by a technology-oriented approach.

Combining both societal needs and technology trends, we aim to create holistic future scenarios worthwhile discussing. We call them speculative future scenarios to emphasize that they do not merely show what is possible, but also raise questions, highlight voids and trigger debates about the present and the future of rural areas.

This autumn, we will conduct the workshops in three pilot regions. We look forward to discuss the emerging speculative scenarios with local actors to assess their needs concerning future technology solutions. Digitalization does not stop at city boundaries. Infrastructure, education, health, administration... The digital transformation also has to be designed for rural areas – as diverse as they are. Then rural areas could become the drivers of innovative strategies, new community organizations and creators of new business models that go beyond smart city approaches.

Other than mission statements e.g. of digital technology companies, we use future imaginaries as a tool to explore original needs of the society instead of primarily focusing on economic needs and markets. Our approach uses different future narratives to enable diverse civil society actors to explicate ideas, wishes and no-gos. Since our scenarios are based on people's needs they foster technologies, which are required and accepted.

MyData as a national socio-technical imaginary of a future data economy

T. Lehtiniemi, Aalto University

In this ongoing project I examine “MyData,” an initiative which in Finland has developed into a national technology policy initiative and industry alliance. I explore the underlying future imaginary with the aid of socio-technical imaginaries (Jasanoff & Kim, 2015).

MyData proponents believe that structural asymmetries in data economy can be engaged with technology, by providing individuals with means to control personal data. MyData’s remarkable aim is “combining industry need to data with digital human rights” (Poikola et al., 2015), based on a conviction that this benefits individuals, firms, and the society alike. It promises individuals agency towards data, entrant firms increased access to data across industry silos, and the society the circumvention of data economy’s monopolistic tendencies. This is recognized to require new technical infrastructure based on services such as data account operators, and associated interoperability models and governance bodies. MyData is promoted by an international community, with a shared underlying vision of an equitable data economy (<http://mydata.org>) partially drawn from opportunities arising from new regulation such as the data portability rights of EU GDPR.

In Finland, the imaginary of a future data economy is tied into national technology policy. The notion entered expert discourse via a report commissioned by a ministry (Poikola et al., 2015), and has since featured in government policy documents. A national MyData industry alliance convenes under the ministry, having representatives from 50 organizations, including IT, retail, and financial sector companies, tech startups, authorities and research organizations. It has formed pilot projects, including a personal data sharing arrangement between firms and public authorities based on a blockchain identity ledger. The alliance is building a standardization body to govern what technologies and projects correspond to “the national MyData model” and can hence form an interoperable ecosystem. The alliance aligns private firm and national interests against the observed threat of monopolization from the US data giants. Simultaneously it accounts for the borderless digital economy, attempting to construct Finland as an initial testbed for an equitable future data economy – jokingly called “the Moomin valley of personal data” by one insider, contrasting it with models of the data economy incumbents from Silicon Valley.

I aim to make sense of the role of future imaginaries in the construction of the national initiative with Sheila Jasanoff’s concept of socio-technical imaginaries. The MyData imaginary is a collectively held and, to an extent, institutionally stabilized vision of desirable future, an imaginary of how the personal data economy should be organized with information technology. I have closely followed the movement since 2014 from an “outside-insider” position granted by research projects, and participated in the industry alliance from its inception. My empirical data currently consists of documents, plans, presentations and notes. I have access to key insiders and plan to proceed next to interviews.

This work-in-progress would greatly benefit from the workshop to better structure the approach. I would contribute with an empirical case study of how an imaginary of more equitable data economy underlies national technology policy and an industry self-governance body.

References

Jasanoff, S., & Kim, S.-H. (2015). *Dreamscapes of modernity. Sociotechnical imaginaries and the fabrication of power*. Chicago, IL: University of Chicago Press.

Poikola, A., Kuikkaniemi, K., & Honko, H. (2015). *MyData – A Nordic model for human-centered personal data management and processing*. Report: Finnish Ministry of Transport and Communications.

The Magic of Blockchain: A Look behind the Scenes of three Smart Contract based Flagship Projects

K. Wendland & C. Wadehul, Karlsruher Institut für Technologie

Projects that are "blockchain-based" are widely considered to be future-oriented and innovative. The blockchain technology is currently associated with many future imaginaries, which are unleashing new social and economic visions, but also euphoria and fright in the financial markets. Nevertheless, this future-oriented discourse is prompting more and more companies to think about converting their products or integrating blockchain solutions, even if the actual extent of this impact – if not the whole technology – remains unclear. A core concept of some blockchain environments are the so-called smart contracts, with which transactions, agreements and contracts between partners can be easily programmed and thus automated. Solutions based on this principle are currently being introduced to the market - and with them, future scenarios in their first implementation steps.

As we are currently investigating various such smart contract-based projects regarding their future imaginaries at ITAS (KIT), we would like to present and discuss three small case studies of the following exemplary blockchain implementations:

- 1) "Climate-friendly electricity production with the innovative power for a sustainable energy future", a cooperation project between Swiss energy trader Axpo and Wuppertaler Stadtwerke GmbH (WSW). The latter supplies the more than 350,000 inhabitants of Wuppertal with energy (services) – and has been the world's first municipal corporation offering its customers a blockchain-based trading centre for local green electricity – in real time (Tal.Markt, since November 20, 2017).
- 2) „Dentacoin”, an Ethereum-based blockchain platform regulated by smart contracts, supporting the dental community by building and creating solutions devoted to improving the quality of dental care worldwide. The blockchain “gives Dentacoin the power to change the world for the better”. (white paper, Dentacoin)
- 3) “Cindicator”, a blockchain solution which promises “Hybrid Intelligence” in a way of combining human and machine intelligence, in order not just to “help people settle one of the most complex tasks facing mankind: predicting the future with high accuracy”, i. e. “to make effective decisions under the volatile conditions of the new economy“. (white paper, Cindicator)

These three case studies are still work-in-progress, but our contribution will contain a critical analysis of the published white papers and project descriptions and a „future vision assessment“ by the means of Technology Assessment. We are guided by the following three dimensions, which we will present in more detail in the workshop:

- Dimension 1: Forms and formats of socio-technical futures, which are promised by the project approaches
- Dimension 2: Socio-technical constellations in the use case settings
- Dimension 3: Process dynamics in human-technology interaction

For each dimension of this heuristic, we try to answer some key questions raised by the three blockchain-cases, such as: Which "ingredients" constitute the future vision (e.g. anticipatory assumptions, utopian contents)?, Which scientific, ideological, political and economic positions and interests of the actors

can be recognized (e. g. progress optimism, technical determinism, corporate interests)? As future visions seem to be central for decision-making in the present, a comparison of the promises within the white papers and the concrete implementation and performance of the technology (and its results) will show what role future imaginaries have in the making, legitimating and governing of the three presented projects – as examples of certain modes of digital technology, here the blockchain.

In addition to the presentation of the current studies, this proposal aims to engage the participants in the workshop in the intensive exchange of questions on how visions of the future can be adequately examined, processed and also shaped in perspective.

The creative democracy: A review on how speculative art, fiction and design can contribute to meaningful public deliberation on emerging technologies

A. Fraaije, Vrije Universiteit Amsterdam

Emerging technologies such as digital technologies are transforming the world as we know it, and they are doing so at high speed. Their social implications are characterized by high levels of uncertainty, in the sense that their developments and impacts are unpredictable, and ambiguity, in the sense that publics can have significantly different yet similarly legitimate perceptions of the same implications. Therefore emerging technologies ask for an inclusive and reflective societal debate, in which citizens are not only involved as users or as stakeholders, but as citizens, from a public value perspective.

Our specific academic interests go out to how speculative art, fiction and design can contribute to a meaningful public debate on emerging technologies. Therefore we're currently reviewing how such imaginaries have been reported to support public engagement on emerging technologies in various fields. The goal is to derive design principles for art-based public engagement activities. It is work-in-progress, so we have several preliminary conclusions to report.

The imaginaries in the included case-studies all embody some fictional and multi-interpretable story (or theatrical play, art installation, etc.) of an alternative future. Some of the imaginaries were embedded in participatory decision-making processes, but most were used to stimulate critical reflection and debate on the socio-ethical implications of emerging technology. The review has shown three possible routes in which imaginaries can contribute to meaningful public deliberation.

First of all, such imaginaries can trigger important values and feelings and bring them to the surface. Emerging technologies have a major impact on how people relate to their world and what they find important in it, yet public deliberation on science and technology has traditionally focused on a purely rational, logical deliberation of alternatives. Values and feelings are likely to be overlooked in such rational deliberations. Second, imaginaries can trigger imagination and make new futures conceivable. The uncertainty of emerging technologies asks for a flexible and anticipatory governance. Imaginaries can help to keep an open mind and keep the debate flexible. Third, imaginaries can be multi-interpretable, and so invite a broad range of co-existing interpretations. This is important because the ambiguity of emerging technologies asks for a diverse and inclusive governance, wherein a plurality of perspectives is embraced and a broad range of perspectives is brought to the surface. Imaginaries can help to keep the debate diverse and inclusive.

We're interested in discussing this work-in-progress with the participants of the workshop, and in this way contribute to the theme 'theories and concepts to analytically grasp future visions and their roles in the making and governing of digital technology'.

Case Studies – Policy and Infrastructures

From Grand Design to the Unimagined: Competing visions of big neuroscience technology and their normative implications

B. Stahl, T. Fothergill, I. Ulnicane & W. Knight, De Montfort University, Leicester, UK

Visions of technology, sometimes referred to as sociotechnical imaginaries, can be used to mobilise attention and resources to enact particular research designs and funding streams (Jasanoff and Kim 2015). These visions need to mobilise imagination but they also need to be situated in a normative context that allows portraying them as appropriate and desirable. What is less clear, however, is what happens with these visions and their normative appeal once the initial task is successful, support is garnered and the research goes ahead. How do the visions and in particular their normative underpinnings get translated into research and innovation practices? What happens when they are confronted with existing systems of research and innovation governance?

In this paper we will look at a prominent example of research to trace the developments of the vision and their normative implications. We look at the EU Flagship Human Brain Project (HBP), a large-scale ICT project that involves more than 120 partners in more than 20 countries with a duration of 10 years and a core funding of around €500 million (The Human Brain Project 2012).

The HBP was selected as one of two initial EU ICT flagship projects, arguably to a large extent because of the vision behind it that was propagated by the inaugural coordinator of the project, Henry Markram. One strapline of the project was that it would simulate an entire human brain within 10 years. The other part of the vision, which arguably supports the creation of a number of similar large-scale neuroscience ICT programmes and projects is the vision that using ICT to understand the brain can contribute to the resolution of the many problems arising from brain-related diseases.

We argue that it is the normative strength of the vision of understanding the brain and subsequently curing diseases that give legitimacy to the funding of such work. This implies, however, that a questioning of the vision that undermines the narrative can be perceived as a threat to the project as a whole. The initial strong focus in the HBP on a bottom-up approach to brain simulation proved to be highly contentious and led to a high-profile debate around the merits of the project (Abbott 2015; Frégnac and Laurent 2014). This led to an adjustment of the narrative around the project which is now framed in terms of the development of an infrastructure for neurosciences (Amunts et al. 2016; The Lancet Neurology 2017).

Our specific interest in this paper is to explain how this development of the framing of the project and the concomitant change of its normative justification is reflected in the way in which normative issues are dealt with within the project itself. For this purpose we focus on data governance. This is a central issue of the HBP. The project consists of 12 sub-projects, four of which can be classified as predominantly focused on

neuroscience, six are working on the development of ICT platform, one (the one where the authors are located) looks at ethical and social issues and one focuses on management. The integration of data from different sources both originating within the HBP but also external data has always been a key feature of the project. While in the original vision this was aimed predominantly at collecting data required for human brain simulation, the current work of has a broader aim of making data available to internal and external users of the project.

We explore the link between the imaginary of the project and the way in which normative issues are addressed. In the case of the HBP one could observe strong reactions to the initial vision of the simulation of a human brain including questions whether such a simulation would be capable of developing properties that would call for ascribing a moral status to the simulation, i.e. the question of personhood of the simulation (Lim 2013). The HBP has integrated a programme of work focusing on responsible research and innovation that includes anticipatory activities, philosophical reflection, public engagement and ethics support activities (Evers 2016; Aicardi, Reinsborough, and Rose 2017). The question of visions and their normative implications are of particular interest to the foresight research which has developed a set of reports around various aspects, including long-term existential risks (Aicardi et al. 2018).

It is interesting to note, however, that in the day-to-day activities of the project, in the provision of services to project partners in terms of ethics, these visions and their normative implications are of relatively limited importance. The original vision of the simulation of a human brain has vanished, to be replaced by the much less inspiring, but also much less problematic vision of the development of an ICT infrastructure. What has remained constant to a large extent is the need to develop data governance structures that will facilitate the neuroscientific research. This work, however, is not an explicit part of the vision but remained unimagined in any of the imaginaries of the HBP. This does not render it irrelevant. In fact, we would argue that the development of data governance structures that can facilitate international collaboration will be key to future large-scale projects. Such collaboration raises many scientific and organisational challenges, but also numerous ethical ones. Open questions of data governance are, for example, whether animal ethics processes in different jurisdictions are equivalent or whether data protection practices in non-European countries are compatible with European regulation. Finding solutions to these issues will be a necessary conditions for future development of the neuro-ICT enterprise.

During the workshop we plan to further elaborate on the relationship between the imaginaries, their normative implications and the ethics-related activities that actually occur in the project. The example of the HBP and similar large neuro-ICT projects demonstrates the importance the imaginaries as well as their normative implication for creating legitimacy and enlisting support for the project. At the same time our experience suggests that these only translate to a very limited extent to practical work in the project itself. If this observation is correct, then it one could argue that the imaginaries, while doubtlessly important as rhetorical devices, are largely irrelevant in practical research. The normative challenges of governing digital technologies may be quite determined and revolve around well-defined issues such as privacy and data protection, research ethics and informed consent, or foreseeable use and misuse of technology. Such a conclusion would raise interesting question about broader discourses of the governance of digital technologies, such as the current discussion of artificial intelligence and big data. We hope that our insights from the case of the HBP can inform the workshop but also the broader technology governance debate.

References

- Abbott, Alison. 2015. "Human Brain Project Votes for Leadership Change." *Nature*, March. <https://doi.org/10.1038/nature.2015.17060>.
- Aicardi, Christine, B. Tyr Fothergill, Stephen Rainey, Bernd Carsten Stahl, and Emma Harris. 2018. "Accompanying Technology Development in the Human Brain Project: From Foresight to Ethics Management." *Futures*. <https://doi.org/10.1016/j.futures.2018.01.005>.
- Aicardi, Christine, Michael Reinsborough, and Nikolas Rose. 2017. "The Integrated Ethics and Society Programme of the Human Brain Project: Reflecting on an Ongoing Experience." *Journal of Responsible Innovation* 0 (0): 1–25. <https://doi.org/10.1080/23299460.2017.1331101>.
- Amunts, Katrin, Christoph Ebell, Jeff Muller, Martin Telefont, Alois Knoll, and Thomas Lippert. 2016. "The Human Brain Project: Creating a European Research Infrastructure to Decode the Human Brain." *Neuron* 92 (3): 574–81. <https://doi.org/10.1016/j.neuron.2016.10.046>.
- Evers, Kathinka. 2016. "The Contribution of Neuroethics to International Brain Research Initiatives." *Nature Reviews Neuroscience* 18 (October): 1–2. <https://doi.org/10.1038/nrn.2016.143>.
- Frégnac, Yves, and Gilles Laurent. 2014. "Neuroscience: Where Is the Brain in the Human Brain Project?" *Nature* 513 (7516): 27–29. <https://doi.org/10.1038/513027a>.
- Jasanoff, Sheila, and Sang-Hyun Kim. 2015. *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. University of Chicago Press.
- Lim, Daniel. 2013. "Brain Simulation and Personhood: A Concern with the Human Brain Project." *Ethics and Information Technology*, 1–13. <https://doi.org/10.1007/s10676-013-9330-5>.
- The Human Brain Project. 2012. "The Human Brain Project - A Report to the European Commission." Lausanne: The Human Brain Project. http://www.humanbrainproject.eu/files/HBP_flagship.pdf.
- The Lancet Neurology, null. 2017. "The Human Brain Project: Adjusting the Flagship's Course." *The Lancet Neurology* 16 (3): 171. [https://doi.org/10.1016/S1474-4422\(17\)30013-3](https://doi.org/10.1016/S1474-4422(17)30013-3)

Mobilized, tweaked and curtailed: On how imaginaries are enacted in a smart grid demonstration project

A. Wallsten, Linköping University

A smart grid can be understood as a digitalized electricity grid, meaning that the current grid becomes "smart" as it is interlaced with ICTs that add intelligence (Nyborg & Røpke, 2013; Verbong et al., 2013). Nevertheless, there is still a large degree of uncertainty in relation to what this digitalized grid entail and can enable. The enactment of smart grids is thus an open, contested and political process in which social relations between various actors are at stake.

This paper is divided in two parts, the first one explores the futures that are evoked in Swedish smart grid strategy and planning documents, and analyse the implicit imaginations of smart grid futures enclosed in these documents. These imaginaries are in this paper conceptualized as an important part of what Law (2004:27ff) defines as a hinterland: a geography of associations that holds relational webs together and enables certain human and non-human connections above others. Drawing on Jasanoff and Kims' (2009; 2013) concept of sociotechnical imaginaries, this paper unpack notions of smart grid futures that establish a route that influence which realities are more or less likely to be made possible. These imaginaries function as a template of associations that legitimize certain configurations and make them thinkable and meaningful. The paper presents five different notions of smart grid futures as traced in Swedish strategy and planning documents: Sustainable society, Flexible futures, Digital dreams, Successful Sweden and Empowered and active electricity users. These notions are interwoven and overlapping; combined, they make up smart grid futures as evoked in the studied documents. These notions attach associations to the smart

grid, and connect the smart grid to ideas of what kind of smart grid futures are desirable, sought-after and worth striving for.

Smart grids are still at an early stage of development, and a multitude of actors are involved in shaping what they will become in the future. However, there are ongoing attempts to turn these prospects into a materialized form in the present and thereby close down alternative future pathways. Demonstration projects are currently used as the main instrument to achieve such close downs and lay the groundwork for further roll-outs. They are by authorities given the mandate of influencing which socio-material configurations that work and which that do not. Demonstration projects can thus be conceptualized as arenas in which ideas about smart grid futures congeal into functional socio-material configurations. In other words, the outcome of these demonstration projects will guide the future setup of smart grids and contribute to the stabilization of certain alternatives in favour of others. The second part of this paper follows how a smart grid unfolds within a demonstration project, and explores the various tensions that arise in the process of making a smart grid functional within a local setting. The paper concludes that some imaginaries are mobilized in the demonstration project, while others are tweaked or curtailed on project ground.

Imagining smart urban energy futures

L. Quitzow, Wissenschaftszentrum Berlin für Sozialforschung

Smart grid infrastructures combine the promise of clean energy transitions with that of high-tech development and economic growth, and are therefore currently at the top of urban policy and business agendas. Although only vaguely defined, smart grids broadly stand for the incorporation of information and communication technology (ICT) into electricity networks. Visions attached to the smart grid center around a variety of goals, most importantly cleaner and more efficient energy use, the combination of infrastructure sectors and more active consumer participation.

In Berlin, digitized electricity grids are being projected, implemented and/or tested in three sites of urban experimentation, namely the EUREF-Campus in Schöneberg, the Science City in Adlershof, and the UrbanTechRepublic in Tegel. Here, their development is mainly driven by expert coalitions that involve utility companies, small-scale energy and mobility entrepreneurs, ICT businesses and researchers. Based on expert interviews and document analysis from within and beyond these sites, I examine the socio-technical imaginaries surrounding smart electricity grids in the city of Berlin, and how they are being translated into practice at these sites of urban experimentation.

My preliminary results show that in Berlin the introduction of digitized electricity grids is carried by a vague but optimistic belief in the ability of digital innovation and economic opportunity to facilitate “smarter”, “cleaner”, more energy-efficient and climate-friendly cities. They are accompanied by a common notion of urgency, necessity and inevitability that largely derives from (or is framed as) a commitment to Germany’s renewable energy targets and from a strong reliance on technological solutions to achieve these climate-related goals. Dominant narratives suggest that the digitization of electricity grids will enable urban energy futures that are more independent, sustainable, efficient, flexible, and participatory.

Yet, the production of these visions is largely confined to relatively small communities of experts, leaving little room for critical public debate. Alternative visions or competing narratives therefore hardly exist. Issues such as data protection, cyber crime, or platform ownership are largely neglected. Even the trade-offs between energy-efficiency gains on the one hand and resource use on the other are hardly questioned at all. In sum, the co-production of ICT infrastructure and urban energy futures is currently based on the positivist visions of few experts, rather than the critical involvement of many, potentially affected, users.

Radical Engineering: An Ethnography of Promise

G. Bachmann, Leuphana University of Lüneburg

Certain engineering endeavours are guided by the promise of making history by working on the medium. This paper is about this specific form of engineering in the tradition of Doug Engelbart and Alan Kay. It is based on a two-year long ethnographic fieldwork between 2015 and 2017 in the "Dynamic Medium Group": a highly influential research collective in the San Francisco Bay Area. The group, working under the lead of Bret Victor, consists of a dozen engineers and designers, who try to "bootstrap" a paradigm shift of digital media by building the conceptual and technical foundations for a new "dynamic spatial medium" – a digital medium no longer be based on the paradigm of digitally dynamic paper (such as the tablet or the personal computer) but on a digitally dynamic notion of spatiality.

With the notion of 'promise', the paper thinks through the forms with which the group constructs futures. The research group makes promises by building them into prototypes, by extracting new promises out of these prototypes, and by using prototypes to make their promises convincing. By analysing such practices as a generation and stabilisation of promises, we can understand not only the subject positions that are created through this endeavour, both on the side of the promise makers and the promise addresses, but also the space of negotiation opened by the promise. This paper shall explore how internally, promises produce both coherence and conflict. Externally, the research group tries to fight off attempts to use or understand their work without buying into the full set of its promises.

Even though the promises of the Dynamic Medium Group consist of daring junctures of speculation and technology, they are positioned as opposites to techno-solutionist shortcuts situated in the Silicon Valley and beyond. As such, they are posed not only as alternatives to current digital media and their commercially-driven development, but also as opposites to currently available imaginaries of futures fuelled by AI, Machine Learning, Blockchain, VR, AR, or free software (all of which are explicitly condemned by the group). Instead the groups stages promises of a medium yet to come, a new form of "togetherness" to evolve, and a more "humane" version of augmented thinking to emerge.

Educating the future. The role of 'skills gaps' and methods in political and economic scenarios of the future

P. Saner, University of Lucern

Although digitization as a socio-technological process has now been lasting for several decades, recent years have shown a significant increase in activities of educational institutions responding to the politics' or labor markets' growing demand for 'digitally' or 'computationally' literate students. At the same time, states and other political actors formulate "digital strategies" in order to cope with this phenomenon and to shape future developments of their societies regarding technological challenges in different social fields. In Switzerland, the federal government recently inaugurated "Digital Switzerland" as a strategy whose main aim is to preserve and strengthen the global competitiveness of the Swiss economy as well as Switzerland's science and technology sector. In this context, the federally funded ETH domain launched the "Initiative for Data Science in Switzerland" in 2016 as a response to the challenges of massive amounts of scientific data in all disciplines.

Apparently, these policies manifest a semantic turn towards so-called "knowledge economies" (Jessop et al.

2008). They share a pronounced focus on education, research and technological innovation, which can be seen as central drivers of this formation, as well as a constant call to make educational systems and programs more adapted to future needs of digitized labor markets. My research focuses on the emerging field of data science which is often described as one of the key disciplines in the ongoing transformation ('datafication') of education, science and society as a whole (Schäfer/van Es 2017): Data science is an interdisciplinary field of knowledge that includes people trained in computer sciences, statistics, mathematics, machine learning, and engineering, who are equipped with strong programming skills (Schutt/O'Neil 2013).

This paper investigates the transformation of higher education in the "digital-era governance" (Margetts/Dunleavy 2013) regarding both socio-technical processes of digitization as well as political demands for competitiveness and economic growth towards the future. Specifically, I ask which possible futures do political, economic and educational actors construct in and through data science as an emerging field of knowledge? Which similarities or differences exist in the use of the same categories and concepts between different social fields (education, politics, and labor markets)?

To answer those questions I examine the institutionalization of data science in Swiss higher education as a case study. I show how the field of data science discursively constructs both 'skills gaps' and promising future economic scenarios and thereby changes the governance of the education sector. i.e. the relations between industry universities, and the state. My paper relies on a preliminary analysis of documents by political and economic actors as well as educational programs (study program descriptions, course syllabi and interviews with data science educators). I draw on recent theoretical work about sociotechnical imaginaries (Jasanoff 2015) and future imaginaries (Beckert 2016) as well as the 'methods turn' in STS (Ruppert et al. 2013; Savage 2013).

Bibliography

Beckert, Jens. 2016. *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Cambridge: Harvard University Press.

Board, ETH. 2016. "The ETH Domain Launches the Initiative for Data Science in Switzerland Master in Data Science." 1–2.

Jasanoff, Sheila. 2015. "Future Imperfect: Science, Technology, and the Imaginations of Modernity." Pp. 1–33 in *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, edited by S. Jasanoff and S.-H. Kim. Chicago: Chicago University Press.

Jessop, Bob, Norman Fairclough, and Ruth Wodak, eds. 2008. *Education and the Knowledge-Based Economy in Europe*. Rotterdam: Sense Publishers.

Margetts, Helen and Patrick Dunleavy. 2013. "The Second Wave of Digital-Era Governance: A Quasi-Paradigm for Government on the Web." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 371(1987):1–17.

Ruppert, Evelyn, John Law, and Mike Savage. 2013. "Reassembling Social Science Methods: The Challenge of Digital Devices." *Theory, Culture & Society* 30(4):22–46.

Savage, Mike. 2013. "The 'Social Life of Methods': A Critical Introduction." *Theory, Culture & Society* 30(4):3–21.

Schäfer, Mirko Tobias and Karin van Es, eds. 2017. *The Datafied Society. Studying Culture through Data*. Amsterdam: Amsterdam University Press.

Schutt, Rachel and Cathy O'Neil. 2013. *Doing Data Science: Straight Talk from the Frontline*. Sebastopol, CA: O'Reilly Media.

Session 4: Case Studies – Media

Developing the control imaginary: Time magazine's symbolic construction of digital technologies

D. Dumitrica, Erasmus University, Rotterdam, NL & G. Jones, Southern Alberta Institute of Technology, Calgary, Canada

Media coverage of digital technologies fulfills a double role: it contributes discursive repertoires (i.e. symbols, stock phrases, narratives, arguments, etc.) to the social imaginary of technology; and it makes technology meaningful by relating it to existing social concerns and dynamics. In this process, media coverage participates in the symbolic construction of 'legitimate' social hierarchies and norms for leading a 'good life'.

Such constructions of technology are part and parcel of wider imaginaries of not only technology, but also of what the social is and how it should be addressed. Deterministic visions of the effects of technology on the social are implicated in both policy-making and in everyday sense-making (Schulte 2008). Iconic images and stock phrases produced and circulated by media actors provide not only discursive repertoires, but also a framework within which subsequent assessments of the social impact of technology are made possible (Alper 2014). This, in turn, opens up possibilities for identifying moments of change, which can then be examined in more depth, for "the future has to be discussed in terms of the imaginary, in terms of metaphors, but sometimes today's imaginary becomes tomorrow's lived reality. It is therefore important to think about metaphors of the Internet not only because they reveal what different actors think it is but also because they tell us something about what they want it to become" (Wyatt, 2004, p. 244).

In this paper, we examine such constructions of digital technologies by focusing on their portrayal in the covers of *Time* magazine over the past 70 years. *Time* magazine remains a global newsmaker and a producer of iconic images and stock phrases. The paper worked with a wide definition of digital technologies – which included hardware such as computers, peripherals or networks; and software. The resulting corpus of texts consisted of 75 covers (1950-2017) analyzed using a combination of thematic and discourse analysis. Thus, in the first stage, the covers were analyzed thematically, leading to the emergence of four themes (discussed next). In the second stage, the articulation of theme was analyzed in line with discourse analysis principles, by taking into account: vocabulary choices (including figures of speech); semiotic choices for illustrations; and the narrative/ argument constructed by the juxtaposition of cover titles and illustrations. Across all four themes, we chart the discursive transformation of the symbolic construction of digital technologies over the years.

Four themes were identified across the covers:

- the ambivalence of the computer/human integration;
- the moral panics around children's uptake of digital technologies;
- the question of trust in a digitized environment.
- And, the celebration of the techno-capitalist.

In one way or another, all themes speak to the issue of control: control over ourselves (and our children) and control over our future (with the accompanying corollary: get ready, or be left behind). We conclude by arguing that this preoccupation with control of the social body speaks to wider anxieties associated with the reflexive awareness of uncertainty in modernity (Beck, 1992; Beniger, 1986; Giddens, 1990). In line with Ungar's suggestion that exaggeration of the threat posed by technologies creates new opportunities of using "moral panics to engineer social consensus and control" (2001: 276), we discuss how the themes identified in our research construct future imaginaries of social control, by allocating social roles, responsibilities, and resources to particular social actors.

References

Alper, M. (2014). 'Can Our Kids Hack It with Computers?' Constructing Youth Hackers in Family Computing Magazines (1983–1987). *International Journal of Communication*, 8: 673–98.

Beck, U. (1992). *Risk Society: Towards a New Modernity*. London: Sage.

Beniger, J. (1986). *The Control Revolution. Technological and Economic Origins of the Information Society*. Cambridge, Massachusetts, London: Harvard University Press.

Giddens, A. (1990). *The Consequences of Modernity*. Cambridge: Polity Press.

Schulte, S. (2008). 'The WarGames Scenario': Regulating Teenagers and Teenaged Technology (1980-1984). *Television & New Media*, 9(6): 487–513.

Ungar, S. (2001). Moral panics versus the risk society: the implications of the changing sites of social anxiety. *British Journal of Sociology*, 52(2): 271–291.

Wyatt, S. (2004). Danger! Metaphors at Work in Economics, Geophysiology, and the Internet. *Science, Technology & Human Values*, 29(2); 242–261.

Exploring Facebook's Circulative Communication about the Future of Humanity

J. Haupt Berlin, Berlin University of Arts

Since Facebook was founded in 2004, it has been attracting a lot of interest within social sciences. While a lot of research has been carried out on the usage of Facebook as a social network, there have been few empirical investigations into Facebook's corporate communication. However, imaginaries of a better world and the future of humanity are a central part of these communication activities and closely linked to the development of new technologies beyond the classical social network. In my contribution I explore the ways in which these futures are communicatively constructed and legitimized.

Focus of my investigation is a discourse analysis of Facebook founder and CEO Mark Zuckerberg's public utterances in the period from 2004 to 2017. The data for this study comes from the Facebook Newsroom, the corporate collection of Facebook's official press releases and The Zuckerberg Files, a digital archive of Zuckerberg's public communication, hosted by the University of Wisconsin, Milwaukee.

By employing qualitative modes of enquiry, I attempt to illuminate Mark Zuckerberg's entrepreneurial storytelling about the future of humanity. The main issues addressed in my contribution are: a) different

phases in Facebook's communication about the future, b) 'global connectivity' and 'global community' as Facebook's core concepts for imaginations of a better world, c) the normative foundation of these future imaginaries, which are grounded in certain conceptions of humans, corporations, organizational culture and a specific self-image, d) the role of technology, in general and as concrete technological developments.

The results of this investigation show that Mark Zuckerberg's communication about the future of humanity legitimizes Facebook's entrepreneurial actions in a circulative manner. It is based on a self-contained narrative network consisting of repetitive patterns and supported by a solid normative foundation. Overall, this case study supports the view that corporate communication and entrepreneurial storytelling can be understood as a means to popularize certain views of 'what the future will bring'.

This research on Facebook's corporate communication is part of a greater doctoral research project (work-in-progress) on the entrepreneurial construction of future imaginaries in Silicon Valley.

All the news you want to read: Personalization as the future imaginary of the news industry

J. Harambam & M. Makhortykh, University of Amsterdam

The personalization of content is often heralded as *the* future for a troubled news industry operating in a highly competitive information market and is as such driving much of its innovation today. From *The Guardian* to *The New York Times*, different algorithm-driven recommendation practices are used to provide consumers with more personally relevant news, while ensuring traffic, consumption and revenue through user targeting and profiling. This application of algorithms and related technologies can radically alter not just the consumption of news, but the democratic role of the media in general. Utopian perspectives would emphasize a world where news personalization leads to more engaged and better informed citizens, while dystopian perspectives emphasize the unequal provision of information, potentially leading to filter bubbles and societal polarization. Similarly, it could positively be argued that personalization helps news outlets to be more responsive to consumers' needs, while critics would argue that this is just a means to keep money flowing into the news industry.

The question we would like to address in this contribution is which future imaginaries of the news industry are enacted in current implementations of personalization technologies. Do news outlets merely speak of a brave new world where algorithms help people navigate the information overload, or is there room for critical considerations of these technologies as well? Are they transparent about their own (commercial) interests in the advancement of these technologies, and do they see an ethical and democratic duty to foster fair news practices?

To answer these questions, we examine how media practitioners and stakeholders communicate the introduction of personalization practices and explain the motivation behind these decisions to news consumers. Using a selection of (online) news outlets from the US, UK, and Germany, we investigate the role of future imaginaries in the implementation of personalization technologies. For this purpose, we analyze how future visions of news industries - and their impact on the democratic societies of the future - are referenced in public statements and editorial policies related to news personalization and compare how these references vary between news outlets depending on the national context and political regime to which they belong. We conclude by discussing the impact of future imaginaries on conceptualizing normative aspects of news personalization.

When future visions and traditions of innovation collide: lessons for the future from the early reception of the iPad

T. Tofalvy, Budapest University of Technology and Economics

Touch or haptic digital media technologies (Parisi 2017) have been in the forefront of social imagery since (at least) the 1980s. When the iPad appeared on the market in 2010 with the promise of fulfilling all the futuristic expectations, shortly became the most successful product of the company ever. The almost decade-long story of the iPad so far seems to line out a narrative in which a technology instantly receives undivided positive reception among potential users, confirming all the futuristic visions that were behind its inception.

However, the early history of the iPad features a period which turns this narrative upside down. This was the roughly two-month long frame in which pictures and footages on and specifications of the product were seen and known, but the iPad itself was not available for purchase and only a few could get their hands on the actual device. Apple announced the new tablet device on 27 January 2010, and the first iPad was available for purchase on 3 April in the United States. The time window between the two dates is particularly interesting not only because of the fact that all the reviews, opinions and reactions published that time were conceived without knowing the actual product; but because of the direction that the discourse took eventually.

In my talk I attempt to analyze early responses to the Apple iPad as examples of cultural construction of a technology, with the tools of the Social construction of technology and the Empirical program of relativism (Bijker 1997, Bijker-Hughes-Pinch 1987, Humphreys 2005) and 'cultural technology studies' (Gitelman 2006, Marvin 1988, Peters 2009, Pingree-Gitelman 2003, Pitt 2000, Punt 2000, Sterne 2012). My aim is to show how users and critics attached values and affections to a technology that they have not used yet but already knew its hardware and software specifications. Through analyzing the product reviews published after the announcement of the first iPad, but before the product was available for the audience, I show that the opinions and judgments on the iPad framed the product as an inferior PC, and those evaluations were dominating the discourse on the iPad until it got into commercial circulation. Based on the case study, I wish to argue that certain values of innovation and industry traditions attached to technology play an important role in creating the social status of a technology perceived as new. I also wish to argue that this case study from the recent past has to offer important lessons for future policies, as presents a conflict in which future imageries are not affirmed, but rather temporarily confronted by criticism based on values of innovation traditions.

When innovation disrupts tradition...

M. Bernisson, Karlstad University

In the case Google France SARL and Google Inc. v. Louis Vuitton Malletier SA and Others initiated in 2010, the European Court of Justice stated: if Google's activity is defined as "a mere technical, automatic and passive nature", then, Google isn't liable for "infring[ing] its [Louis Vuitton's] trademarks". Conversely, if it is defined as an active tool, thus it is liable (Google France SARL and Google Inc. v. Louis Vuitton Malletier SA and Others 2010). The "tech-company-not-media-company" argument is well spread among these companies who seek to be classified as neutral technologies for being regulated as such (Napoli and Caplan 2016). Indeed, it exists a "semantic debate" (Gillespie 2010) to adapt to existing laws (Gillespie 2010; Grimmelmann 2013; Yoo 2012; Napoli and Caplan 2016; van Dijck 2013). Thus, it is at stake to contextualize such

“semantic debate” in its social imaginaries when it concerns policymaking processes.

Ricœur defined the imaginary through the tensions between a function of consolidation (the ideology) and a function of subversion (the utopia). He argued, based on Weber’s argument, that any system of social control, including the modern State, is based on an ideological functioning which is used as a rhetorical tool. The State uses it to persuade of its legitimacy; and thus, this legitimization would establish its authority; however, other stakeholders might try to use the same mechanism but through the opposite pole of ideology, utopia; a utopia can’t be defined through its content but through its function that is to propose invariably an alternative society (which is the opposite of the ideology); and thus, an utopia questions those in power (Ricœur, 1984). I argue that social imaginaries influence the policymaking process in the European Union and thus impact final policy outputs that concern new technologies.

In this paper (which is an empirical work part of my Ph.D. thesis), I seek to explore these processes in the case of the EU copyright regulatory framework. To do so, I seek to collect data through backward mapping; that is to say, to track back the policymaking process in order to identify both key actors and key documents. Key actors are those who are involved in the production of key documents in the policymaking process and interviews are being conducted; and key documents are the proposal from the European Commission, the proposal for amendments from the most powerful lobbyists groups (based on their resources), and the final regulation or directive. To analyze this data, I will use critical discourse studies (CDS). This method offer a re-contextualization of utterance through different levels; there are four levels, the discourse (e.g. social imaginary) that involves fields of actions (e.g. the policy-making process) that involve genres (e.g. Regulations) that involve texts (e.g. a specific regulation) that involve utterances (e.g. an argument that supports technology neutrality) (Wodak & Reisigl, 2016). Thus, I will extract the arguments in use about new technology from the documents and interviews to re-contextualize them thanks to a hermeneutic process as proposed in CDS (Wodak and Meyer 2016, 21).