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THE ANNUAL MAGAZINE
ON INTERNET AND SOCIETY RESEARCH

VOLUME 2019/2020

Fostering Impact · Rethinking AI · Understanding Platforms ·
Reshaping Society · Decoding Tech Talk

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EDITORIAL

On the eve of a new decade, we have reached a crucial point in the debates on the digital society. In 2019, public discussions about the development and regulation of what we call artificial intelligence (AI) hit the mainstream. One of the key questions is how we can shape this new wave of technologies for automating human decision making across all sectors for the good of the public. Similarly, the role and responsibility of the dominant platform companies now rank high on the political agenda. Recent and ongoing regulatory initiatives such as Germany's Network Enforcement Act or the EU's Directive on Copyright seek to tame the power of platforms, yet they also risk constraining freedom of expression and cultural diversity in the long run. Another emerging field concerns data governance. Who should have control over the rapidly growing data sets that are being produced by humans but increasingly also machines?

The aim to shape the digital society in the public's interest evokes fundamental and thorny questions to which we still lack appropriate answers. At Alexander von Humboldt Institute for Internet and Society (HIIG), we spent a good part of the year 2019 working on possible pathways and solutions. These pathways also include new ways of doing research, such as the AI & Society Lab, which we will be setting up in 2020. This magazine can only offer a glimpse of the many activities that contributed to making 2019 a very lively and successful year at HIIG.

In the year of Alexander von Humboldt's 250th birthday, we explored issues of artificial intelligence and platforms, but also citizen engagement in the digital age and the intricacies of the impact of research, as you will see in this magazine.

It has always been HIIG's mission to do meaningful research with practical relevance beyond academia. If we truly have reached a critical stage in the process of rebuilding our societies' technological and institutional infrastructures, this line of research at the intersection of digital innovation and governance matters more than ever. It was Rasmus Kleis Nielsen, director of the Reuters Institute for the Study of Journalism at Oxford University, who reminded us in the final installment of our lecture series *Making Sense of the Digital Society* for this year that this task falls to all of us now. In our various roles as researchers, users, developers and regulators, we need to carefully think through what we want the digital society to look like – and what actions we can take to pursue our visions. At HIIG we are as eager as ever to participate in this collective effort – and we hope you'll be joining us. Let's make the twenties a great decade in the formation of the digital society!

Jeanette Hofmann,
Director at HIIG

Christian Katzenbach,
Co-Head of research programme at HIIG

CONTENTS

RESHAPING SOCIETY

ENVISIONING THE FUTURE

DECODING TECH TALK

PERCEPTION AND REALITY

What we think AI does

- Solving all our problems
- Taking over humanity

What AI really does

- Translation tools
- Content moderation
- Image recognition
- Beating you at gaming
- Pretending to be more than a software

What we think internet researchers do

- Reading articles
- Writing articles
- Reviewing other articles
- Going to conferences

What internet researchers really do

- Googling
- Criticising Google

FLORIAN LÜDTKE

Discovering the digital cosmos with Humboldt

He was not only a star who filled lecture halls with reports of his travels and discoveries – Alexander von Humboldt is known today as both the last polymath and as a pioneer of interdisciplinarity at a time of scientific specialisation. He was known for his meticulousness and his ability to intuit underlying connections. His work has the potential to inspire the scientific community to self-reflection. On the occasion of his 250th birthday, Florian Lüdtke commemorated Humboldt's legacy.

ADMIRATION FOR THE SPIRIT OF DISCOVERY

Hardly any other scientist in the 19th century was portrayed, interpreted and even instrumentalised (Holl, 2012) more frequently than Alexander von Humboldt. No wonder so many places in Germany and beyond are named after him (Wasmuth, 2019). Humboldt's versatility has also provoked many different perspectives on him, as the hundreds of Humboldt biographies prove. This will certainly continue in the year of his 250th birthday. But what makes Humboldt so appealing?

Due to the specialisation of science from the middle of the 19th century onwards, researchers have since devoted themselves to questions that they try to answer within their discipline alone. However, it is the man of spectacular adventures – and not his sedentary brother, who reformed education in Prussia – who is in demand today. Is it because of the complexity of the internet society that this universal genius is receiving more attention? Our institute, too, is named after Alexander von Humboldt, because our internet researchers are breaking into unknown worlds, exploring the dynamic relationships between internet and society in the digital age and, in doing so, crossing the boundaries of their discipline. In addition to being an adventurer, Alexander von Humboldt embodies three essential traits of science: he was a pioneer of interdisciplinary and holistic research, a networker, and a science communicator.

INTERDISCIPLINARY RESEARCH

Take today's discussions on climate protection and sustainability, which Humboldt, with his curiosity about nature, contributed to in important ways. In his speeches, he drew attention to the consequences of human intervention in nature (Wildermuth, 2016), as he recognised early on that man is part of nature and does not rule over it. In order to develop this understanding of the interplay of organisms, Humboldt could not allow himself to be limited by disciplines. His work demanded that he act as a geologist, zoologist and social scientist simultaneously. Consistent with this, his works range from *Mineralogical Observations on Some Basalts in the Rhine Basin* to botanical research to numerous physiological experiments to the two-volume work *Research into the Irritated Muscle and Nerve Fibre* published in 1797.

Humboldt specialised in most branches of natural philosophy (today

known as natural sciences). He was also one of the few scholars who advocated for unity among the separate fields of science; indeed, as he wrote in his work *Cosmos*, he believed they were all connected by nature. Humboldt's holistic view of nature, which spanned disciplines and also brought the natural sciences and the humanities together, has been lost. In fact, the sciences have increasingly been divided into a multitude of disciplines. Only more recently has there been a return to more interdisciplinarity (van Noorden, 2015). Humboldt is an important role model in the endeavour to look beyond disciplinary boundaries in a highly complex and global internet society.

NETWORKING

In light of rapidly developing technical progress, worries about our emotional health are growing. Individual disciplines can only provide isolated approaches to social development and upheaval. For example, digitalisation is not merely a technical problem and migration is not only about economics. A look at Humboldt shows us that, by observing digital society through an interdisciplinary lens, we can better classify modern phenomena and developments. But Humboldt, the lone researcher who pondered on top of the Chimborazo that everything was connected "by a thousand threads" (Wulf, 2015, p. 210), is no longer a realistic model for the present day given the complexity of the digital society and the sophistication of science. Today, the many disciplines simply cannot be unified in one person.

Global networking through the internet teaches us to understand research as networked. Researchers can link and evaluate more and more data using new methods. For this reason, Humboldt's claim to a holistic approach to science should be seen as a model for internet and social research today. In order to assess the social changes brought about by the internet, machine learning and digital media, we need an informed discourse on their consequences and about the possible ways of shaping them. Just as companies that want to develop in the field of artificial intelligence (AI) cannot afford to only employ computer scientists, science cannot afford to carry out research in its own little chamber – more networking is needed in science in order to take an interdisciplinary look at digitalisation.

Humboldt is also a role model in this respect. He was part of a global network and promoted scientific and social exchange on the latest findings. In 1828,

some 500 researchers came to Berlin for a Humboldt Conference that called on researchers to exchange ideas rather than merely present their research. But his ambitions went even beyond this. As Andrea Wulf (2015) writes in her Humboldt biography *The Invention of Nature: Alexander von Humboldt's New World*, Humboldt "envisioned an interdisciplinary brotherhood of researchers who would exchange and share their knowledge" (p. 249). That's something we should aspire to even 200 years later. In keeping with his ambitions, he lived out this idea during his time in Russia: In his lecture at the Imperial Academy of Sciences in Saint Petersburg, he called on scientists to investigate geomagnetism globally. The call was successful, three years later the community he had called upon collected nearly two million observations – an international cooperation known as the magnetic crusade (Cawood, 1979). Moreover, Humboldt supported young scientists such as Charles Darwin, Louis Agassiz, Joseph Dalton Hooker and Hermann Schlagintweit in their research – not only by advancing their knowledge, but also by helping them expand their relationships and resources.

COMMUNICATING SCIENCE

In addition to his network, which consisted of other scientists, politicians and the educated middle classes, Humboldt was also an experienced science communicator. He shared his insights and his global view of nature with a non-scientific audience: after his travels in South America, Humboldt gave more than 70 lectures in Berlin in 1827 and in 1828 he gave 61 lectures in front of 400 students and teachers at Berlin University. In addition, he presented his research at 16 events at the Singakademie – today's Gorki Theatre. Each of these famous lectures reached up to 1,000 attendees with diverse educational backgrounds. He was keen to make free access for all possible, so he also argued for women to be able to participate, although they were excluded from Prussian universities until the end of the 19th century.

In addition to calling for a holistic approach to nature, Humboldt also advocated for not drawing too strong a dividing line between science and the arts. Indeed, he is quoted as saying: "Knowledge and cognition could never 'chill the feeling that killed the creative power of the imagination' – instead they 'mature astonishment, excitement and emotion'" (Wulf, 2015, p. 309). He made this conviction part of his scientific practice. In addition to his writings, he produced numerous drawings, some of which are also thought of as the first infographics (Moser, 2016). With his

way of combining poetry, science and art, he thus influenced the author Henry David Thoreau. Humboldt's work and approach to knowledge encouraged him to combine natural science and poetry in his book *Walden*.

In order to facilitate an informed discourse, researchers should learn to use descriptive methods of knowledge transfer. This is especially important today, as the experts of the Siggener Kreis (2018) recently emphasised, since consensus in society is eroding and science often does too little to oppose those who question science. In addition to narrative science communication, Humboldt's attempt to draw less strict boundaries between science and art can inspire us today. Art and science can help each other to develop new ideas, methods and forms of representation. They can learn from the way they address different target groups and still strive to achieve the same objective: namely explaining and questioning the world around us. Digital technologies offer wonderful opportunities for this. Art projects use methods of data analysis, visualisation techniques and machine learning as well as diving into the depths of the web. Research and science communication could benefit from experimenting more with digital forms of representation.

WHAT NOW?

Today Humboldt means many different things – he represents a spirit of discovery, he was an environmentalist, humanist and defender of interdisciplinarity, and he was a gifted networker. However, he also stands for a passionate effort to gain knowledge – an aspect that links his various roles. He carried out countless measurements and wrote them down in detail, he was a poet and an open-minded person who let nature affect him, and he did not leave his own feelings out of his descriptions. This is why he is so attractive as a researcher and why we are able to write about him enthusiastically even today.

By presenting these reflections on Humboldt, I would like to inspire three things: in order to gain a better understanding of the digital society – and ultimately to expand our creative scope within the digital transformation – we should focus on holistic, interdisciplinary research projects. Humboldt, with his interconnection of disciplines, opposed specialisation and advocated for the unity of science. Given the complexity of the various disciplinary perspectives – legal, economic, political, technical, media science, etc. – when it comes to topics such as data protection, platforms or AI applications, we should invest more time and

continue reading on page 14 ▸▸

THIS IS AN ARTICLE BY **FLORIAN LÜDTKE**

This article was first published on 30 April 2019 on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG).

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resources in bringing researchers together in networks. In order for the findings to reach those who can benefit from them, the results of the research should be communicated to different target groups in a clear and innovative way using digital methods. Humboldt would probably not think too highly of the fact that, in the year of his 250th birthday, poorly formatted PDFs are the most common form of publication. ◆

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"We, as scientists and scholars, need to hold ourselves more accountable to societal challenges. We need to get genuinely interested in societal problems!"

ACTIVE BUT NOT ACTIVISTS: RESEARCH COMMUNICATION BY SCIENTISTS FOR FUTURE

AN INTERVIEW WITH GREGOR HAGEDORN BY NATALIIA SOKOLOVSKA

The student movement Fridays for Future has managed to get an important message across: the current policies for protecting the climate, biodiversity, and forest, marine, and soil resources, are far from sufficient. However, when they received extensive attention, many politicians and media outlets avoided the substantive questions raised by the students and instead talked about skipping school as a form of protest. This is when Gregor Hagedorn realised that science needs to act and initiated the grassroots movement Scientists for Future with the aim of verifying the scientific evidence that the young protesters were referring to. Nataliia Sokolovska asked Hagedorn about the motivation for setting up such a movement, about the difficulties of doing so and about boundaries between science and activism.

Nataliia Sokolovska: As the initiator of the Scientists for Future movement, could you give us a peek behind the scenes: how did you come up with the idea and how did the concept evolve?

Gregor Hagedorn: Like many others, I was concerned by the slow progress of the sustainability agenda. That is, not just climate change, but also biodiversity loss, loss of soils, food security and questions of human rights and justice. The 2030 Sustainable Development Goals agenda of the United Nations provides a reasonable overview of the spectrum of challenges that humanity is facing. But even though the problems are – somewhat vaguely – known and many people are despairing about them, it seems that our industrialised societies are reluctant or even unwilling to address the challenges through effective action. Because scientific or scholarly results do not reach the majority of citizens, we continue to live – in a certain sense – in the past.

So, as scientists, we are struggling to communicate our situational awareness, for example, for the biodiversity sector, the climate change sector and the agricultural sector. I have been trying this for years and have largely failed, even among many

of my colleagues. And for decades, many people in many countries, old and young people, have worked much harder than I have. When Greta Thunberg started to receive media attention, I started to get hopeful. Then, I started to reach out to about thirty friends from various institutions all over Germany, asking how they felt about it and whether they knew about others who had already begun to work on this. The result was that many agreed that this was a good idea, but very few felt they could justify investing time. Also, because they thought it was too political, no institution or science association wanted to have anything to do with it. Ultimately, we started a grassroots movement in our free time: Scientists for Future. It began with a handful of people, but once we overcame the initial reservation, it became an amazing enterprise. The core team quickly grew to about 40 people, and many more people supported the initiative. It started rolling almost faster than we could handle it. People suddenly dropped other things they had been doing and invested an incredible amount of time. And we quickly realised that this was strong enough to reach out to our Austrian and Swiss colleagues to make it joint a German-Austrian-Swiss initiative – a move that greatly contributed to the overall success.

Over 26,000 researchers signed the initiative's statement, which is an impressive number, but there are still more researchers dealing with the topic of climate change. What has kept them from signing?

The number of signatories is not a good estimate of the total engagement. Not everyone who wanted to was able to sign the statement. Technical problems were one issue (e.g., some confirmation emails were misclassified as spam); another reason was our limited resources. After all, this was an unfunded initiative run by a few dozen people in their spare time. We had an intense period of about six weeks when we worked very hard on executing our communication plan.

But after the press conference and the large Fridays for Future demonstration on 15 May, we stopped all active communication efforts and just kept the petition open for new signatures for another seven days. We, the core team behind the initiative, were totally exhausted. Many people later said that they would have signed if they had known. But on the other hand, proper outreach takes a lot of effort. For example, there is no mailing list in Germany where you can find all scientists and scholars who are working on sustainability topics and very few research institutions sent our statement via their university distribution channels. I am actually quite impressed that some heads of universities took that action and informed all their staff; but this was a very small fraction of universities in Germany, Austria and Switzerland.

Researchers do have different opinions as to whether an initiative like Scientists for Future is an appropriate action for scientists and scholars or not. Some researchers we asked personally opted not to sign because of political reservations. They believe that it is not appropriate for researchers to speak up in the political arena and that they should limit their action to scientific publications. But I am also very happy to have later spoken with a number of researchers who had changed their minds during the course of the initiative.

Where is the border between being an impartial researcher and an activist?

In my opinion, there are no impartial researchers – research is always done by people. That is why our initiative is called Scientists for Future, not Science for Future. We are people and have contact with society, which varies depending on our employment situation. Some are working in academic institutions where mostly the number and impact factor of peer-reviewed publications count and the concept of responsible research is often frowned upon. Some researchers are working for big corporations. Some are working for governments or political parties, others for NGOs. Most of these remain true scientists and scholars, but they all need to balance their scientific ethics with their societal ethics. The statement of Scientists for Future was not written by an activist group that had a particular interest and was trying to find arguments to support this. Even though we were pro-active, we put a lot of effort into validating our arguments. Many scientists and scholars scrutinised and criticised the statement, others responded, checked and resolved criticism. This does not mean that the statement is perfect, but it is the work of a scientific community, elaborated under scientific standards.

Noone in our group had the full spectrum of expertise that was required. We had to figure out how to understand contradictions between different facts and statements and how to communicate that in a very understandable, brief way. If you write a 1,600 page report for the Intergovernmental Panel on Climate Change (IPCC) or the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), you have the space to explain why results may be viewed differently. If you want to keep it short and communicable and understandable for young pupils or students, you have to discuss what can be said and at some points drop certain statements, because they are too difficult to communicate and ultimately not a priority. I think that is perfectly valid. We did not drop any contradictory evidence, and we would like to challenge everyone to bring up issues where our effort might have fallen short.

Initiatives like yours are about increasing the societal impact of science. Should there, in your opinion, be more happening to strengthen the ties between research and society? And, if yes, how should that happen?

Yes, we need much more science communication! Now, science communication is traditionally thought of as a one-way street: from the sacred halls of science down to the ignorant general public. And despite the sarcasm: this is a relevant issue. However, I am not sure that science communication is currently addressing the right priorities. The majority of activities seem to be geared to communicating the most recent advances in science. Anything older is not "news" and thus not noteworthy. Of course, older discoveries are taught at school, college and university. But this leaves the vast majority of our society with a vast knowledge gap in between. And, in my opinion, this gap of perhaps 30 to 50 years is causing real problems concerning the ability of our society to address global sustainability challenges.

To give you an example: I anecdotally observe that many politicians are stuck in the '70s or '80s when it comes to framing the challenges of the energy transition. In the 1970s, the dominant question was: when are we going to run out of fossil fuels? People quickly discovered that any calculation based on known reserves exploitable under current prices results in a severe underestimation. We probably still have around 70 to over 100 years until humanity runs out of fossil fuels.

However, from the beginning of the '80s onwards, scientists started to understand that the question of fossil fuels exhaustion was entirely irrelevant. The relevant question is how to deal with the space limitations of the garbage dump used for the CO_2 produced when we burn fossil fuels. This garbage dump is our atmosphere. While CO_2 is not poisonous, it causes global warming. And, unlike some other greenhouse gases, it does not go away (that is, it does not decompose). Any CO_2 we put in our garbage dump is there to stay until we clean up the mess we have produced. When we consider acceptable levels of global warming, scientists conclude that we can burn at most 20 percent of the remaining fossil fuel reserves. The campaign "to keep it in the ground" is based on scientific facts. And we have like zero years to enact drastic measures to stay within our planetary boundaries with the atmosphere and climate.

To come back to science communication: so, we have information that has been well known to experts for a long time but unknown to many citizens and politicians. And this information is highly relevant to critical political decisions. I do not mean to imply that politics is simply a question of having the right information. But information does

play an important role in the decision making of our democracy. And the decisions are urgent, that is, we cannot wait for the people educated in the 1970s to 1990s to retire before a rational decision can be made.

So, how does science communication deal with this? How do we find a new mode of learning for citizens, politicians, economists in a world where everything is happening faster and faster, where resource use, overfishing, deforestation, soil loss, and CO_2 emissions are accelerating?

Some excellent formats exist on TV, on YouTube, etc. But, usually, these do not reach many people outside the bubble of those interested in science and technology. One excellent contribution can come from institutions like museums – which is why I moved into that sector. But overall, the science communication activities in this field are, in my opinion, still insufficient. Now, there has been a long discussion on top-down science communication. But let me briefly finish with the other direction. I believe a major challenge in science communication is the need for bi-directional communication.

As scientists, we are in an incredibly privileged and powerful position. But many of us are so wrapped up in our daily routine and artificial goals of succeeding with the next grant and getting the next paper published in a prestigious journal that we are unaware of the societal challenges our peers have identified. We have a scientific system that often doesn't support scholars who are willing to address societal challenges. You can build yourself a good career by studying small questions in well known, conventional "publishable" fields – regardless of the importance of this research to society. Building your career by tackling tough questions is much more difficult.

I do not think that it is a good idea to force scientists or scholars to work on problems they find uninteresting or believe they are unable to contribute to. We need to preserve the freedom of science. But to do that, we, as scientists and scholars, need to hold ourselves more accountable to the societal challenges. We need to get genuinely interested in societal problems. Communicating with people whose life is in danger or who fear for their future or the future of their children is one way to motivate researchers to – perhaps partially – shift their focus and priorities. ◆

This is an abridged version of the interview published on the blog journal *Elephant in the Lab*.

www.elephantinthelab.org

MAX BERGMANN, KATHRIN GANZ,
MAIKE NEUFEND AND MARCEL WRZESINSKI

Editors of all disciplines unite and take over!

—

What is the cost of quality in open access (OA) publishing? And who should profit from open access? At this point in the OA transformation, scholar-led journals are in a precarious position. But there are many reasons to believe that the timing is right for new forms of collaborative publishing practices.

SCHOLAR-LED JOURNALS: DOOMED TO FAIL?

When we look at publishing policies and funding strategies these days, the future of the scientific publication system seems clear-cut: it's open access all the way. Within the next decade, the majority of journal articles will be free to read and to distribute for everyone. At the same time, the big OA debates such as DEAL, Plan S and the like, have completely failed at addressing scholar-led OA-born journals (Moore, 2019) that refuse to pass on part of the publishing bill to authors. Because it does not impose article processing charges (APCs) and is dedicated to exploring new collaborative publishing practices, this journal segment is of vital importance in our commodified publishing environment (currently there are over 10,100 journals listed in the Directory of Open Access Journals that do not charge APCs). But when initial funding expires, the founding members retire, or single-institutional support fades away, these journals are more often than not faced with the decision to cease operations, as Björk, Shen & Laakso (2016) pointed out. To put it bluntly: in the current ecosphere of OA publishing, scholar-led journals are an endangered species; there is almost no sustainable financing model, and hence, scholar-led publishing is almost designed to fail in the long term.

AUTHOR-DRIVEN INSTEAD OF AUTHOR-BURDENED

APCs are regarded as the main funding channel for open access journals. So, if APCs seem the way to go, why don't we all join in? First, generic APCs introduce inequities that disadvantage independent or precarious researchers, citizen scientists and scholars from low-income countries. Second, APCs remain the primary method used by big publishers to extend their influence in the current phase of the OA transformation, which likewise explains the inordinate focus on APCs by policymakers – and both contribute to a commodification of academia by applying a logic of valorisation to research results. Lastly, and even though APCs can be used to cover costs in nonprofit publishing, they come at a huge administrative expense, which is not sustainable for smaller journals. Therefore, there is a substantial interest in exploring alternative financing models.

Several community-driven approaches, crowdfunding platforms and consortial models, such as the Open Library of Humanities, Knowledge Unlatched, or Subscribe to Open provide innovative

solutions and are prime examples of collaborative efforts to foster the transition from traditional publishing to genuine open access. This said, native open access services are not eligible for funding in these consortial models.

EXPLOITATION AND INNOVATION: AN EDITOR'S TALE

Even with a strong community support, high quality not-for-profit scholar-led publishing comes at a cost. And while volunteer work has been part of the academic profession for as long as anyone can remember, any critical inquiry into OA transformation needs to acknowledge the precariousness of unpaid editorial labour and dare to challenge it.

To be clear, this labour is neither trivial nor quickly done, as it includes a variety of editorial work: calls for papers have to be drafted and circulated, submissions collected and evaluated. The peer review process must be administered and overseen to ensure high quality content. And when the final papers are ready after rounds of revisions, the meticulous copy editing, proofreading and formatting process needs to be done. Once a journal issue is uploaded and published, it needs to be archived, distributed, and promoted.

This day-to-day business aside, most academic editors are driven by the urge to innovate and experiment. This ranges from (further) developing tools for publishing and dissemination, to implementing unconventional publishing processes (e.g. the form of open-by-choice review done by *Middle East – Topics & Arguments* or the open abstract model by *Internet Policy Review*) and new formats (e.g. collaborative research, multimedia content, raw data). These new pathways don't just promote a single journal's standing and reputation, but contribute to bibliodiversity (Jussieu Call, 2017) as a means of blueprinting the future of publishing. Certainly, these efforts to push the envelope require funding, which most journals are running out of.

THE ACTUAL COST OF OPEN ACCESS PUBLISHING

Publishing models are changing, and therefore the conditions under which scholar-led OA journals work are too. If we refuse to accept the survival-of-the-fittest principle, which is based on self-exploiting academic labour, we have to

continue reading on page 26 ▸▸

THIS IS AN ARTICLE BY **MAX BERGMANN, KATHRIN GANZ, MAIKE NEUFEND AND MARCEL WRZESINSKI**

This article was first published on 20 November 2019 on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG).

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Maike Neufend works as a cultural sociologist at the Centre for Near and Middle Eastern Studies at Philipps-Universität Marburg and is one of the founding editors of the journal *Middle East – Topics & Arguments*.

Marcel Wrzesinski is open access officer and research associate in the project Innovative Open Access in Small Sciences at HIIG. He is also one of the founding editors of *Open Gender Journal*.

ensure the survival of this endangered species in the publishing landscape. Academics need to be the agents for this change, take collective action, and create meaningful "community capital" within universities (Neylon et al., 2019, p.7), libraries and the OA community at large. Initiatives and collectives like ScholarLed, Radical Open Access Collective, or the Fair Open Access Alliance are paving the way for (re-)building horizontal alliances in that regard.

We would like to remind our peer communities that the non-APC, not-for-profit perspective and practice emerged out of the OA movement: not being interested in a renewed marketisation of publishing (Ottina, 2013), we call upon learned societies, research institutions inside and outside universities and colleges, as well as academic libraries to support and fund these independent journals as hubs of critical inquiry, both financially and reputationally.

To ensure the quality and endurance of scholar-led OA journals, we need sustainable publishing contexts that can support these structures and foster diversity within the publishing culture. Providing access to and communicating our research is one of the most urgent tasks of our time. It cannot be dependent on short-term funding and the good will of some unpaid academic labourers. ◆

TL;DR

At the moment, scholar-led open access journals working without article processing charges can barely survive. To ensure high quality publications that are experimental and innovative and put an end to exploitation through volunteer work, academia should take a stance against the marketisation of publishing and collectively engage to fund scholar-led publishing.

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EXPERTISE
IMPACT PROPOSITION
TARGET GROUP
VALUE
FORMAT
CHANNEL
STRATEGIC OPPORTUNITY
TRANSLATION
RESOURCES
CORE ACTIVITIES
COLLABORATORS

MEET THE RESEARCH IMPACT CANVAS

A STRUCTURED GUIDE FOR PLANNING YOUR SCIENCE COMMUNICATION ACTIVITIES

The calls for science to have a societal impact are getting louder. But there's a problem: few researchers know how to make their expertise applicable to a target group outside of academia. The Research Impact Canvas is a structured guideline that is intended to help researchers translate their research into a strategic science communication project.

The canvas consists of five distinct modules (comprising fourteen elements in total) of a coherent impact strategy: value, translation, operation, budgeting and evaluation. These modules and the respective elements that they contain should be worked through iteratively to generate an effective strategy for your impact project.

MODULE 1 – VALUE

The first step involves using your own expertise in order to create an impact proposition for a particular group. What is the expertise you have and which of your further skills might help you to realise your project? Who do you want to reach and what interests them? The place where your expertise and their interest meet and match is what we call an "impact proposition".

MODULE 2 – TRANSLATION

The second step involves the process of translating expertise into a specific product or activity. So, in general terms: what is the best format to reach your target group? Can you best convey your content or idea in written form or do you want to produce a podcast, a video or something completely different? The answer to this question gives rise to another: how will the format you choose find its way to your target group? How will you distribute it? Is there a "right time"? For example, is there an ongoing public debate or a change in legislation that is relevant to you?

MODULE 3 – OPERATION

The third step involves reflecting on the operational activities that are necessary to realise a specific impact proposition. Besides being smart and having all the expertise and skills you can bring yourself, are there other people you need for your project? Can they add skills, knowledge or resources that you don't have but need? To develop an awareness of the operational effort, it is always helpful to spell out the core tasks your project requires and whether you need help or resources to manage them or not.

MODULE 4 – BUDGETING

There is no such thing as a free lunch. So you should be honest that even a project that "only" requires you to invest your own time comes with some costs. Bigger projects might actually need a lot of money to come true. So step four involves reflection on the administrative activities that are necessary to undertake your outreach activity. Do you need money and, if the answer is yes, where are you going to get it from? Sometimes it is also helpful to take a deeper look at your potential funding partners and whether they add constraints or benefits.

MODULE 5 – EVALUATION

The last thing you should do is to look at your project with the goal in mind. What would make it successful? It is useful to identify some criteria beforehand; these should reflect the intended (personal and societal) effects of your project and measure its impact.

The Research Impact Canvas has been created by Alexander von Humboldt Institute for Internet and Society (HIIG) researchers Benedikt Fecher and Christian Kobsda, who have been working on science communication and research impact both from a research and science management perspective. The canvas can be downloaded on the blog journal *Elephant in the Lab*.

www.elephantinthelab.org


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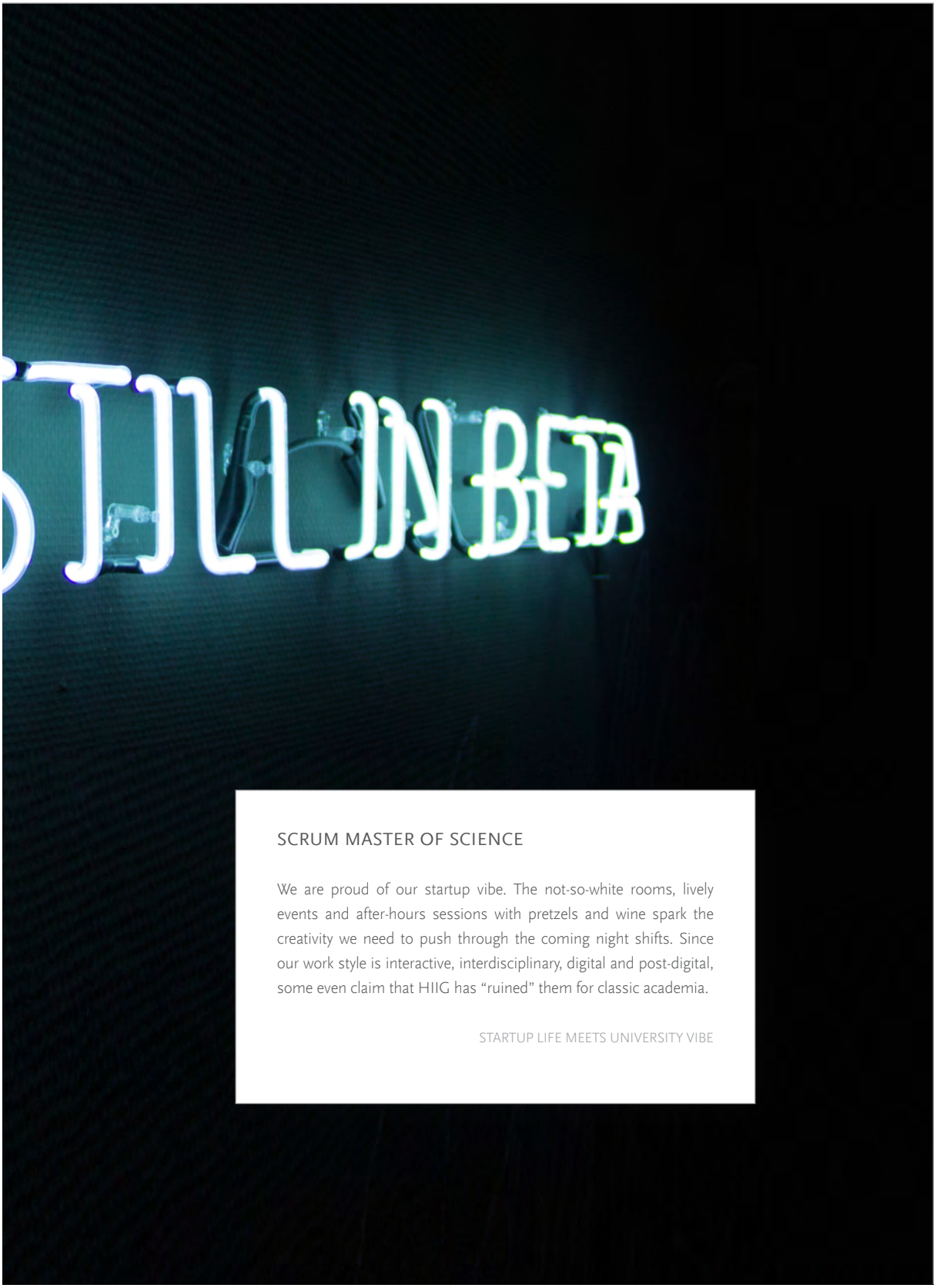

SCRUM MASTER OF SCIENCE

We are proud of our startup vibe. The not-so-white rooms, lively events and after-hours sessions with pretzels and wine spark the creativity we need to push through the coming night shifts. Since our work style is interactive, interdisciplinary, digital and post-digital, some even claim that HIIG has “ruined” them for classic academia.

STARTUP LIFE MEETS UNIVERSITY VIBE

"We are currently ... (re)building the infrastructures of our lives and societies.
Let's talk about what we want, collectively – and how we can achieve that."

WE'RE LACKING IMAGINARIES THAT SPELL OUT IDEAS OF AI AS A PUBLIC GOOD

AN INTERVIEW WITH CHRISTIAN KATZENBACH BY NICOLAS NOVA

Christian Katzenbach recently worked with his colleague Jascha Bareis on a project that compared the national artificial intelligence (AI) strategies of various countries such as France, the United States and China. They identified distinct approaches in the different countries but also similar narratives. The researcher and writer Nicolas Nova interviewed him for a report commissioned by the City of Lyon about the different strategies and their impact on the imaginaries of AI.

Nicolas Nova: Christian, you are studying the discourse about AI, particularly national AI policies and strategies. Why are you interested in AI? And why this focus on AI policies and national visions?

Christian Katzenbach: I am always interested in the entanglements of technology, communication and politics. In recent years, I have become interested in the rush towards AI – which seems to be happening in all domains: media, business, politics, research. AI appears to be a catchword that is used to frame so many diverse things at once. The debates about bias, fairness, agency and transparency seem to have shifted away from the notion of algorithms to the notion of AI without much of a substantial change.

In our recent study, we analysed policy reports – such as strategy papers, plans and policies issued by institutions like the Chinese Communist Party, the White House or the French Parliament – and the public discourse of state representatives. We were surprised to note both commonalities in striving to become top research hubs and economic leaders, as well as differences in focus, approach and values between the countries, even touching upon well-known national narratives.

The term AI is indeed very polysemic. Do you see differences in the way it is framed in the different countries you looked at?

As a term, AI is indeed used in various ways – at the semantic level there is plenty of variation, both within the countries that we studied as well as across the different countries. Where we have identified striking differences is the general framing of AI and its relation to social, political and economic issues. The French AI strategy, for example, that Emmanuel Macron presented in 2018 is called "AI for humanity" and draws tight connections to a "new Renaissance", calling AI a "Promethean promise", stressing the role a strong regulatory state and the need to consider AI a "public good". In order to "boost the potential of French research", Macron announced his intention to strengthen public research institutes (in addition to notable public-private research partnerships) and stated his aim to create a national coordination research hub, including a network of four or five institutes across France. In total, Macron plans to spend €1.5 billion on AI during his current presidency, with the largest portion of the sum earmarked for research and industrial projects.

The US, by contrast, has focused its national strategy on deregulation and competitive advantages. The policy aims at removing barriers to AI innovation "wherever and whenever we can". The US government wants to foster the combined strength of government, industry and academia and generate competitive advantage over other nations. Concretely, according to the strategy document, the US has loosened the regulatory frameworks for AI in autonomous driving, the use of commercial and public drone operations and medical diagnostics. Concerning research and development (R&D) and the private sector, the Trump government has emphasised its ambition to remain "the global leader in AI", increasing investment in unclassified R&D for AI by over 40 percent since 2015 ($1.1 billion in 2015).

Among all the governments, the Chinese Communist Party (CCP) has presented the most detailed, comprehensive and ambitious AI strategy. The CCP is planning to use AI as a universal problem solver. To concretise things, their detailed plan includes technical specifications on how to integrate AI into information and manufacturing

industry in order to turn "China into a manufacturing ... and a cyber superpower." Neither the French nor the American strategy papers have such accuracy and detail, once more stressing the CCP's determination to fulfil its ambitious three-step future plan. What is noticeable about the Chinese strategy is also the ambition to fuse such "civilian" AI technology with military innovations and applications.

Based on your search, how do you think such differences in framing AI lead to various policies?

The national AI strategies that we analysed are a peculiar hybrid between policy and discourse. They are at the same time tech policy, national strategic positioning and an imaginary of public and private goods. In most cases, they sketch broad visions and ambitions – and are rather sparse when it comes to concrete measures and policies. Most do allocate – or at least promise – resources to AI research, list already issued policies and regulations, and present roadmaps for future measures and initiatives. So their function is a mix of strategic positioning, jumping on the bandwagon and giving orientation and legitimation for future measures – they are less so about concrete policies and regulations. So the impact of the papers' own framings on the policies is hard to evaluate for now. But taken as a whole, these documents most probably already reflect the different framings and imaginaries that are circulating in the different countries. We are currently planning follow-up studies that look at the media discourses around AI over time and across countries to understand how different imaginaries travel across domains and become dominant or marginal.

As you metioned, these visions can guide and reinforce imaginaries of AI. That's a common pattern in the history of technology. Why is that important to shape these imaginaries? Or, put differently, what do nation states such as China, the US and France expect from that?

These national AI strategies are the first cornerstones in the institutionalisation – and naturalisation – of AI into our lives and societies. Although AI is severely over-hyped – creating a myth of human intelligence and empathy, which AI is simply not able to

deliver – we are currently setting the frames of how to understand this development and identifying problems – we are thus setting the frame in which we articulate the need to take action and start searching for solutions. In this way, these framings are more than mere talk. Sociotechnical imaginaries materialise in the drafting of policies, the mobilisation of industries and the allocation of resources. Thus, the imaginaries should not just be understood as constitutive but as performative: they create situations of irreversibility as investments that demand returns and political promises that have to be met. For instance, the Chinese Communist Party is strategically tapping civilian innovation for military use and vice versa. Whereas Google retreated from working together with the Pentagon, in the Chinese government actors work hand in hand with commercial companies or simply strategically appropriate innovations from the private sector. The CCP is taking advantage of its authoritarian centralising power, enforcing synergies wherever it can and leaving aside ethical considerations in order to push China to become the leading AI nation.

For this reason, nation states are currently struggling to balance the perceived need for quick action with the need to set adequate frameworks for understanding and coping with AI, and the design of desirable futures. Thus, the national governments are trying to shape the currently negotiated sociotechnical imaginaries in line with their institutional and national interests, be they competitiveness, surveillance, or public welfare – and most often mixtures of all of that.

Down the road, do you think these various policies will lead to different imaginaries of AI?

The strategy papers and policies are part of the broader social process of negotiating sociotechnical imaginaries and shared understandings of technologies and social developments. Thus, they reinforce, slightly change or fundamentally reorientate specific imaginaries and frames. Policies, once in place, are very solid materialisations of imaginaries. They may have a strong impact because they can be enforced in cases of non-compliance. However, without broad social legitimation, they usually fall short. In other words: the strict anti-smoking regulations in the early 2000s in

Europe would probably not have proved successful without the increasing interest in European societies in health and fitness issues.

The striking differences we identified between France, the US and China obviously point to striking political and cultural differences, but they also show that the future, and especially the role of automation and AI in the future, is highly contested. We are currently negotiating how we want to live with automation and AI in the future. And this negotiation is not only about technology, policy and budgets – it is strongly entrenched in myths and metaphors. Let's be aware of that.

In your opinion, based on your research, what kind of imaginaries of AI are we lacking? What isn't considered? Why is that?

Although there is some talk about AI for humanity, about ethics and fairness, most concrete imaginaries and concrete scenarios are strongly led by economic and technological arguments. What is possible, what is convenient, what is efficient? We're lacking imaginaries that spell out ideas of AI as a public good and that envisage using it for public welfare – and I think we're really lacking imaginaries that highlight scenarios that do without AI, identifying domains where we do not want automatic sorting and decision making to take place. We currently seem to take for granted that AI technologies will necessarily permeate every domain of society and all aspects of our lives. But this is not the case. It could be different. We are currently living in a crucial and critical time in which we are (re)building the infrastructures of our lives and societies. Let's talk about what we want, collectively – and how we can achieve that. ◆

The original French version of the interview was published by the French magazine *Millénaire 3*. An essay on the *Digital Society Blog* provides more information about this analysis. The study on national AI strategies is part of a larger project The Discursive and Political Construction of AI.

www.hiig.de/ai-construction

CHRISTOPH ERNST AND
THOMAS CHRISTIAN BÄCHLE

Autonomous weapons – reality or imagination?

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How autonomous are autonomous weapons? Do they exist in reality? And in what ways do fictional characters like the Terminator shape how we think about this technology? These questions were at the centre of the HIIG conference *Autonomous Weapon Systems – Realities and Imaginations of Future Warfare*. The authors give an overview of what we can learn about technical autonomy from looking at these weapons systems.

Drones have become emblematic of a development that has kept the military, politics, industry and civil society on edge: the *autonomisation* of weapons systems. This unwieldy term denotes the plan to equip weapons with the capabilities to carry out missions independently. There is an obvious contradiction in the military's assurance that humans can retain control over so-called autonomous weapons at all times: these systems can not only navigate independently, but can also carry out military actions that are independent of human decision-making, such as attacking an incoming missile. In principle, they are capable of injuring and killing people, which is why the abbreviation AWS (for autonomous weapon systems) is often preceded by an L (for lethal; LAWS), highlighting their deadly functions. The decisions made by computer systems based on so-called artificial intelligence may have serious consequences (Altmann & Sauer, 2017; Suchman & Weber, 2016). How momentous they can be in combat is subject to controversial debates. At the same time, this raises a number of unresolved questions.

It is astonishing that there is no consensus on when weapons should be considered autonomous and in what respect they differ from automatic weapons. Many highly automated weapons systems have existed for some time. The most-cited examples include the American *Phalanx* or the German *Mantis* system, both of which are used for short-range defence. These weapons are designed to destroy or incapacitate fast-approaching missiles with a rapid-firing system that is triggered automatically. Both are stationary systems that execute predefined processes. A technical system is referred to as autonomous when human control is not required and it can move and adapt to dynamic and unstructured environments for a long period of time after activation. The definitions of what an AWS is are undetermined and vague at best (Sauer, 2016). What is certain, however, is that the autonomy of weapons has little to do with human autonomy, which rather alludes to the ability to give oneself rules and obtain freedom as a result.

But despite the inappropriateness of the comparison, no expert discussion of AWS fails to refer to the concept of human autonomy. For example, a position paper published in April 2018 by the Chinese group of governmental experts to the UN Convention on Certain Conventional Weapons (CCW China, 2018) states that the autonomy of such systems should be understood, among other things, as a complete "absence of human intervention" (p. 1): according to the characterisations in this paper, these weapons are impossible to switch

off and should even be capable of "evolution, meaning that through interaction with the environment the device can learn autonomously, expand its functions and capabilities in a way exceeding human expectations" (p. 1). These definitions explicitly establish associations with human autonomy. Their political relevance does not result from the call for the development of systems that are autonomous in this sense. Rather, this particular understanding of autonomy presumably aims to distract from already existing weapons systems that – although not fulfilling the criteria of human autonomy – can act independently.

The frequent references to science fiction scenarios, such as the killer robot in the *Terminator* films, very effectively shape collective notions about autonomous weapons. These are misleading in that they project qualities strongly associated with human autonomy onto the technology. Consequently, they have been commonly rejected in expert debates. Yet, even when experts express a desire to avoid such comparisons, their assessments of what is real or feasible in the context of LAWS are often overshadowed by fictitious speculations about potential scenarios. This occurs even when experts express a desire to avoid such comparisons. In this sense, the concept of autonomy helps to bring together the two very contradictory aspects: on the one hand, it offers the possibility of classifying factual weapons systems as autonomous in a technical sense. The quite distinct meanings of personal or human autonomy, on the other hand, clearly point to the purely fictional expectations towards weapons technology.

This is why the discussions on LAWS and their regulation are only a small part of a much larger debate about technical autonomy in general: the ongoing development of technical autonomy – in which it may acquire capabilities that are actually interpreted as characteristics of human autonomy – is currently perceived as an inevitable course of future development. The particular attention that is currently given to lethal autonomous weapon systems, both in expert communities and the general public, is the result of this circumstance. It can be ascribed to the dubious expectation that intelligent technical systems will be able to learn and will be equipped with free will and a consciousness of their own.

The reality of LAWS is permeated by expectations on what is possible. Their social, political, legal or ethical meanings must be seen as an expression of diverse social imaginative processes that are equally influenced by expert discourses and popular culture. Science fiction is instrumental in shaping today's cultural ideas of LAWS (cf. Ernst, 2019). The primary task of these imaginaries is to give shape to an

continue reading on page 44 ▸▸

THIS IS AN ARTICLE BY **CHRISTOPH ERNST AND THOMAS CHRISTIAN BÄCHLE**

This article was first published on 3 September 2019 on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG).

Christoph Ernst is a media researcher at the University of Bonn focusing on diagrammatics, information visualisation, implicit knowledge, digital media (especially interfaces) as well as media change and imagination.

Thomas Christian Bächle is co-head of the research programme The Evolving Digital Society at HIIG. Since April 2019, he has also been Guest Professor for Media Studies/Digital Media at the Hermann von Helmholtz Centre for Cultural Techniques at Humboldt-Universität zu Berlin. His areas of research include cultural representations of identities, bodies and (media) technologies; human-machine interaction; technological materialities, and interfaces and agency; mobile media, surveillance, robotics, affective computing and simulation technologies.

anticipated future: it may become the foundation of efforts to technically realise it and at the same time guides the critical debates. In addition to the realities of technical functionality, i.e. the factuality of LAWS, it is therefore always necessary to question the imaginations on LAWS. What rhetorical means are used? What fears are addressed? What are the intentions and purposes?

Only by analysing these imaginations will we be able to fully grasp the reality of a technology that has not yet been actually realised. ◆

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ETHICAL AND POLITICAL CHALLENGES OF AUTONOMOUS WEAPONS

A CONVERSATION BETWEEN FRANK SAUER AND THOMAS CHRISTIAN BÄCHLE

Artificial intelligence and robots in the battlefield? The idea of autonomous weapons is tempting for some but troubling for most, as it poses many ethical, legal and political challenges. What exactly do we mean by the term autonomous weapon systems (AWS)? Are humans really "out of the loop" and no longer involved in targeting decisions? How can we still determine who is accountable for military actions? Thomas Christian Bächle and Frank Sauer met at the Alexander von Humboldt Institute for Internet and Society (HIIG) to talk about the need to regulate these weapons but also about why it's so difficult to find a political consensus for a ban. In their conversation they address the Convention on Certain Conventional Weapons (CCW), the role of powerful nations such as China, Russia and the US and also why there is little reason to be optimistic about finding a solution any time soon.

"We can now imagine almost any kind of weapons system being autonomous or being made autonomous even by retrofitting them with new technologies – any boat, any tank, any plane, any submarine could potentially have this autonomous functionality going into the future, and this of course raises all sorts of interesting and also some deeply troubling questions."

Frank Sauer

“The great powers are not really interested in any form of regulation. So Russia, the US, to some extent also China are stepping on the brakes. We are in trouble with the existing treaties and we are not getting anything. So in terms of arms control, we are in a tough position, and this will probably continue for a while. ”

Frank Sauer

“Delegating the decision of taking a human life from a human to a machine – to an algorithm operating in a computer system – is infringing the human dignity of the person that is getting killed. It is not only a question of international humanitarian law. It’s a question of human rights. ”

Frank Sauer

"Even if we could build the perfectly functioning, immaculate killer robot that is compliant with international humanitarian law, never makes any mistakes, performs better than any human being, always within the boundaries of the law. Perfect. Should we?"

Frank Sauer

"AI is a very powerful tool, but you don't need a very sophisticated system to create an autonomous weapon. It's not a sci-fi scenario. In 2018, for instance, Kalashnikov presented a gun coupled with an image recognition system. It's easy to build. If the system recognises something that is shaped like a car, the gun would pull the trigger. But the system would not be able to recognise if someone is hors de combat, so it would not recognise nuances and subtleties on the battlefield."

Frank Sauer

Listen to this interview on the *Exploring Digital Spheres* podcast:

www.hiig.de/podcast

ISABELLA HERMANN

Terminator won’t save us

—

AI-based technologies open up opportunities but also carry risks. Couldn’t we just learn how to deal with this new technological challenge from science-fiction films that have already narratively engaged with the major issues of AI? Unfortunately not. Because instead of giving advice, science-fiction distracts from current ethical and legal issues around AI and their socio-political implications.

Aya Jaff is a successful entrepreneur and coder working with machine learning – which is currently considered the most promising method to build artificial intelligence (AI). When she talks about her job, people initially think that she is creating Hollywood-like robots that might take over the world, as she said in a panel discussion in 2018. But what she actually does is writing computer programs to optimise very specific tasks.

Fears of a takeover by machines are not only a German phenomenon. However, Germans seem to be particularly afraid and sceptical of AI when compared to other countries. These fears are echoed in the media when articles on AI are illustrated with robots from science-fiction films – like the iconic *Terminator*, the innocent looking Ava from *Ex Machina*, the humanoid cylons from *Battlestar Galactica* – or inspired by science fiction. Hence, it was hardly surprising when a group of German scientists who research the social impact of robotics and AI established the Twitter hashtag #notmyrobots, inviting everyone to post such unrealistic or misleading visualisations.

SCIENCE-FICTION-STYLE ROBOTS ARE NOT ABOUT TECH BUT ABOUT US

But why are science-fiction-style robots unrealistic or misleading? Isn't that genre about the future possibilities offered by scientific discoveries and technological progress? Yes and no. On the one hand, science fiction builds on technology. It is the current context of digitalisation, big data and machine learning that has led to an explosion of films and series dealing with dystopian surveillance systems, robots and AI. From this vantage point, it seems that the genre is referring to real world discussions on the possibilities but mostly on the danger of AI (Irsigler & Orth, 2018). In this sense, it can be interpreted as a technology impact assessment.

But on the other hand, this misses one central point: science fiction also uses technology as a means of conveying a certain narrative. The films and TV series are not about a realistic view of technology; they are about us. First of all, science-fiction films are disaster porn. As early as 1965, Susan Sontag argued that science-fiction films are not about science, but about the extensive disaster as a form of art (Sontag, 1965).

But even more, the films and TV series are projections of primeval human desires and fears: we long to create an artificial human-like being and are worried at the same time about being dominated and destroyed by the forces we create. These motifs can be found in all kinds of different stories, from Mary Shelley's *Frankenstein* to E.T.A. Hoffmann's *The Sandman* to the Jewish folklore of the golem. Also, science fiction critically reflects on current socio-political issues. In this sense the humanoid robot is a "narrative canvas" for the "other", for (human) beings who are discriminated against and marginalised (Meinecke & Voss, 2018, p. 208); it confronts us with a critical humanism, in which our humanity defines itself within our attitude towards strangers and aliens (Jackson, 2013).

We find all of these motifs in the above-mentioned examples: *Terminator* shows us the human desire for a saviour in the face of an apocalypse; *Ex Machina* tells us, on the one hand a feminist inspired tale of emancipation and, on the other hand, a centuries-old story of fear of the seductive woman; *Battlestar Galactica* blurs the line between friend or foe by envisaging a world where anyone could be an artificial cylon without even knowing it. Yet, in order to serve those kinds of stories, AI in science fiction – be it a robot or not – must become almighty, magical and/or mystical.

SCIENCE FICTION DISTRACTS FROM THE REAL CHALLENGES OF AI

However, in real life, AI possesses none of these qualities. It is a technical tool already applied in many areas. We use AI in translation, in logistics, in detecting cancer, in recruitment and so on. AI has the potential to make our lives better. One of the downsides is a possible consolidation of discrimination through data bias, since machines are currently learning on the basis of data – which is nothing other than people's digitalised experiences. This data carries the inequalities of history. If fed into a prediction system, this injustice will be transferred into the future. One of the examples is predictive policing in the USA, where citizens who belong to a reference group that was supposedly criminal in the past – mostly African Americans – come into police focus.

So, what we don't need are anthropomorphised science-fiction robots with red eyes. What we need is a positive narrative for the future to use the opportunities

continue reading on page 54 ▸▸

THIS IS AN ARTICLE BY **ISABELLA HERMANN**

This article was first published on 20 December 2018 on the *Digital Society Blog* of Alexander von Humboldt Institute for Internet and Society (HIIG).

Isabella Hermann is a political scientist researching the intertext between politics and science fiction. She currently acts as research coordinator of the interdisciplinary research group Responsibility: Machine Learning and Artificial Intelligence at the Berlin-Brandenburg Academy of Sciences and Humanities.

of AI and to take measures to meet the challenges. This means diversity and a sense for the social context of data among the coders along with an informed and attentive society. And above all, this means bold policy and smart regulation to make sure that our democratic values, including the protection of minorities, count more than ever. The presentation of AI as an almighty, mystical, magical and thus uncontrollable force distracts from the fact that technology is the product of our making. It is our responsibility as a society and as individuals to make sure that technology takes the course we want it to take. ◆

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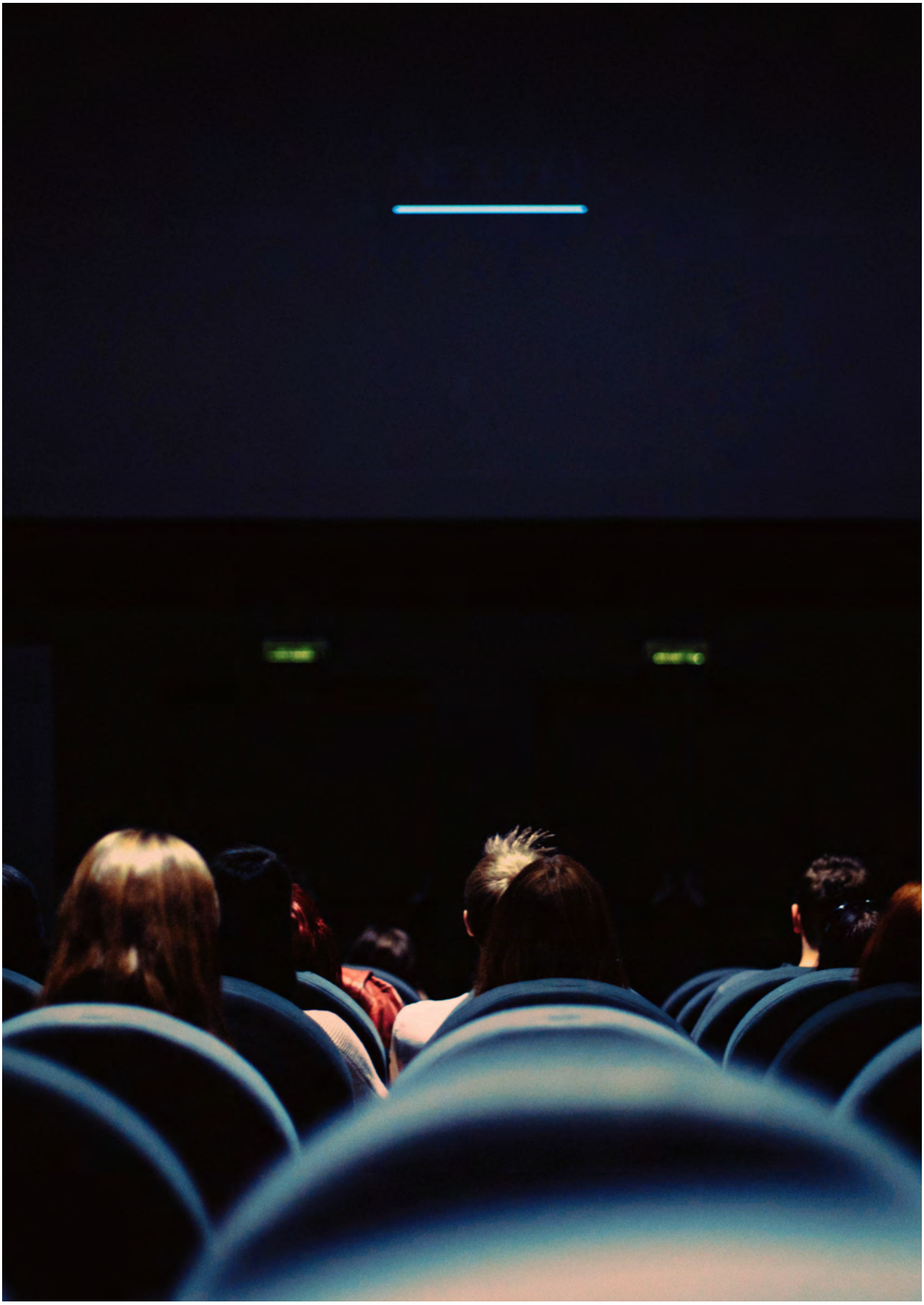


"AI is a basic technology that enables a wide range of new capabilities for machines which challenge entire markets."

AI IN SMES – STATUS QUO AND FUTURE CHALLENGES

AN INTERVIEW WITH ALEXANDER WALDMANN BY MIRIAM WOLF

This interview is the start of the AI meets Mittelstand series, which aims to explore little-known areas in the German AI landscape to gain a better understanding of the social, economic and technical dimensions of artificial intelligence in small and medium-sized enterprises. appliedAI, part of UnternehmerTUM's platform for innovation and entrepreneurship, is Europe's largest nonprofit initiative for the adoption of artificial intelligence technologies. Based on the conviction that competitive advantage results from actual experience with AI-based products and services, appliedAI supports companies introducing AI technologies in the areas of strategy, development and training. Alexander Waldmann, operational and technological director of the appliedAI Initiative, explains how far Germany has come in terms of AI and sheds light on its potential for small and medium-sized enterprises (SME).

Miriam Wolf: You have included the term AI in your company name. How do you define AI for yourselves?

Alexander Waldmann: First of all, artificial intelligence is a term that is difficult to define, and there are disputes over who is ultimately able to determine its meaning. Basically, there are two views: the first is about the idea of creating something that is as intelligent as humans, or at least something that makes it look like intelligent behaviour from the outside, regardless of the strength of this intelligence. However, appliedAI relies much more on an application-oriented definition. For us, this means that currently, AI still revolves around the automation of knowledge work. Incidentally, the automation of knowledge work is also the core activity of most medium-sized companies, and it is here that they place their competitive advantage. AI technologies play an important role in the current phase of the technological revolution – together with some other core technologies, such as robotics or augmented reality.

And how do you position AI in the discussion around digitialisation and digital transformation in general?

On the one hand, AI is a crucial basic technology driving the current technological revolution. One might say that AI is the next wave of the digital transformation. As a result, many companies believe that they have to undergo digital transformation before they can turn to AI. It's not wrong to think about digital transformation per se, but AI has the pleasant characteristic that while it won't let you skip digitalisation, it can at least accelerate it. A number of problems that typically arise during digitalisation can be solved more easily using AI technology. Typically, this happens when you enter existing data sets. If a company wants to digitise a filing cabinet containing analog data, computer vision technology now makes this much easier and faster. In addition, these data can now be clustered and presorted quickly. It is important to understand that AI is not simply introduced as part of a digital transformation. Instead, the successful introduction of AI requires its own AI transformation.

Which discourses on AI do you find problematic and why?

At the political level, there is a lot of talk at the moment about the European Union setting itself apart by focusing on ethics or value-based AI. And it certainly makes sense to talk about this and to create the right framework conditions at an early stage, but Europe will not succeed on the market by primarily funding research into ethical AI – it also needs to consider the opportunity, not just the risks. You can't win a race by essentially shutting out entire areas of active research and development. In addition, the problem is that these debates often take place at a very simplified level and are then very much detached from the real-life questions that small and medium-sized enterprises have today.

Something one hears frequently is that SMEs have some catching up to do in the field of digitalisation and AI. Is this assessment justified?

Yes. In a recent study by PwC, only half of all surveyed companies stated that they considered AI to be an important key technology. It's as though in the year 2000, only half of all German companies had said, "Yes, the Internet is important for us" because AI technology is just as important. Many companies, whether large or small, are still unaware of how powerful and important this technology is for us as a business location because its influence cannot be diminished. Many medium-sized companies are still used to buying solutions instead of investing in their own research. This conflict persists until today.

The term AI subsumes many different technologies and fields of application. Which application scenarios are particularly relevant for SMEs?

I wouldn't necessarily use the term application scenarios because AI can be a more general basic technology that enables certain capabilities for machines. These capabilities, such as automatic image or speech recognition, are independent of a particular niche to start with. The problem is that there are currently only a small number of standard solutions. This means that companies that are looking for actual fields of application need to be guided by best practices. For example, for which application case has a company already built a concrete solution and is interested in cooperating? Then the question is how to use AI capabilities to solve a problem. This offers a wide range of possibilities that can affect both process and product topics within the company. The use of AI can range from IT security and product quality to internal processes. That's why I wouldn't commit myself to one scenario. Even today, the challenge is to match the right solutions to the right problems. What AI allows us to do is solve completely different problems, namely the challenges of knowledge work with machines.

How could a classic mechanical engineer or a regionally rooted retail company approach AI transformation?

We recommend that companies start from a strategic perspective. A very important finding is that if you really want to use AI to its fullest extent, the first step is to think strategically. A company should ask itself: what are my core products? What are my core processes? Then these companies can model their behaviour on other players who are already tackling the issue of AI, because AI transformation is not something we already have a great deal of experience with or that small to medium-sized individual players can master on their own. What is required is the right framework for your technology, people, ecosystems and organisation. All these areas need very specific answers and there are certainly best practices that medium-sized companies can use for orientation. In addition to the IT infrastructure, such a holistic approach also affects the organisational structure, corporate culture and cooperation with partners.

In which areas or countries is AI already more widely established?

Above all in China and the USA but also in Canada and Great Britain, both business and politics have been heavily promoting the issue. Of course there are also individual sectors that benefit particularly from AI, such as healthcare or mobility. Image data play an important role there. The insurance, security and energy sectors also stand to benefit because AI solutions will be extremely important in the energy transition. Other areas of application include the functional units of companies, such as quality assurance and accounting.

What obstacles or barriers do companies face when implementing AI?

That depends very much on the size and location of the company. I would have a different answer for DAX companies than for SMEs. While large companies often have to rethink their strategic orientation and organisational structure, SMEs are more frequently concerned about budget problems, especially because it's often unclear whether an AI project can be successfully implemented; there is a lack of process knowledge. Generally speaking, there is usually a certain amount of internal resistance from employees to new technologies, not least because people learn too much about AI on television. Ultimately, of course, companies have to confront tough technical hurdles at some point. However, we hope that the German federal government's national AI strategy will now improve the framework conditions. Above all, regions with medium-sized businesses need to receive stronger support, especially since we can see that large cities and metropolitan regions experience fewer problems. Small and medium-sized enterprises, which are often located in rural regions, should seek help from the outside, for instance from large metropolitan areas like Berlin or Munich. ◆


CITIZEN SCIENCE

LONG NIGHT OF THE SCIENCES 2019

THE SMARTEST NIGHT OF THE YEAR AT ALEXANDER VON HUMBOLDT INSTITUTE FOR INTERNET AND SOCIETY (HIIG)

Every year, the Long Night of the Sciences invites visitors of all ages to take a look behind the scenes at Berlin's scientific institutions. Roughly 135,000 visitors responded to this invitation in 2019. HIIG's twelve diverse and interactive formats of knowledge transfer attracted more than 400 guests including a mini golf course playfully explaining open access, a digital treasure hunt with Asterix and Obelix and a mystical AI Oracle reflecting your professional future. A robot welcomed our visitors and guided them through the exhibition Humanoid Robots.

Moreover, the institute's scholars provided an entertaining insight into their research. All night long they gave short presentations about their current work. These talks represented the variety and interdisciplinarity of research at the HIIG with topics ranging from fake news, the hype in artificial intelligence, privacy in the digital society to telemedicine, data protection as a service, and questions about freedom of speech for social bots. The following page looks back at four highlights from the smartest night of the year.

OPEN ACCESS MINIGOLF

Knowledge is free. Or at least it should be, according to many scientists. However, for many people, science is a means of profit: the business models of scientific publishing houses are based on exclusive access to knowledge. With just one hit, this minigolf course playfully explained the seemingly complex topic of open access.

AI ORACLE: WHAT IS YOUR FUTURE JOB?

The AI Oracle is an interactive art installation awarded in the university competition in the Science Year 2019. The oracle predicted our visitors' future jobs based on personal data. The installation thus engaged critically in ethical questions over the role of AI in the future labour market.

ASTERIX AND THE DIGITAL MAP

Asterix and Obelix went on quite a trip: they sailed to the British Islands, met Cleopatra and took part in the Olympic Games. This interactive game invites players to look for the secret connections between their stories and to create a digital map of the world of Asterix using Pelagios' Peripleo search tool, which is a portal for discovering the secrets in maps.

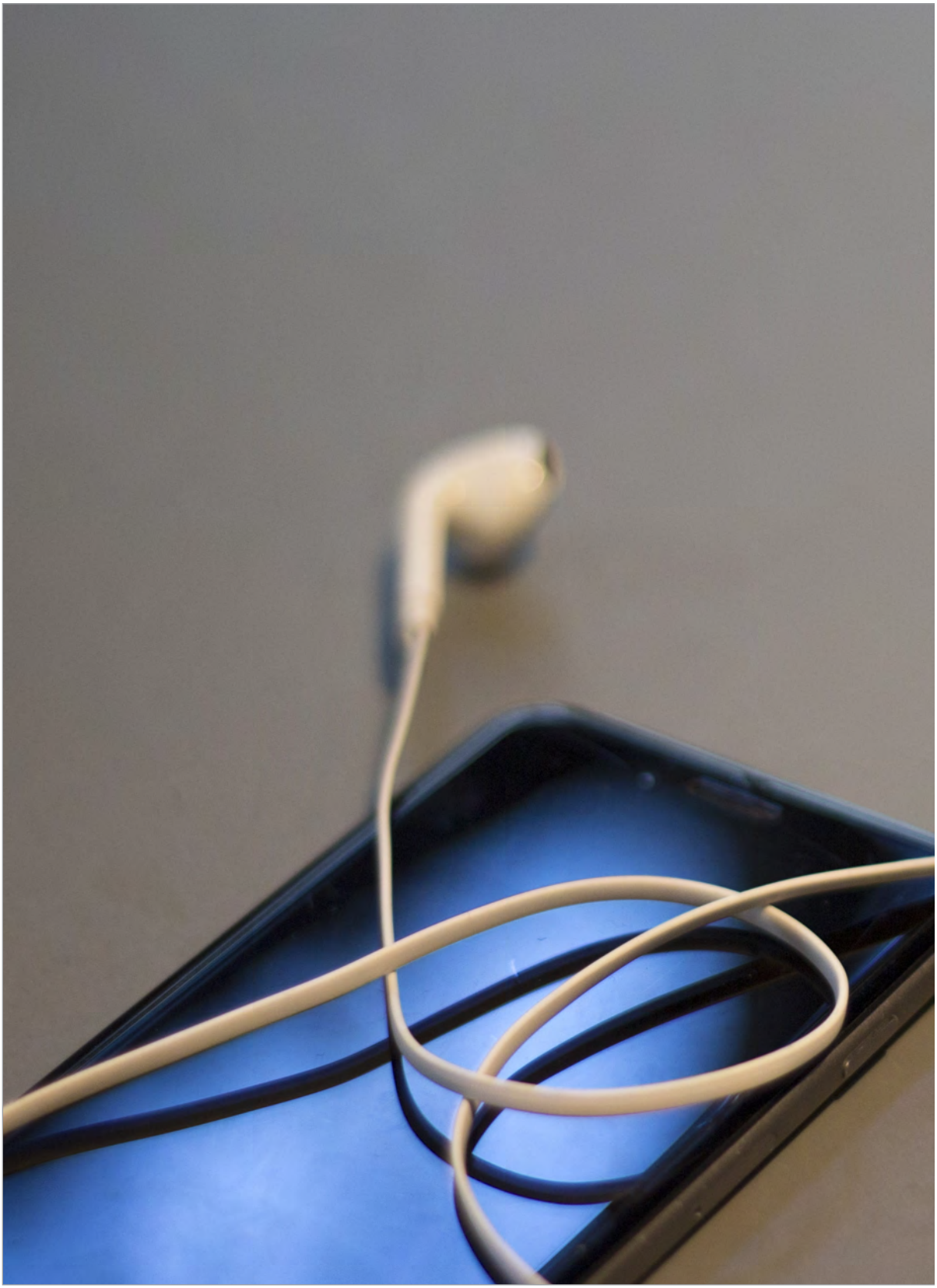
2040 – UTOPIAS NOW! DESIGN YOUR DIGITAL FUTURE

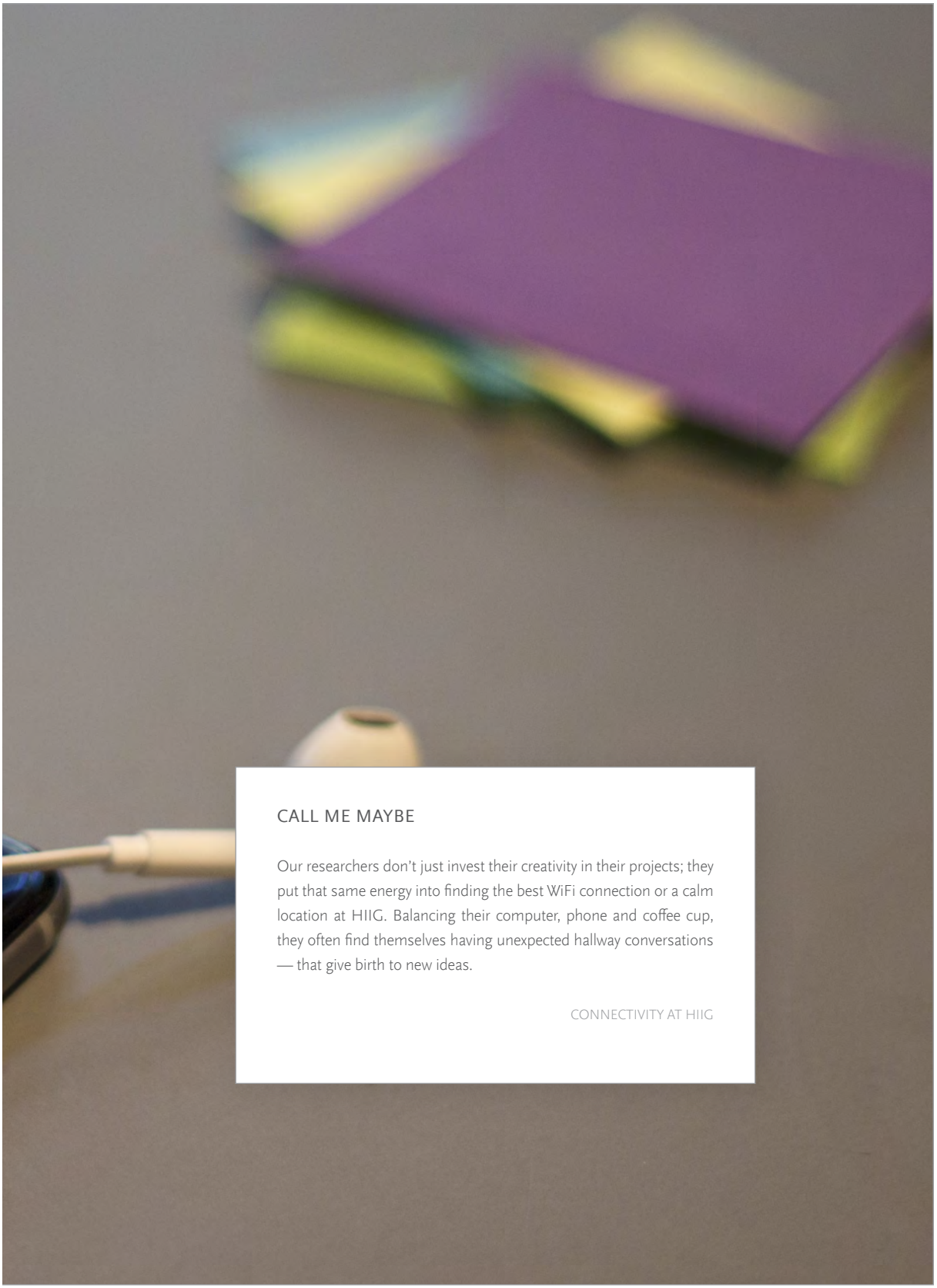
What does the year 2040 look like? Artificial intelligence, virtual reality and the utilisation of our personal data are omnipresent. How will we learn, love, live, work and decide in the future? Our visitors shared their future visions, which were graphically converted into a mosaic of the world in the year 2040 in real time.

Read the full programme and watch all talks of the Long Night of the Sciences 2019 online.

www.hiig.de/lndw-19


Privacy installation
Lightning talks
Future shocks game
Asterix and the digital map
Open access minigolf
Besser-quizzer
DECK
2040 Utopias now!
Methaphors
Digital innovation
Social robots
AI Oracle





CALL ME MAYBE

Our researchers don't just invest their creativity in their projects; they put that same energy into finding the best WiFi connection or a calm location at HIIG. Balancing their computer, phone and coffee cup, they often find themselves having unexpected hallway conversations — that give birth to new ideas.

CONNECTIVITY AT HIIG

AMÉLIE HELDT

#NSFW? Be yourself but don't undress

—

The world's biggest social network plans to launch a new dating application but at the same time it has banned all types of potentially sexualised behaviour in a new version of its community standards, including communication via private groups or messages. This not only threatens users' freedom of expression but also their freedom of personal development.

NO MORE "SEXUALISED BEHAVIOUR"*

"Bringing the world closer together" is a key element of Facebook's mission statement (Zuckerberg, 2017), which has included a new dating application since September 2019. Making use of the data collected over the past years, the world's biggest social media platform created its own dating service after testing it internally and on the ground in Columbia. The dating service is an additional opt-in feature inside the already existing structure rather than a separate application, and it enables users to integrate their Instagram profiles into Facebook Dating. A year before that, Facebook updated its community standards effective of 15 October 2018, banning all types of "sexual activity" in the process. In doing so, the social network has expanded its strict ban on nudity in pictures to cover all types of social interaction, including even private messages. Until now, the focus was mostly on pictures showing nudity or sexual interaction. According to the new community standards, any form of sexual speech that goes beyond simply mentioning "a state of sexual arousal" or a "sexual act" or any sexual activity is forbidden. In practice, a post or message containing any type of speech that could express a desire for sexual interaction or simply arranging a date with explicit verbalisation could be subject to deletion.

Facebook has a reputation for being conservative, for expressing this vision in its community standards and for enforcing them globally. But they are not the only ones: Tumblr, which was previously quite liberal about content showing nudity (so-called adult content would be flagged as "not safe for work", or #NSFW) also announced they would take down adult content, that is, any media that depicts "real-life human genitals or female-presenting nipples", starting 17 December 2018. This ban does not – in contrast to Facebook's – include text: "Written content such as erotica, nudity related to political or newsworthy speech, and nudity found in art, such as sculptures and illustrations, are also stuff that can be freely posted on Tumblr." Tumblr's change of policy in response to allegations of disseminating child pornography came after and was perceived as linked to its takeover by Verizon in 2017.

PLEASE SHARE YOUR LIFE

This development of content moderation policies with regard to speech containing possibly sexual content is a change for the worse. Social media

platforms invite users to share every single detail of their lives, even the most intimate ones. They rely on user-generated content to generate interactions and are constantly fighting for their users' attention in order to keep them on board as long as possible. While the business model is to collect data produced by users that can be utilised to make micro-targeting more and more precise, users are constantly losing ground when it comes to the freedom to choose to be more expressive. If the pictures, videos or text they wish to share with their communities are not consistent with the platform's standards, they will be deleted. Under the pretext of creating a "safe space" for communication, social networks are becoming more restrictive, regardless of the age of the users affected or the actual content.

Facebook's strict policy on nudity and sexual speech has been subject to criticism in the past, especially because it is stricter than national laws and contradicts the company's mission of making the world more open and connected. Several pictures of great historical, artistic and journalistic value have been deleted due to "nudity", as have pictures showing women breastfeeding. The controversies regarding these cases aren't new and Facebook has been under attack for forcing a puritan morality onto its users. This phenomenon could be amplified by the use of artificial intelligence in proactive content moderation if there is no longer a "human in the loop". Indeed, experts confirm that the technology used to retrieve unwanted content is not currently fulfilling expectations. Reports show that algorithms and filters are still struggling with visual content recognition tasks (e.g. differentiating between naked skin and deserts), although deep learning-powered image recognition algorithms are performing well at recognising single items and activities. The main issue is that the context of visuals is not incorporated in the filtering process, meaning that pornographic pictures and photography showing nudes are not differentiated. Furthermore, the context needs to be assessed according to the respective cultural codes in different parts of the world, making a one size fits all solution impossible.

PRIVATE ORDERING AND HUMAN RIGHTS

The example of Facebook's new community guidelines on sexual behaviour shows – once more – that social expectations are high when it comes to respecting and protecting human rights. Although social media platforms – like other private companies – aren't bound to respect fundamental rights the same way public authorities are, users perceive take-down decisions as a violation of their

continue reading on page 72 ▸▸

THIS IS AN ARTICLE BY **AMÉLIE HELDT**

This article was first published on 1 January 2019 on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG).

Amélie Heldt is a researcher and doctoral candidate at Leibniz-Institute for Media Research | Hans Bredow Institute and associated researcher with the HIIG. She focuses on the transformation and protection of communication as well as on freedom of expression and other fundamental rights in the digital public sphere.

rights. Social media platforms legally have the right to govern their contractual relationship with users, including setting up a list of unwanted content even if the speech would be considered legal according to the laws of the user's country of residence. One should, therefore, refrain from calling community guidelines censorship, unless they rely on some kind of state-driven action. In German constitutional law, prior restraint is absolutely forbidden by Art. 5 Basic Law, but this only applies when a public institution is involved and it requires the content to be controlled before its publication. The European Convention on Human Rights has a less strict definition of censorship in Art. 10 ECHR (2010), i.e. prior restraint needs to be proportionate but is not forbidden per se.

Nonetheless, social media platforms play a special role in the digital sphere and the big players such as Facebook, YouTube and Twitter are expected to comply with human rights standards, even if not obliged to by national laws. Applying a strict non-sexualised-content policy is a major restriction in the way users communicate via Facebook. Not only does it limit their freedom of expression when it comes to posting visuals that are likely to be filtered, but it is also paternalistic in terms of their behaviour and their right to free personality development. Yet, even though an increasing number of courts have tended to rule in favour of users when it comes to the deletion of legal content, it remains unclear to what extent they will interfere in the platforms' freedom of contract. ◆

* *Unless otherwise noted all quotes refer to Zuckerberg (2017).*

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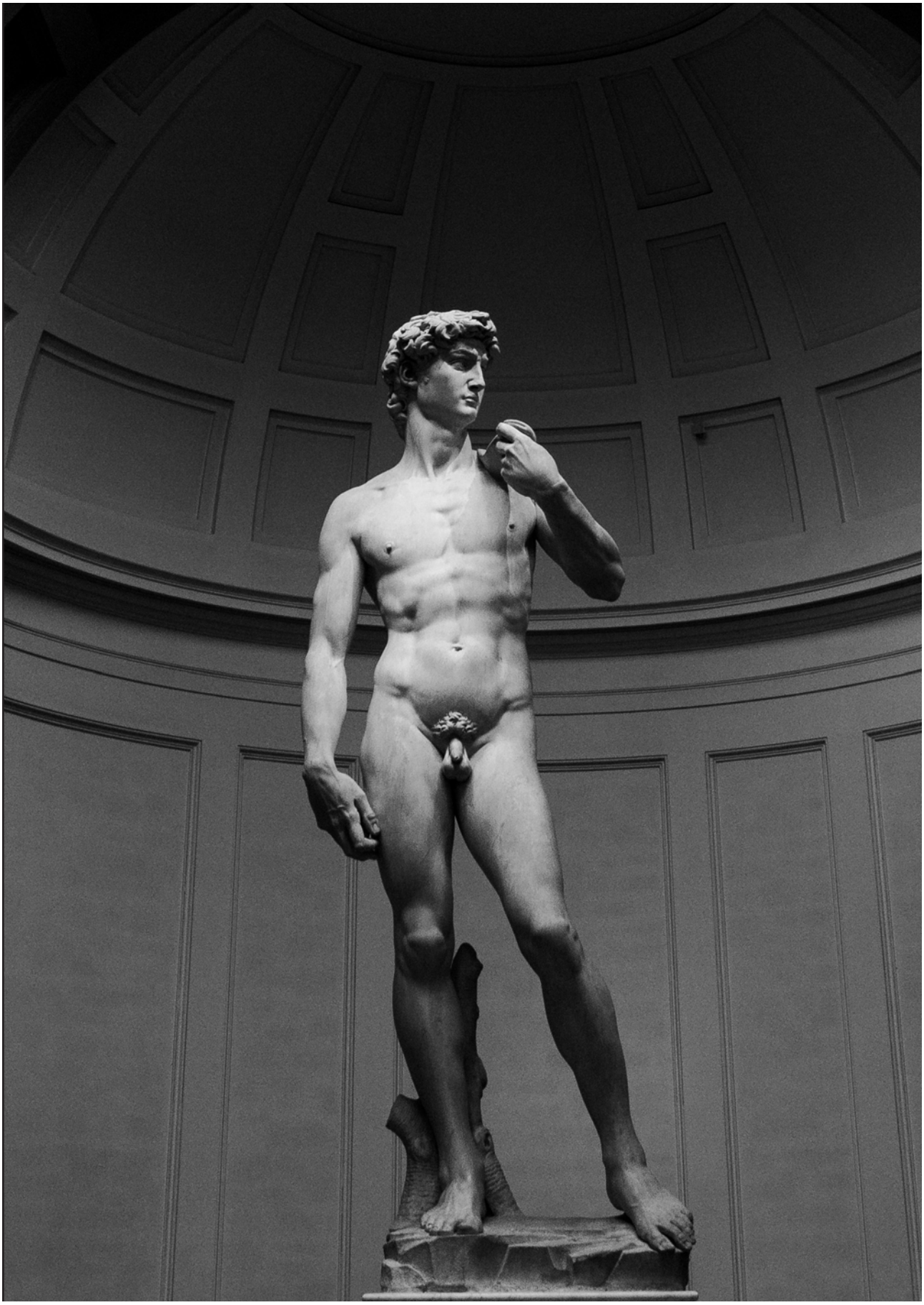

CAN THE DIGITAL FUTURE BE OUR HOME?

A LECTURE BY SHOSHANA ZUBOFF ON THE NEW FRONTIER OF DATA USAGE AND DISTRIBUTION FOR PROFIT – THE "SURVEILLANCE DIVIDEND"

Facebook, Google and personal data: How do large tech companies sell out and trade in user data? Social scientist and author Shoshana Zuboff not only answered this question during her talk at the Alexander von Humboldt Institute for Internet and Society (HIIG) lecture series Making Sense of the Digital Society. She also shed light on buyers – other companies – and their intentions with those data and implications for democracy and free choice of such handling of user data. Each of Zuboff's books has heralded the beginning of a new era. Her latest book, *The Age of Surveillance Capitalism*, reveals a world where users of technology are no longer customers but the raw material for a new economic system. Zuboff is Charles Edward Wilson Professor Emeritus at Harvard Business School.

"You know, the story of Alice in Wonderland. And you remember the white rabbit who had the clock and he was rushing and "I am late, I am late, I have a very important date", and he goes down the rabbit hole. Well, the way I think about it is two decades ago, we were all Alice, and we encountered the white rabbit. And he was rushing down his hole. And we followed the white rabbit into Wonderland. What happened in Wonderland? In Wonderland there are various things that we learned and it took us two decades to learn about. First of all, we learned that we can search Google. But now, two decades later, it's occurring to us: it's not so much that we search Google, it's that Google searches us."

Shoshana Zuboff

"In Wonderland, we assume that we use social media. But now, we've begun to understand that social media uses us. We thought that these are great free services. While these companies were thinking, these are great people who are free raw material for our new operations of analysis, production and sales. We learned to believe that privacy is private. Privacy is not private. Privacy is a collective action problem, it's a political challenge. Finally, we believed that the internet offered unprecedented access to proprietary knowledge. But in surveillance capitalism, proprietary knowledge now has unprecedented access to us. We enter the third decade of the 21st century marked by an extreme new form of social inequality that threatens to remake society as it unmakes democracy."

Shoshana Zuboff

"Alright, so what do we learn here? The surveillance dividend is the center of this. Surveillance capitalism produces the surveillance dividend, which has driven this logic not only through the tech sector, but through our economies.

Surveillance capitalism is not the same as technology. Surveillance capitalism is not an inevitable consequence of digital technology. Surveillance capitalism is not restricted to technology companies. It redefined businesses in every sector now."

Shoshana Zuboff

"What is new here is that at no other time in history have the wealthiest private corporations had at their disposal a pervasive global architecture of ubiquitous computation able to amass in parallel concentrations of information about individuals, groups and populations sufficient to mobilise the pivot from the monitoring to the actuation of behaviour remotely, and at scale. This is a new and unprecedented form of power, what I call instrumentarian power. It works its will remotely. It comes to us secretly, quietly. And if we ever know it's there, it might actually greet us with a cappuccino and a smile."

Shoshana Zuboff

"Essentially, we need to outlaw the surveillance dividend. Once we do that, we open up the competitive space for the millions of young people, entrepreneurs, companies, who want to produce digital products and services that will address our real needs, that will do all of the things that we once expected from the digital. The illegitimate secret unilateral taking of human experience and translation into data should be illegal. We make markets that are trading in human futures illegal – they have predictably destructive consequences."

Shoshana Zuboff

"Greta Thunberg says, "Our house is on fire". So, I'd like to suggest that global warming is to the planet – our house – what surveillance capitalism is to society – our home. Not only is our house on fire, but our home is on fire. Anything that humans make can be unmade. All we have to do is to decide. Right? Surveillance capitalists are rich and powerful, but they are not invulnerable. They have an Achilles heel. They fear law, they fear lawmakers who are not confused and intimidated. But ultimately, they fear you. They fear citizens who are ready to demand a digital future that we can call home."

Shoshana Zuboff

The high-profile lecture series Making Sense of the Digital Society seeks to develop a European perspective on the processes of transformation that our societies are currently undergoing. This talk by Shoshana Zuboff and all other lectures are available online.

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LECTURE SERIES MAKING SENSE OF TH


#DIGITALSOCIETY

ALEXANDER PIRANG

New EU regulation: Upload filters against terrorist content?

—

A proposed EU regulation aims to stop the spreading of terrorist content on online platforms. Unfortunately, the misguided draft gravely threatens freedom of expression. HIIG researcher Alexander Pirang explains how the newly elected European Parliament can still curb the damage.

On 15 March 2019, a gunman used Facebook's Live Stream function to broadcast his killing of 51 people in two mosques in Christchurch, New Zealand. Until content moderators stopped the stream, roughly 4,000 Facebook users had been watching the attack in real time. Then, copies of the video went viral. Facebook stated that it had removed 1.5 million videos in the first day of the incident. Despite these efforts, the video material is still circulating on the internet.

In response, several governments and tech companies recently committed to eliminating violent extremist material online in the Christchurch Call. One significant step already taken in this direction is the EU's draft regulation on preventing the dissemination of terrorist content online (European Commission, 2018). Proposed by the EU Commission in September 2018, it aims to ensure that online platforms are not being abused to spread terrorist material. However, the draft regulation suffers from severe shortcomings and will likely lead to the arbitrary removal of lawful content. The European Parliament will play a key role in mitigating the risks for freedom of expression.

PLATFORMS AS QUASI-REGULATORS

In the draft regulation, the commission followed an already familiar approach to platform regulation (think NetzDG). Having unsuccessfully pressed online platforms to voluntarily limit the dissemination of terrorist content, the commission introduced binding rules that devolve regulatory powers to private companies. Put differently, the proposal forces platforms to control online speech on the EU's behalf.

The scope of the proposed regulation is broad. It covers "hosting service providers" who offer services within the EU, regardless of their business location or size (European Commission, 2018, Art. 2 (1)). The proposal provides for two novel instruments. The first requires online platforms to remove terrorist material from their services within one hour following a removal order from a competent public authority in any EU country. If platforms systematically fail to meet this time frame, they may be sanctioned in the amount of up to 4% of their global turnover. The second instrument is a referral system, which means that national public authorities and EU agencies such as Europol may

notify providers that certain content might be terrorist material. In this case, platforms are only obliged to expeditiously assess this content in light of their terms and conditions; they make the final decision to remove the material or not.

In addition, platforms that have been exposed to terrorist content are required to deploy upload filters to detect such material. The commission's proposal also includes reporting obligations and safeguards, such as user-friendly complaint mechanisms.

GRAVE CONCERNS REGARDING FREEDOM OF EXPRESSION

If the commission's proposal passed into law without substantial amendments, the regulation would severely undermine freedom of expression. Needless to say, online terrorist content is a serious challenge, which needs to be countered with targeted and effective measures. It should be just as obvious, however, that any legislation to that end must comply with EU law, including the Charter of Fundamental Rights. The draft regulation fails to strike that balance, as Martin Scheinin, former UN Special Rapporteur on human rights and counter-terrorism, noted on the occasion of a talk at HIIG on 9 April 2019.

DAMAGE CONTROL BY THE EUROPEAN PARLIAMENT

The council nevertheless largely endorsed the commission's proposal in December 2018, despite sharp criticism from human rights organisations. Fortunately, the European Parliament rose to the occasion and voted for a comprehensive overhaul of the proposal in its first reading on 19 April 2019, including key improvements to the commission's proposal.

In the first improvement, the parliament limited the regulation's scope to content disseminated to the public. This clarification was missing in the commission's proposal, which could be interpreted as also applying to private communication hosted by messenger services or cloud infrastructure providers. The parliament also narrowed the regulation's definition of terrorist content by excluding educational, journalistic or research material, as well as "content which represents

an expression of polemic or controversial views in the course of public debate" (European Parliament, 2019, Art. 1 (2a), Am. 45).

Second, the parliament set out that removal orders may only be given by a judicial or functionally independent administrative authority. As three UN special rapporteurs on human rights noted in a joint Report in December 2018, "the [Commission's] proposal does not specify whether the competent authorities designated by member states would benefit from any level of institutional and substantive independence from the executive" (OHCHR, 2018, p. 6). Considering the democratic backsliding in some EU countries, this amendment is crucial. On the other hand, the parliament regrettably did not change the rigid one-hour time frame, which especially burdens smaller platforms.

In the parliament's third improvement, it scrapped the referral system, which would have forced platforms to assess potentially terrorist material under their own content policies. Referrals would effectively allow national authorities to hide behind platforms' decisions. This is irresponsible, given that platforms' terms of services often lack clarity and do not reflect fundamental rights standards – and the parliament rightly rejected this provision.

Fourth, the parliament also removed the provision on upload filters. It emphasised that obligating providers to proactively filter content and to prevent its re-upload is not compatible with EU law, namely Art. 15 E-Commerce Directive. This is fortunate – as Amélie Heldt (2019) pointed out in a journal article, "[u]pload-filters still lack the ability to understand content in context or to identify satire in videos", which means that they are "not fit for purpose in meeting the requirements of our common human rights framework" (p. 63).

CRUCIAL NEXT STAGES OF THE LAWMAKING PROCESS

These improvements may be fleeting, however, as they might be rolled back in the next stages of the lawmaking process. Is still too early at this point to say whether this will turn out to be the case. What is sure, however, is that the outcome will largely depend on how successfully the newly elected European Parliament

handles the so-called trilogue negotiations with the commission and the council. This series of closed-door meetings started in October 2019; the commission seems committed to finishing the negotiations in just a few months. The trilogue's objective is to find a consensus between the EU's co-legislators, based on which the regulation can be formally adopted. Considering that the council appears to have taken little issue with the commission's proposal, any compromise may likely require the parliament to abandon some of the improvements described above.

The new parliament therefore needs to continue to push for a regulation that does not erode freedom of expression under the pretense of combating terrorism. ◆

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THIS IS AN ARTICLE BY **ALEXANDER PIRANG**

This article was published on 28 May 2019 on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG). An abridged version of the article was first published on 22 May 2019 on Verfassungsblog.

Alexander Pirang is a researcher and PhD candidate at HIIG. His research interests focus on freedom of expression, EU law, and media regulation. In his doctoral thesis, he examines regulatory approaches to online platforms from a fundamental rights perspective.

PHILIP MEIER

How do digital platforms make their money?

—

How do digital platforms capture value from the transactions they enable between different actors? An analysis of 51 platform startups enabled Philip Meier to identify recurring value capture patterns and develop a toolkit for practitioners and researchers who design and describe business ecosystems.

What do the ride-sharing giants UBER and Lyft, the email substitute Slack, the analytics company pagerduty and the photo-sharing app Pinterest have in common? First, they represent four out of the seven major US tech IPOs in 2019. Second, they all run digital platforms in a multi-sided market environment as a central part of their business model.

THE POWER OF THE PLATFORM, OR: WHY COMPANIES EMBRACE MULTI-SIDEDNESS

Network effects are probably the most significant and most discussed value driver for a new business models on digital platforms (Eisenmann, Parker & Van Alstyne, 2011). An example of direct network effects could be seen with the emerging telephone network at the beginning of the 20th century. While a single telephone provides a very limited benefit to its owner, the usefulness for current and future owners increases with each additional telephone network user. 72 years after the beginning of telephone network construction, Robert Metcalf described these properties in the context of the Ethernet network extension in Metcalfe's Law (Gilder, 1993).

With regard to digital platforms, two types of network effects can be distinguished, namely direct and indirect network effects (Parker & Van Alstyne, 2005). An example of direct network effects can be found in the increasing overall utility of the telephone network. In addition, social networks such as Facebook or Twitter leverage direct network effects by specifically supporting interactions between users as well as encouraging them to invite new users (from the same market side). Indirect network effects pertain to the ability to increase the value of the platform for the actors in a multi-sided way. The classic example of indirect network effects can be found in online marketplaces (Hagiu & Wright, 2015). More supply increases the benefit of the marketplace for potential customers, while more potential customers make the whole thing more attractive for new suppliers. If the challenge of the initial creation of supply and demand on a marketplace – the so-called chicken and egg problem – is mastered, a self-reinforcing growth spiral can develop through these indirect network effects (Parker, Van Alstyne & Choudary, 2016).

When combined with the often lean operating models of digital platforms, which allow new supply and new demand from third parties to be efficiently and automatically matched, direct and indirect network effects lead to rapid growth in platform companies (Cusumano, Gawer & Yoffie, 2019). If the platform sponsor still manages to bind the various players to itself, for example, through technical integration

(e.g. in the Apple App Store) or high initial investments (e.g. for game developers on the Sony Playstation), this often leads to large proportions of supply and demand being orchestrated nationally or internationally via one to three platform players. Examples of this include on-demand mobility in the USA (UBER & Lyft), mobile operating systems (Apple iOS & Android) or private hospitality (AirBnB).

COPY AND COMBINE TO SUCCEED

Basically, the business model of a company must always answer the questions of value creation, value delivery and value capture. In this research project, we looked at the value capture mechanisms of a total of 51 startups with a multi-sided business models on digital platforms via the commercially accessible PitchBook database. Startups are particularly interesting here, because their business models are often very lean, clear and therefore easy to investigate; additionally, young, technology-driven companies are excellent indicators of innovation trends for all components of their respective business models. Using qualitative text analyses and interviews, we were able to identify seven recurring value capture patterns. The startups apply these patterns in isolation on the supply or the demand side or combine different patterns so that they can capitalise on the transactions that are enabled on the platform in question.

Admission fee: The platform sponsor charges a fee for individual actions to place supply or demand. Examples of this are listing a property on Immobilienscout24 or posting job advertisements on Monster. Often different packages (5 or 10 packages) are offered in addition to one-time use. The admission fee is mainly used to monetise the supply side and to bring standardised price structures onto a platform with infrequent, inhomogeneous or individualised transaction units.

Transaction Fee: Through transaction fees, platform sponsors benefit from every transaction that is enabled between two or more actors. This pattern was the most frequently observed one in the analysis and addresses the supply and demand side in similar proportions. In the case of very dominant platforms such as AirBnB, both parties are liable for part of a combined transaction fee. This pattern is particularly useful in cases of high transaction frequencies, with similar transaction sums and with little manual effort for the platform sponsor to drive the respective transaction to success.

Arbitrage: In the arbitrage model, which means buying a good to a price x and selling it to a higher price y as an intermediary, the platform sponsor exploits the

continue reading on page 90 ▸▸

THIS IS AN ARTICLE BY **PHILIP MEIER**

This article was first published on 29 July 2019 on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG).

Philip Meier is a researcher at HIIG and is currently writing a dissertation on platform strategies at the University of the Arts Berlin. In addition, he advises various companies on topics such as business model development and innovation strategies.

wide separation between actors on the platform, often associated with physical products, and creates its own position of power by controlling access between the actors. Although this can also be recognised in most other patterns, the arbitrage model actively contributes to maintaining the position of power to the extent that the platform sponsor performs both an orchestrating and a price-setting role on the platform by acting as an intermediary. This model seems to be particularly applicable for physical goods that are not subject to short-term declines in value. The supply side's access to the demand side often appears to be the strongest sales argument for the platform sponsor.

Data monetisation: The indirect monetisation of data generated by actors on the platform gives the platform sponsor a secondary or even primary source of income. For the data-generating actors, the use of the platform, as in the case of Facebook, is often free of charge. By accessing the data, the platform sponsor enables third parties to access relevant actors or valuable information. For platform sponsors who use data monetisation for value capture, the value capture potential increases with the growing richness and relevance of the collected data from interactions and transactions between the actors.

Membership fee: In a membership model, actors pay for a particular or unlimited use of the platform infrastructure. The fitness startup Urban Sports Club, for example, offers its members three packages of services with different membership fees. This pattern is particularly relevant when the number of emerging transactions per actor can be reliably predicted or the transaction goods can be efficiently scaled.

Freemium: Freemium is basically a modified form of membership in which a certain part of the platform's products and services are made available to certain actors free of charge. An initially free period on the platform lowers the entry barrier and allows the platform to convince actors to access the full range of services associated with the payment of a membership fee. The streaming platform Spotify, for example, also finances its freemium model by monetising data through advertisements in the free package. Freemium appears particularly promising if the marginal costs for additional actors on the platform are low for the sponsor.

Service and product sales: The platform sponsor's activity as a complementary actor on its own platform is particularly interesting if the company in question already has the necessary expertise and infrastructure and sets up a new platform (e.g. the Klöckner.i steel marketplace) to include other players from its own

industry. Companies such as Amazon initially act as platform sponsors, generate an information advantage over the suppliers on the basis of their data sovereignty and then compete with their own complementors in promising product categories.

SO WHAT? IMPLICATIONS FOR YOUR PLATFORM BUSINESS

While the value proposition that pulls different actors to a platform in a particular industry and individual use cases must be adapted accordingly, we showed that platforms can be identified in the way platforms earn money. This can be done for startups or established companies and for existing platform or platform projects. Constantly and experimentally validating business models and applying the patterns presented to your own platform ecosystem can be beneficial in exploiting the potential for value capture in multi-sided market environments. It is challenging to figure out if the supply or demand side of the platform shows a higher willingness to pay, if both sides can/should be monetised, which pattern fits in which form and if one side should even receive subsidies. Short feedback loops in trying out and generating relevant data often lead to the monetisation strategy being implemented by the observed companies. ◆

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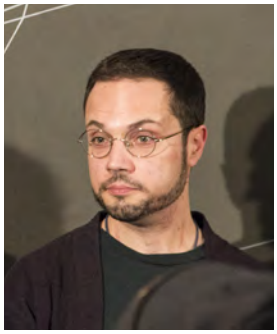
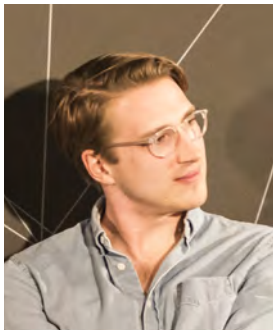








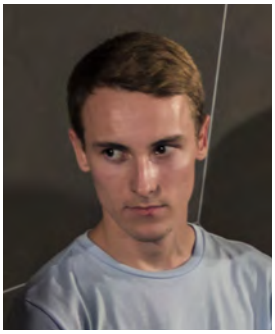












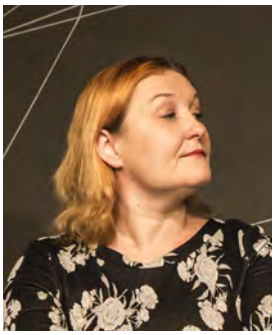





DIGITALER SALON 2019

In 2019, eleven events of Digitaler Salon took place, shedding light on subjects like Artificial Intelligence “artists”, digital citizenship, the advantages and disadvantages of social scoring systems and esports’ inexorable transition into professionalisation. Moderated by Katja Weber, 34 guest experts from politics, science, media, business and civil society discussed the impact of digitalisation on society, along with a public audience. Together with Kooperative Berlin, HIIG hosts the dialogue event Digitaler Salon on the last Wednesday of every month.






Samim Wininger,
Designer, Engineer and Co-founder, creative.ai

JANUARY 2019

Clara Herrmann,
Program Manager, Web Residencies, ZKM – Center for Art and Media

JANUARY 2019

Sebastian Schmieg,
Artist and Programmer

JANUARY 2019

Hans Jagnow,
President, eSport-Bund Germany

FEBRUARY 2019

Kristin Banse,
eSports Journalist, Agentur freaks4u

FEBRUARY 2019

Leonard Langenscheidt,
Principal, BITKRAFT Esports Ventures

FEBRUARY 2019

Yannick Haan,
Politician for digitalisation and Publicist, iRights.Lab

MARCH 2019

Clara Wolff,
Politician for digitalisation and Publicist, iRights.Lab

MARCH 2019

Christophe Guené,
Founder, unite.coop

MARCH 2019

Kai Gärtner,
Project Manager, DECiDe

APRIL 2019

Damian Boeselager,
Vice President, Volt

APRIL 2019

Kai Wagner,
Business Developer, Jolocom

APRIL 2019

Ralph Müller-Eiselt,
Author and Director of Megatrends, Bertelsmann Stiftung

MAY 2019

Heike Schaumburg,
Research Assistant, Institute of Educational Sciences, Humboldt-Universität zu Berlin

MAY 2019

Björn Nölte,
Coordinator, Voltaire School Potsdam

MAY 2019

Isabella Hermann,
Sci-Fi Researcher, Berlin-Brandenburg Academy of Sciences and Humanities

JUNE 2019

Leyla Sünnenwold,
Sci-Fi Enthusiast and Student, Berlin University of the Arts

JUNE 2019

Sina Kamala Kaufmann,
Writer and Activist

JUNE 2019

Klaus Landfeld,
Vice Chairman, eco – Association of the internet industry

JULY 2019

Elisabeth Niekrenz,
Political Advisor, Digitale Gesellschaft e.V.

JULY 2019

Hubert Schuster,
Manager, LKA 71 – Forensic Information and Communication Technology

JULY 2019

Theresa Züger, Head of Project Team, Third Engagement Report

AUGUST 2019

Silvan Wagenknecht,
Pro-European Activist, Pulse of Europe Initiative

AUGUST 2019

June Tomiak,
Delegate, Fraktion Bündnis90/die Grünen, Berlin House of Representatives

AUGUST 2019

Linda Volker,
Activist, Fridays for Future

AUGUST 2019

Rainer Alisch,
Editor and Managing Director, Berlin School for Sexual Health

SEPTEMBER 2019

Corinna Rückert,
Cultural Scientist and Erotic Author

SEPTEMBER 2019

Tobias Platte,
CEO, me.mento 3D

SEPTEMBER 2019

Katika Kühnreich,
Political Scientist and Sinologist

OCTOBER 2019

915

Guests hosted

34

Experts invited

144

Bottles of wine emptied

Nicolas Kayser-Bril,
Data Journalist and Reporter, AlgorithmWatch

OCTOBER 2019

770

Pretzels eaten

37.5°C

Hottest event: 26 June

14 h 2 min 9 sec

Videostream material

Nils Zurawski,
Editor and Researcher, surveillance-studies.org

OCTOBER 2019

Paulina Fröhlich,
Co-Founder, Initiative Kleiner Fünf and Das Progressive Zentrum

NOVEMBER 2019

Franziska Schröter,
Project Manager, Gegen Rechts, Friedrich-Ebert Stiftung

NOVEMBER 2019

Christian Fuchs,
Reporter and Author, Die Zeit

NOVEMBER 2019

WE ARE FAMILY!

Research is demanding; it's never just 9 to 5 and it sometimes challenges the work-life-child-dog balance. All our human and non-human companions are welcome as part of the HIIG family, so there is a strong community of care, especially when deadlines are approaching.

THE HIIG HOSPITALITY

Paula Grünwald

Hanna Lutz

Johannes Müller

GETTING INVOLVED. THE IMPACT OF DIGITALISATION ON CIVIC ENGAGEMENT

AN INTERVIEW WITH PAULA GRÜNWALD, HANNA LUTZ AND JOHANNES MÜLLER BY CLAUDIA HAAS AND LORENZ-GRÜNEWALD-SCHUKALLA

In 2018, an interdisciplinary expert commission comprising nine professors started working on the Third Engagement Report, titled *The Future of Civic Society: Young Engagement in the Digital Age*. The expert commission was chaired by Jeanette Hofmann, director of the Alexander von Humboldt Institute for Internet and Society (HIIG), and was supported by the head office based at HIIG. The report draws on a number of resources, including talks with various experts on civic engagement and digitalisation that have opened up questions on highly relevant but under-researched phenomena. How does digitalisation affect people's ability to be an engaged citizen, especially if they are young? How do new digital infrastructures and practices change the existing and enable new forms of civic engagement? What is the role of common resources? Claudia Haas and Lorenz Grünewald-Schukalla, both project managers at the head office, interviewed three dedicated experts who are committed to shaping digitalisation in ways that are beneficial to everyone.

PAULA GRÜNWALD, JUGEND HACKT

Paula Grünwald is a project leader at Jugend hackt, a programme that organises regular hackathons for teens. Jugend hackt maintains two labs that offer year-round activities for young hackers.

Claudia Haas: Last year Jugend hackt was awarded the Theodor Heuss Medal for facilitating democratic engagement. How is hacking a form of engagement and why do you consider it important for young people to learn how to hack?

Paula Grünwald: In the mainstream media terms like hacking or hackers are often used in a very narrow way. There, hacking is considered to be the illegal or malicious penetration of computer systems with the goal of damaging or destroying them. This has little to nothing to do with the original meaning of the term, our understanding of it and, of course, the goals of our programme.

The term was first recorded at the Tech Model Railroad Club at the Massachusetts Institute of Technology. It was described as follows: "Someone who applies ingenuity to create a clever result, called a hack. The essence of a hack is that it is done quickly, and is usually inelegant. It accomplishes the desired goal without changing the design of the system it is embedded in. Despite often being at odds with the design of the larger system, a hack is generally quite clever and effective." So it is about creativity, about rethinking existing structures.

Seen from that angle, hacking can be a tool for developing solutions for social challenges. Although issues like the climate crisis may seem huge and unsolvable at first, it helps to approach them with a hacking mindset – rethinking it creatively, breaking it down into manageable packages and playfully testing possible solutions. The Jugend hackt programme follows in this tradition, and we often discuss the hacker ethical principles with our participants.

The internet enables low-level acts of participation, often called slacktivism. This includes forms like taking part in a hashtag movement like #metoo or signing an online petition. Would you consider these activities civic engagement? Why or why not?

It's really hard to draw a distinct line between where engagement starts and where it ends. I think that these low-level forms of participation can do an excellent job of drawing wider attention to a specific topic or problem. They can be a very good starting point for further civic engagement when they encourage people to take action beyond slacktivism. Becoming aware of a crucial legislative process and signing a petition for or against it, or retelling your experience under a certain hashtag – both are acts of voicing a political opinion and thus can be seen as forms of civic engagement. In

a best-case scenario, these forms of low-level engagement can connect people and inspire them to take further action.

What future developments and challenges do you see in promoting young people's digital engagement?

The biggest challenge will be to create a better and more cohesive digital and cultural education that aims to enable young people to use digital tools critically and in a self-determined manner so that they can become literate creators themselves. Therefore, we need more open spaces, both in the digital and the analogue worlds, where young people can experiment with new technical possibilities supervised by pedagogically and technically trained staff. In order to be able to use these spaces, young people need more freedom and less pressure to perform – they shouldn't always have to measure their achievements through grades or job opportunities. We need to create environments in which young people experience themselves as self-sufficient. In order to achieve that, we adults need to place more trust in them.

These open places already exist: youth centres, libraries, makerspaces and hackerspaces. But they all struggle with insecure finances, funding cuts and the current landscape of public and private support programmes, which only provide project-based funding for a limited time. There is simply not enough money to enable them to create a network of long-term sustainable structures.

We want young people to have trust in our democratic institutions and decision-making processes, because this trust is the basis for civic engagement. If politicians discredit young protest movements and young civic engagement, as has happened numerous times over the last few months with regard to the Fridays for Future movement, that trust is broken.

HANNA LUTZ, VOSTEL.DE

Hanna Lutz is co-founder and managing director of vostel.de, a social enterprise that provides volunteering opportunities, offers consultation to nonprofit organisations and supports companies in planning and implementing corporate volunteering activities.

Claudia Haas: More and more people use digital platforms for civic engagement, for example to crowdfund a charitable project, collect votes for a petition or to find committed people to work with. How can we classify the different features of the engagement platform landscape?

Hanna Lutz: In my opinion, the relevance or user benefit of such platforms is most apparent through their purpose or topic, scope and type of funding.

Regarding the purpose of engagement platforms in Germany, they can basically be divided into the following: First of all, there are volunteering platforms, which focus on matching volunteers with nonprofit organisations (i.e. betterplace.org, correlaid.org, vostel.de). Then there are funding platforms, which offer tools for crowdfunding or for generating donations (i.e. betterplace.org, Startnext). You can also find a variety of campaigning platforms, which can be used to petition the government (i.e. change.org, openPetition) as well as crowdsourcing platforms that mobilise a group to achieve a common goal (i.e. wheelmap.org). Community building platforms generate support within (local) communities (i.e. nebenan.de) and they are more in demand than ever. Finally, there are dialogue platforms that enable citizens to submit questions to the government, municipal authorities or those with different political attitudes (fragdenstaat.de, diskutiermitmir.de) as well as citizen science platforms (i.e. buergerschaffenwissen.de).

In terms of scope, many of these platforms operate throughout Germany but a number of similar online platforms have a local or regional scope. Usually, the ones with a regional focus have stronger local networks. However, the transregional platforms are

frequently more widely known because they often invest in big marketing campaigns instead of local network-building and clearly benefit from spillover effects.

And finally, the platforms named above can also be structured according to types of funding. Most operators choose a mix of funding sources but usually rely on public grants, donations and endowments. Some also opt for a business model that generates additional revenue. Only a small number of platforms concentrate on only one type of funding, and for-profit platforms that generate profits through the sale of products and services are still rare.

In 2005, you founded a platform for matching volunteers with nonprofit organisations. What are the challenges of managing a platform that aims to contribute to the common good?

At vostel.de, we aim to connect people in order to jointly contribute to the common good. I see three main challenges: first of all, we need to serve a variety of stakeholders and target groups. We have created a digital volunteer platform that aims to facilitate matching volunteers with nonprofit organisations. While our volunteers are a predominantly young target group – usually, they're between 18 and 35 years old and are so-called "digital natives" – many of our partner organisations were established in pre-digital times. Consequently, it's a challenge to build a website that provides a good user experience for both groups. Plus, within the social sector, many people still question whether digitalisation is necessary at all instead of discussing how its advantages can be used for good. Therefore, we're still having a hard time convincing quite a lot of our stakeholders to use our platform at all.

Second, one of our biggest lessons over the last years was that a software solution alone will not suffice in the field of civic engagement. In our case, we don't just need a clever IT solution that facilitates the matchmaking process. We actively curate all the volunteering opportunities listed on our platform. Each of them has to be evaluated by our staff in terms of their charitable goals, their up-to-dateness, their readability and much more. Plus, our team is deeply committed to establishing strong relationships with our partner organisations and is available to answer questions of all kinds – especially those regarding the use of the platform.

Third, a relatively new challenge is that aggressive competitors that aren't part of the civic engagement scene are giving us a hard time. Right now, a number of global companies seem to have discovered the volunteer market and either want to broaden their business models or show their corporate responsibility by building their own volunteer platforms. Just recently, I heard Facebook wants to launch a feature that makes it easier for nonprofit organisations to find volunteers on Facebook. As stated above, you don't just match volunteers with nonprofit organisations by offering a suitable online platform – it requires careful community building so that both sides, volunteers and social organisations, show reliability. Reliability can be demonstrated through actions like the volunteers actually showing up and nonprofit organisations replying to volunteer requests. If you only provide a platform without any kind of human intervention, usually the commitment remains quite low. If you provide nonprofit organisations with a tool that does not meet expectations, users who are already sceptical will lose trust in digital solutions. In the end, organisations like us bear the negative consequences when nonprofit organisations don't want to work with platforms like ours anymore due to bad experiences with competitors in the past.

`Engagement platforms can use open-source software in an intelligent manner. What is the current role of open resources in the context of engagement platforms generally and for vostel.de specifically?`

As far as I know, none of the platforms listed above used open-source code to develop their platforms. However, I'm sure that many use open software like Thunderbird and Open Office instead of Microsoft Office tools for their operating business – if only because they are free. In our case, I have to say that we actually didn't even think of using open code when we started setting up our volunteer platform. Usually, founders are dealing with funding issues instead of focusing on impact or scaling questions – questions that would necessarily lead to the idea of developing open source code from the start. However, we are willing to give away an adjusted version of our platform to nonprofit causes and to share the aggregated anonymised data we've collected that would show trends in the field of civic engagement for scientific purposes. The latter has so far not yet been requested, though. ◆

JOHANNES MÜLLER, CORRELAID

Johannes Müller is the founder of CorrelAid e.V., a nonprofit association with a network of more than 1,000 volunteer data analysts who help NGOs to use and analyse their data.

Lorenz Grünewald-Schukalla: There's a wide range of data collected in organisations. You are the CEO of CorrelAid, which voluntarily conducts data analyses for nonprofit organisations. How do these organisations use data?

Johannes Müller: Every organisation already sits on a lot of data. It comes in all forms and shapes – databases, surveys, registration lists, financial and operative indicators. Even text based-documents like meeting minutes can prove to be a data source from which an organisation can learn something. Making use of these kinds of data through data science and machine learning can have tremendous benefits for NPOs as well. To give a few examples: in one project we modelled the supply and demand patterns of a food bank to assist their planning efforts. And recently, we started a project with an organisation that puts sensors into beehives to monitor their health and thus generates a lot of data to be analysed.

I think we will see many more interesting applications of natural language processing, image recognition and forecasting in the future. For example, we are currently trying to classify images of houses and storefronts to determine whether they are barrier-free for wheelchair users. Another area where I see tremendous potential is the environmental protection sector. We already have a lot of organisations with experience there as well as data that is mostly not personal information and hence a lot easier to deal with in terms of privacy and security concerns.

However, most nonprofit organisations lack the necessary expertise as well as financial resources to optimise their processes using data analysis. In the nonprofit sector, we are not only optimising for profit but for impact. So the question really is: how

can we make the potential of data science accessible to everybody and enable every NPO to harness their data for their mission?

Since open-source software is developed by and for the commons, it seems logical to use open source in nonprofit organisations. What's your assessment of the application of open-source software and open data in organisations?

We rely almost exclusively on open-source software for our work, especially in the case of the programming languages R and Python and their respective ecosystems of tools. Such open-source solutions exist for many more problems and applications. However, these programmes are frequently not user-friendly and require at least a certain amount of technical understanding (e.g. when you have to host and maintain a solution yourself). NPOs just don't have the resources to engage with all the new developments out there.

This reveals a kind of paradox: the data science tools themselves are created by and for common purposes and are publicly available for free. Yet they are almost exclusively used in academia and private businesses. That's why we say that we need to democratise the potential of data science.

Regarding your question about open data, I think the biggest challenge is to find effective mechanisms to match open-data providers with potential open-data users and data science experts.

What present and future challenges do you see for generating and using data for civic engagement and participation?

I currently see two big challenges: first of all, there is no general understanding of what this new and advanced technology is capable of and what impact it can have, especially for nonprofit organisations. When people talk about the potential of technology, they use terms like artificial intelligence and big data in a vague and abstract way. This creates a huge barrier to seeing the real value of data science methods and how they could be applied in both large and small organisations.

Second, most NPOs are run by incredibly passionate people who go above and beyond for their cause. However, they often work in precarious and uncertain circumstances. They have to raise funds, pay their staff and keep their programmes up and running. That doesn't leave much time for exploring new areas such as making use of their data. Therefore, we need to think more holistically about how to make their life easier, specifically in terms of legal regulations, access to financial resources and ecosystem support. And we as the data science community need to build more bridges to civic society at large and think about how we can contribute. ◆

Further information about the Third Engagement Report and the expert's talks are available online.

www.dritterengagementbericht.de

KATHARINA MOSENE AND
MATTHIAS C. KETTEMANN

Many worlds, many nets, many visions – Critical voices, visions and vectors for internet governance

The internet has changed our world. But has it also disrupted hierarchical power structures and given a meaningful voice to all? Are offline differences in the realisation of individual and societal progress – and their narratives – being challenged by the internet, or are they being replicated and technologically perpetuated? In the run-up to the 14th Internet Governance Forum in November 2019 in Berlin, Katharina Mosene and Matthias C. Kettemann developed a catalogue of 30 visions for an emancipatory internet without discrimination. We present a selection of five visions here.

Internet governance, as broad and multi-stakeholder-driven as it has become, still is not broad enough, not open enough, not flexible enough to encompass all voices. The Many Worlds, Many Nets, Many Visions collection provides space for some of them. Developed in partnership with the Dynamic Coalition on Gender and Internet Governance (DC GIG), the Alexander von Humboldt Institute for Internet and Society (HIIG), netzforma* e.V., the Gunda-Werner-Institute, the Centre for Internet and Human Rights and the Leibniz Institute for Media Research | Hans-Bredow-Institut (HBI), it aims to bring in sidelined perspectives on how to create a better internet, including feminist perspectives on issues like surveillance, digital violence and regulation. The authors seek to broaden the debate by including contributions from groups and individuals who have experienced marginalisation(s) and who can help to rethink the prevailing policy dispositifs.

The Internet Governance Forum 2019 in Berlin was committed to "One World. One Net. One Vision". Katharina Mosene and Matthias C. Kettemann begged to differ and invited experts and activists from all over the world, representing all stakeholder groups to present their ideas on how the internet governance discussion should be further developed to include marginalised groups and communities. The collection was published at a side event of the IGF on 26 November 2019.

ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC):

"The internet is a transformative political space. A feminist internet facilitates new forms of citizenship that enable individuals to claim, construct and express selves, genders and sexualities."

NAKEEMA STEFFLBAUER:

"I believe in the digital future as an open vista. But for everyone to feel safe and free to explore it, the harmful, hateful and violent behaviours and expressions of bigots

must be actively held at bay through enforceable regulations that are updated regularly to reflect an ever-changing internet."

RICARDA DRÜEKE

"Especially in view of the current backlash, it remains important not to lose heart, and instead to unite even more closely against these tendencies and show solidarity inclusive of the consideration of our own diverse perspectives."

NICOLE SHEPHARD

"To do justice to the ever-increasing amount of data that the lived experience at the heart of many feminist movements produces (and relies upon), requires translating such critique into inclusive data practices."

SHMYLA KHAN

"We demand that the lived experiences of women, non-binary folks, queer individuals and the transgender community – along with intersectionalities of oppression such as race, class and ability that undercut gender and sexualities – be placed at the centre of policy discussions regarding speech and content regulation."

NANA KESEWAA DANKWA

"I want to be bold and loud. I am afraid. I cannot. I wish to make my voice louder and clearer and perhaps speak up as one who belonged."

Read the full catalogue of 30 visions online.

www.hiig.de/many-worlds

"[T]he variation of a meme is always adapted to one's own context, the current situation and one's own identity."

THE RUN-DMC LOGO: WHEN IS A MEME A MEME?

AN EMAIL EXCHANGE BETWEEN LORENZ GRÜNEWALD-SCHUKALLA AND OSKAR PIEGSA

Stickers with very similar designs have been appearing in Hamburg, Berlin and other German cities for a number of years. On traffic lights and fences, we find black squares on which six letters across two lines are printed in white, sans serif writing, bordered by a red bar above and below: FCK SPD, FCK NZS, FCK CPS. But why does the logo of the New York rap group Run-DMC serve as a model for these stickers? Oskar Piegsa began writing about the phenomenon on his blog achtmilliarden.wordpress.com, while HIIG researcher Lorenz Grünewald-Schukalla built a collection of the many variations of the sticker at dmcpics.tumblr.com. Oskar and Lorenz started emailing to exchange ideas about memes in general and the Run-DMC logo meme in particular.

`Oskar Piegsa: What distinguishes a meme from a quote?`

Lorenz Grünewald-Schukalla: The big difference is what I would spontaneously call the internal integrity or identity of a quote. In the scientific world, in journalism and also in everyday practice, when we use a quote we always indicate a clearly defined source, usually with a known author. We speak of Einstein, for example, who once said that the universe and stupidity are infinite, and so on. So there is an original text and an author of that original. And although we always put the quote in a new context, we strengthen this identity and its belonging to a certain author. In different contexts, a quotation can reveal a slightly different meaning, but we usually do not intentionally change the quotation and its meaning.

However, this change does happen with memes. In the case of the Run-DMC logo, it's first and foremost about the variation of the familiar design of two lines with three letters each, white on a black background and bordered by red bars at the top and bottom. But besides that it's about the production of your own sticker. You are against right-wing extremists but don't write "FCK NZS" again because you've

already seen that (that would be a quotation). Instead, you change the statement to "FCK PGDA" in Dresden or to "FCK LGDA" in Leipzig. So the variation of a meme is always adapted to one's own context, the current situation and one's own identity.

When we speak of memes we don't mean a singular (art)work. A meme is always a collection of texts, images or videos that only become a meme by merit of the fact that they are all related to each other and reference each other.

This means that a meme is not a chain of images (which would be chronologically hierarchised, original, first variation, second variation, etc.), but a swarm of images (in which, under certain circumstances, an "original" can be identified as the initial image) whose variations relate to each other, possibly without even knowing the original. Correct?

Exactly. It might help to distinguish between original and origin to better understand memes. I ask myself: does anyone create a meme because its value and status resides in its novelty in relation to something else? I don't think that is the case.

Is the Run-DMC logo, which we can see in so many different variations at the moment, particularly suitable for appropriation and variation through meme praxis? If so, why?

Four thoughts on that. First, design constraints play an important role: the fact that the Run-DMC logo only has space for six letters stimulates people's creativity. You have to think about how to get your message across cleverly with just six letters. Departing too far from this convention is tricky because it jeopardises recognition. How much of the original can I change without losing the reference to the meme – or to the original, the previous version? This is the attraction of constraints, which plays a role in memetic practice. I owe this idea to the design researcher Jan-Henning Raff.

Second, newspapers, warning signs and adverts used black, white and red contrasts long before Run-DMC. Designing things in these three colours if they are supposed to attract attention seems to be a cultural convention.

Third, there is a culturally influenced recognisability that is important in memes. Many friends that I have shown the Run-DMC project to are also beginning to recognise

more of these stickers on the street. Something changed in their perception after our conversation. Fourth, there may also be a very trivial reason: the Run-DMC logo is square, so it fits well on stickers.

You wrote that in a meme, variations reinforce each other. But in the case of Run-DMC, you can slowly see the original shape dissolving. Sometimes we suddenly find four letters instead of six, or even twelve. Then three lines instead of two, special characters instead of alphabetical letters, green bars instead of red, other fonts and so on. Would you say that these variations reinforce each other? Or is the meme just slowly falling apart because each variation potentially reduces the recognisability?

I think you might be right. Every meme has some core elements that shouldn't be missing for the reference to remain clear. There can't be a Travolta meme without John Travolta's silly face . But maybe even that is possible? If someone else makes the same movements and is dressed like Travolta? It would still be recognisable but you would need more involvement and knowledge of context to recognise the meme.

So I'm not sure, but the more boundaries blur and core elements change, the more the reading of a meme becomes a hermeneutic task. Instead of a text that is part of a meme affecting its reader directly, the production of meaning on the part of the reader becomes a necessity. Understanding memes becomes a complex task as soon as one takes apart the various contexts that contribute to us calling something memes at all

So if we want to understand memes, should we start with the producers? With the media? With the readers? With the image or text objects? If meme research wants to progress it probably has to better understand all these contexts and also learn to think them together. And researchers probably also have to get used to the fact that there is no clear answer as to when a meme is actually a meme.

At first glance, memes seem to democratise culture. Everyone can participate, especially if he or she is willing to remain anonymous and renounce their fame. This applies to the production of memes. Regarding the reception of memes, however, the amount of contextual knowledge that is often necessary to understand them means that their exclusivity, to put it bluntly, resembles that of high culture.

Memes present themselves to the viewer free of charge, they make their way into the public realm, both its digital as well as its analogue versions (recall the sticker on the traffic light) – but in order to understand that I am dealing with a meme at all requires a kind of knowledge that probably the majority of viewers do not have.

Could this be the attraction of meme-making: that I become part of a kind of secret society? That I know that I give pleasure to others who don't know who I am and who I don't know either – but who are "hip" in the classical sense, "in the know", just part of an in-crowd?

What I think is definitely true is that by participating in a certain meme, I also make myself a member of a certain group. These can also be secret groups, in which outsiders can hardly decipher what it is all about.

But I'm not sure that the practice of producing, disseminating and appropriating memes are the expression of a generation. Memes are not in themselves a fixed part of a generation's self-image, nor are they in themselves a means by which young people differentiate themselves from adults. My father, too, sometimes brings along pictures from memes that he found in online forums that actually deal with completely different things (he collects automatic clocks).

I believe that the distinctions that are made here are more differentiated. So you don't set yourself apart so much by the fact that you make memes but by the way you make memes, as well as its content. Like the sociologists in whose office I'm sitting right now who just created their own variation on the Run-DMC-Meme: NKLS LHMNN. Without the keyword *sociologists* one would probably never think that this stands for Niklas Luhmann. ◆

This email exchange was first published in German under the title *Run-DMC Logo: Wann ist ein Meme ein Meme?* on the *Digital Society Blog* of the Alexander von Humboldt Institute for Internet and Society (HIIG). A collection of memes can be found on the DMC Pics blog.

dmcpics.tumblr.com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FCK
SUV

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SMART CITIES AND SMART CITIZENS

A PODCAST INTERVIEW WITH MARLEEN STIKKER BY CHRISTIAN GRAUVOGEL

Marleen Stikker is co-founder of WAAG, an Amsterdam-based interdisciplinary nonprofit media lab and research institute. Christian Grauvogel talked to her for the *Exploring Digital Spheres* podcast about her aim to put social values at the core of technology by creating and promoting open, fair and inclusive innovations. Marleen Stikker has been active in the field of internet and digital activism since the early nineties.

"You can look at the issue of smart citizens from two sides: First, from the point of view of citizen science, from maker culture, from opening up the black box, technology literacy, so citizens that are smart can also really participate in a democracy and have the ability and knowledge to be an active partner in it. Second, at the same time, of course, it is also a reaction to the whole theme and frame of the smart city, where the city is smart and the citizens are 'dumb'. A lot of the smart city technology tells us that technology itself can run the city. Just put some sensors somewhere, do some artificial intelligence, some deep learning and all the problems will vanish, so just trust the technology."

Marleen Stikker

"We love technology at the WAAG but we understand that technology is not neutral. So it really depends on who is creating the technology. ... If you use data, this data will not be objective, every dataset is an interpretation of reality. So that means we have to pay attention to who is defining it, who are we optimising for? So for us, a smart citizen is a reaction to the smart city, but bringing these technologies into the hands of social innovation and empowering individuals is also in itself a very positive programme."

Marleen Stikker

"I think that part of the narrative around technology is that it is being mystified. That makes demystification a very important aspect of our work: you can simplify technology, you can clarify what the rules are. You always have to return to this point: do you want one central power to know everything about you or would you rather be in charge of your own information? Nowadays people think losing your privacy is inherent in the internet, but it's not! It's based on the business models of these companies."

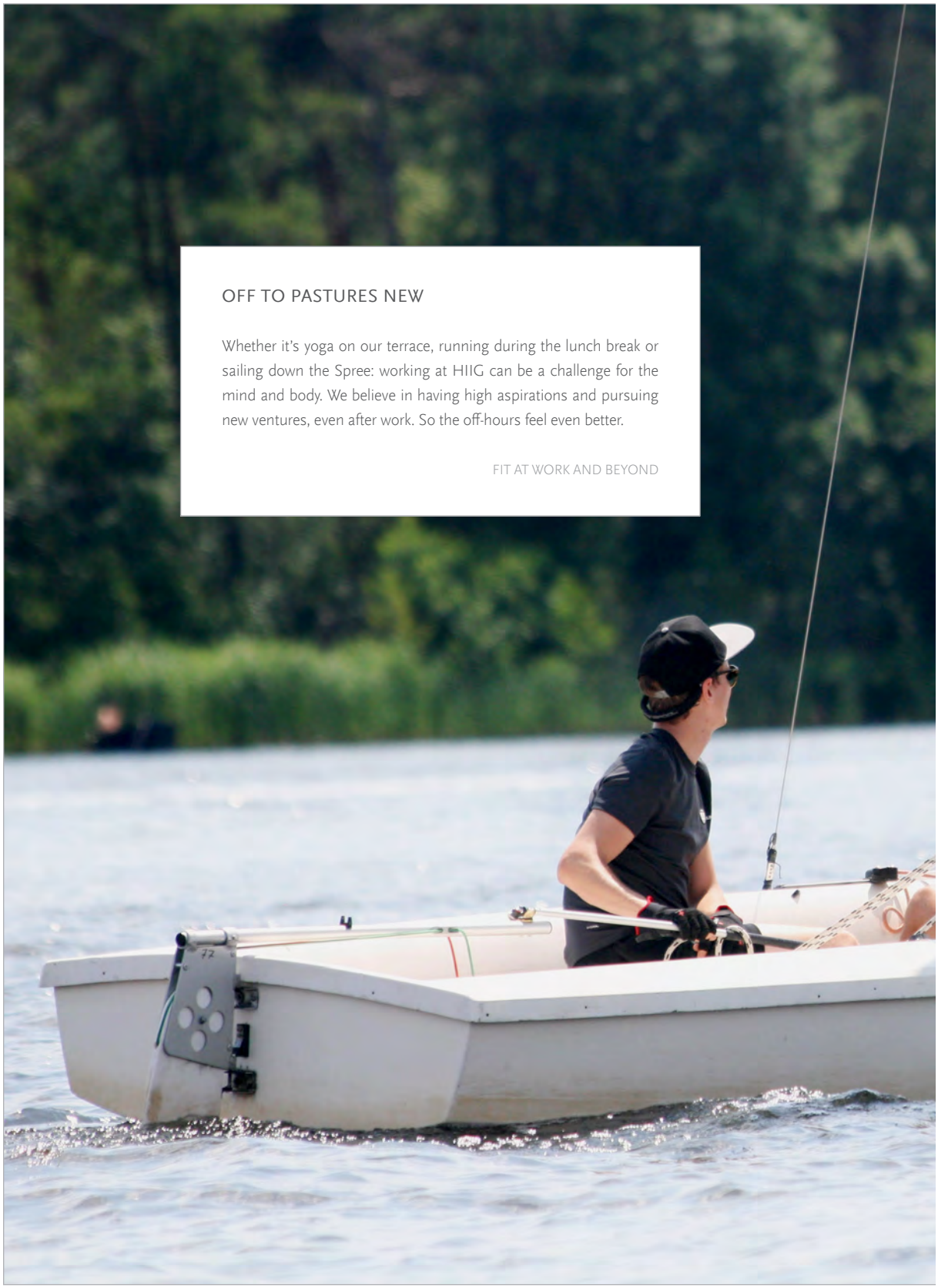
Marleen Stikker

"There is a group of people who have a moral obligation to make the right choices, and that is politicians. As people involved in policymaking – for healthcare organisations, for educational organisations, etc. – they have to make a moral decision about who they are going to collaborate with. I am not saying that every single citizen should know about it, but I think that people who make policies have certain obligations and they have to make the right choices."

Marleen Stikker

Listen to this interview on the *Exploring Digital Spheres* podcast:

www.hiig.de/podcast



OFF TO PASTURES NEW

Whether it's yoga on our terrace, running during the lunch break or sailing down the Spree: working at HIIG can be a challenge for the mind and body. We believe in having high aspirations and pursuing new ventures, even after work. So the off-hours feel even better.

FIT AT WORK AND BEYOND


77

PREETI MUDLIAR

In Mangal's new world

—

This fictional short story attempts to understand the world of people who occupy positions of marginality and find themselves vulnerable to the top down diktats of technological systems. The story is inspired by the author's ongoing field work in India, where she studies the biometric failures experienced by beneficiaries in claiming their food entitlements. By following the protagonist Mangal, the reader learns about his mutiny against the machine that was driven by the historical injustices it reminded him of. His rebellion ushers in a long lasting socio-technical revolution that changes the way people live in 2040.

As a veteran of the 2020 mutiny, Mangal had never managed to shake off the deep anxiety that robots engendered in him. Even as they cheerfully hailed him on his yearly visits to the welfare office to renew his pension claims. "Namaskar, Mr. Mangal. We acknowledge your needs and strive to be of service to you", the pleasantly modulated voice would greet him when he placed himself in their line of vision. When his turn came, Mangal held up his palm as if he were high-fiving the robot. This was the gesture that everyone adopted to enable a collaborative inquiry into the purpose of their visits.

When Mangal's hand met the robot's, the machine's emotional intelligence set to work, analysing and feeling through the data that Mangal permitted it to access depending on the task at hand. For his pension renewal, the robot needed to authenticate Mangal's proof of life and assess his health condition to determine if the amount due to him needed to be increased to accommodate any physical, social, mental or emotional distress. Accordingly, Mangal accepted the robot's request to access his pulse. He also allowed his synapses to transmit their signals for a quick scan of the valences of his feelings. This was essential to identify if he needed to see a counsellor to help him with any unhealthy thought patterns that were plaguing him.

The screen on the robot's chest threw up a detailed graph charting his moods and feelings over the past month. It was a colourful representation of their occurrence and frequency, leaving Mangal free to think through and correlate his moods with the actual incidents in his life. Looking at the chart this time around, he could identify how his worry had spiked every time his granddaughter had travelled outside the city on work and had forgotten to call him. The blanket of sadness that was a grey patch on his chart had occurred at the time when he had been busy with his duties as the presiding authority for the 20th anniversary of the mutiny. He was not surprised to note that it had overlapped with frenetic nostalgic activity. He had given interview after interview recalling the events that had led to that eventful night in 2020.

Nostalgia had continued to show a strong presence, even after the anniversary had ended. It coincided with the new headset that his granddaughter had gifted him on his birthday. It came pre-programmed with the hit parade of the Hindi songs of his youth, and he had taken to spending his mornings oscillating between schmaltzy mushiness and a wistful longing for the simpler times of his boyhood. As in the past, his anxiety levels showed a gradual increase as the day of his visit

to the welfare centre neared, but it wasn't severe enough to warrant concern just yet.

Mangal swiped to save the chart to his pension and health account, over which he had sovereign control. Nobody could access his data without his consent. The robot renewed his pension and wiped his health data clean from its memory. Their interaction ended. Respect for individual privacy was one of the cornerstones of the New Order that had come into force after the mutiny. The rules of the new world that Mangal now inhabited emphasised sensitivity and dignity in interactions and transactions between people and machines. Even the vocabulary that was used to describe the essentials of a digital society had transformed to accommodate a changed value system.

Thus, human computer interaction had transitioned into humane computer interaction. There was even a Department of Humane Computer Interaction to oversee and regulate human-machine relations. The violence inherent in a regime that solely operated on the principles of machine-readable bodies had been discarded. With it went the anxiety and indignity that oppressed people when machines failed to correctly assess them and their needs. In its stead, the New Order operated on the values of machine sensitivity towards humans. Before the mutiny, machines would blithely pronounce people as failed data if they did not meet the machine's standardised requirements for recognition. Now, machines could not be deemed intelligent if they did not contextualise how people dwelled within the differing situations and positions that defined their lives. It meant that the robots were built to operate through multiple models of thought and feelings that they used to navigate different cases. For instance, when confronted with a person whose palm could not adequately transmit the required information, or worse, a person with no upper limbs, the robots searched through their accumulated emotional and knowledge store to find alternative ways to identify and serve the person or transfer them to a human for assistance.

In this way, the New Order required machines to recognise, process, and address the plurality and diversity of the human way of life. Still, even with the high competencies that machines had come to acquire, alternatives were maintained. Thus, even while the government trained and updated the machine brains of the robots with regular caregiving patches of empathy, patience and kindness, they remained mindful of the minority community of the machine avoiders – people who did not wish to interact with machine way of life.

Mangal could just as well have been one of the machine avoiders. The sheer convenience and swiftness with which the robots operated meant that most people defaulted to the machine embracer status. However, being a machine avoider never imperilled the avoider's way of life. The constitution of the New Order that was enforced in the year 2040 guaranteed and safeguarded the rights of minorities conscientiously. Mangal would have had nothing to fear if he had chosen to live as an avoider. Moreover, it would have helped him in bypassing the anxiety he experienced whenever he had to engage in machine interactions.

Still, Mangal persisted in interacting with all kinds of machines, including the welfare robots. Years after having been once responsible for a mutiny against the Machine, he forced himself to continue interacting with them. It was his way of maintaining eternal vigil over a system that had once destroyed his will to live.

The year was 2020. In the nine months since the Rule of the Machine had first come to the village, Mangal's body had developed its own monthly cycle of reactions to its diktat. They foreshadowed his eventual encounter with the fingerprint verification process that had wreaked havoc in the hardscrabble chaos of his daily life. It always started in his head. The dull throbbing at his temples, which would soon transform into an ache behind his eyes. Within a couple of days, it would travel down to his forearms, shooting sharp darts of pain down to his wrists. Its eventual destination would be his fingers, where, on the fourth day, it would take up residence. For the rest of the week, it would shoot regularly from his head, travel down his arms, and coil tightly at the tips, as if to imprint itself on the whorls of his fingers. And there it would remain until Mangal finished the long-drawn-out fingerprint verification process every month.

During the week when the pain took over, Mangal would be stunned into silence. His jaw would clench with the effort it took to bear the pain that would course through his body. All attempts at speech would result in stifled noises. Instead, his ears would ring with the Machine's voice. "Your touch has failed, your touch has failed, your touch has failed." Over and over again, the Machine would intone, even as, one by one, Mangal would press all of his ten fingers to the glass plate in the hope that one of them would work. Fingerprinting was the only way to prove his existence, identity, and valid claim to the water pills that the government disbursed to his family of five every month.

Often, when he was by himself, away from the worried eyes of his children and wife, Mangal would pore over his palms. It seemed to him that they were fated to wrestle and scuffle with the vicissitudes of touch. They carried within them ancient grievances of lives that were lived in careful avoidance of touching the wrong things. He had grown up hearing how, for people of his kind, who occupied the very bottom of the caste structure, touch had never been a neutral act. It had always been fraught with the peril of threats, uncertainty and vulnerability that his ancestors had survived.

Water, even then – in the time of his forefathers – had been a site of contention, and the punishment for drawing water from the common well was often fatal. As was drinking tea from the wrong saucer or even letting their shadows fall upon a higher caste person. All of these acts carried swift and immediate retribution for the pollution and bad luck that their touch would bring upon those perched higher up in the social order. So, you see, there was never the slightest scope for accidentally grazing against the wrong kind of object or person. Their very survival depended on the surveillance and vigilance of their touch. The language of their bodies was cultivated so they could shrink into spaces so small that they often asphyxiated on the toxicity of their circumstances.

Accordingly, Mangal had inherited an acute sense of the way bodies such as his could become mistakes. It was a part of his inheritance. The way his body carried within itself a few millennia worth of remembered oppression as bearers of impure touch. Hence, when the Age of the Machine first came to the village on the back of promises of recording their fingerprints for posterity to make their lives easy, Mangal was sceptical. It would involve physical contact with machines, and who knows how they would react to his touch?

The great water drought was well underway by 2020. The devastation that climate change had brought about hit people like Mangal the hardest. His family of five needed a water pill a day to survive. Each pill expanded to a bucket of water. With careful rationing, it would last an entire day—if they were lucky enough not to have any accidents. Sometimes, buckets developed leaks. The first time it happened, Mangal discovered it only late in the evening after all the water had slowly drained away. One time, a full bucket had slipped from his mother's frail hands. It meant the loss of two water pills in a day. Despite their caution, water spillage was common. Sometimes due to bad luck, sometimes due to accidents. When this happened, it cut deep into their ration and brought additional hardships. It often

continue reading on page 130 ▸▸

THIS IS AN ARTICLE BY **PREETI MUDLIAR**

In Mangal's New World is one of thirteen utopian stories of the digital society written by scientists and thinkers from all over the world as part of the project *Twentyforty*. All stories will be published in spring 2020.

Preeti Mudliar is an assistant professor at IIIT-Bangalore. Her research interests broadly centre around gender, infrastructure and digital media using ethnographic methods and analyses. Currently, her work is focused on people's acts of "repair" and coping following biometric authentication failures in the public distribution system (PDS) in India. Preeti Mudliar holds a PhD in communication studies from the University of Texas, Austin.

meant borrowing money to be able to buy expensive water pills from the open market and sinking deeper in debt.

After years of agitation and lobbying by activists, the government had finally been compelled to bring in the Right to Water Act. It helped create a water security net for the poor. It meant that Mangal could receive subsidised pills from the village council office against his signature. But, the government decided to introduce the Rule of the Machine to keep count of the demand for and supply of the pills in a bid to track and save costs. Water pills would now be available only against the successful verification of fingerprints. There was unease in the village when this was announced.

What would the Machine do to a life such as Mangal's that was spent bent from the waist down, with both feet and hands rooted in soil? At work, he spent all his time busily toiling in his landlord's fields. Season after season, the cycle of his life rolled from tilling and sowing to plucking and harvesting. His hands expertly wielding plough and sickle with equal ease. His palms and fingers bore the mark of his expertise. They were scarred and pitted with bruises and wounds. Some healed, some unhealed, some maintaining their forever status as an injury-in-progress. The rigour and unyielding labour that characterised his work had mapped itself on to his hands and made his fingers rock hard, unyielding, stiff and inflexibly thick.

And thus, when the Machine began repeatedly pronouncing the touch of his fingers a failure, Mangal's fears were confirmed. He did not know what was worse: trying to put behind him a history of humans ostracising the very thought of his touch or beginning a new chapter of machines loudly disagreeing with the reality of his touch. While the Machine could not feel or listen, it could speak very well indeed. When it pronounced a touch a success or failure, it made sure everybody heard its verdict. But it was not sentient to the friction it was creating within people and could not listen to their dissenting cries of despair.

Mangal's obsession with examining his hands began the very first time he recorded his ten fingers with the Machine. He was told that what the Machine had captured was to be his only identity from that moment. As he pored over the landscape of his palms, he wondered about his fate. If a palmist were to read Mangal's hand, he would have been confronted not with the mounts of planets, but with

mounts of hard, callused flesh. Together, they would have presented a narration of Mangal's story for anyone.

Every month as the pain began its journey down to his fingers, Mangal set about trying to repair and groom them. After returning from work, he would scrub and oil his fingers in a bid to soften and ready them so that the Machine could read his prints clearly. Given the strict rationing of water, his family would scrimp and scrounge on their consumption to reserve the four water pills that Mangal would need to minister to his fingers through the month. However, this rarely worked. Instead, Mangal would find himself queuing up along with many others like him, fervently praying for a successful verification outcome.

Among the villagers, talk about the Rule of the Machine was varied. For some, the Machine promised a righteous form of governance. They said that the experience of extending their finger to the Machine was their way of pledging regular allegiance to the government. It allowed records to be produced, such as the date and time of verification and the quantity of pills disbursed, which officials offered as proof of efficient administration. But, its record keeping was only partial. Opposition to the Machine meant that they were quick to brand you a traitor to the cause of an efficient nation. Some even suggested that such treachery should be punished by sending people to the notorious Island of the Black Waters that housed a digital poorhouse for people deemed unfit for the digital age.

So, Mangal said nothing. In any case, the pain made it difficult for him to speak. He continued to coax his fingers into being read by the Machine, but their obedience was hard to achieve. His touch continued to fail more often than it succeeded and the pain returned unfailingly every month.

Until one evening, when Mangal was driven to distraction by the pain coursing through his body. On that hot May night after a hard day's work harvesting crops on the field, Mangal found himself convulsed with spasms. As he lay writhing on the floor, blinded by his misery, he was alarmed as his voice acquired a life of its own and he heard himself scream. Something within him snapped and he got to his feet. Instead of the fear and anxiety that he had felt moments earlier, he now felt a welcome surge of exhilaration, an unexpected sense of independence. He found himself liberated from all compulsions of expected behaviour. There was no one to beat him into timid submission, no one to seek approval from, and

definitely no one to disapprove. The thought gave him wings and he soon found himself running through the grounds to the far end of the village.

When he reached the edge of the village and could run no further, Mangal realised he had also reached the end of his imagination. What should he do with his newfound sense of self and where should he go? He began running towards the village council office. A machine just like the one to which he offered his fingers every month stood guard against the door. It would only let you inside if your fingerprint was read correctly. The blood rushing to his head, Mangal placed his finger on the machine. Predictably, it told him his touch had failed. Mangal smashed the machine and continued battering it in a frenzy. The machine shrieked, and then, felled by Mangal's touch, its speaker blew up. It could no longer pass any verdict.

The resultant commotion brought several people to the office. Stunned at first, they looked at Mangal, who was charging around the office breaking every machine he could lay his hands on. His intelligible screaming echoed in the village. The revolt spread. Beginning that May evening, the rage of a million mutineers turned against the Machine, as people across the dusty plains of the country banded together in rebellion demanding an immediate recognition of the authenticity of their claims and their touch.

In the immediate aftermath of the riots, Mangal was arrested and sentenced to prison. He stood trial for inciting the revolt and was convicted and sentenced to life on the Island of Black Waters. The riots, however, continued to rage.

Even as Mangal was serving his sentence, the uprising forced a change in the regime. The old order was ousted and in its place a new techo-political imagination that pledged to privilege humanity over machines assumed leadership. The machines lost their capital M status. Among the things that the New Order did was to bring Mangal back from the Island of Black Waters. Its leadership wanted to listen to his experience. To recognise the despair that led to the violence of the mutiny. The New Order constructed a memorial in Mangal's village recognising it as the site of the 2020 insurrection. In Mangal's new world, it was the only remnant of the Old Order.

He no longer experienced pain. ◆

★★★★★

“Playing this game was sooo much fun!”
The directors of HIIG

★★★★★

“I really enjoyed this way of learning more about risk assessment and protection measures in data protection law.”
Anonymous

ADMINS & HACKERS

A SERIOUS GAME ON PRIVACY

Your company depends on data-driven innovation. Should you invest solely in algorithms and data? Or should you spend your limited resources on data protection and security measures, too? Which protection measures should you focus on to make sure that hacks and fines don't wipe out your profits?

In the game, you get together with other would-be admins and compete to create the most successful company in a data-driven economy. But you are under attack: technical problems, hackers, privacy activists and the mighty data protection authority may make your life miserable, drain your resources and destroy your reputation. Without proper security and data protection mechanisms in place, your business will be easy prey. Your challenge is to assess the risks in a complex situation, balance competing requirements and choose a way that allows you to reap the benefits of the wealth of the available data and innovative algorithms while still complying with the law and protecting the rights of the data subjects.

Players:	3 – 35 in up to seven groups
Time:	approximately 90 min
Age:	16 – 99 years
Difficulty:	Beginners and advanced players
Context:	A serious game to provide data protection and security training for employees.

INTERVIEW WITH THE GAME DEVELOPER

What's the issue that you aim to address with the game?

Max von Grafenstein: One of the challenges for companies seeking to cope with the requirements of data protection laws is to raise awareness of privacy issues among their employees. Most people have a naive understanding about the need for data protection and how to apply it in a company's day-to-day business. This lack of awareness is problematic because data protection works only if implemented in technical and organisational business processes. It has a lot to do with assessing complex situations, balancing competing interests and goals and making sensitive decisions about protection measures – and that has to be learned and practiced, and that's what the game is for.

Why did you choose a serious game over more traditional training material?

Most available training materials are either overly simplified or dry and boring. People's struggles against attackers – such as hackers – and their decision-making processes in a company are social activities. This serious game makes training a social activity as well. And a fun one. You can use the game to train experts and non-experts, and thus create a common understanding of the challenges within your company that enables you to successfully implement data protection in the daily business processes.

What was your most exciting experience when you tested the game with people in the field?

The most surprising experience was that in the first version of the game you could win the game by playing a very high-risk strategy – unfortunately, that means high risks for the data subjects, which is unacceptable. Now, the players win the game if they succeed in earning enough money to invest in data protection measures. This still is surprising because it demonstrates that you need money to become GDPR-compliant. If you have a data-driven business model, you have to process more and more data to earn enough money for data protection measures. This is somewhat counter-intuitive, but it seems to reflect reality.

"[T]here is a fundamental tension between competition and cooperation when internet networks interconnect."

FOR THE GOOD OF THE INTERNET

A PODCAST INTERVIEW WITH UTA MEIER-HAHN BY WOUTER BERNHARDT

The internet is currently built from more than 60,000 autonomous systems. Without connectivity among these, the internet simply wouldn't exist. Uta Meier-Hahn, associate researcher at the Alexander von Humboldt Institute for Internet and Society, researches how network operators like Netflix, Youtube and Deutsche Telekom jointly provide internet connectivity. Since they constantly have to negotiate whether to cooperate with or compete against each other, a very particular form of connectivity economics exists. Wouter Bernhardt chatted with Uta Meier-Hahn about her research for our podcast, *Exploring Digital Spheres*.

Wouter Bernhardt: Uta, please tell me about your first experience with the internet.

Uta Meier-Hahn: In 1996, I was an exchange student in Houston, Texas. I remember sitting at the computer at night, sending emails back home, but also discovering AOL chat and doing what is really common today. Then, I really got hooked to the internet around 2002 when I was at the University of Lüneburg. I learned HTML, quickly became a tutor and helped other students learn it too. I also registered my first domain, zweitgeburtsort.de, which roughly translates to "second place of birth". I used it to experiment and to see what the internet would hold for me. I still like the domain name as a relic of that time when you could create another version of yourself online, a second home. Do you know the sentence "on the internet, nobody knows you're a dog"? That was a very early internet meme symbolising the hopes for the types of freedom we would have in discovering the internet and using it in anonymous ways. My domain is a good way of recalling those hopes and comparing them to what has become of the internet – because now, well, everybody knows if you're a dog ...

When did you switch from being an internet user to somebody who was interested in the internet as a commodity?

Attending the Internet Governance Forum in Baku, Azerbaijan, in 2002 was a turning point that led me to my research. I remember Bill Woodcock, a very prominent person in this field, talking about interconnection relationships and saying that the internet is a network of networks. In fact, it's currently composed of more than 60,000 networks, so-called autonomous systems. I thought that was fascinating because it made clear that there is a fundamental tension between competition and cooperation when internet networks interconnect. This tension has to do with the fact that on the one hand, every network operator – Netflix, Google, Deutsche Telekom etc. – needs to interconnect with other networks in order to provide internet connectivity for their users. On the other hand, these operators may be in competition with one another. And so they constantly have to negotiate with each other.

What is actually being traded between the two different partners?

I would suggest looking at the relationships between three different aspects or concepts to explain how internet interconnection economics work: first of all, the architecture of the internet, second, the object that is traded and third, the community of internet engineers who call themselves "networkers". The basic argument is that there are two main protocols that every network operator has to use – the Border Gateway Protocol (BGP) and the Internet Protocol (IP). The IP actually transmits the packets on the internet and the BGP identifies the destinations and provides information on how to reach them. The reason why these two protocols are so super important, why they basically shape this whole economy and make it so different from other economies is that neither of these protocols entails a mechanism for conducting economic transactions. Neither has a means for accounting. Therefore, network engineers say that the internet relies on trust. This means that if you and I were network operators, I'd have to trust you to actually transmit the traffic I forwarded you to the destinations that you say you can reach for me. The Internet Protocol and the Border Gateway Protocol both induce economic uncertainties.

How or on what basis do these people then do business with each other?

There is no external mechanism that network engineers can refer to. It's basically a direct comparison between two offers of connectivity. In my research, I focused on

these very specific relationships and the grey areas produced around that. In terms of empirics, I interviewed internet engineers, those who actually hook up networks with each other and determine those relationships, from around the globe. I asked them that exact question: how do you decide? They described this process in very different ways, and from these answers I conceptually developed what I would call a product-centred perspective on the interconnection economy.

It's important that these engineers can rely on shared notions of what to put at the core of the interconnection. It would be really inefficient if network operators would not understand each other. In order to avoid that they developed implicit, competing quality benchmarks – understandings of what a product is, how to measure value, what a functioning internet interconnection looks like and how to coordinate it practically. The community of network engineers is a precondition for internet interconnection because these quality benchmarks are debated, discussed and challenged within that community.

`What does the future of internet connectivity look like and what will be the role of the community of internet engineers?`

Becoming a network engineer is not as attractive anymore today as it was back in the 1990s or earlier, when the internet was the new technology. The internet back then was like AI today. Everybody wanted to go into that area. But today there are lots of alternatives like software development at the application level. Apparently, that is much more attractive nowadays. This means that overall, the community is aging and shared understandings are aging with it. That may be an issue because – as I have learned from my interviewees – young network engineers tend to come in with different understandings of the job. Apparently, they have a more transactional view of the internet.

`This concludes Exploring Digital Spheres. Catch you on the flip side.` ◆

www.hiig.de/podcast

MATTHIAS C. KETTEMANN AND STEPHAN DREYER

Busted! The truth about the 50 most common internet myths

—

Yes, laws matter online. No, cybercriminals don't escape unscathed. And no, privacy isn't dead – yet. In their book, Matthias C. Kettemann and Stephan Dreyer bust internet-related myths. Myths, as Roland Barthes reminds us, are a cultural construction that consist of universal truths embedded in common sense. Internet myths are seductive heuristics. They make us lazy thinkers. This is why myth-busting is so important: it allows us to stay sharp and critical – and makes sure we are ready for the policy challenges facing us on the internet.

It is a myth that what people do on the internet cannot be regulated. It is a myth that protocols do not have politics. These powerful constructions of reality mystify the actual challenges in regulating the internet. While containing some truth – it is often more difficult to regulate online behaviour than offline activities, and protocols have fewer politics than laws, which are distilled politics – they obfuscate what is actually at stake. This is why some forces within the internet policy field have a vested interest in promulgating myths. The temptations of bad policy lurk in the shadows of myths about the way the internet is being run. They feast and grow on disinformation, misinformation and the uncritical belief in the stories we tell ourselves to make sense of the world(s) we construct.

Psychologically, myths are attractive because they seem intuitive. Myths sound like helpful simplifications in ever more complex times. They suggest that we can stop reflecting, stop questioning the status quo, stop thinking of how to improve what we perceive. If algorithms are always neutral, then we do not need to develop normative tools to hold accountable the companies that develop and deploy them. Not thinking, not questioning, not looking at details is always easier than the opposite.

MYTHS ARE SEDUCTIVE

Myths are seductive. Cybercriminals don't get caught. Doesn't this sound like something we may have read, something that we may have heard politicians say. But do they go free? Or does the myth hide the uncomfortable truth that they do not have to, but that it takes hard forensically sound policing to counter them rather than political posturing?

If search engines provide objective results, then there is no pressing need to open up a societal discourse on the duties of those structuring information. If privacy is dead, then why get riled up about privacy violations? If algorithms are neutral, then biases are an issue of the past. But they don't, it isn't, and they aren't.

All isn't well in the state of the internet (which, of course, isn't a state by itself: the notion that laws do not apply online is a powerful myth in its own right).

Myths are like heuristics that help to simplify the world. Like many heuristics, myths may be useful and partially true and they may even be based on or encompass dearly held beliefs. In terms of economy of

thought, myths may make sense individually. Thinking is hard, and critical thinking even more so. But societally, myths are very dangerous.

Many who use myths do so consciously. "Myth has the task", as Barthes (2013) wrote, "of giving a historical intention a natural justification and making contingency appear eternal" (p. 254). But each normative solution to a specific problem of internet politics, policy and the global internet polity is highly contingent. If we mystify the origins of the internet, the role of algorithms, the character of code, the normativity of rules or pluralism in cultures and concepts of life, we lose track of historical contingencies, cultural dependencies and the conditions of social interrelationships.

A VADEMECUM FOR THE INTERNET

It is against this background that we decided to publish a call for internet-related myths. We collected submissions and in a peer-reviewed process selected the 50 most representative ones. We are fully aware that the myths we selected only represent a fraction of the myths present in internet governance discourses, but, we submit, it is a rather representative fraction that does cover many of the key themes and all of the broad thematic issues of the Internet Governance Forum 2019 in Berlin, the occasion at which our book was published. We have included five myths here:

MYTH #17: THE DARK WEB IS A HIDDEN PLACE OF EVIL.

No, writes Suzette Leal: the dark web embraces all activity that cannot be searched or indexed using standard search engines. Although the anonymity and freedom associated with the dark web also facilitate criminal activities, the dark web is not the epitome of mysterious, suspicious and illicit conduct. In fact, much activity on the dark web is used to protect those who need privacy and to allow people under threat to communicate.

MYTH #23: PEOPLE GET THEIR NEWS VIA SOCIAL MEDIA ALONE.

No, writes Sascha Hölig: social media plays an important role in many people's lives, but social media platforms are usually not used to get news and information. Instead, news is a kind of inevitable bycatch for social media users. The vast majority of internet users across all age groups use traditional news media brands

continue reading on page 146 ▸▸

THIS IS AN ARTICLE BY **MATTHIAS C. KETTEMANN AND STEPHAN DREYER**

This is a preview of the publication *Busted! 50 internet myths and why they are wrong*. Read more about busted internet myths on internetmyths.eu and on the *Digital Society Blog* of Alexander von Humboldt Institute for Internet and Society (HIIG).

Matthias C. Kettemann, LL.M. (Harvard), an associated researcher at HIIG and project lead on the International Law of the Internet, is head of research for rule-making in online spaces at the Leibniz Institute for Media Research | Hans Bredow Institute and visiting professor for international law and human rights at the University of Heidelberg. His research focuses on normative interaction between different stakeholders and various normative orders on the internet.

Stephan Dreyer is senior researcher in media law and media governance at Leibniz Institute for Media Research | Hans Bredow Institute and head of the research programme on the transformation of public communication. His research focuses on regulatory issues of mediated communication in a datafied society.

online and offline, and only a small minority of social media users limit their news consumption to social media platforms.

MYTH #27: MILLENIALS ARE ALL INTERNET-SAVVY "DIGITAL NATIVES".

No, writes Claudia Lampert: the fact that children are growing up in mediatised environments does not mean that they all use digital media (equally) competently. On the one hand, the individual requirements are very different; on the other hand, self-determined and sovereign use requires more than technical skills.

MYTH #42: ALGORITHMS ARE ALWAYS NEUTRAL.

No, writes Matthias Spielkamp: algorithms are either directly designed by humans or, if they are self-learning, they develop their logic on the basis of human-controlled and designed processes. They are neither objective nor neutral but rather outcomes of human deliberation and power struggles.

MYTH #46: THE INTERNET NEVER FORGETS.

No, writes Stephan Dreyer: many files online have a short half-life, and there is evidence of significant decay in services and link rot. Regulations aiming at deleting information or delisting specific search results reinforce such phenomena. Mostly online content is not suited for long-term archiving – and remembering. ◆

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Barthes, R., Howard, R., & Lavers, A. (2013). *Mythologies.* New York: Hill and Wang.

CHRISTIAN KATZENBACH AND
THOMAS CHRISTIAN BÄCHLE

Defining concepts of the digital society

In the current quest to understand the digital society, a plethora of ideas, ranging from catchwords to concepts, have emerged. A new special section in the journal *Internet Policy Review* establishes a forum to reflect on whether these are worthwhile concepts, whether they provide analytic value and whether they actually describe something new. When mobilising concepts, we need to carefully and critically reflect on their implications and the choices they represent. Concepts have their own politics.

One recurring theme we encounter in our research on artificial intelligence, robots and autonomous systems at HIIG relates to how preconceived images shape the expectations and fears people have of technologies. These images, however, do not necessarily reflect the reality of these phenomena. Machine learning or decision-making systems, for example, are often misguidedly associated with notions of intentionality, free will or consciousness. Still, these imaginations and figures of speech have actual political and social clout, they shape research and technological development goals and they inform discourses on regulation, innovation and potential futures.

Branding new, occasionally innovative but often only catchy terms has become a familiar activity of researchers, companies and policymakers alike. This is why we find it necessary to reflect on which of these concepts are actually worthwhile, provide analytic value and in effect describe something new. In the quest to understand the digital society, some ideas have proved more successful than others in stimulating public discourse, academic thinking, and economic and political activities. Our selection of concepts helps to make sense of the current rapid social and technological change.

A new special section *Defining concepts of the digital society* at the *Internet Policy Review* seeks to act as a platform to discuss and validate these overarching frameworks and theories. Based on the latest research, yet broad in scope, the contributions offer effective tools to analyse the digital society. Their authors craft concise articles that portray and critically discuss individual concepts with an interdisciplinary mindset. In 2020 the special section will continue, featuring concepts such as digital commons, transparency, autonomous systems, value in design and smart technologies.

ALGORITHMIC GOVERNANCE

Algorithmic governance means that digital technologies order and regulate the social in specific ways. Will this development lead to opacity, a loss in human agency and the muting of political debate?

Authors: Christian Katzenbach & Lena Ulbricht

DATAFICATION

Datafication refers to the quantification and often accompanying monetisation of human life through digital information. How is this process connected to capitalism? What does datafication mean for the relationship between power and knowledge?

Authors: Ulises A. Mejias & Nick Couldry

FILTER BUBBLE

The concept of the filter bubble seems plausible and enjoys considerable popularity in public and policy discourse, yet research shows little evidence that the phenomenon even exists. Should we dismiss it altogether?

Author: Axel Bruns

PLATFORMISATION

Platformisation today seems to be everywhere: from media to mobility, from housing to health. Why have platforms become the dominant mode of organisation and imagination in the digital society?

Authors: Thomas Poell, David Nieborg & José van Dijck

PRIVACY

Privacy has always been an ambivalent concept, at the intersection of protection, (de-) politicisation and individual rights. But things get even murkier in digital societies: how should we rethink privacy and to what degree are its core values under threat?

Authors: Tobias Matzner & Carsten Ochs

This is an abridged version of the editorial of a new special section *Defining Concepts of the Digital Society* of the journal *Internet Policy Review*. The special issue is available online.

www.hiig.de/concepts

Algorithmic governance

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Datafication

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Filter bubble

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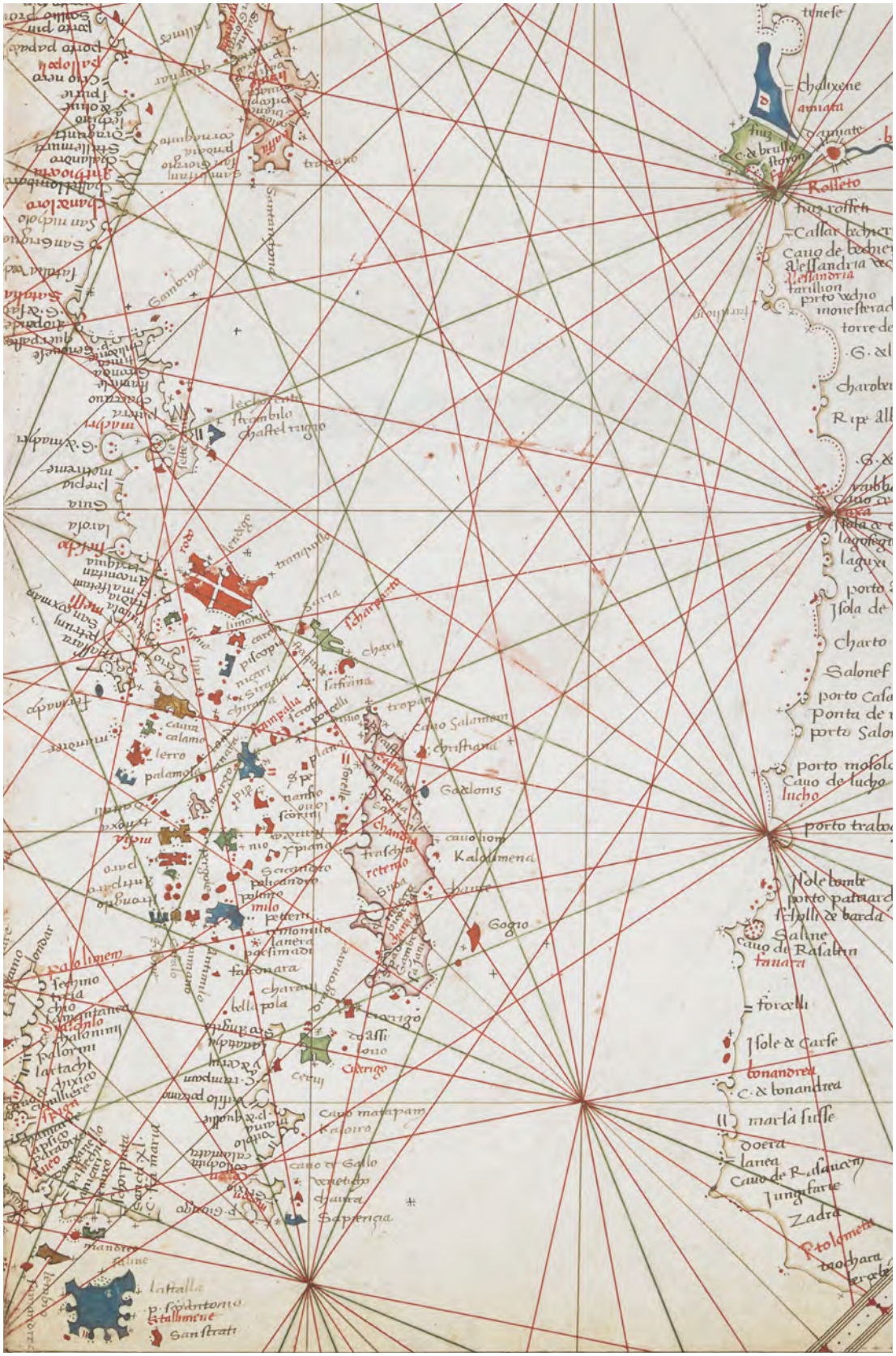
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falconara
bella pola
P. S. Antonio
Stalimene
San strati

SAILING INTO THE PAST WITH LINKED DATA

MEET HIIG RESEARCHER REBECCA KAHN

Rebecca Kahn was a researcher on the Research, Learning and Innovation team at the Alexander von Humboldt Institute for Internet and Society (HIIG). She works with linked open data, a standard that creates connections across separate repositories. This allows researchers to use semantic queries to look for links between these different data sources. She introduced her research in our video series *Meet the HIIGsters*.

"Our project Pelagios, which means "of the sea" in ancient Greek, uses this data model to create connections between digitised historical sources and then allows researchers to visualise, share and collaborate on using this data in various ways, including in maps."

Rebecca Kahn

"We recently completed a project with the British Library in which digitised sailing maps from the 13th and 14th centuries (commonly known as portolan charts) were annotated with geodata indicating the places referred to on the maps. We then overlaid this information onto contemporary sea charts and were able to show that sailors from 700 years ago were able to create maps that are as accurate and as correct as maps that you can find today."

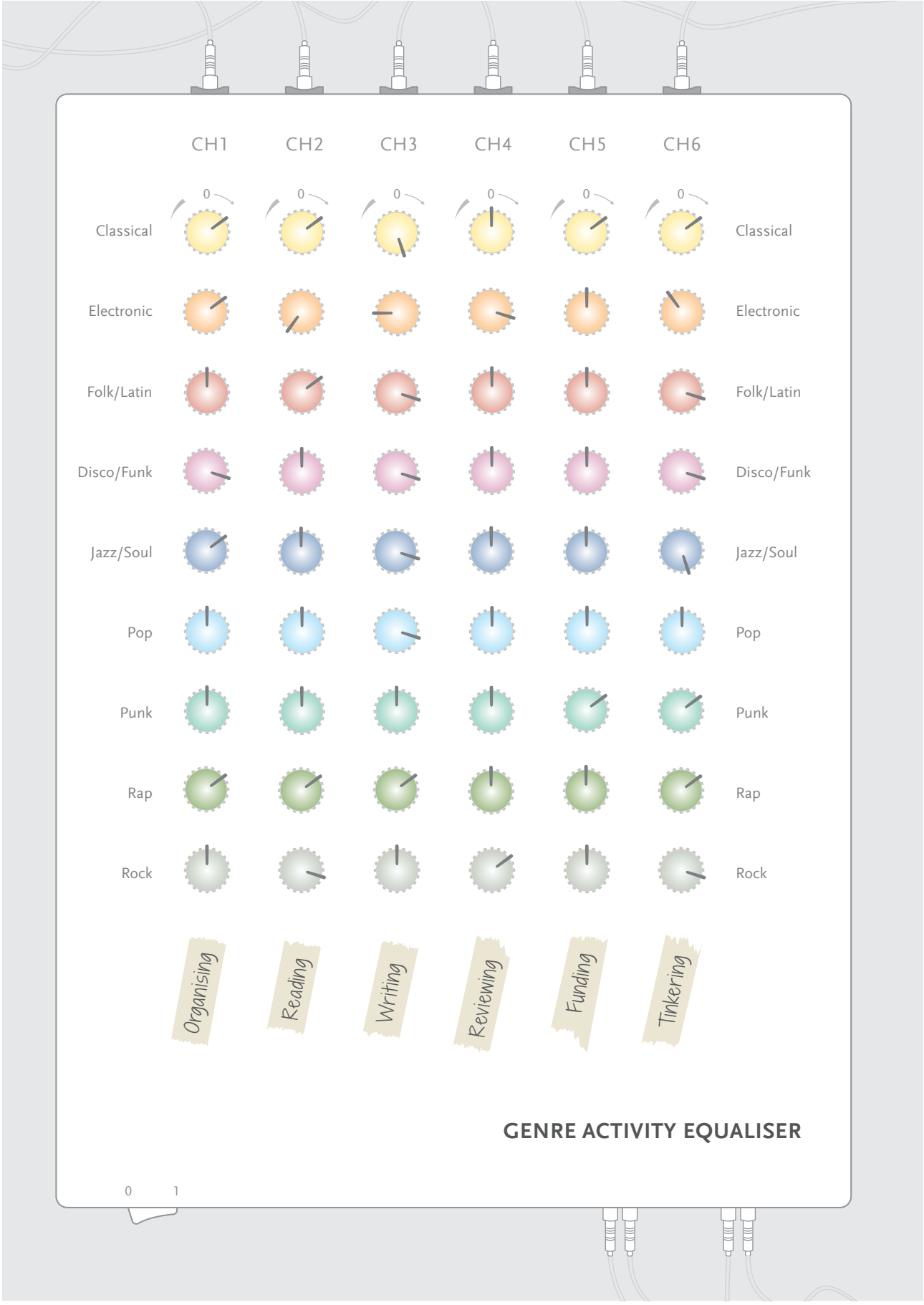
Rebecca Kahn

"Using linked data to search for historical sources is a little bit like being a digital archaeologist. You can search through museum, library and archive collections and find relationships between objects such as coins, inscriptions and artefacts that you might never have been able to find using the paper records."

Rebecca Kahn

The full video is available online. www.hiig.de/video-kahn

"We ... were able to show that sailors from 700 years ago were able to create maps that are as accurate and as correct as maps that you can find today."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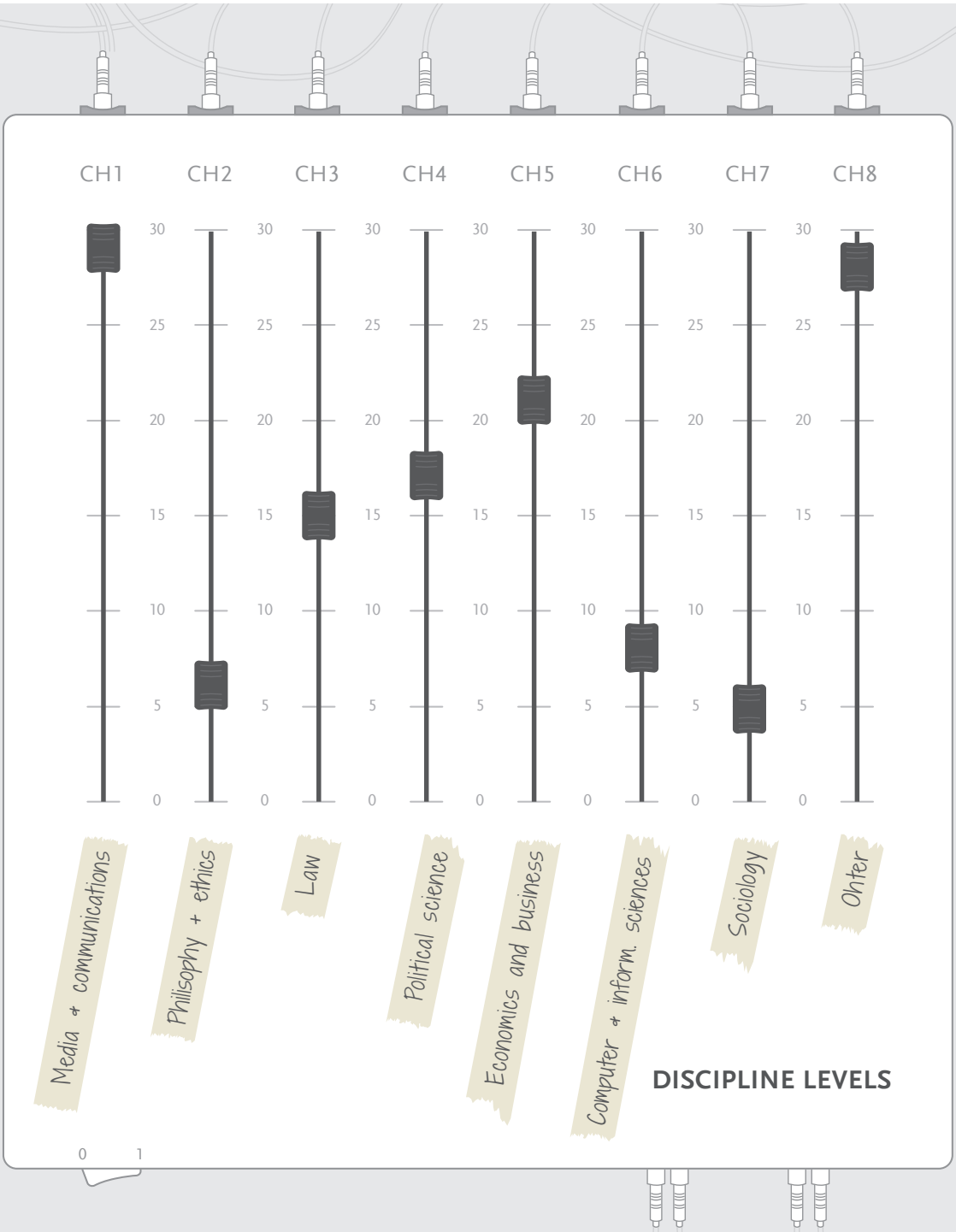
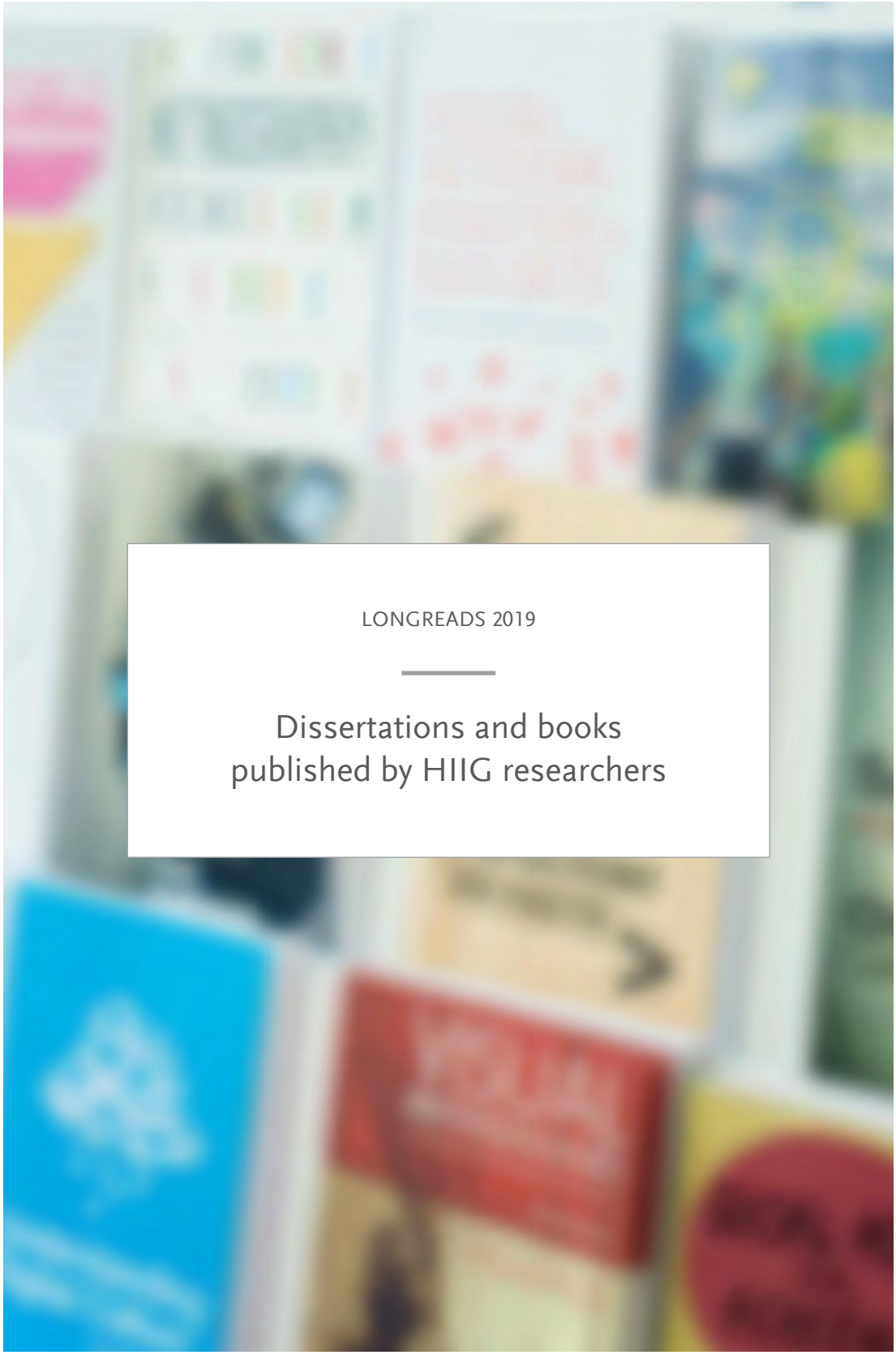


TUNE INTO HIIG

Scientists evaluate statistics and analyse social processes every day, but what do the statistics about the heart of the institute – the employees – look like? What different scientific backgrounds do they have? Why do bibliographies and techno somehow belong together? And what music is playing when contracts and deals are being pushed forward? Based on the results of a highly standardized survey amongst HIIG members, we reveal the beats, tunes and the vibe of the institute.



LONGREADS 2019

Dissertations and books published by HIIG researchers

DISSERTATIONS

Uta Meier-Hahn
Die Konnektivitätsökonomie des Internets
(Internet connectivity economics)
Dissertationen Freie Universität Berlin · DOI 10.17169/refubium-2440

Internet connectivity forms the basis of the digitally networked society. About 25 years after the onset of the commercial internet, this thesis explores the economics of internet interconnection.

Stefan Stumpp
Management des Crowdsourcing-Prozesses in der Organisation
(Management of the Crowdsourcing Process in the Organization)
Nomos Universitätsschriften· ISBN 978-3-8487-5809-8

Crowdsourcing – the integration of a large group of internet users into the value chain – is becoming increasingly important for organisations. This dissertation examines what makes this principle so valuable, which areas of the organisation benefit from it and how this integration works.

EDITED VOLUMES

Caja Thimm and Thomas Christian Bächle (Eds.)
Die Maschine: Freund oder Feind? Mensch und Technologie im digitalen Zeitalter
(The machine: friend or foe? Humans and technology in the digital age)
Springer VS · ISBN 978-3-658-22954-2

Machines: friend or foe? They symbolise progress, even technological salvation but they are at the same time seen as the cause and driver of social and political conflicts. Fear of machines has always been an important theme in determining the relationship between humans and technology. This volume aims to update and broaden this debate.

Thomas Christian Bächle and Alina Wernick (Eds.)
The Futures of eHealth. Social, ethical and legal challenges
Alexander von Humboldt Institute for Internet and Society ·
ISBN: 978-3-9820242-3-3

Looking into the futures of eHealth? Diagnoses made by machine learning algorithms, medical consultations via video call, mobile health apps, fitness trackers, smartwatches and sensors built into our clothes or even our bodies: This publication strives to take a look at potential, likely, desired, anticipated or feared futures of digital health technologies and practices.

Katharina Mosene and Matthias C. Kettemann (Eds.)
Many Worlds, Many Nets, Many Visions: Critical Voices, Visions and Vectors for Internet Governance
Alexander von Humboldt Institute for Internet and Society · ISBN 978-3-9820242-5-7

The internet has changed our world. But has it realised its emancipatory potential? In this collection, the editors asked 30 authors to describe their visions for a truly free and dignity-based internet.

Matthias C. Kettemann and Stephan Dreyer (Eds.)
Busted! The Truth about the 50 Most Common Internet Myths
Verlag Hans-Bredow-Institut · ISBN 978-3-87296-150-1

Yes, laws matter online. No, criminals don't get off scot-free. And no, privacy isn't dead – yet. Matthias C. Kettemann and Stephan Dreyer have edited a book busting the 50 most common internet myths with the clear goal of ensuring a knowledge-based internet governance for the future.

Wolfgang Kleinwächter, Matthias C. Kettemann and Max Senges with Katharina Mosene (Eds.)
Towards a global framework for cyber peace and digital cooperation: An agenda for the 2020s
Verlag Hans-Bredow-Institut · ISBN 978-3-87296-148-8

Published on the occasion of the Internet Governance Forum 2019 and prefaced by the UN Secretary-General, the book contains articles from authors from all stakeholder groups that shed light on the future of online regulation.

Ingolf Pernice was director at Alexander von Humboldt
Institute for Internet and Society from 2011 – 2019

HIIG BIDS FAREWELL TO ITS DIRECTOR INGOLF PERNICE

"People often say that I'm curious about too many things at once... But can you really forbid a man from harbouring a desire to know and embrace everything that surrounds him?" This quotation is attributed to none other than Alexander von Humboldt himself, but we could say something similar about a man without whom HIIG most likely would not exist today. This year, it was not at all easy for us to say goodbye to Ingolf Pernice, one of the co-founders and directors of HIIG.

I remember very vividly how Ingolf and I were sitting in a restaurant, literally making plans for HIIG on a serviette. Constitutional law professors don't often set up new organisations, so Ingolf Pernice can be very proud of having made HIIG a pioneer in the internet and society research landscape.

Wolfgang Schulz

Thanks to Ingolf's openness, curiosity and straightforwardness, it wasn't at all difficult, despite very different backgrounds, to work together successfully and interdisciplinarily and thus contribute significantly to making HIIG an inspiring place for researchers.

Björn Scheuermann

His spontaneity, but also his enthusiasm, commitment and sense for the right moment have contributed significantly to the founding and success of our institute.

Thomas Schildhauer

In addition to Ingolf's astonishing professional expertise, his approachability, his open ear for everyone and the great relationship of trust that you can develop with him in a very short time are truly remarkable.

Jeanette Hofmann

The central focus of Ingolf Pernice's academic work in recent years has been to centre people as points of reference in international law – as holders of fundamental rights, as sources of legitimacy for socially binding political decisions and as co-decision makers. He paid particular attention to the question of how information and communication technologies can be used to strengthen the transparency of political action, accountability and participation – both online and offline.

We are grateful for the many years of dedication, curiosity, expertise, passion and openness with which he accompanied HIIG and wish him all the best for the future.

The directors
Jeanette Hofmann, Björn Scheuermann, Thomas Schildhauer, Wolfgang Schulz

encore

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