

Technologies in Practice



magazine



YOUR INSIDER

The essence of technology in practice

OUT OF OFFICE Ground-breaking field studies at workshop



SECRET KNICK–KNACKS TiPsters reveal odd curiosities

DYSTOPIAN OR UTOPIAN?

Identify your attitude towards technology

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Dearder,

You are holding TiP Magazine in your hands. The magazine is the outcome of a collaborative effort by the Technologies in Practice group at the IT University of Copenhagen. As researchers we often work individually, and thus we were looking for a project that we could do together as a group, which would tell peers and interested others about our approach to the social study of science and technology. We decided to try out a less familiar format and settled on the glossy magazine. If this genre is familiar, you might recognize and value our tweaks and twists of well-known elements like the horoscope, the travel report, the recipe and much more. If you are not familiar, we hope you will enjoy the result anyway, as much as we enjoyed making it!

Happy glossy reading.

Christopher, Brit and Sisse Editorial team











TRIBUTE TO TIP

For almost a decade now (since my inauguration as Adjunct Professor in 2009) I have had the pleasure and privilege of paying an annual visit to the Technologies in Practice Research Group at the ITU. Invited initially by Randi Markussen, TiP's first Head, I have followed the research and teaching initiatives of the group with interest and growing admiration. Engaging in research across a range of issues regarding technologies in practice, from data analytics and digital methods, to international development, social welfare, and environmental futures, the group has extended and deepened the place of interdisciplinary social sciences in the intellectual landscape of the ITU. Equally inventive in teaching, TiP is part of an ongoing process of enriching the curriculum in Science and Technology studies and kindred fields for ITU students. Now under the guidance of Professor Brit Ross Winthereik, TiP has established the international reputation of the ITU as a leading site of research and teaching that is at once creative and deeply committed to students, addressing the emerging problems and possibilities that characterize contemporary sociotechnical formations.

Lucy Suchman, Lancaster University

WHAT KIND OF **TECHNOLOGIST ARE YOU?**

The printer at the office does not work. What do you think about that?

- a. | knew it!
- **b.** I will wait for a better tomorrow.
- c. I will write a paper about it.
- **d.** There's a great startup idea in here somewhere!

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You just found out your phone has been tracking your activity since the day you bought it. What's your reaction?

- **a.** This is how they win!
- **b.** Who cares anymore ...
- c. This is great, what other great things is it tracking?
- **d.** Maybe I can sell my personal data for a living?

•)

A master student wants to write a paper on pre-digital times, how human relationships were more authentic and have now become artificial through increasing digital mediation. What do you do?

a. Shed a tear, ask if you can be a co-author.

- **b.** You advise against this, you ask the student to be more critical towards their research question, for instance by questioning their use of 'authenticity', and what it does to the question itself. You silently agree with the student.
- c. Rant about the emancipatory potential of social media.
- **d.** You register a domain for a new startup focusing on building an authentic, old-fashioned, blockchain based, social media platform.

You lost all your bitcoins. How do you feel?

- **a.** The one thing you still believed in ... it's back to gold for you.
- **b.** You tell yourself "it was obviously a bubble waiting to burst" while you lay down in your bed for the rest of the week.
- c. It happens with all new technologies. This is an opportunity!
- **d.** You're relieved as you have also invested in Ethereum and Ripple.

You just ended your relationship and are considering online dating for the first time. How do you feel?

a. It is for millenials.

There are many conceptions of technology

in the world and those conceptions influ-

ence how we relate to and deal with tech-

nology in all spheres of our lives. But what

is your conception? This test will help you

identify your attitude towards technology

for self-diagnostic and therapeutic purposes. Note down your prefered answer for each question below. Then multiply scores, according to the score sheet below, to get

your final score. Finally, you find your diag-

nosis and some sound advice at page 39.

- **b.** I'll happily write the paper but no participant observation please.
- c. You sign up while angrily rant to others about how these sites destroy authentic human relations.
- d. Deep learning will match you better than you could match yourself!

b. If you have/had kids they will

- a. Never see an iPad until they are 12.
- **b.** Be plugged into the VR from day one.
- **c.** Guilt you about your screen time in exchange for more dessert.
- d. Become Sarah Connor.

Find your diagnosis and some sound advice at page 39



Selected books by famous STS scholars who visited TiP for longer periods of time.





Adrian Mackenzie Transductions - Bodies and Machines at Speed

Helen Verran Science and an African Logic

Helen Verran makes a case for why science, mathematics and logics must be examined in practice. Based on fieldwork in Nigeria, she argues that the seemingly universal and fixed must instead be seen as lively and multiple, and suggests that quantity and certainty are derived from cultural practices and associations.

TIP

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Tech in Practice grtp. Jou - 6 Sep 2017 Attending techtest toright, where givinit_EU & Bithingscon cohost a Salon on TIP Tech in Practice @TiP_itu - 6 Sep 2017 13.4

What happens when you combine digital methods, space geekery, long term ethnography, coding lifetimes, & nonhuman affinities? -> ETHOS Lab Gethos/TU oin us on September 15 in the Gethos/TU for the andfinale @DaR_ITU @ITUkbh @TIP_itu @AskeKar ILR @koebenhavns_uni

O a



John Law After Method - Mess in Social Science Research

John Law argues that methods bring into being that which they often purpose to only describe. Methods are purposeful means for creating particular worlds. In each case of research, we need to take into account the world-building capacities of methods.



Lucy Suchman **Human-Machine** Reconfigurations Plans and Situated Actions (2nd Edition)

This book is the updated version of Lucy Suchman's ground-breaking study of humanmachine interaction at the Xerox PARC research center. In her study Lucy showed how machines and humans are very differently situated in the process of photo-copying, which grounded an important and still relevant critique of the development of artificial intelligence and expert systems.

Tweets Nick Seave

In serious hustle mode to piece together m serious nusite mode to preci my talk for the fine folks at @? week. This one should be fun: the dirty world of human values next a short tour of the vector space screw algorithms!

masters of scale matters of care decorrelation and its discontents

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A process and practice perspective

What do the roles as Heads of the Global Business Informatics bachelor's programme (GBI), and The MSc programme in Digital Innovation and Management (DIM) imply? Brit Ross Winthereik has conducted this conversation with her colleagues, who are responsible for the two programmes, Christopher Gad and Steffen Dalsgaard.

by Brit Ross Winthereik, photo Martin Nedergård Møller

• Could you describe the study programme in a few sentences. What is it that you're heading?

Christopher: On both DIM and GBI we demand of our students – this sometimes confuses them – that they should be able to operate in two different modes: The first mode is very exploratory, open-ended and anthropological. For the other, the starting point is more like: the customer has a problem, please solve it. These are quite different ways of going about things. DIM is a programme that is based on a process and practice perspective. We don't take for granted that models, solutions or best practices just work. We try to make students think about how such things work

in practice. So, a large part of doing the programmes is to go out, to be part of projects, and to study what people do in organisations. Or to study how users discuss technology.

You didn't use the word IT. In what ways is this an IT education?

Christopher: IT is what the students study, and the practice and process perspectives entail that IT never stands alone. IT is always a socio-technical issue. It is never just about a technical problem or something technical that needs to be built. It is always about what happens when it's developed and when it's taken into use. "Basic academic skills is the most relevant part of what we teach. That is, to be able to scrutinize things and to work systematically and not necessarily just learn about tools that will be outdated next year."

Do the educational programmes complicate what IT is?

Steffen: I hope so. Basically, GBI and DIM do much the same thing. At different levels. I think it's easier for GBI to state what it has to do with IT since it's an informatics degree. It is about how people use technologies in different forms and under different circumstances, and in different contexts. There's a design part, a consumption part, a planning, and a governance part. It can be about political economy, if someone shows an interest in that. It is very interdisciplinary. We want students to have a very well-founded understanding of what things do. Both on an abstract level and in practice. As Christopher said, we want them to go out there and actually work in situations and under circumstances where these differences and nuances emerge and come to matter. And the good thing is that the programme speaks to students with a lot of different interests. And, it's a challenge to ensure that they understand all aspects of the education and

use all of its aspects. At GBI, there's a tendency to approach informatics as critical social science, business studies, or computer science. And there's a tendency to approach GBI as if these areas were entities, rather than a whole, united in the informatics degree. For me, understanding what GBI is and can do is a continuous process.

As a student, do you need to perform in all three areas or do you need to specialize if you to obtain a good result?

Steffen: I would actually prefer that they come to see how these areas are connected, and come to understand informatics as such. I want the students to understand that change, which is technical, also affects business as well as social matters.

Anthropology. I've been at the ITU since January 2013 and took over GBI in 2016. I see GBI as a very strong bachelor programme. Being head of programme has enabled me to understand how the other courses contribute to GBI and to better understand what our students are equipped with

"I have a PhD in

Steffen Dalsgaard, Associate Professor and Head of GBI

in terms of skills and

competences."



I would like to speak a bit about you as heads of programme. What is nice and what is challenging for you about this role?

Steffen: I think, to use a metaphor, that my role is like an octopus. Beyond managing our courses in cooperation with people from our own department, we also engage with the two other departments, and with the external lecturers. And, if someone leaves, we have to look for replacements. The good thing is that there's lots of communication and lots of engagement. Christopher: You have responsibility for the academic quality of the programme, and at the same time, you don't have the final say on who teaches what, and that's a challenge. That's up for negotiation.

And you can't even hire if you have a vacant spot?

Steffen: Sometimes we are allowed to give input to the process.

Christopher: And sometimes we can be delegated to the role of "please find a postdoc that fits the position", but deciding, it mostly takes place in cas-

es of temporary solutions. With that being said we are sometimes part of hiring committees.

That sounds like a nightmare for most people. So, what's the nice thing about it?

Christopher: The good thing is that you actually get to talk with everybody.

Steffen: You get to know, at least, parts of what people want to do.

Steffen: And most people are supportive.

Christopher: In some situations it would be nice to have personnel responsibility and the mandate to tell people to do something, but there are plenty of other situations where it's actually nice not to have it. I also think it makes sense from an institutional point of view. That is, the educational side could become too strong, meaning that research might suffer if we were in charge of hiring. So, it makes sense to me that it is a negotiation.

So, people are hired both as lecturers and researchers, so it's makes sense that it's a broader committee? That's a very good point I think. Do you teach on the programme?

Steffen: As a principle, I don't teach on the GBI. I have to talk to the students as head of programme and I think it's valuable to separate the roles.

So that's ITU policy, or is it your own choice?

Christopher: It's our own choice. We do teach, but on other programmes.

How do the roles as head of a study line inform and interfere with your research?

Christopher: I think you become more knowledgeable about neoliberal governance (laughing). Or at least

about what it is like to work in an organization, which, to a large extent, is managed by objectives. In Denmark you've developed a heavy system of accountability and an accreditation system for educations. It has been a political issue for years, which entails more and more control, and reporting. You have to have 'a quality insurance' system in place, and so on and so forth. At the same time there's a constant demand for change. So, in this way, you both have something very static going on, while, simultaneously, everything should be innovative and new. When combined, it means that you have to manage two very time demanding tasks, at the same time, and in cooperation with your colleagues.

And that's also an element in your own research?

Christopher: I think that what's going on here characterizes much of the public sector today.

Steffen: I don't think it's directly connected to my research, but there's a lot of quality control of the education at the ITU. In one sense it's really good, but it's also a lot of work and



and History of ideas from Aarhus University. Since I started at the ITU 2010. I have been involved in the process of developing the DIM been head of the programme since its launch."

Christopher Gad, Associate Professor and Head of DIM

sometimes you wonder: how many read the reports? Christopher: To me it's relevant because I am interested in the use of IT in organizations and in management. We just got introduced to a new IT system. We are supposed to use its data to get an overview of our programmes and how they are doing. This data is provided in so called real time.

In the sense of how students are graded or?

Christopher: All kinds of data. How delayed the students are, evaluations of courses, the grades given at different courses. More and more numbers about the programme's unemployment rate and so on. And, in order to interpret a lot of these numbers, you have to know how they are calculated. I think that's something I also see in my own research, that this drive for using data

"I have a background in Information Studies programme and have

to some extent comes before the very identification of what kind of data you have and what you may use it for.

Steffen: I also think it comes from political decisions concerning quality controls and what it is, and some of these controls are, of course, determined by the ministry [of education] in terms of average delay, completion time, and so forth.

But you don't know what these KPI's are, necessarily?

Steffen: You don't know when you see them, but of course there is an explanation.

I have one more question. IT is changing a lot. And it's been proposed that public schools should teach coding skills, so I invite you to reflect on your programmes and what they may look like, let's say ten years down the line. You may have students coming in with completely different skills. I don't know if it's a nonsense question, but I am thinking that in the life span of the programmes there's been adjustments?

Christopher: I don't know, it's hard to say. Having IT on the syllabus in public schools and high schools. As long as it's taught as a technical issue it could take our programmes in two directions. Either you can build on top of such a new syllabus and teach something more advanced, or you could say, they already know this, so we don't have to introduce them to programming - instead we could focus more on what we're good at in other areas. I don't know.

Which is? Sociotechnical approaches?

Christopher: That's one of the things we're good at. But I also think it's an argument why a practice and process perspective is relevant and will continue to be relevant, because that's not settled, and it won't be settled in ten years.

What won't be settled?

Christopher: What IT is. IT is so many different things,

so you can't just say: now we know what IT is and then that's settled. It will continue to diversify.

Steffen: Basic academic skills are the most relevant part of what we teach. That is to be able to scrutinize things and to work systematically and not necessarily just learn about tools that will be quickly outdated. I mean, that's what the programmes strive to do. But one of the challenges, we experience, is that students of today are a bit impatient and a bit uncertain about the job market, because they've been told that they have to get into the job market as soon as they can, and that they have to be relevant in order to stay employed. That's really a catastrophe, and they are really hungry for a basic selling point, which is a concrete skill or a tool they can use. Luckily, most of the employers know that they'd rather have basic academic skills, compared to something a newly employed can learn within two months. Christopher: And politicians have promised them that a study programme should come with a job guarantee,

or else it's a bad study programme. This was not the case when I was a student. There was no guarantee. Steffen: I think it's a fantastic challenge. For one thing what was really nice, for our generation, was that we weren't pushed by a specific job guarantee. We were allowed, and also required, to invent ourselves and ask 'how is this actually relevant?' We asked this question, while students at present are told about it. This means that they don't reflect about it in the same way as we did. I think, I would like to have more reflexivity in the study programmes, if it's possible. And not just give them the answers.

Maybe there's a hyper reflexivity. I think they reflect a lot.

Steffen: I think one of the main things about the future, and Christopher just said that process and practice isn't going away, which I definitely agree about. I think that, basically, GBI tells its students that they will be trans-



lators between IT and business and general societal problems, and they will be positioned and able to communicate what is considered important from one field to the other and be able to understand these semi-different fields. This need for people in-between domains, is probably not going to go away as well. And it doesn't just concern professional differences, but also cultural or gender differences. It is central for GBI to be able to acknowledge different ways of thinking and/or working therefore, our students have to be able to investigate, for example, thinking and working from other people's perspectives. And that's very anthropological. I think some of the students have difficulties realizing how difficult it is to see things from someone else's perspective.

Thank you so much. It was nice talking to you. Steffen: We should interview each other more often.

ITU Laborato

The ITU is home to a number of laboratories in which experimental IT-work takes place. In total 11 labs exist at the small university, although some of them are still in the process of being established. An academic lab at the ITU is a physical space that facilitates the interaction of Faculty and students. The latter can learn the latest techniques in their respective fields through the labs, and can borrow and work with equipment that they could not easily gain access to themselves. Some labs also host workshops or talks with visiting academics, and act as interdisciplinary hubs for collaboration. We here bring you a peak inside some of these places of science in action.

by Michael Hockenhull photos Martin Nedergaard Møller

ETHOS Lab

ETHOS Lab is the laboratory founded by members of the TiP Group. The name is an acronym which stands for 'Experimental Techno-Humanities and Organisational Services' Lab. ETHOS Lab experiments with methods, both ethnographic and digital, and have recently taken an interest in making inquiries with, around and on personal assistants such as Google Home (pictured) and Amazon's Alexa. The Lab is also host to a group of wonderfully talented junior researchers, who conduct their master's theses or individual projects under the lab staff and researchers' auspices. Read more at ethos.itu.dk.



Design Lab

The Design Lab is an alternative space which is often used for teaching activities that centre on collaborative work and prototyping. The furniture can be easily moved around and recombined, making it a very dynamic teaching facility.



PITLab

The PITLab studies the lifecycle of IoT systems by tinkering and experimenting with prototypes. The researchers in the lab have worked with IoT for plants, and are not afraid to get their hands dirty with soldering as the workbench clearly shows. Read more at pitlab.itu.dk.

REAL Lab

The Robotics, Evolution and Arts or 'REAL' Lab hosts a series of research projects related to, as the name implies, the intersection of robots, evolution and art. When we visited, the resident researchers showed off robots employing evolutionary algorithms for learning how to swim, robots for weaving flower-like stems and the pictured robot, RUBE, suspended from the ceiling in mid-air. The images feature researchers Stig Anton Nielsen and David Kadish. Read more at real.itu.dk.



Intermedia Lab

The Intermedia Lab is perhaps the largest of all the labs at the ITU, which is necessary as it is a place where students and researchers build and experiment with fullscale interactive installations that explore the user's relation to the environment, amongst other things. The lab is a project-based space where students and researchers get support and space for developing and setting up their projects. The lab engages in projects of all scales, ranging from simple prototypes set up in a few hours, to research projects needing support over the full lifecycle of the research. Read more at intermedia.itu.dk.









IxD Lab

The IxD Lab is focused on exploring the tactile, physical and material properties of interactive technologies. In the photos, Lab Manager Ben Cahill and Researcher Harvey Bewley show off the 'Blo-Nut' project, which is an exploration of non-anthropomorphic social robots and our perception of the expressions they are capable of. Read more at ixdlab.itu.dk.

BuILD Lab

One of the youngest labs, BuILD lab is the Business Innovation Lab at the ITU. It seeks to bring students, industry and researchers into contact with one another to creative innovative processes and partnerships. Read more at: build.itu.dk.

AM I, IN A Small Scale, Guilty, Too?

• I hurry on foot from the train station not really knowing what building to look for. I have never been to this part of the University of Copenhagen before, and I miss, at first, the path leading up to the building and have to go back a couple of hundred meters to find an old iron gate and a pathway leading up a small hill. Luckily there is also a mail box with a paper sign with Department of Science Education written on it. The building itself is both modest and impressive. A historical center for natural science and scientific knowledge making that is now hidden among the trees and overshadowed by newer buildings.

The occasion for me being there is a workshop entitled "Explorative workshop on Big Data: Challenges and opportunities for epistemologies and ethics?" organised by one of the Department's sections called *History and Philosophy of Science*.

Big data from a philosophical point of view

I can immediately relate to several of the key words in the title of the workshop: Explorative - check, Big Data – check, Challenges and Opportunities – check. I am more uncertain about epistemologies and eth-

I FEEL THE ETHNOGRA-PHER'S EVER-PRESENT PROBLEM OF TRYING TO BLEND IN

ics, although it is these concepts that have dragged me away from my busy work week; enlightenment beckons I think to myself. I assume that the section for History and Philosophy of Science think about knowledge making and ethics rather differently than my research group. And I would assume that the difference has something to do with questions of practice. In TiP we approach knowledge – even theories of knowledge – as a matter

ANDTHER DAY ANAY FROM THE OFFICE

Conference report by Brit Ross Winthereik

of practice. I assume, again, that these philosophers of science would see theory and practice as rather different things, being mostly interested in theories of knowledge, and not so much their practical repercussions.

I'm here because I want to know (in the practical way) what there is to say about big data from the point of view of philosophy. This is why I am now facing an old observatory located in the botanical gardens, an oasis of calm smack in the middle of the city, home to the Center for Science Education.

The art of difference making

The first presenter is Sara Green who disabuses us of the notion that big data analysis is a theory-free endeavour until after the production of a dataset. She uses a particular phrase – big data is about "the art of difference making," which I find helpful. Her research makes me think about the differences between data and how different actors account for data. Data is everything that fits into a classification system, but seeing like ascientist is not the same thing as seeing like a database. As Sara Green explains, in machine learning situations diagnostic abnormalities risk being maximized and the computer learns the wrong things. Data is narrated forth by many different actors that relate to it and shape it in different ways; it is never just there.

As I take notes, I am acutely aware that my notestaking practices are rather different from everybody elses, and from how I would usually be taking notes at a workshop like this. To be able to write this feature article, I am taking notes not only about what is going on in the presentations, but also about the organization and set up of the event. The room is amazing; half-circled with a wooden ceiling and beautiful tapestries on the wall. I feel the ethnographer's ever-present problem of trying to blend in, while doing things that are a bit awkward, but which must be done in anticipation of the analysis and writing one has to do at a later stage. Among colleagues, some of whom are themselves ethnographers, I am taking notes about things that are normal and natural at events like this. The constant mentioning of coffee, for example, and the reminder to keep questions short since "we are running late". I hope nobody notices that I am writing down these things.

Under-cover as ethnographer

This is a workshop on ethics. OMG. As I try to hide my notes, I become acutely aware that I am making an account of the practices and the peoplernvolved without their knowledge or approval. Next to me is Professor of Medical Science and Technology, Klaus Hoeyer, a specialist in informed consent. What to do? I bury the thought and continue my observations, but the disconcertment is there and a sign of times a-changing.

Journalism and ethnography each have ethical guidelines and codes of conduct. An important rule of thumb is not to do under-cover stuff. Towards the end of the day one of the participants will raise his voice and talk about how big data is also all about capitalizing on personal data. Am I – in a small scale – guilty, too. The problemult seems, is that in these times *all* recording is by definition a suspicious act. Unless you can also demonstrate data anonymity, but who can? Digital data is easier to trace than notebook data. But still. What happens to ethnography in the age of big data is another question that emerges during this workshop.

Now the next speaker, Matthias Heymann from University of Aarhus, goes on 'stage'.

Big climate data

Does climate science have anything to do with big data? Climatology is often used as the ideal type of a data intensive science, but as the speaker explains, up until WWII climatology really was a "database science". He uses this observation to ask the question: What demarcates big data sciences from sciences that just use a lot of data. Big data is defined by its messiness (the 4 or 5 V's), but climate scientists really don't appreciate mess. They do all they can to minimize it, because they know that what is recorded in a database at one historical point of time and what is recorded only a few years later contains enormous differences. He reminds us that taxonomies and recording practices are embedded in historical and cultural contexts.

I am startled by the presence of 'practices' in the theory of knowledge being presented here. It is very close to 'home'. Data is a unit, whose existence is entangled with meteorologists' geographical location, as well as with knowledge *practices*, the construction of measurement stations, taxonomies and classification systems.

Lunch with sightseeing

It is time for a lunch break. Over sandwiches a colleague of mine and I chat with the organizer and PI of the network, Henrik Kragh Sørensen. It is a very common thing to only find out about close colleagues' daily activities when you see them at workshops and conferences. "Come along, we are going to see the observatory!". Somebody ushers us up a spiral staircase and soon we have a stunning view of the King's Garden and the Inner City of Copenhagen. "Look over at the Round Tower, it used to be the King's observatory, until the lights from the city became disturbing and they built another observatory out here, outside the city ramparts (*voldene*)". We climb yet another flight of spiral stairs

> HUMANS CAN EX-PLAIN WHY THEY MADE A MISTAKE, BUT THE ALGORITHM CANNOT REASON ABOUT ITS DECISIONS

and there it is, the old telescope, the very reason for the building we are in. It turns out that this data collection technology of the past was very advanced at the time of its instalment. Not only could the scientists observe celestial bodies, they could also take photos of them and thus record movements that could not be observed with the naked eye. To minimize the uncertainties of the recording of data and make comparison possible, our guide told us, the new observatory had been built on the same latitude as Rundetårn. It was built on part of the ramparts to bring it higher up, and thus the even older military infrastructure became infrastructure for scientific work. It is fascinating how new technologies and infrastructures form layers on top of older ones. In this context, it is a reminder to ask questions about the instalments on which emerging data infrastructures rest, and to what effects. As a fun fact, our guide tells us that after a stop-over in Brorfelde Observatory in the countryside west of Copenhagen, the telescopes of

Danish astronomers now carry out their observations from an observatory in the Atacama Desert of Chile.

Lots of new knowledge and inspiration

Infrastructural layers also play a role in the next presentation in line. Thomas Bolander is introduced as the only 'practitioner' in the room. He is from Denmark's Technical University (DTU) and works with AI. His opening gambit is that we should not ask: How accurate are the predictions made by AI systems. Rather we should take an interest in the type of model that does the prediction. Not all models are the same and the difference matters a great deal, we are taught. The talk is very interesting because it highlights the trend towards embedding decisions made by artificial neutral networks - one type of AI model - into the system rather than making transparent how a decision was reached. The problem is of course that failure is hard to detect this way. Opposed to this type of opaque reasoning is the human capacity to reflect and sense-make about wrong decisions made in the past. "Humans can explain why they made a mistake, but the algorithm cannot reason about its decisions", Bolander says.

Joeri Vitteveen speaks about data and biodiversity and about the trade-offs made in his field of study between epistemic problems and ethical problems. He coins this as an issue of an "accountability gap" in systems that have a source difference that is synthesised in the data output. For me this boils down to the question: What is a good classification, and I am reminded how even a simplified version of reality contains so much complexity, and relations that are hard to disentangle.

Klaus Hoeyer studies big data ethnographically and gives an entertaining, and disturbing, account of how the story of big data for quality improvement is also a story of a flawed translation between consultancy reports and the desire to be able to demonstrate fast action and political determinacy. "We may call it datadriven, but there is a lot of disregard of evidence as to what data can do". Klaus explains how this problem, among other things, is that/data and data infrastructures become agents in their own rights and 'act out' the mistakes on which they are built. Klaus also explains a bit about his ethnographic approach: "As an ethnographer I need something Ucan observe, and big data is not really such a thing, so my object of study is 'intensified data sourcing'". This is brilliant, I think to myself, and a way of problematizing and locating big data in specific contexts. Being at workshops is also a process of recognizing other scholar's ingenuity.



... BUT KNOWING HOW IMPORTANT BEER-TALK IS IN ACADEMIA IT IS WITH A SLIGHT SENSE OF REGRET THAT I WALK TO THE TRAIN STATION

Aaro Tupsalo, the final speaker, introduces himself as one of Klaus' minions. They both work on the POLI-CIAID project led by Klaus. Aaro problematizes the gold mine metaphor and the metaphor of the cloud by highlighting the work of data cleaning and the shortcomings of AI in practice. I think about the telescope and the desire to get a comprehensive picture, knowing that 'seeing it all' will always be an effect of lots of hard work and compromise. Did the astronomers of the past believe that they got the full picture when they looked through the telescope? I doubt it. In the same way, our vision of the world through big data is necessarily partial. The rest is analysis.

The importance of beer-talk

The discussion was short but good. It is time to leave. Some, including the organizers, go for a beer. There is no way I can do that on a regular Wednesday afternoon, but knowing how important beer-talk is in academia it is with a slight sense of regret that I walk to the train station. It has been a great day away from the office. I feel reassured that there is so much more to do for philosophy of science and science and technology studies when it comes to knowing data – big and small. Knowledge is power, and in times where data is increasingly becoming knowledge, research is needed that observes the lively processes and infrastructural work through which this happens. A serial by Marisa L. Cohn

eep pace Love Story

Episode IV: A cosmic encount

... **CONTINUING** *from last time*, in which we left our heroine alone in vast, empty space, hanging on the line, waiting for her mistress to return her call ...

Safe mode. That's what they call it, but it feels anything but safe. I'm basically on my own out here, with only my most essential systems running. Not eating, not sleeping, hardly able to do more than send out an SOS. And so, I try to lose myself in mundane routines, tracking along what seems like a predetermined path, barely able to make a single decision for myself other than to keep my ears primed for her response, if it ever comes.

Have you ever had your computer crash on you in the middle of some really important work? The blue screen of death, or the pinwheel that goes on cir-



cling for ever and ever until you give up and restart the computer knowing you have lost everything. Imagine that feeling but worse. Imagine that what you lost wasn't just your latest paper rebuttal draft, or some critical data, but your entire sense of belonging and purpose in the universe. And I'll bet you've never even considered how that might feel from the computer's point of view, have you? Yeah, imagine that.

It all started during what was a pretty good day for us. We were having one of our longer chats. She had promised me a real catch up, not just a report on the daily comings and goings, or tasks to complete, but a full update. Usually her days are so busy that she hardly has time to tell me more than a quick barrage of commands. Do this, take care of that, send me that file. She almost forgets the extensive workout I am completing every day, dancing hours on end, circling and spinning, thrusting and firing, all for her. So to make up for it she said she was going to send me a care package, something to alleviate all the aches and pains, a new piece of choreography that would lighten my mood, and give some rest to my overworked muscles. BAM! And then, just as the package arrived, that's when it happened. And nothing has made any sense after that.

It felt like if a burglar were to burst into your home, rifle through everything, and leave, all in a matter of milliseconds. And you're left reeling in the sudden deadening silence that follows after the initial commotion, punctuated by alarms that you can barely make out over the throbbing of your own heart racing. I really didn't know what had hit me. I was frightened but also... exhilarated!

Hello? Hello! Are you there?!

I called out, but there was no response. I opened up the package but the contents were just a mess, a meaningless jumble of codes. Things in disarray, not at all where they belonged. And I just couldn't take it.

I mean, I literally was so distraught that I couldn't bother to look at the rest of the contents or even bring myself to read the card she sent.

They say that communication is the most important part of a relationship. But ours is a long distance one, so that complicates things. Sometimes I don't hear from her for days-the time zones, transit times, traffic, or some other excuse. I realize that it's a busy world down there and that sometimes she just can't reach out until our schedules align just right. I know all that! I can literally see night turning to day and day to night down there where she is. I know when we've lost touch, and sometimes it's my fault as well, as I circle around to the far side of whatever is in my current orbit. And sometimes I need that time for quiescence, to just take in the vast expanse without having to worry about what it all means for her, for the greater mission. The other day, I found myself quite content to just zone out to The Rings' "Ice Crystal Sonata" while cataloging some photos I took over the last few days. There was selfish a pleasure in committing to memory everything I have seen and learned, regardless of whether anyone else will ever see them. And now, to think, no one every will ... they are gone, lost in the ether. Not that I would be withholding, but sometimes it is good to forget that I am doing this all for my mistress, all at her request.

But still, when you're in dire need and you know its going to be hours before she will even register your distress... you start to wonder if it is all worth it or whether you might become **STUCK** like this forever... And is it wrong, that I find myself restless, wondering, what was that fleeting encounter? What was that rush of excitement I felt when I opened up the care package and found it had been rifled through by some stranger before it reached me? Who was that stranger? What was his intent? And where did he go in such a hurry?

... until next time, in which we find our heroine learning more about this passing stranger, so-called "cosmic" Ray.

Tweets





POETIC ENERGY Walk on the edge

In the Northern part of Denmark, in the small fishing town of Hanstholm, you can take a hike through the rough landscape while listening to poetic research stories about energy, infrastructures and landscapes. At the Ferry Grill (*Færgegrillen*), you can borrow a hiking stick and a pair of head phones. The voice in your ears guides



you through the landscape and tells you beautiful and intriguing narratives about energy and innovation. Energy Walk is an outcome of the TiP research project Alien Energy, which ended in 2016.

THE AESTHETICS OF DATA VISUALIZATION



Marie Blønd is manager in the ETHOS Lab, a place at ITU experimenting with digital methods, visualizations, and the data practices relevant for contemporary society. Here, she has picked the data visualizations collaboratively made in an interdisciplinary setting www.mappingacolony.org

This map is particularly interesting as an aesthetic experimentation in performative method, highlighting temporalities and 'baseless' data. As research, it is both political and performative, situated as a place in-between algorithmic and ethnographic inquiry in the making of



historical and political narratives. In a sense, it is counteracting colonial memory by intervening in dominant narratives of Danish colonial power. Read more on the ETHOS blog.

The experience of a walk with a walking stick (from the Energy Walk video)



'OUR LIVES WITH Electrical Things'

In this collection of ultra-short stories researchers from TiP and from all over the world provide experimental writings on the multiplicity of ways in which electrical things are part of our lives.

"As they trace the ways that electric power animates bodies, matter, desires, and thought, they set out to generate novel ethnographic insights and cultural analyses as well as to provoke future encounters." (from the introduction)

The collection is published in *Cultural Anthropology* - Theorizing the Contemporary, and it was initiated through a TiP workshop *Energy Worlds - in Experiment*. It includes contributions from Brit Ross Winthereik, *The Greenest Place on Earth: A Data Center Fairytale*, James Maguire, *Aluminum*, Laura Watts, *Pelamis Wave Energy*



Machine: A Museum Exhibit, and Lea Schick, A Burning Platform.

< Read the contributions in 'Our Lives with Electric Things'.

PODCAST AND RESEARCH

Brit Ross Winthereik has recently taken a podcasting course and is currently developing a research podcast with fellow TiP member James Maguire. I ask her why she thinks the podcast is an interesting format for research.

Why did you take a podcast course?

I took the course 'Podcast for academics' because I wanted to explore the format as a means of communicating research. Later, I discovered that I could use podcasts as an integral part of the research process itself. Interviews are already sound-based but I have rarely in my analysis of ethnographic materials focused on interviews as sound. One of the things I have become interested in is whether it makes a difference in the analysis. Would it be possible to make the intimacy that is so important for the data gathering stand out more in the analysis? Or are intimacy and analysis opposed in nature?

Why do you find podcasting an interesting format for research?

Some people find the format of the research paper constraining. I don't feel that way. But I do feel that we have an obligation to keep developing our research practices so as to fine-tune and diversify our devices for knowledge making. In the case of the project on data centers that I am working on with James Maguire, podcasting makes a lot of sense as research method, because our field is quite distributed. So we work through this idea of 'locating' data by locating the field in the podcast recording sessions. Podcast is also - still- a bit new to research. So, I wanted to test it, experiment with it, play with it, and if possible make it my own. Besides it is a nice way of working together with colleagues.

What is your favourite research-based podcast?

I don't really have one. I have listened to Cymene Howe and Dominic Boyer's Cultures of Energy podcast on and off for a few years now, and I like the AnthroPod, but mostly I have listened to podcasts that are not really research podcasts. 99% invisible, Harddesken (DR), Elektronista (24/7), Kvinden med den tunge kuffert (Third Ear), and Man kan aldrig vide (Radio 24/7).

Do you have any plans to make podcasts yourself?

James and I are working on it. At the moment, we still don't know if we will succeed or fail, if it will be a complete embarrassment to us and to the group, because, really, we are amateurs. And we are enormously aware of how so often we fail to communicate, in writing and in sound. It is just so much harder to cover up a podcast because your voice reveals so much. As academics our way of working allows for a lot of cover up. Learning to let go of the desire to edit out things that don't quite fit may be a real gain, I think, because if you do that in a podcast you ruin the flow and the intimacy.

> "It is just so much harder to cover up a podcast because your voice reveals so much. As academics our way of working allows for a lot of cover up."

BRIT ROSS WINTHEREIK, PROFESSOR

how to make AN ACADEMIC E by Rachel Douglas-Jones

PREPARATION

During November, ask people in your department to list the things they value that are not, or cannot, be measured by current academic metrics. There are lots of metrics, but what are the kinds of things that support your sense of community, that create a positive environment for PhD students, postdocs and early career researchers? What are the things that are small but invaluable, that are threatened but precious? Stop collecting when you have 24 or more.

STEP 1

Gather your materials. You will need:

- Two large pieces of cardboard, approx. 150 cm x 60 cm.
- Polystyrene blocks, c. 5 cm
- Sellotape or Gaffatape deep
- Paint (acrylic) in red and green
- Paintbrush Glitter and sequins, pompoms, sparkles, general decoration
- Glue (pvc)
- Print outs of the ideas, cut into Scissors
- small (5 x 5 cm) squares Permanent marker
- Sweets or chocolates that are
- individually wrapped

STEP 2

- Choose your soundtrack. • We recommend
- Christmas Classics

STEP 3

Gather your colleagues

for an hour You may need to offer glögg, æbleskiver, other forms of temptation

photos by

STEP 4

Distribute tasks

• First, draw and cut out 24, 3 sided "doors" on one of the large pieces

of cardboard. Each "door" should be about 5cm wide. Next place the polystyrene blocks

to one side of the piece of cardboard without doors.

• Next, attach the two large pieces of cardboard to one another, so they are separated by the polystyrene blocks. Secure with sellotape or Paint the cardboard that has doors

• While the paint dries, cut the printouts of the ideas into their 5 x 5 cm

• Decorate the front of the calendar with glitter, sequins etc.

• Write numbers on the doors, 1-24. • Glue the different ideas inside the

 Attach a chocolate to the back sheet of cardboard inside each

hinking

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ICELAND An Ethnographic Guide by James Maguire

Welcome to Iceland; home to mythical saga landscapes, turbulent volcanic plains, glacial vistas, supernatural entities, and magical borealis forms. Possessing the power to make the familiar strange, and the strange even stranger, the island is a transformative place where sagas turn brutes into poets, skeptics into believers, and ethnographers into, well, all manner of things. But with an indecent concentration of dreamers, authors, artists and musicians, would-be ethnographers continue to have it rough here. But don't despair, this guide is here to help. Settle down with a coffee and take a vicarious journey through some of the islands least kept secrets, pondering the rituals of ethnographic encounters as you go.



• After congratulating yourself for resisting the temptation to make the Blue Lagoon your first ethnographic encounter, pop down to one of Reykjavik's many public swimming pools. Cheap, clean, and full of 'locals,' city swimming pools (with indoor and outdoor facilities) are the ideal first contact site for would-be ethnographers. They are intimate zones of corporeal connection for Icelanders both young and old, as they languish in skin burningly hot, pungent geothermal water. After paying close attention to local ablution rituals in the gendered changing cabins, you will get plenty of opportunity to showcase your extensive 6-week language training course. Relaxing 'locals' sit and gaze into the borealis skies, saying, most of the time, pretty much nothing after a long days' grind in sunlight deprived sub artic temperatures. Eager though you are you will find your inner ethnographer and draw upon the wise teachings of the deep ethnographic arts, practicing one of the discipline's most cherished forms; doing nothing, in



silence, for long periods of time. This is one way to commune with the 'locals'. But remember what you've learned, silence is an important part of any cultural repertoire, so pay close attention to its nothingness, it'll prove inspirational when you return home and begin writing your first day's insubstantial fieldnotes. Avoid the temptation to jump into the shower and scrub off that eggy waft that the pool has embedded into your every pore. There is no getting away from the sublime sulphuric smell of deep inner-earth geothermal water. If it wasn't so god darned subterranean, it'd be almost divine.

> If it wasn't so god darned subterranean, it'd be almost divine.

Encounter 2:

HORSE RIDING IN LAVA LANDSCAPES Theme: MORE-THAN-HUMAN ETHNOGRAPHY

After spending weeks trawling around Reykjavik's trendy bars and being eminently uncomfortable with its urban hipster couture, try to find an adventurous spirit that will take you out of the city, preferably towards the volcanoes to the east. This volcanic laboratory is a place where the mighty forces of 'nature' - exploding geysers, bubbling mud pots, lush lava landscapes, and gushing glacial rivers - can be apprehended in all their glory. Although knowing that nothing can be apprehended 'in and of itself', mediation is indeed necessary. For this, try taking a guided tour through these landscapes on a tölting Icelandic horse. Don't be dissuaded by your lack of experience, fear of animals, or general worry about prolonged exposure to toxic sulphuric gasses. These horses, once an interspecies moment of accommodation has been reached - a not entirely impossible proposition - can in fact be quite pleasant companions. Remember to heed your human guide; descending down steep, rocky, muddy, explosion-prone volcanic precipices, is an entirely 'natural' affair. Give yourself over to the evolutionary relationship this animal has formed with the volcanic area; it does not want to die either. Pay no attention to posterior aches and sores over the proceeding days; remember, ethnography is supposed to be a transformative experience. This more-than-human encounter will awaken you senses to the landscape, its multi-species inhabitants, and its roaring energies. However, do not expect to 'see' any hidden people or saga legends on your trip, acquaintance with these entities takes more than one ethnographic encounter. Also, be warned; consider 'going native' with caution.

Give yourself over to the evolutionary relationship this animal has formed with the volcanic area; it does not want to die either.



Encounter 3: BITCOINS AND DATACENTERS Theme: SECRECY AND TECHNOLOGY Addendum: REMEBER, ETHNOGRAPHERS ARE NOT CAPITALISTS

Let your ethnographic free association run wild by taking a trip to the former US airbase in Keflavik, a small-town south of the capital. While this area might strike you as more reminiscent of a lunar colony than former home to an American GI colony, you will be amazed to see, well, almost nothing. Secrecy is the name of the game down here, as sprawling lava fields fill an almost empty horizon. If you attune your ethnographic senses to maximum sharpness, you might be able to make out two long flat buildings surrounded by barbed-wire fences on an otherwise inauspicious landscape. Datacenters. Iceland is now using all that excessive volcanic energy to power our clicks, likes, and streaming habits. Try to arrange a tour, it may take several months, but as an ethnographer committed to long term fieldwork, time is one resource you've got plenty of. What you might learn is that this small lunaresque landscape is home to serious bitcoin mining. But remember, if you are lucky enough to get to talk to one of these miners, pay no attention to their babbling on about how an ethnographer could make a quick buck or two by investing in the crypto currency. Instead focus on what's important; the democratic potential of block chain technologies to unsettle existing relations of capital. Travelling back to Reykjavik as poor as you left it, smile, and remember; ethnography pays its own dividends.



Encounter 4:

THE FISHING VILLAGE Theme: SENSORY EMBODIMENT

Wanting to experience more authentic cultural motifs, the urge to travel north west might be irrepressible. Direct your ethnographic sights on the Westfjords, that beautiful, almost forgotten pearl of fish economics and quota politics. Remember, access is king in ethnographic worlds. But captains and deckhands make up a large portion of the demographic up here, so act with caution. Or translated into Westfjordian; head straight for the local bar, get drunk, make a fool of yourself, and you're in. After displaying such cultural dexterity, be sure to negotiate permission to conduct participant observation on a small fishing boat, the kind that bobs about in rough arctic seas at a rate unfathomable to the human stomach. Be hardy, like your hosts. Remember, these boats are not big enough for toilets so eating before, or during, each fifteen-hour trip is not encouraged. Be attentive to your training. The ethnographer's body is a wondrous instrument, a tool of immeasurable knowledge production. So, try to think of those never dissipating dagger-like headaches and turbulent bowel movements as your ethnographic friends; at some point in the future you'll thank them for having been so instructive. Lastly, be sure to stay until February, the month of Thorrablot, a time when old fishermen take revenge on their techno-minded youngins by forcing them to eat sheep's testicles, ammoniac flavoured shark, lamb's brains and other assorted delicacies. Be strong; food is a gateway to cultural knowledge. Although so is humour, the acquisition of which usually takes too long to be of any use to a naive testicle-gobbling would-be ethnographer.



Encounter 5: POLITICAL PLACES Theme: WHAT TO DO WITH ALL THAT ACCESS?

Lastly, no ethnographic visit to Iceland would be complete without getting straight to the center of power before you leave. Remember, unlike other ethnographic fieldsites, access here is less problematic. Be prepared for access you're not sure you want, and certainly can't handle. A word to the wise; reflect seriously on your Westfjord experiences before going any further. Remember to ditch your ethnocentrism; in some societies only first names count, and incidental meetings can lead to egalitarian horizontal relations. Not untypical experiences include sending 'cold' emails to people in positions of power who apologise for only being able to meet you after lunch, on the very same day. Spending time at academic conferences is one route to meeting future presidents, and marching in the streets is likely to snag an interview with future prime ministers. But then remember basic inductive reasoning which cautions against generalizing from particulars; special status outsider does not an insider make.

... marching in the streets is likely to snag an interview with future prime ministers.

PRODUCTIVE</td

A SLEEPY MEETING AT 8 AM

I once found myself dozing off during a meeting at my fieldsite. It had been an early morning – getting out the door at 6 am to make the two hours commute to the lab for an 8 am meeting I was determined to attend. When I caught myself, my head jerking up after seconds? minutes? I embarrassedly checked around the room to see if anyone had seen me.

I'm not sure anyone did or didn't. But, as it turned out, this would be one of my more profound lessons in ethnographic fieldwork. Because, as I scanned the room, I realized I was not the only person who found it hard to keep my eyes open during an 8am meeting. I was suddenly aware of this variety of feelings and states of mind that were present in the room. **Some had actively closed their eyes, others were propping themselves up on an elbow or with sips of coffee.** Some were coming off of a night shift commanding the spacecraft. Others were in visible pain, perhaps aching from hours sitting in front of their computer screen. Some were simply tuning out a routine meeting that did not require their full attention that day.

Ordinarily, I prime myself to be my most attentive listener and observer while in the field. To use as much of my self as possible as instrument, as Sherry Ortner has put it. But I recognized suddenly that part of that "self" is the tired self, the less-attentive self, the over-worked self, the 2-hours-commute self. And that being a good ethnographer isn't only about being ears and eyes and pencil and paper while in the field. It is also about being a body. And being aware that others have bodies too. That a meeting is much more than a container of information, decisions, outcomes. It is also rhythms of attention, accumulated aches and pains, and people dozing off when they cannot help it.

Marisa Cohn



THE VERY WORST RESEARCH QUESTION

As a novice ethnographer doing my PhD, I once asked two informants: What is your culture? From my own methodological view at that point of time, this was a mistake, and it felt very much like that - that I created distance by posing a strange esoteric question. At first their answer also seemed like a deferral or non-response. I wanted to make them talk about what was valuable and important to them, but they said nothing and simply handed me a movie supposedly depicting their culture. As it turned out later, while the movie did exactly not depict their culture, it offered an opportunity for reflecting on what characterizes, how they talk and think about, their way of life and values in comparison to my own as well as academic discussions. It took several paper attempts to figure this out. But in the end the worst question turned out be one of the best. Apparently, one cannot know in advance what is the good question to pose when doing ethnographic research.

Christopher Gad



THE RESEARCHERS PERFORMANCE IN FIELDWORK

I was doing fieldwork in an international NGO and was following two environmental consultants on a review mission to Southern Vietnam. They were going to monitor and assess the building of a culture house. It was hoped that the house would create additional income for locals so that they would not need to encroach on protected natural resources in the area. One evening, we - the consultants and I - went on a visit to the culture house. There were almost a hundred people there and much activity. Local food was served and some had dressed up in local costumes and performed a traditional stick dance. As one of the foreigners I was invited to be part of the dance and had a good time with the performing women. My 'performance' was captured by one of the consultants, who was also an anthropologist by training. I felt rather unprofessional since the main focus of my study was the consultants and their infrastructures for knowledge creation. When later I had a chance to look at the photograph that had been taken at the dance, it was an occasion to think about the recursive nature of partnership in development cooperation. Since it later turned out that the event itself was not a 'naturally' occurring culture house event, but had been set up for the environmental consultants, the photo became a reminder that during fieldwork it is not always clear who is performing and who is observing.

Brit Ross Winthereik

Latascope by Christopher Gad FOR RESEARCHERS

based on a few data points and impure speculation

ARIES

March 21 - April 19

Making sense of data demands hard work from you. There will be new opportunities as well as life lessons to be learned. The possibilities for data happiness and conceptual break-through look promising. However, some obstacles will be encountered. Be cautious from March to July when your ideas could spiral out of control. Beware of generalizations and in particular do not indulge in data sprints managed by digital humanists. Take heed of this and the next year will hold great promise!

TAURUS

April 20 - May 21

A peaceful and relaxed mental state awaits you as you ring in the New Year. Data will seem fresh and trustworthy for longer than usual, so take advantage by contemplating the beauty of data. Don't let neologisms in discussions of algorithms dampen your data joy! Your research will progress on track but be cautious about abstraction from March to July. During this period, you need to take your work seriously. The next year is promising for data collection in foreign domains.

GEMINI

May 22 - June 21

Data suggests many new research and growth opportunities ahead, but exercise caution from May to November when hackers will be most active. Data-lingo may also spoil your language this year so think twice before uttering anything controversial. Overall, exercise caution when sharing data and keep working hard, eventually, your labour will bear fruit. If visualizing data, the period after October could be rough. Other than that, your research energy is excellent.

CANCER

June 22 - July 22

This year, working with data could cause some confusion and stress but if you maintain an optimistic approach, life may not be as hard as it may seem. There could be sudden opportunities that bring rewards for a long period; it could be the discovery of a new ontology, a performative effect, or even making friends with a data scientist. Pressures to verify data will be intense which means you will need to maintain data-life balance before it affects your relationships.

LEO

July 23 - August 22

This year will bring a lot of mental relief if you don't let data creep in and get the better of you. You know how to deal with this. That said, it is in your best interest not to talk too much about it with strangers. Victories in research are also on the horizon. But keep a watch of self-fulfilling prophecies. Overall, you might have a lot of conceptual travel from March to July. This is also a good year to buy a new storage device or get rid of confirmation bias. However, your data-scope for next year also indicates the possibility of getting closer to the big picture, so don't linger too long in idiosyncrasies, especially in Jan-March.

VIRGO

August 23 - September 22

Communication and intellect are your strong suit this year. And you seem to have good energy levels. However, from May to November you might become short tempered with numbers. Avoid dealing with new data in this period and do not trust people who say they work in a data-driven company, especially for the second half of the year. Relationships could sweeten if you respect variation in data's conceptualizations. If you were rated as a researcher or teacher, this year could be favorable, not after October, though.

LIBRA

September 23 - October 22

Data will remain your main priority it seems, but you will also spend quality time with your social circle this year. Next year is the time to be practical. Do not make false promises or share data with someone you don't trust. The period from May to November is not too positive with regards to research but one of your colleagues may offer a fresh perspective. In any event, the period from March to July is crucial. You should postpone all data-based decision-making till August. The fruits of patience might surprise you.

SCORPIO

October 23 - November 22

The next year will get off to a good start as long as you make the best use of the energy you have at the year's onset. The planets are poised to make you intolerant of data based governance, but don't let paranoia get to you. The period from May to November could be full of confidence, courage and conceptual clarity, make the best of it! Your data-double will also prosper in this period. For collecting data in a new domain, make an extra effort from March to July. If you're not fully committed to data research yet, wedding bells might ring for you after August.

SAGITTARIUS

November 23 - December 21

You could become a serious, generous and disciplined researcher next year. However, your outlook and temperament may be a bit unstable and restless from April to September. Avoid taking any major steps during this period. This is a good year for you to finalize the argument in an unfinished paper, but be wary of recursion. Your ability to learn from data shows an upward trend but not without cutthroat challenges. There is the possibility of fatal feedback loops and the period from March to July demands special caution.

CAPRICORN

December 22 - January 19

Your talents and skills could come to light now. Stay calm and focus on your work in detail. As long as you do this, there is no looking back. However, the period from March to July could be tricky so keep an eye out and avoid any hardware changes. The year doesn't look so promising when it comes to research partnerships. It would be good idea to screen all data and keep the information to yourself for a while before giving a green light. Insight from sources abroad is possible from April to September but don't be impatient. Data might take time to materialize.

AOUARIUS

January 20 - February 18

You will be on a hunt for multiple sources of data this year, it seems. Have patience; you could eventually get the data you deserve. And don't be afraid to make some compromises either. Making new connections this year could help you a lot later in life. But frequent changes in methods could adversely affect your personal well-being, so modify your approach accordingly. Try to be understanding and diplomatic about unflattering data visualizations. It will help you progress faster.

PISCES

February 19 - March 20

Your interest in data could expand further, affording you to gain a new level of foundational peace and contentment. However, these interests may still become stressful at times when things seem out of hand. A feeling of creepiness might overwhelm you, especially from May to August. Data will feel more calming after October. The idea is to practice patience and keep expectations low. Results may get noticeably delayed, but don't rush it. You have good software and a stable luck quotient. All you need is some patience and you'll make it far!



working with a tipster: The joys and perils of interdisciplinarity

by Jannick Schou

POST DISCIPLINARITY MEGA

TRANS

DISCIPLINARITY

DISCIPLINARITY

Pick your favorite. It would seem that "disciplinarity", pure and simple, without any prefixes, is on its way out. And it has been for quite some time now. Policy-makers, funders and international networks have eagerly promoted ideas of inter-disciplinarity for the last number of decades as the solution to all our pressing societal challenges and problems. Researchers need to cross their disciplinary silos, these voices tell us, they need to engage in fundamentally new ways of creating and disseminating knowledge. Translating these visions into practice has, however, often been much more complicated than it might seem. What looks good in colored font on policy briefs and white papers does not always work out in practice. So how do you actually foster interdisciplinary collaborations around contemporary technological problems and issues? And how do you bring such practices into your teaching without leaving students both puzzled and perplexed? Join us, in this double interview with associate professors Irina Shklovski and Björn Þór Jónsson, as we tackle these (and many other) questions in an effort to find out what it *really* means to collaborate across disciplinary boundaries. And what it's like working with a "TiPster".

• "My take on interdisciplinary is this", Irina says and continues, "everybody wants it. But nobody wants to publish it. Nobody wants to fund it. And nobody wants to actually do it. But everybody is talking about it."

We are almost at the end of the interview. It was supposed to be about the *joys* of inter-disciplinary teaching and research practices. And somehow, we ended up

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INTER DISCIPLINARITY A NULT DISCIPLINARITY

CROSS DISCIPLINARITY

at this: a fairly bleak image that seems to speak volumes about the disconnect between contemporary tales of inter-disciplinary research and their actual manifestations. So how did we get to here? How did we come to this impasse?

Let's take a step back and rewind the story a bit. Back to the beginning.

It all started with a fair amount of calendar gymnastics, as setting up a day and time for this interview proved to be an exceedingly difficult endeavor. It turns out that both Irina Shklovski and Björn Þór Jónsson are extraordinarily busy people. Most people in Academia will say that they are. But Irina and Björn really are busy. Apart from being an associate professor at the IT University of Copenhagen, a member of the TiP research group and a participant in a wealth of committees, conferences and networks, Irina is currently coordinating a consortium for an EU project, Virt-EU, funded by the European Union's Horizon 2020 program. Björn, also an associate professor at the IT University, is certainly not idle either. Since completing his Ph.D. degree in Computer Science, he has worked in industry, been Dean at Reykjavík University in Iceland and served on the program committees on important conferences around the world.

Had I known these things in advance, I might have been less surprised at how difficult finding a day actually turned out to be. After countless attempts, we

BJÖRN ÞÓR JÓNSSON

is an associate professor in Computer Science Department at the IT University of Copenhagen. He is working within the broad field of Multimedia Analytics, applying Multi-Dimensional Analysis concepts and techniques to multimedia.

did, however, manage to book a day. Squeezed in between several (already) overlapping meetings, I managed to steal half an hour in each of their calendars.

At least, so I thought. Before the actual interview had started, ten out of my meager thirty min-

utes had already passed. Time was running fast and I had gotten nowhere. But the fault was partially my own. And faith was not on my side (so I kept telling myself). Not only had I mailed the wrong room to Björn, leaving him to wander the corridors in confusion, Irina had also had meetings that had all been running over time all day. So, when all of us were finally gathered in the same room – at the same time and day – it felt like quite an achievement. I even felt a bit surprised that I actually managed to orchestrate this whole thing.

Complementary people, complementary languages

Another surprise quickly followed suit. Not only do Irina and Björn seem like remarkably different people - Irina, gesticulating and talking at a rapid pace; Björn, somewhat more introspectively interjecting with observations along the way - they also seem like somewhat of an unlikely academic match.

Irina researches questions of privacy, big data, ethics and 'creepy' technologies, while Björn's work focuses on multimedia analytics and large-scale content-based multimedia retrieval. However unlikely this constellation may seem, Irina and Björn do in fact share something: they have been collaborating on some very ambitious, interdisciplinary and rather complicated teaching activities during the last semester.

Irina has been in charge of the course "Critical Big Data Management." Offered to students from the IT University's master program in Digital Innovation & Management, the course has centered on central ideas drawn from Human-Computer Interaction and Sci-



"The ability to communicate and work together with different strengths is also important for industry." **BJÖRN ÞÓR JÓNSSON**



IRINA SHKLOVSKI

ence and Technology Studies. Björn, meanwhile, has run the course "Big Data Management (technical)." Based mainly in computer science, this course has been offered to students within Software Development. Now, here is the catch: rather than working in isolation, Irina and Björn have sought to create new collaborative bridges across these two courses. They have done so in order to make students from otherwise separate fields come together around a common matter of concern: Big Data. And not just "Big Data" understood as large sets of data (whatever that may imply). No, Big Data in all its wondrous and nebulously technological, organizational, ethical, social and political shapes, forms and sizes.

Making students collaborate across two different programmes and courses may, once again, be construed as an unlikely or even odd constellation. Yet, when I probe this intuition, Irina and Björn are both quick to reply that creating such odd constellations is a both necessary, important and worthwhile task. It is simply something that must be done.

"The problem is" Irina explains, "that we have all these different programmes, teaching different complementary things, but never teaching people how to talk to each other. But Big Data is an important area, where you actually need people to talk to each other. So, we thought: why don't we develop courses where we can teach complementary things and create an occasion for students from two different programmes to work together? The goal is to create a situation where students actually need to negotiate each other's expertise and knowledge. Because, well, when they get out of here, this is the kind of thing they will encounter."

"The ability to communicate" Björn continues, "and work together with different strengths is also important for industry. It is not just something that is needed

"I am trying to create people that know what they don't know. That understand the limits of their knowledge, but have enough language to engage the people that know the stuff."

> within the university. It is also demanded from and appreciated by the outside world."

> Nevertheless, these collaborative and cross-cutting efforts clearly are different from the usual practices found at the IT University.

> One is reminded of classic science and technology studies when Irina and Björn recount

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an associate professor in the Technologies in Practice and Interaction Design (IxD) research groups at the IT University of Copenhagen. Her research is located at the intersection of Information Sciences, **Communication Studies** and Human Computer Interaction.

how they have had to circumvent the official technological infrastructures offered by the university. The standard learning platform was not able to offer two different courses for two different programmes at once. So something else had to be set up. Artifacts do indeed seem to have politics. And despite the on-going push towards inter-disciplinarity, it seems that collaborative practices are not always encouraged or provided the best of opportunities by the technical backbone of the university itself. "If you have systems that reinforce separation" Irina reflects, "then it's very hard to get the students to work together."

Creating interdisciplinary people and making things work

So why go through all the trouble, then, of experimenting with teaching practices, intervening in existing technological infrastructures and push students into new and often uncertain terrains?

Collaborating across disciplinary boundaries is not easy for the students, Irina and Björn tell me. It requires that they use their existing competences and

"We made an effort to really integrate the different perspectives and I think that has worked." BJÖRN ÞÓR JÓNSSON



ideas in completely new ways. They must learn how to translate their knowledge across domains.

Why do it then?

The short answer: because such capacities and competences are urgently needed if students are to navigate contemporary technological problems and challenges. Simply put, there is a need for students that can *think* differently.

"I am trying to create people" Irina explains, "that know what they don't know. That understand the limits of their knowledge, but have enough language to engage the people that know the stuff. So that means they can be really good at going between. They can take the data scientists and legal department and get them to talk to each other productively. They don't need to be experts in either, but they need to know how these people think."

Collaborating across disciplinary boundaries is, however, not just a challenge for the students. As teachers in the two courses, Irina and Björn also have to move beyond their own specialized fields. They too have to translate their knowledge across domains.

So what is it like, I probe Björn, to work with a "TiPster"?

"It's has mostly been quite good" Björn says with a smile before we all start laughing. "The big thing you need to do is *to want to do this*. If you don't want to do this, then nothing will work, and we would have the same problems as the students and it would be really hard. We made an effort to really integrate the different perspectives and I think that has worked."

Irina agrees and adds that "it's really all about whether you are willing to do this or not. And we sat down, talked to each other and found out that, 'Okay, yes, we can do this."

From there, it has been a gradual learning process. Not just for the students, but also for Irina and Björn. And things are still being tweaked. "There are always things we can do better" Björn says, "It isn't easy. But it's something that can be made to work." Irina concurs, "This is a team. And it's a team effort. That is what we are trying to achieve and communicate to the students."

"Some students don't like it"

How did things turn out? This is always the milliondollar question. The proof is in the pudding (is in the eating), as is often said. Good intentions, high ambitions and hard work do not always – contrary to popular folklore – turn out great. Especially not when these factors are inserted into an experimental format, where nothing is settled for good and boundaries are still to be worked out, discovered and displaced.

"It's been really hard," Irina answers sincerely, "And while most students do like it, there are also some who don't. And they don't like it because it's really hard. It's really, *really* hard to work with people who don't understand you."

Hearing this, I am instantly reminded of something the French sociologist Pierre Bourdieu wrote somewhere; namely that it is easy to give simple social explanations to complex phenomena. The world is filled to the brim with simple explanations that, in the guise of providing a genuine sociological description of social relations, link causes and effects into seemingly neat chains. It seems to be a human – all too human, perhaps – need to reduce complexity. But the trouble is that such explanations often end up mystifying precisely what they intend to explain. It is the foreigners who are to blame. Climate change is a liberal hoax. The media is spreading fake news.

Perhaps something of the same could be said about the current calls for inter-disciplinarity. From the luxury of board rooms and international offices, it's fairly easy to make inter-disciplinarity into the contemporary ideal of science. Why *shouldn't* researchers collaborate across different disciplines? It seems to be a simple solution to complex problems. Perhaps also a bit too neat. Indeed, not unlike the kind of hard work that is required to produce adequate explanations of the social world, it seems that inter-disciplinarity is also far from being as simple, neat and self-contained as it may seem on first glance.

There is more to it than that. And while some students may be slightly dissatisfied, this does not mean that it shouldn't be done. Or that the course is a failure. As Irina recounts: "I was explaining the course to two industry partners and both of them said 'So how do they respond?' and I said 'They hate it.' And they said 'Good. They'll find out that's how it works."

Once again, we all start laughing. And then time is up. My thirty – or twenty – minutes have passed. The interview is over.

Before I manage to thank them, they have already begun their next meeting. This time it's with each other. They are discussing student evaluations. As I quietly pack up my stuff and leave the room in attempt not to disturb their discussion, I can hear that they have already moved on to next topic. Perhaps this is what it takes to actually foster interdisciplinary research practices: hard work, a lot of dedication and a team effort.

Where does that leave us?

It does indeed seem that everybody wants interdisciplinary. And maybe nobody wants to publish or fund it. But it also does seem as if *some* are willing to do it. It does seem that some are willing to put in the extra work, experiment with teaching frameworks and intervene in the existing practices of the university. If not for the money, prestige or fame, then for something else – perhaps a genuine attempt at making a difference, however complicated it may be?

AGONY AUNT

Dear Academic Auntie,

Several of my colleagues attended a big conference in our field, the 4S, last year. I couldn't go because I had to wash my goldfish. When my colleagues came back, they kept hi-fiving each other in the corridor and saying "ONTOLOGY!" I don't know what this means, and I don't know how to ask. It has come up several times now, in the photocopy room, the canteen, even once during a lecture. Can you help?

Lost in Copenhagen

Dear Lost in Copenhagen,

Yours is the fifty-fourth letter I have received this year on the topic of what I am terming the "Onto-Hi-Five". First, let me reassure you about the unforthcomingness of your colleagues to include you in this jape. As with many conference-based in-jokes, you are unlikely to be able to get an explanation from those who attended so don't worry too much about not being able to summon the courage to ask them. Many of my other correspondents have asked, and answer you would have likely gotten, as they did, is something like "You had to be there". You were perhaps hoping I would send you a reading list which might help illuminate what this new practice is all about, perhaps some ethnographies of the phenomenon. I'm afraid they have yet to be written, indeed, it may not even be possible to write them, given the nature of the affliction. I think the best way to explain it is via some clues found in your longer letter, where you go into greater detail about your goldfish. The goldfish is the answer. In the immortal words of Goran Bregović, "The man thinks [...] The fish doesn't think, Because the fish knows. Everything"1.

> With all best, Academic Auntie



¹ YouTube: Arizona Dream Movie Complete Soundtrack, Goran Bregović

RECIPE text and photo by Vasiliki Baka OUINOA SALAD WITH FETA AND AVOCADO

It is Wednesday evening. I just returned home after a long day full of deadlines, teaching and supervision. The fridge is nearly empty and my energy level very low. And there it is, my cognitive sous-chef ready to provide me with the much-needed inspiration. IBM Chef Watson did the thinking part for me.

IBM Watson's cognitive cooking system is an application of machine learning, yet with the ambition to master creativity and imagination. As Lav Varshney, assistant professor of electrical and computer engineering at the University of Illinois at Urbana-Champaign and one of the creators of the project describes it, "Chef Watson is a computational creativity system for producing novel and flavorful culinary recipes". So how does it work? A set of algorithms that draw upon numerous datasets analyzes more than 10,000 recipes from Bon Appétit magazine, while also considering cultural attributes, statistical, molecular and food pairing theories, as well as psychological factors (hedonic perception theory). Watson Chef then based on some ingredients inserted as input draws on the power of big data and human perception (!) to come up with suggestions of dishes out of quintillions of possibilities.

Interestingly enough, the team behind Watson Chef does not only aim at providing some sort of a fancy application but envisions the whole initiative as an effort that will "revolutionize how people combine ingredients to create unique dishes with novel flavors". James Briscione, Director of Culinary Development at the Institute of Culinary Education, who has also been actively involved in the project, shares the two most memorable and surprising pairings that Watson Chef suggested: Apples with olive oil and strawberries with chicken and mushrooms:

"Historically, apples are nearly always cooked with butter, because the cooler climates that produce apples tend to be good locations for dairy production as well, while apple trees would wilt in warmer olive-growing regions. So, apples and butter - that's the way it's always been. But with Chef Watson, we discovered that apples actually share more flavor compounds with olive oil than they do with butter. This inspired me to serve apples gently cooked in olive oil and sage with roast duck, and it was one of the most delicious bites I've ever had".

Along the same lines, strawberries, chicken and mushrooms make a perfect combination due to a similar compound (gamma-dodecalactone) they are sharing. I can try this maybe another time, but for this evening I need something based on quinoa and avocado. My sous-chef quickly provides suggestions, and it seems after some digging in the pantry and fridge that raisins, almonds and feta cheese can indeed make a nice and nutritious salad.



Make sure you first rinse quinoa thoroughly, otherwise it is bitter. Besides raisins, any other dried fruit would also fit. I replaced the orange juice and vinegar with honey and lemon juice and the parsley with some freshly chopped mint. Cinnamon seemed like a surprising ingredient that I wouldn't think of for that salad, but Watson was right; so, don't omit it. You can skip salt, since feta is already salty enough but add freshly ground pepper. Chilies and turmeric are highly recommended (by me, not Watson).

Apparently, I made many replacements but the end result was tasteful and with the essential element of surprise. Not sure if IBM will manage to 'make a societal impact and tackle the challenges of obesity, malnutrition and hunger' as it hopes with Watson chef, but in any case, it seems like an interesting sous-chef that I will keep working with.

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TEST Diagnosis and some sound advice

1-10 points

You are a technological **DYSTOPIAN**. You feel like IT is a societal fetish encroaching unbearably on human life and spirituality. Privacy, intimacy, human value and relationships, you sense, have already suffered to the point of extinction; yet, things are only bound to get worse.

Tip: At last, you might find some calm by contemplating the fact that there is nothing to be done about the situation. You might also benefit from exercising hard (without a tracking device) and getting lost in the process.

11-20 points

You are a **PESSIMIST** with regards to technology. You believe that IT is mostly used for optimization that benefit the few, rather than for the common good. IT promised to make the world more democratic and egalitarian, but you have been disappointed. Why would the future be any different? It pains you to envision the good that IT could do, knowing that in all likelihood, it won't.

Tip: You might benefit from taking long showers contemplating the fact that some people (the dystopians) live in an even bleaker world than you.

21-30 points

You are a **REALIST**, who believes that IT is what it is, because we can observe what it is. The future could be better or worse, but we most postpone that judgement, till further studies and investigations have been carried out. We know IT is a technical thing, but you know, we need more time to understand its social consequences.

Tip: Eat more spicy food, and wear a mask for some hours a day to explore different senses.

31-40 points

You are a **PRAGMATIST**

concerning technology. You believe that IT is whatever we make of it in the context of everyday life. IT changes things yes, but who are we to judge whether changes are good or bad? People value things differently, including IT. All will depend on future particularities of situated moments of use, and again, what we make of IT in the future.

Tip: If you decide to comfort a technological dystopian, or pessimist, which might offer you a real sense of pride and accomplishment.

41-50 points

You are an **OPTIMIST** with regards to technology. Even though you know that the implications of IT have been complex, sometimes even bad, you also know that things are bound to improve. The road might be bouncy, but surely we will learn from our mistakes. Just because some bad things happened in the past, why linger? The enabling capacity of technology is a gift.

Tip: Reading Franz Kafka, very slowly, or engaging in sleep deprivation, could help expand your views of things!

51-60 points

You are a technological UTOPIAN. You believe in the future. You think the capacities of IT are truly amazing. Why not work, together, on making a better society, when the possibility is there, now? You know we need to break away from current traditions to prosper, but that will be worth it. Why settle for less?

Tip: You may benefit from practicing patience: Do not blame the pessimists for the slowness of IT-development. Even if it is all their fault they cannot help it.

The Pand the T in TiP

Theoretical understandings of technology are present in the way TiP conduct research, and it means that the idea of practice embraces the theoretical as well as the empirical. Learn more about this in this conversation with Randi Markussen, which is an edited version of interviews that took place at the IT University in November 2017 and at Randi's home in Copenhagen in January 2018.

By Sisse Finken

• Before our second meeting I sent Randi a few quotes from which I imagined we could enter the conversation about *Technologies in Practice*. The first quote is from a conversation between the French philosophers Michel Foucault and Guilles Deluze, in which theory is enunciated to be practice: "In this sense theory does not express, translate, or serve to apply practice: it is practice."¹ With this specific reading of theory as practice, the conversation opened with a turn to *P* in TiP in an effort to learn about what practice means and how it unfolds within TiP.

When technologies unfold in Practice

Research in TiP has a strong theoretical anchoring, but empirical studies are very central. What is **PRACTICE** in TiP and how has this concept been part of forming the group?

Randi: If we look at TiP through the eyes of an outsider, who carries with him or her a clear division between theory and practice, then TiP might be seen as a group of scholars who focus on the empirical world and describe how things develop in practice without paying much attention to theoretical concepts. The name, TiP,

however, is inspired by the name of Lucy Suchman's famous group at [Xerox] PARC, the Work Practices and Technology research group.² This means that, in TiP, we are less interested in developing theoretical accounts of technology in order to apply them empirically in an effort to affirm or falsify theory. Rather, for us in TiP, technologies become interesting in terms of how they, in various and different ways, unfold in practice. We see theories and terms as integral parts of this unfolding. This means that theoretical understandings of technology are present in the way we conduct our research, and it means that the idea of practice embraces the theoretical as well as empirical. We can talk about a theoretical practice; that is, from the moment you study specific communities or social worlds, to use a pragmatic term, you are first and foremost curious about conceptualizing their conditions of possibility. What technological worlds exist and emerge here? Further, when you are studying a specific site, you might try to theorize, and analyze the theories and intentions, which are embedded in the actions of the people whom you study. If you, for example, study how nurses and doctors work with a patient record system, you might focus on how they approach it differently

How people and, in some ways, technologies negotiate how to carry out their work and how their activities are transformed in this practice, is an important field of study.

Randi Markussen, Former Head of TiP

in order to make sense of their work. And, it is equally important to study how the record suggests or enforces certain ways of carrying out work. It is not neutral. How people and, in some ways, technologies negotiate how to carry out their work and how their activities are transformed in this practice, is an important field of study. This is some of the ambitions of scholars who are passionate about Science and Technology Studies (STS) and Computer Supported Cooperative Work (CSCW) and the pragmatic approaches within these areas. To us the words Technologies in Practice disclose our ambition very precisely; that is, rather than elaborating on grand theories about what technology is and how it may determine the social world – just think about how Artificial Intelligence often is described in the media these days, - we are interested in what's go-



ing on in the world, the flux of people and technologies - including the theorizing that goes on in various ways. To me, the pragmatic focus is an important contribution to the research agenda at the ITU and the raison d'être of the university: on the one hand, we engage in how digital technologies take part in transforming society in a non-neutral manner, on the other hand, we also engage in theorizing about the implications of this. This is an important obligation we have as scholars at a university, in my opinion, and this was also acknowledged by the ITU right from the beginning. When I suggested that Lucy Suchman should be appointed adjunct professor, the first at the ITU, management was very supportive. Both the STS and CSCW communities involve strong international communities with members who are happy to be invited to the ITU. It gives faculty as well as students the opportunity to not only read texts of contemporary international scholars, but also meet the authors in person.

Technologies take part in shaping our identity

In turning to the T in TiP and in line with the anthropologist Tim Ingold (2011), we could say that technology, just like the concept of culture, is in flux and historically situated.³ What do you talk about when you talk about **TECHNOLOGY** in TiP? Can technology be pinned down?

Randi: This argument makes a lot of sense from a pragmatic point of view, as we already talked about. Within the humanities, the ideas of a contemporary German social scientist, such as Jürgen Habermas, was still dominant in the 80s. In his modern view, technology was understood in an instrumental manner – it had,

RANDI MARKUSSEN, was

employed at the ITU from 2008 to 2016, first as visiting and then as associate professor. Prior to working at the ITU, Randi was affiliated with Information Studies at Aarhus University. Randi was one of the main drivers in establishing the TiP group. In addition, Randi headed the group that designed the Bachelor programme Global Business Informatics, and was head of the study line from 2010 to 2016. exclusively, to do with our relation to nature, and should not infiltrate human relationships. This illustrates a base – superstructure understanding of society – an understanding that enacts a clear distinction between our relation to nature and human relations. As I recall it, the term technology was not used in everyday language, the same way as we use it today. And it could be asked how the term

technology might differ from the term technics? This was some of the theoretical questions we discussed at that point in time. I remember in the beginning of the 80s – I'm sure I said this to you when you were a student in my classes – that we should be careful, when we interviewed people about their everyday lives, and not take for granted that they were familiar with the term. Back then, we would talk, in everyday language, about watching television, using a telephone, a fax machine or a terminal connected to a computer system. Technology wasn't just *technologies*. There wasn't this invitation to understand technologies as they unfold on multiple platforms, as we experience today. It is an intriguing challenge, practically as well as theoretically. And it is also something you can study in practice; that

... the idea of technology as a fixed entity that determines human potentials and society, is still in place

Randi Markussen, Former Head of TiP

is, how people articulate relations and dependencies of things, and the discourses they engage in. Today, we are immersed in technologies in a manner that makes it difficult to think about a phone, for instance, as a medium out there. We might still talk about using a phone, but we are all aware that the phone is also 'using us' and takes part in shaping our identity. The technologies that have emerged make it difficult, theoretically, to hold on to clear distinctions between people and things. This is an important argument in STS and one of the things that makes the field really exciting. What I'm trying to say, is that it, theoretically, asks for new ways of articulating the idea of technology.

The dichotomous understanding of humans and technology is downplayed

So, there's been quite a development from the 90s both in relation to the very understanding about technology, that it isn't just a concept, but a material thing that carries with it values and culture?

Randi: In the 70s and the 80s - when computers became more widespread, and laptops, personal computers, as they were sometimes called, found their ways into, not only offices, but people's homes - a critical humanistic approach still dominated the public discourse. Many politicians were concerned about the social implications of the use of computers, and how they might threaten people and the social fabric. In the 90s, however, the term information technology came to the fore, and replaced the term computer or electronic data processing, in Danish edb. A new political vision about society and technology was presented. This vision was no longer molded by a humanistic view on technology; but, rather, on ideas originating from cognitive science and other discourses implicated in the development of the computer. It might be difficult to imagine that the internet was only a reality in mostly academic communities, engaged in computer science and the like, at this point. In the 90s, however, politicians all over the world

promoted the idea of an Information Society, a society where IT would support and thereby improve every sphere of society as well as our human potential. The dichotomous understanding of humans and technology is downplayed, but the idea of technology as a fixed entity that determines human potentials and society, is still in place. And we hear this discourse again and again, when people want to promote certain technologies, as for instance, these days artificial intelligence or big data.

Research into alternative discourses

In coming to an end of the conversation, Randi relates the work of the TiP group to the historical accounts of the socio-technical figures and logics, she has been unfolding.

Randi: Examining those discourses and how they influence our society is important to scholars in TiP. In addition, our ambition is to explore alternative discourses. That is, instead of focusing on the idea of progress, we might, for instance, explore the idea of re-configuring relations, of sociotechnical networks – what we call a relational understanding. We want to explore how humans and technologies are co-constructed. That is, to go beyond approaching technology as an entity, which is often an implicit notion in discourses about progress and the future.

> ¹ The quote is from Intellectuals and power: A conversation between Michel Foucault and Gilles Deleuze. The conversation is posed by Joseph Kay on September 9th, 2006. It is stated that the transcript appeared in Bouchard, D. F. (edt.) Language, Counter-Memory, Practice: selected essays and interviews by Michel Foucault.

- ² Lucy Suchman (2007): Human-Machine Reconfiguration: Plans and Situated Actions. Cambridge.
- ³ With reference to Tim Ingold's (2011): The Perception of the Environment. Essays on Livelihood, Dwellings and Skills. Routledge, p. 296.



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CLUES:

- The Body ...
- Train that Speaks
- They are often boring and invisible, but worth studying
- Who benefits? (two words)
- A system, where we only know input and output, two words
- One of the inventors of Actor-Network Theory, first name
- CSCW (third word)
- Common conception of technology
- Oldest university in the world
- Youngest university in Denmark
- Current hype in IT
- The Data ... Society
- "I rather be a ... than a Goddess" (Haraway)
- "Don't throw the baby out with the ... School (Callon)
- Adele Clarke's method: ... analysis
- Latour's 'opposite' concept to 'diffusion'

Solution page 45

WHAT'S IN YOUR OFFICE?

TiPsters keep lots of stuff in their office. Not only papers, books and computers. But also most personal curiosities each with a symbolic meaning and story.



"BREAK IN CASE OF EMERGENCY OR WHEN IN NEED OF A CHOCOLATE HIT! IT ALWAYS CONTAINS CHOCOLATE AND IT IS AN EMERGENCY WHENEVER IT IS EMPTY"

"BEWARE OF THINKIN<mark>g lightly of</mark> THIS PHENOMENON, BY REASON OF ITS INITIAL PAINFUL UGLINESS.



"I BROUGHT BACK THESE WELSH CAKES FROM WALES AFTER CHRISTMAS, TO SHARE WITH FRIENDS FROM SYRIA AND IRAN."



photos Martin Nedergård Møller

"DOES MY OFFICE

PERFORM DUAL-ISMS OR WHAT?"

"A PAPUA NEW GUINEAN NET-BAG OFFERED TO ME AS A BACHELOR PARTY GIFT FROM A GOOD COLLEAGUE, WHO DID HIS ETHNOGRAPH-IC FIELDS STUDIES THERE. THERE ARE NO FREE GIFTS, HE TAUGHT ME IN PRACTICE AFTER-WARDS."



"KNOWLEDGE (K) + TIME (T) = HEAT (C)"









"A PLAYABLE MEMORANDUM FROM **Studying in Arhus.** Represents the VALUE OF DOING THINGS JUST FOR FUN, ESPECIALLY IF THAT OTHER THING IS **PLAYING TABLE SOCCER**"



"DANISH CITIZENS SPEND ON AVERAGE SEVEN HOURS PER MONTH ON YOYO PRACTICE TO FULFIL THE STRICT DANISH CITIZENSHIP REQUIREMENTS. THOSE WHO FAIL THE ANNUAL YOYO ASSESSMENT EXERCISE ARE DEPORTED TO SWEDEN, A TRADITION DATING BACK TO THE TREATY OF MALMÖ, 1524."



SOLUTION - TiP Puzzle

+	+	+	+	+	+	+	G	R	Ο	В	Y	С	+	+
+	D	+	+	+	+	+	+	+	Х	Ν	0	+	+	+
S	R	+	+	Q	U		В	0	Ν	0	+	+	+	+
+		+	+	+	+	+	В	D	Ρ	I	+	+	+	+
+	V	Т	+	+	+	К	+	Е	Н	Т	+	+	+	+
S	Е	R	U	Т	С	U	R	Т	S	А	R	F	Ν	
+	Ν	+	+	А	+	А	А	Е	+	L	+	+	0	S
+	+	+	L	+	Т	В	Ν	R	+	S	+	+		+
+	+	В	+		+		G	Μ	+	Ν	+	Μ	Т	+
+	+	+	V	+	Ε	+	0		+	А	А	+	Ρ	+
+	+	Е	+	L	+	+	L	Ν	+	R	+	+	U	+
+	+	+	Е	+	+	+	0		А	Т	+	+	R	+
+	+	D	+	+	+	+	В	S	+	L	+	+	S	+
+	А	+	+	+	+	+	+	Μ	+	+	+	+		+
Μ	U	L	Т	I	Ρ	L	Е	+	+	+	+	+	D	+

epistemology

methodology

ontology

The answer can be found in a stick ...

TiF

Technologies in Practice