

# WTMC SERIES

ON TEACHING &  
LEARNING STS

Algorithmic

Summer School  
2023



WTMC

*Netherlands Graduate Research School  
of Science, Technology and Modern Culture*

WTMC Series on Teaching and Learning STS

Publication of the Netherlands Graduate Research School  
of Science, Technology and Modern Culture (WTMC)

*Director:* Esther Turnhout

*Training co-ordinators:* Alexandra Supper & Andreas Weber

Practical information, registration, and hotel arrangements:  
[wtmc@utwente.nl](mailto:wtmc@utwente.nl)

Last minute emergencies: +31-24-3615999 (Soeterbeeck)

**Cover design:**

Zahar Koretsky

**Information about the series:**

[a.supper@maastrichtuniversity.nl](mailto:a.supper@maastrichtuniversity.nl)

[a.weber@utwente.nl](mailto:a.weber@utwente.nl)

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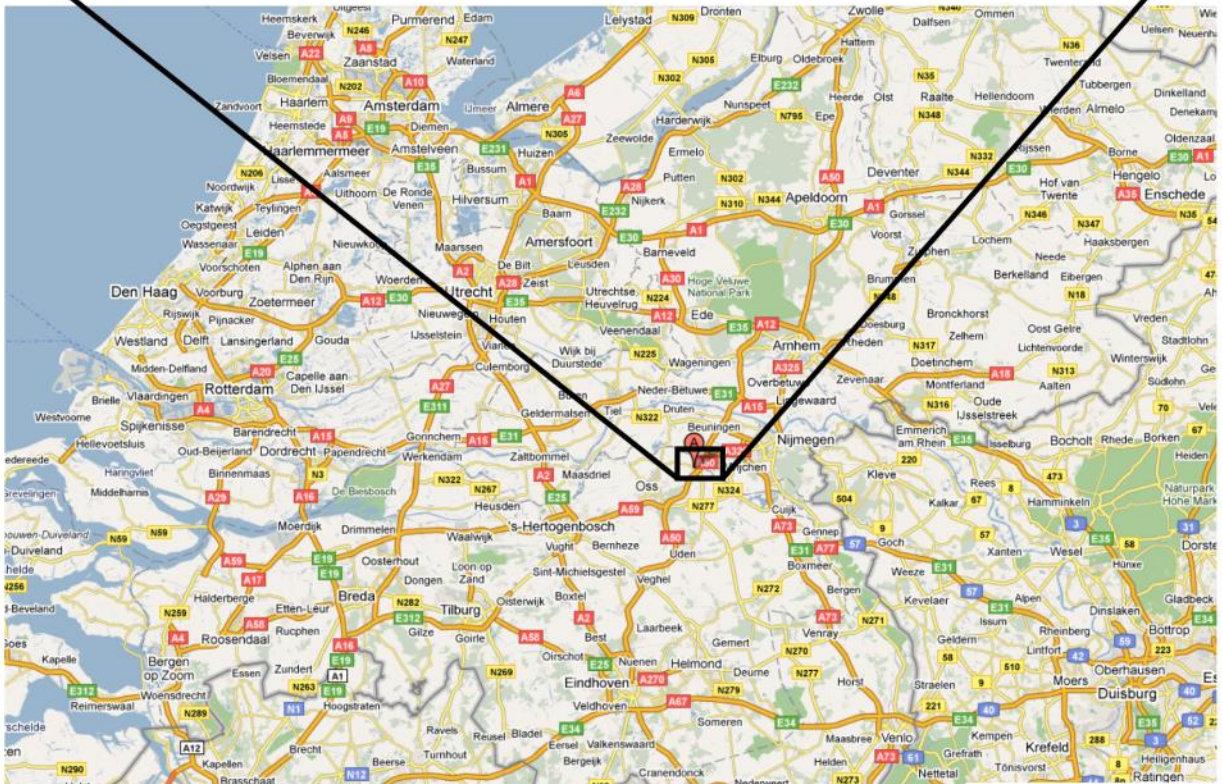
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# Maps



Thank you, Google maps

# Directions

## Address

Studiecentrum Soeterbeek / Study and Conference Centre Soeterbeek  
Elleboogstraat 2  
5352 LP Deursen-Dennenburg  
Phone: +31-24-36 15 999

<https://www.ru.nl/soeterbeek/>

## By train

Take the local train ('stoptrein', NOT the Intercity or fast train) in Nijmegen or 's Hertogenbosch to Ravenstein, leaving every half hour. This takes 15 or 20 minutes, respectively. At the railway station in Ravenstein take the exit at the back of the station, and follow the small footpath ('Stationspad'); at the end of the path turn right and enter the Soeterbeek premises through the entrance gate. This is a 10-minute walk. Dutch railway schedules can be found at [www.ns.nl](http://www.ns.nl).

## By road

Motorway A50 Arnhem - 's Hertogenbosch (= coming from Arnhem): take the exit Ravenstein (nr.17); at the roundabout turn left, next roundabout straight on, next roundabout turn left (de Rijt), and again left after 100 m (Elleboogstraat), enter the Soeterbeek premises through the entrance gate.

Motorway A 50 's-Hertogenbosch - Arnhem (= coming from 's-Hertogenbosch). Take exit Ravenstein (nr.17); at T-junction, turn left, and again left at the traffic lights; first roundabout straight on, and again straight at second roundabout; next roundabout turn left at the crossing (De Rijt), and again left after 100 m (Elleboogstraat); enter the Soeterbeek premises through the entrance gate.

## Introduction to the summer school

Welcome to the Summer School. Together with our anchor teacher Tarleton Gillespie, we will explore the theme of ‘Algorithmic’. The exploration starts here, well before you arrive at the summer school. This programme, together with some readings and assignments that you will have to prepare yourself, provides the luggage for your journey. Travel well prepared!

It is advisable that you first carefully study the whole programme, before embarking on the actual reading. This should help you get a sense of the themes and how they connect, and how specific texts fit in those themes. The compulsory reading material amounts to (the equivalent of) roughly 500 pages, which at 8 pages per hour would take you about 62 hours to prepare. Also, some assignments require preparation, others require you to think about what you want to learn. And finally, we will have a number of participant presentations. Be sure to check whether you are assigned the role of discussant for one of them.

For each of you, the ideas and concepts discussed during the Summer School will have different kinds of relevance. This depends on your research topic and method, the phase you are currently in, and your personal interest. The Summer School is not a “one size fits nobody” event, and getting the most out of it does require some work. Make sure that you have in mind what you would like to learn, and how that can be achieved. In general, it is good practice to prepare one or more written questions about the reading material for each session. This helps focus your attention during lectures, and it ensures that you have something to contribute to the discussion, especially if you are not that eager by nature to join discussions. Of course, going with the flow and welcoming things the way they happen to come to you is also an important mode of learning. So here we go.

\* \* \*

Knowledge production, the navigation of public culture, and the workings of societal institutions have been thoroughly quantified, computerized, and networked. This means they have also become algorithmic: organized and governed by rule-bound procedures based on mathematical precepts easily calculated by computers, assigning rankings and making selections based on criteria often obscure to their users, functioning at the scale of data and the speed of global networks. If modern society now exists in a condition of information abundance, or even information overload, we have not only embraced that abundance or information, we have also committed irretrievably to algorithmic ways of sorting through it - guidance as to what to pay attention to, what is relevant, what is likely, and what is of value. This requires the formalization of social facts into measurable data, and the modeling of social phenomena to operationalize both problem and solution. All this can be automated so that it happens instantly, repetitively, across many contexts, away from the guiding hand of its implementers, and in the service of potentially massive profits. Some of these algorithmic systems work at a velocity and on a scale that is not just unprecedented, but in some ways unfathomable.

However, to say that “society is now algorithmic” is to make a large claim with a small gap at the center - for such assertions about the algorithmic often care very little about what an algorithm actually is, or whether it’s the algorithms that are at issue. We (as users, as citizens, as policymakers, and as researchers) cannot talk about algorithms without thinking about the systems in which they are embedded - though we so easily find ourselves pontificating about algorithmic systems while forgetting the role of the algorithms within them. In our week together we will attempt to rectify this, and be both precise and expansive as we do so. Algorithms are something specific, with a technical shape, a specific history, and a set of animating values; but they have also come to stand for something, a token useful for saying something about how broader sociotechnical information systems work and how pervasive they’ve become.

Still, as we examine the algorithmic, we may find our analytical tools of STS are insufficient. Algorithms are technologies: so, we must understand how they shape practice, and what values hide in their inner workings. Algorithms are also fragile social accomplishments: so, we must unpack the warm human and institutional choices that lie behind and maintain them. Algorithms are also ways of knowing, animated by specific presumptions about how information should be sorted and evaluated: so, we must study how these tools are called into being by, enlisted as part of, and negotiated around collective efforts to know and be known - and why this version of knowing is so highly valued. Are we engaged in a sociology of technology, a sociology of practices and institutions, a sociology of knowledge, all three - or something else altogether?

\* \* \*

On Monday, we will consider what we mean by “algorithm,” and how to think about algorithms and algorithmic systems as historical and cultural phenomena. Our guest speaker for the day will be Stefania Milan (University of Amsterdam), who will invite us to think about the role of data and algorithms in forming and sustaining publics and citizen practices. We will also gain some practical experience with algorithmic thinking and with finding our way around Ravenstein during our algorithmic walk.

On Tuesday, we will think through which algorithms we are interested in, the challenges of studying algorithmic systems, and how STS researchers have proposed to address those challenges. Our guest speaker, media studies scholar Anne Helmond (Utrecht University), will explore with us algorithmic ecosystems in relation to questions about platform partnerships, infrastructure, and power.

On Wednesday, we will tackle questions of bias in algorithmic systems, some tactics for studying them, and the potential limits of that research framework. Through a case study of logistical labor, our guest speaker Jess Bier (Erasmus University Rotterdam) will think along with us about how algorithms are enfolded in systems of injustice.

On Thursday, we will examine the social and political logics of machine learning, the robust algorithmic systems that have driven the expansion of artificial intelligence. We will also spend some time thinking about the importance of scale to our understanding of the political economy

of algorithmic systems, with the help Paul Dourish (University of California, Irvine), who will join us for an online Q&A.

On Friday, we will consider the ethics of algorithmic systems and artificial intelligence, and weigh STS approaches to complex, global scale, systems of information. Guest speaker João C. Magalhães (University of Groningen) will use automated content moderation as a case for understanding how complex automated systems can engender new forms of representation. We will end by considering whether STS has the tools to adequately grapple with algorithmic systems and algorithmic ways of knowing, and how our scholarship may have to shift in response.

In addition, throughout the week we have scheduled a number of discussion sessions and skills sessions (this time focusing on discourse analysis as a research method). As always, we will also closely read a classic STS text from our WTMC core reading list.

And of course, we look forward to some great presentations about PhD projects by some of you, and stimulating discussions with all of you!

Alexandra and Andreas, also on behalf of the speakers.



# Practical Notes

## To do before the summer school

Allow about two weeks for preparation of this summer school. As already said, the compulsory literature consists of roughly 500 pages. At 8 pages per hour, this takes about 62 hours. We expect you to spend about 18 more hours to prepare the exercises, and read part of the recommended literature as you wish. This amounts to 80 hours in all, which is the standard amount of preparation time for a summer school. In preparation, proceed as follows:

- Read the detailed programme and pay special attention to the activities so that you know in advance what you need to prepare and think about.
- Read all literature before you arrive. There is no time to read during the workshop. Make notes about what you don't understand, questions you would like to ask, things you want to discuss.
- Check the programme to see if you are a discussant for one of the PhD presentations. Look at the sections "PhD presentation guidelines" and "Feedback on presentations", which contains guidelines for presenters, discussants, and all others!

## What to bring with you

- Debit card or credit card. In the evenings, after the formal programme, there are informal drinks, which you have to pay for on Friday upon check out. This also goes in case you desire to have more than one drink during dinner. Cash is not accepted.
- **Earplugs:** we reside in an old convent, so corridors and doors may be noisy at night.
- Running addicts: bring your **running gear**.
- To get moving during breaks: bring footballs, badminton gear, Frisbees etc. Soeterbeeck provides a ping-pong-table, bats & balls, and (usually) some bicycles.
- Check the weather forecast and if needed, bring **rainproof clothes & footwear**.

## Attendance/cancellation

- *The summer school is residential:* you are expected to check in at Soeterbeeck on Monday morning and check out on Friday afternoon. On most days, the programme continues into the evening.
- In order to receive credit for attending the summer school, *you are required to be present throughout the entire event.* Only calamities are taken as reason to depart from this rule. If this creates problems, then please contact the coordinators beforehand and as soon as possible.
- If, for any reason, you are unable to attend the summer school, please inform the WTMC office at [wPMC@utwente.nl](mailto:wPMC@utwente.nl) **as soon as you can**. If notice of cancellation is received more than 10 days prior to the start of the workshop, you will receive a refund for all of the fees, minus €100 to cover the costs of administration and course materials. In the case of cancellations received less than 10 days before the start of the summer school, fees and any other costs that have been incurred by WTMC will not be refunded.

Programme	Monday 21 August	Tuesday 22 August	Wednesday 23 August	Thursday 24 August	Friday 25 August
	<b>Algorithms and the Algorithmic</b>	<b>The Public Life of Algorithms and Platforms</b>	<b>Algorithmic Bias</b>	<b>The Logics of Machine Learning</b>	<b>Scale and Information</b>
9.15-9.30		What kept you awake?	What kept you awake?	What kept you awake?	What kept you awake?
9.30-10:30	<i>Arrival and check-in</i>	2.1 <u>PhD presentations 1</u>	3.1 <u>Lecture</u> , Tarleton Gillespie Algorithmic bias	4.1 <u>Lecture</u> , Tarleton Gillespie AI and the logics of machine learning	5.1 <u>Lecture</u> , Tarleton Gillespie Ethics of algorithmic systems and AI
10.30-10.45	1.0 Opening	break	break	break	break
10.45-12.15	1.1 <u>Lecture</u> , Tarleton Gillespie Algorithms and the algorithmic	2.2 <u>Lecture</u> , Tarleton Gillespie Which algorithmic systems, and how do we study them?	3.2 <u>PhD presentations 2</u>	4.2 <u>Exercise</u> ChatGPT and Dall-E	5.2 <u>Lecture</u> , João C. Magalhães A new leviathan? Scalability and political representation in automated content moderation
12.15-13.30	lunch	lunch	lunch	lunch	lunch
13.30-15.00	1.2 <u>Lecture</u> , Stefania Milan Making and unmaking publics through algorithms	2.3 <u>Lecture</u> , Anne Helmond The Algorithmic ecosystem of programmatic advertising: Platform partnerships, infrastructure, and power	3.3 <u>Lecture</u> , Jess Bier Algorithmic bias and beyond: Digital infrastructures and logistical labor	4.3 <u>PhD presentations 3</u>	5.3 <u>Discussion Session</u> , STS, scale and information

15.00-15.30	break	break	Free afternoon 3.4 WTMC rep session (optional)	break	break
15.30-17.00	1.3. <u>Core reading:</u> Ted Porter, Trust in Numbers	2.4 <u>Professional discussion:</u> Academia and the tech industry		2.4 <u>Skills:</u> Analyzing corporate discourse	5.4 Rounding off & farewells
17.00-17.30	break	break		break	
17.30-19.00	dinner	dinner	optional buffet dinner	dinner	
19:00- 20:45	1.4 <u>Exercise:</u> Algorithmic walk	2.5 Movie night	free evening	4.5 <u>Q&amp;A with Paul Dourish</u>	

## Detailed overview

### Monday, 21 August: Algorithms and the Algorithmic

#### *1.1 Lecture: Algorithms and the algorithmic, Tarleton Gillespie*

Recently, there has been a great deal of fascination with algorithms, whether in public and journalistic discussion, commercial investment, scholarly inquiry, or regulatory policymaking. But it is a fascination that too often settles on “the algorithm” as the object of worry, or the agent causing some pernicious social effect, or the explanation for sweeping societal change – all with surprisingly little attention to what an algorithm is, or what exactly we are imagining when we fret about them. In the first lecture, I will introduce algorithms and consider how to think about them. Should we be talking about algorithms, or algorithmic systems? What are the analytical dimensions of studying them as sociological phenomena? And amid overlapping discussions of the Internet, big data, automation, social media platforms, and artificial intelligence, what is the value of focusing on “the algorithmic”?

#### *Required readings:*

- Tarleton Gillespie, “The Relevance of Algorithms.” In *Media Technologies: Essays on Communication, Materiality, and Society*, Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot, eds. MIT Press, 2014: 167-194, [https://www.microsoft.com/en-us/research/wp-content/uploads/2014/01/Gillespie\\_2014\\_The-Relevance-of-Algorithms.pdf](https://www.microsoft.com/en-us/research/wp-content/uploads/2014/01/Gillespie_2014_The-Relevance-of-Algorithms.pdf)
- Jenna Burrell and Marion Fourcade, “The Society of Algorithms.” *Annual Review of Sociology* 47(1) (2021): 213-237. <https://doi.org/10.1146/annurev-soc-090820-020800>

#### *1.2 Lecture: Making and unmaking publics through algorithms, Stefania Milan*

How are publics imagined and shaped in the digital era? What is the role of data and algorithms’ in forming and sustaining publics? How do materialities of algorithmic systems matter? And what about citizen practices? This session will encourage us to think about algorithms and algorithmic systems looking at their effects on political participation and governance.

#### *Required readings:*

- Francesca Musiani, “Governance by algorithms.” *Internet Policy Review* 2(3) 2013. <https://doi.org/10.14763/2013.3.188>
- Stefania Milan, “When Algorithms Shape Collective Action: Social Media and the Dynamics of Cloud Protesting.” *Social Media + Society* 1(2) (2015). <https://doi.org/10.1177/2056305115622481>
- Davide Beraldo, Stefania Milan, Jeroen de Vos, et al., “Political advertising exposed: tracking Facebook ads in the 2021 Dutch elections.” *Internet Policy Review* (2021). <https://policyreview.info/articles/news/political-advertising-exposed-tracking-facebook-ads-2021-dutch-elections/1543>

### 1.3 Core reading

In our core reading session, we once again shift our attention to one of the ‘classic’ texts of STS found on the [WTMC core reading list](#): *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* by historian of science Theodore M. Porter. We will read the introduction and first two chapters of the book and discuss them in small groups, followed by a short plenary discussion.

Make sure that you read the text closely before our summer school, and bring your notes and questions to the discussion. While you are welcome to bring up additional points and questions in the group, here are a few things we suggest as points of attention to get you started in your reading, thinking and debating about the book:

- Porter make sense of the relationship between objectivity, quantification and expertise in modern culture as “a social and moral problem” at the intersection of science and public life. How does he build up and substantiate the central argument of his book? In particular, how does he combine his core expertise as a historian of science with sociological and philosophical claims?
- Much of Porter’s is made up of shorter examples as well as longer case studies describing different episodes in the history of quantification. What do you make of this approach of building an argument? And can you think of a contemporary instance worthy of similar treatment by future historians of quantification?
- In his book, written around the time of the infamous ‘Science Wars’ of the 1990s, Porter also addresses issues of relativism and positivism. What do you think of the way that Porter positions himself in (or, arguably, sidesteps) these debates?
- How can *Trust in Numbers* inspire us to think about the topics of our summer school? How can we apply it to a discussion of the algorithmic in science and public life?

#### *Required readings:*

- Porter, Theodore M., *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton University Press, 1995, intro plus chapter I and II.

### 1.4 Algorithmic Walk

We meet at 19:00 and walk together to Ravenstein. Bring a pen and paper or a notebook with you. Further instructions will be provided when we all arrive.

[The reference to the ‘algorithmic walk’ by Malte Ziewitz was shared with participants afterwards:

Ziewitz, M. (2017). A not quite random walk: Experimenting with the ethnomethods of the algorithm. *Big Data & Society*, 4(2). <https://doi.org/10.1177/2053951717738105> ]



## Tuesday, 22 August: The Public Life of Algorithms and Platforms

### 2.1 PhD presentations 1

Please see PhD Presentation Guidelines in this programme.

Presenter: Lotje Siffels                      Respondent: Wisse van Engelen

Presenter: Marije Miedema                Respondent: Nina Schwarzbach

### 2.2 Lecture, *Which algorithmic systems, and how do we study them?*, Tarleton Gillespie

If the first lecture focused on how to understand algorithms in the abstract, today we will consider with how to think about algorithms in practice. First, if we want to spend the week studying them sociologically, we have many algorithms to choose from. Which algorithmic systems should we be most concerned about? Which are most revealing as objects of research? How does the algorithmic take root differently in different institutions and different social practices? In this session we will catalog some of the algorithmic systems that matter most to us, and I will discuss why I have focused on algorithmic media and information platforms, and what I believe we can learn from them.

We will then grapple with some of the challenges of studying algorithmic systems. How do we get access to algorithms, and to the places where they are designed and where they circulate? How much technical expertise do we need to have to be able to make sociological claims about them? How do we study algorithms in the hands of users and as embedded in culture?

#### *Required readings:*

- Lee, Francis, and Lotta Björklund Larsen. “How Should We Theorize Algorithms? Five Ideal Types in Analyzing Algorithmic Normativities.” *Big Data & Society* 6(2) (2019): 205395171986734. <https://doi.org/10.1177/2053951719867349>
- Seaver, Nick. “Algorithms as Culture: Some Tactics for the Ethnography of Algorithmic Systems.” *Big Data & Society* 4, no. 2 (December 2017): 205395171773810. <https://doi.org/10.1177/2053951717738104>
- Rieder, Bernhard. “Scrutinizing an Algorithmic Technique: The Bayes Classifier as Interested Reading of Reality.” *Information, Communication & Society* 20(1) (2017): 100–117. <https://doi.org/10.1080/1369118X.2016.1181195>
- Gillespie, Tarleton. “Algorithmically Recognizable: Santorum’s Google Problem, and Google’s Santorum Problem.” *Information, Communication & Society* 20(1) (2017): 63-80. <https://doi.org/10.1080/1369118X.2016.1199721>
- Matias, Nathan. “Humans and algorithms work together — so study them together” *Nature* (10 May 2023) <https://www.nature.com/articles/d41586-023-01521-z>

### 2.3 Lecture, *The Algorithmic Ecosystem of Programmatic Advertising: Platform Partnerships, Infrastructure, and Power*, Anne Helmond

In this talk, we delve into the development, implementation, and use of algorithms in programmatic advertising, which represents a vast ecosystem of technologies that connects various algorithmic systems worldwide. Through the deployment of algorithms and the utilization of machine learning and AI technologies, programmatic advertising automates the creation and targeting of audiences. To accomplish this, platforms engage in partnerships to build the pipelines

of this advertising industry, enabling data to be shared across contexts and integrated into various algorithmic systems. We highlight the strategic role of these partnerships, together with APIs, for comprehending the infrastructural power of large platforms such as Facebook and LiveRamp in the programmatic advertising ecosystem. Ultimately, this talk argues that understanding the relationships between partnerships, infrastructure, and algorithmic systems is important for navigating the complexities of our contemporary digital society.

*Required readings:*

- Fernando van der Vlist and Anne Helmond. “How Partners Mediate Platform Power: Mapping Business and Data Partnerships in the Social Media Ecosystem.” *Big Data & Society* 8(1) 2021. <https://doi.org/10.1177/20539517211025061>
- Anne Helmond and Fernando van der Vlist. “Situating the Marketization of Data.” *Situating Data: Inquiries in Algorithmic Culture*, Karin van Es and Nanna Verhoeff, eds. Amsterdam University Press, 2023: 279-286. [https://doi.org/10.5117/9789463722971\\_ch17](https://doi.org/10.5117/9789463722971_ch17)

#### *2.4 Professional discussion: Academia and the Tech Industry*

There’s been increasing interest among graduate students and junior scholars of the social sciences in research opportunities outside academia, especially in the technology industries. And the technology industries have grown more interested in social scientists. I work at an uncommon point of overlap between these two worlds. Let’s talk.

#### *2.5. Movie night*

AlphaGo (2017, directed by Greg Kohs). See <https://www.alphagomovie.com/> or watch online: <https://www.youtube.com/watch?v=WXuK6gekU1Y>  
We’ll make sure that the popcorn is ready!

### **Wednesday, 23 August: Algorithmic Bias**

#### *3.1 Lecture: Algorithmic bias, Tarleton Gillespie*

Those who champion algorithmic systems often claim not only their speed and efficiency, but their ability to be fair, free of the human subjectivity of the arrangements they hope to replace. But researchers have suspected, and in some cases proven, that algorithms can be biased as to which users they serve most readily, what information they privilege, and how they allocate resources. What kinds of biases plague algorithmic systems? Where do these biases come from, and what can be done about them? Can we “audit” these algorithmic systems to identify hidden biases or inequitable outcomes, especially when they are in so many ways closed to us? How have policymakers taken up concerns about algorithmic bias? And what other concerns might this focus on bias overlook?

*Required readings:*

- Julia Angwin, et al., “Machine Bias.” ProPublica, 23 May 2016. <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>
- Abeba Birhane, “The unseen Black faces of AI algorithms.” Nature. 19 October 2022. <https://www.nature.com/articles/d41586-022-03050-7>
- Christian Sandvig, Kevin Hamilton, Karrie Karahalios, and Cedric Langbort, “Auditing Algorithms: Research Methods for Detecting Discrimination on Internet Platforms.” Presented to “Data and Discrimination,” a pre-conference of the 64th International Communication Association, Seattle, WA, USA, 2014. [http://www-personal.umich.edu/~csandvig/research/Auditing Algorithms -- Sandvig -- ICA 2014 Data and Discrimination Preconference.pdf](http://www-personal.umich.edu/~csandvig/research/Auditing_Algorithms_-_Sandvig_-_ICA_2014_Data_and_Discrimination_Preconference.pdf)
- AI Now Institute, “Algorithmic Accountability: Moving Beyond Audits.” 11 April 2023. <https://ainowinstitute.org/publication/algorithmic-accountability>

*3.2 PhD presentations*

Please see PhD Presentation Guidelines in this programme.

Presenter: Nina Schwarzbach    Respondent: Joost Kuijper  
Presenter: Hanbit Chang        Respondent: Marije Miedema  
Presenter: Oksana Dorofeeva    Respondent: Sophie van der Does

*3.3 Lecture: Algorithmic Bias and Beyond: Digital Infrastructures and Logistical Labor, Jess Bier*

Logistical labor is invisible to many, but nearly every object you are currently touching once traveled in a ship and was managed by shipping workers. Maritime shipping is the backbone of global trade, and it is currently being transformed as ports undergo a rapid process of digitalization and automation. Digital infrastructures, including algorithms, apps and sensors, are designed to make ports more sustainable and efficient. However, the impacts for workers vary widely, as port digitalization builds on the kinds of automated labor management strategies made infamous in firms like Amazon and Uber. As such logistical algorithms, at least in their present forms, may serve to streamline racial capitalism and its related forms of extraction instead of improving the safety and sustainability of ports.

In this talk I examine a platform for scheduling port labor in the Port of Rotterdam to analyze the how algorithms are enfolded into existing systems related to race and gender, such as care practices and labor regulations, in ways that affect different groups of workers in very different ways. Drawing on work in STS, Black feminism, and critical logistics, I aim to better understand how, far from simplifying trade, instead digital technologies become entangled in existing port workflows in ways that incorporate, but also exceed, notions of algorithmic bias. Existing systems of injustice differently shape how people see the world as well as the kinds of algorithms they make and why. Addressing injustice thus requires developing fundamentally different kinds of both technical and social infrastructures.

*Required readings:*

- Edward Jones-Imhotep, “The ghost factories: histories of automata and artificial life.” History & Technology, 26(1): 3-29. <https://doi.org/10.1080/07341512.2020.1757972>

- Jess Bier, “Displacement without Redistribution: Practicality and Reproduction in the Digitalization of Logistics.” *Annals of the American Association of Geographers*, 112: 781-788. <https://doi.org/10.1080/24694452.2021.2020085>

### *3.4 Session on Future of WTMC, session organised by PhD reps*

More information will follow on site.

## **Thursday, 24 August: The Logics of Machine Learning**

### *4.1 Lecture: AI and the logics of machine learning, Tarleton Gillespie*

In this session we will investigate machine learning, a particularly robust algorithmic technique common to contemporary information systems, as a particular way of knowing. How does machine learning work, and where do its successes and failures come from? What are the logics and presumptions that animate machine learning, and how do those logics and presumptions then appear in the AI systems we encounter as users and citizens? What are the implications of a knowledge system whose designer cannot necessarily explain why it works?

#### *Required readings:*

- Adrian Mackenzie, “The Production of Prediction: What Does Machine Learning Want?” *European Journal of Cultural Studies* 18(4/5) (2015): 429-445. <https://doi.org/10.1177/1367549415577384>
- Florian Jatton, “We Get the Algorithms of Our Ground Truths: Designing Referential Databases in Digital Image Processing.” *Social Studies of Science* 47(6) (2017): 811-840. <https://doi.org/10.1177/0306312717730428>

#### *Optional readings:*

- R2D3, “A visual introduction to machine learning” <http://www.r2d3.us/visual-intro-to-machine-learning-part-1/> (2015)
- <http://www.r2d3.us/visual-intro-to-machine-learning-part-2/> (2018)

### *4.2 Exercise: ChatGPT and Dall-E*

Let’s play around with ChatGPT and Dall-E, two of the public AI tools introduced in the last year by OpenAI, and both central to recent debates about “generative AI” and “large-language models.” While we play, we’ll talk through how they work, examine both the optimism and critiques they have been met with, and consider how they might advance and trouble our thinking so far about algorithms and machine learning.

**Instructions:** before arriving, sign up for a free account with OpenAI (<https://chat.openai.com/>); this will give you access to both tools.

#### *Required readings:*

- McKinsey Consulting, “What is generative AI?” (19 January 2023) <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai>

- Steven Johnson, “A.I. Is Mastering Language. Should We Trust What It Says?” New York Times (15 April 2022) <https://www.nytimes.com/2022/04/15/magazine/ai-language.html>
- Karen Hao, “We read the paper that forced Timnit Gebru out of Google. Here’s what it says.” MIT Technology Review (4 December 2020) <https://www.technologyreview.com/2020/12/04/1013294/google-ai-ethics-research-paper-forced-out-timnit-gebru/>

#### 4.3 PhD presentations 3

Please see PhD presentation guidelines in this programme.

Presenter: Xin Ming	Respondent: Martijn van der Meer
Presenter: Justien Dingelstad	Respondent: Tessel Wijne
Presenter: Mirte van Hout	Respondent: Jill van der Kamp

#### 4.4 Skills, Analyzing Corporate Discourse (Discourse Analysis)

Companies produce a great deal of discourse, whether its quarterly financial reports, company blogs, press releases, or terms of service agreements. These texts cannot be taken on face value as evidence of what these companies actually do or what aims and presumptions animate them. But, if they are read as carefully constructed performances, using the tools of critical discourse analysis and even the techniques of literary criticism, they can be useful evidence for sociotechnical analysis.

Instructions: before arriving, identify and print out one public document from a company or non-state actor relevant to your own dissertation research. Brief press releases or blog posts are fine, but a juicier choice is something a bit longer, maybe an official statement about the controversies or issues relevant to what you’re studying. Be sure to read it through once, and bring the printed copy with you to our session.

#### Required readings:

- Anna Lauren Hoffmann, Nicholas Proferes, and Michael Zimmer, ““Making the World More Open and Connected”: Mark Zuckerberg and the Discursive Construction of Facebook and Its Users.” *New Media & Society* 20(1), 2016. <https://journals.sagepub.com/doi/10.1177/1461444816660784>

#### 4.5 Online Q&A with Paul Dourish

Silicon Valley types talk about “scale” all the time. New projects will be scaled up, others failed to scale. But what does this word really mean, beyond simply making something bigger? And why is scale such an important goal, and such challenge? In this discussion we will dig into what practitioners mean by scale, what a sociotechnical perspective might have to say about scale, and how scale can serve as a useful analytical tool for the practical and ethical challenges of studying or building algorithmic tools. This will be a Q&A session, that Tarleton will begin, but PhD candidates will be encouraged to continue.



## Friday, 25 August: Scale and Information

### 5.1 Lecture, *Ethics and algorithmic systems and AI*, Tarleton Gillespie

Instead of deeming algorithms good or bad, biased or neutral, what does an STS approach to the algorithmic offer? If algorithms represent a way of knowing, a particular set of sociotechnical practices, corporate information regimes, and a semi-obscured global infrastructure, what does an ethical approach to studying them look like?

#### *Required readings:*

- Tsing, Anna (2012). On Nonscalability: The Living World Is Not Amenable to Precision-Nested Scales. *Common Knowledge*, 18(3), 505-524. <https://doi.org/10.1215/0961754X-1630424>
- Louise Amoore, *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*. Duke University Press (2020) – Introduction (pp. 1-25) and Chapter 1, (pp. 29-55) [https://www.dukeupress.edu/Assets/PubMaterials/978-1-4780-0831-6\\_601.pdf](https://www.dukeupress.edu/Assets/PubMaterials/978-1-4780-0831-6_601.pdf)
- Louise Amoore, “Why 'Ditch the algorithm' is the future of political protest” *Guardian* <https://www.theguardian.com/commentisfree/2020/aug/19/ditch-the-algorithm-generation-students-a-levels-politics>

### 5.2 Lecture, *A New Leviathan? Scalability and Political Representation in Automated Content Moderation*, João C. Magalhães

In this session, João C. Magalhães will invite participants to consider how very large systems of automated content moderation engender novel forms of representation. Scaling up moderation hinges on translating the voices of the multiple actors involved in this process (users, data workers, moderators, platforms officers, external stakeholders) into logics that are amenable to large-scale computational control – datafication and probabilistic decision-making. In which ways do these systems challenge modern political representation? How do they relate to democratic views on diversity, participation, and freedom?

#### *Required readings:*

- Michael Saward, “The Representative Claim.” *Contemporary Political Theory*, 5(3) (2006) 297-318. <https://doi.org/10.1057/palgrave.cpt.9300234>
- Mike Ananny, “Probably Speech, Maybe Free: Toward a Probabilistic Understanding of Online Expression and Platform Governance.” Knight First Amendment Institute at Columbia University (2019, August 21). <http://knightcolumbia.org/content/probably-speech-maybe-free-toward-a-probabilistic-understanding-of-online-expression-and-platform-governance>

#### *Optional readings:*

- Crosset, V., & Dupont, B. (2022). Cognitive Assemblages: The Entangled Nature of Algorithmic Content Moderation. *Big Data & Society*, 9(2). <https://doi.org/10.1177/20539517221143361>

### 5.3: Discussion Session, *STS, Scale and information*

We will close by considering whether STS has the tools to adequately grapple with massive information systems and algorithmic ways of knowing; what algorithmic and AI tools might be doing for, and to, STS scholarship; and how our research may have to shift in response.

## 5.4 Rounding off & farewells

## About the speakers

**Tarleton Gillespie** is a Senior Principal Researcher at Microsoft Research New England, part of the [Social Media Collective](#), Microsoft Research's team of sociologists, anthropologists, and communication & media scholars studying the impact of sociotechnical systems on social and political life. Tarleton also retains an affiliated Associate Professor position with Cornell University, where he has been on the faculty for nearly two decades.

**Stefania Milan** ([stefaniamilan.net](http://stefaniamilan.net)) works at the intersection of participation, technology, and governance. She is Professor of Critical Data Studies at the University of Amsterdam, affiliated with the Berkman Klein Center for Internet & Society (Harvard University) and the School of Transnational Governance (European University Institute).

**Anne Helmond** is Associate Professor of Media, Data & Society at Utrecht University. She is part of the focus area '[Governing the Digital Society](#)' where she examines the processes of platformization, algorithmization, and datafication from an empirical and historical perspective by focusing on the material and programmable (data) infrastructures underpinning these processes.

**Jess Bier** is an associate professor of urban sociology at Erasmus University Rotterdam. Jess's research analyzes the social and political geographies of digital infrastructures, with a focus on the intersection of systemic injustices related to race, gender, colonialism, and capitalism. Jess is currently the PI of the ERC-funded DIGIPORTS project, where she studies how the digitalization of logistics is reshaping the racialization of labor. Her work to date has focused on topics such as algorithms, digital maps, economic models, smart cities, and maritime logistics.

**Paul Dourish** is Chancellor's Professor and the Steckler Endowed Chair of Information and Computer Science in the Donald Bren School of Information and Computer Sciences at the University of California, Irvine, with faculty appointments in Informatics and Anthropology. He is the director of the [Steckler Center for Responsible, Ethical, and Accessible Technology](#).

**João C. Magalhães** is an assistant professor in Media, Politics, and Democracy at the Centre for Media and Journalism Studies, University of Groningen. His work concerns the multiple intersections of platforms and politics. João holds a PhD from the LSE (London School of Economics and Political Science).

## About the coordinators

**Alexandra Supper** is an assistant professor at the Faculty of Arts and Social Sciences, Maastricht University. Her research interests include the role of sensory skills in scientific practice, the construction of scientific authority and the dynamics of (inter)disciplinary communities. She serves as (associate) editor of the journals *Science and Technology Studies* and *Journal of Sonic Studies*. Alexandra holds an MA degree in sociology from the University of Vienna (2007) and a PhD in science and technology studies, which includes WTMC training, from Maastricht University (2012).

**Andreas Weber** is an associate professor in the [research group of Knowledge, Transformation and Society \(KiTeS\)](#) at the University of Twente. Most of his work examines the relationship between science, technology and society from a long-term historic, digital, and global perspective. Andreas has a special research interest in the coloniality of natural history collections, chemistry and sustainability. Moreover, he is involved in various digital cultural and natural heritage projects. Andreas holds a MA degree (2005) and a PhD, both from Leiden University (2012). He serves as editor of the Brill book series *Emergence of Natural History (ENH)* and as associate editor of the journal *Itinerario: Journal of Global and Imperial History*.

# PhD Presentation guidelines

## For presenters

- Send the title & summary of your presentation to the discussant assigned to you at least 1 week before the summer school.
- A projector and PC are available. Copy your presentation onto the PC in advance. You may want to use your own laptop, which usually works fine, but mind that it poses an extra risk of technical issues. Also, if you have video material, make sure you have it downloaded locally. There is internet, but relying on YouTube etc. is risky.
- The duration of your presentation should be **15 minutes**. Then there is another 15 minutes for the discussant and plenary discussion. We keep time very strictly.
- Try to make a sophisticated choice on what you want to present. One typical pitfall is wanting to give an overview of your whole PhD project, which leads to an unfocused and overloaded presentation. Rather select an interesting aspect of your research and discuss it in-depth.

## For discussants

- Make sure you receive the title & summary of the presentation at least 1 week before the summer school. Contact the presenter if needed.
- After the presentation: join the presenter in the front of the room
- Present your comments in **5 minutes** max.
- Mind that being a discussant is not about pointing out all the flaws in the presenter's argument, but about setting the stage for a constructive discussion. Offering critique is good, but also try to bring out what the potentials of the argument are for improvement, and to identify some questions for the speaker or the group as a whole.
- You may want to get in touch with the presenter to prepare some comments. Feedback should address the quality of the presentation itself (slides, clarity, focus) as well as its content.

## All others

- Listen carefully and attentively to the presentation.
- Please fill in a **feedback form** for each presentation. They can be found at the end of the reader. They will be collected and given to the presenter. We will bring spare copies for people who don't print out the reader.
- Join the discussion after the discussant has given their feedback.
- Chances are that there is not enough time to discuss all questions from the audience. Please write them down on the feedback form. Even without discussion, your questions might be very valuable for the presenter!



## Feedback on Presentations

This is to help you give feedback to your fellow participants, some of whom will be presenting their research during this event. Feedback forms will be available at Soeterbeeck. Use a separate sheet for each presentation, put your name and that of the presenter at the top of a piece of paper. That way, if something isn't clear, the presenter knows whom to ask. Write your comments during or immediately after the presentation and give them to the presenter during the next break.

Points to consider when preparing feedback (you don't need to cover everything):

- Attractiveness of title and opening
- Usefulness of summary provided in the reader
- Clarity and significance of problem definition, research questions and aims (refinement of, addition to, clarification or rejection of an existing thesis)
- Use of theory and/or historiography (concepts, interpretations, etc.)
- Embeddedness in fields relevant to WTMC
- Clarity of structure
- Presentation of the method(s) employed
- Validity and reliability of the method(s) employed
- Accessibility of the research data to the audience
- Use of (intriguing and relevant) details and examples
- Clarity of argument
- Relation to the nature and level of expertise of audience
- Use of PowerPoint and other audio-visual resources
- Contact with audience and audibility of speech
- Clarity and significance of conclusions
- Response to questions and comments
- Time management

First name	Surname	University/ Organisation	What is the topic of your research?
Hanbit	Chang	TU Eindhoven	I study how human and things are moving in the city while being recorded and algorithmically processed as geo-data, for example, through navigation softwares. Currently my research area focuses on two-wheeled mobility of workers in (sustainable) last-mile logistics.
Oksana	Dorofeeva	Aarhus University	My PhD project examines how researchers from different disciplines (e.g., computer science, biomedicine, political science) navigate ethics in big data research. I will start with exploring their experiences and narratives regarding ethical challenges of big data research, and how these are connected to ideas about 'big data', the technology they use, and the epistemology of big data research in their respective domains.
Sydney	Howe	Erasmus University Rotterdam/ESHPM	Legitimacy and cost-effectiveness of AI in mHealth for cancer diagnosis, with a focus on the practices of embedding technologies in health care.
Maud	Oostindie	Maastricht University	My PhD research is on on deliberation, disagreement, conflict, and moderation in online communication. Specifically, I look at public online platforms like news media comment sections and social media (like Twitter). I do digital ethnographic research, and I am interested both in how people engage in deliberation and navigate conflict, but also in the meaning that they give to their online engagement (both with other people and with bots).
Jill	van der Kamp	Radboud University	While early screening via home-based digital testing is considered promising for prevention, detection and treatment of chronic diseases, it is not self-evident that citizens are able and willing to use these tests. For example, because of low health literacy, the experience of practical barriers or actively resist to screen for disease based upon ethical concerns. In the transdisciplinary project Check@Home, I investigate with participatory mixed methods the needs, concerns and real-life experiences among citizens, regarding digital home-based screening and follow-up.
Marije	Miedema	Rijksuniversiteit Groningen	Exploring the engagement with the personal digital archive through a practice-based socio-technological approach. Critically examining the creation, storage, and infrastructure of current digital memory practices in terms of legacy and sustainability. Through ethnographic fieldwork and co-creation I aim to formulate a set of hoped-for solutions to rethink the future of a commonly governed personal digital material.
Iris	Schuitmaker	Utrecht University	My project is about Climate Smart Agriculture (CSA) in rice agriculture in India. I study CSA as an innovation that aims at a transitions towards a sustainable agri-food system in the Global South, and ask how this transition can be made more just.
Lotje	Siffels	Radboud University	My PhD is part of the 'Digital Good'-project, which investigates the 'Googlization of health'. Consumer tech companies are increasingly getting involved in the health domain. This project aims to investigate the different conceptions of the common good that are at stake in these new partnerships and to provide a normative framework for these new collaborations. Through the method of pragmatic sociology, I hope to provide a map of Orders of Worth that are mobilized in this domain.
Sophie	van der Does	Radboud University	I am researching interdisciplinary and transdisciplinary research. I do not have a specific research question yet, but I am interested in how issues and actors in trans-interdisciplinary research are included and excluded through time. Specifically, I want to

			examine processes of deliberation and negotiation, not only between scientists themselves, but also between science and societal stakeholders.
Joost	Kuijper	Twente	Smart specialization in regions
Karin	van Vuuren	Erasmus University	Health care governance for flood disaster preparedness
Jasper	van Dijk	TU/e	Organising knowledge and learning for the regional energy transition
Martijn	van der Meer	Erasmus University Rotterdam / Erasmus MC	I investigate the 20th century history of Dutch childwelfare as a collective activity. I am specially interested in the emergence and proliferation of collective practices with child health as its goal, and their prescriptive effects.
Hugo	Peeters	Erasmus University Rotterdam	I study the production of knowledge and instruments targeting vulnerable pregnancy.
Nina	Schwarzbach	University of Groningen	Scientist-practitioner gap in clinical psychology
Marta	Sienkiewicz	Leiden University	I study evaluative situations and new tools used in research assessment, particularly those which aim to implement 'Recognition & Rewards' ('Erkennen en Waarderen') and broaden what is visible and valuable in academic assessments. I aim to understand how the dominant valuation regime of excellence is being modified and with what effects.
Benedikt	Rakotonirina-Hess	RUG	The goal of this PhD project is to understand the relationship between humans and arctic terns in a new ecosystem and how space for survival is made in anthropogenic landscapes. This PhD project specifically focuses on Arctic Tern colonies in the northern Netherlands that had to be relocated due to conflicts over coastal use with port activities.
Wisse	Van Engelen	University of Twente	My research looks at foot-and-mouth disease (FMD) in northern Botswana through a multispecies lens. It studies how this disease has been framed, manipulated and managed by different actors; how current biosecurity measures impact human-animal relations, and how recent efforts at (transboundary) conservation are leading to policy reform, shifting disease geographies, and a restructuring of disease ecologies.
Xin	Ming	University of Twente	My research focuses on interdisciplinarity, especially in the field of engineering education. My biggest interest concerns how interdisciplinarity, mostly regarded as cognitive and organizational, manifests as social phenomena, constructed and enacted through actions, interactions and transactions between and among actors. I consider my work social studies of interdisciplinarity, learning, knowledge and science.
Dwayne	Ansah	Utrecht University	My research is on EU data donation practices and the effect of the new EU Data Altruism regime on such practices. What is the diversity of data donation initiatives in the EU, how are their practices institutionalised, and how do data donation initiatives contribute to addressing societal challenges?
Vera	Kools	Eindhoven University of Technology	In the transition towards a more sustainable energy system, public participation is considered to be key. Public participation is increasingly influenced by digitalization of energy systems. Both public participation and digitalization are positioned to be important and interrelated aspects of the transition towards a more sustainable energy system. At the same time, both bring about new questions and concerns related to energy justice. Therefore my research investigates the tensions, limitations and opportunities of

			public participation and digitalization for a just and sustainable European energy system.
Justien	Dingelstad	Erasmus University Rotterdam	I study how AI-driven technologies impact the day-to-day work of nurses and physicians. I focus on how bringing the future into the present changes work practices in hospitals, using insights from STS and Organization Science. I conduct (embedded) ethnography and interviews in two case studies. 1) at a neonatology ICU, I shadow and interview nurses and physicians working with a predictive algorithm that has been in use for 5 years. I study the role and meaning of this algorithm at the NICU. 2) at weekly multidisciplinary meetings of neuro-oncology specialists, I introduce the results of a predictive algorithm for brain tumor diagnosis. I study how the introduction of predictive information impacts the norms, roles, and values of the meetings.
Gigi	Vissers	Erasmus University Rotterdam	I will focus on the work that is required by various actors to embed technological and digital innovations developed primarily in the hospital in the broader healthcare system. Specifically, the focus will be on studying the social, professional, and organizational changes necessary to develop and embed data and IT-infrastructure that facilitate care at a distance (thereby displacing care from the hospital to patients' own homes).
Tessel	Wijne	Utrecht University	I study the transition towards animal-free safety assessment of chemicals and pharmaceuticals. Hereby I study how large-scale research collaborations can contribute to this transition, through studying the impact practices and integration processes within these research projects. Next to this I study how new perspectives on risk are necessary for the animal-free transition.
Mirte	van Hout	Utrecht University	My research focuses on the rise of online labour platforms in public sectors, such as the educational and mental health sector. I try to understand how the increased platformization and their algorithms in these sectors alters the structures and value-creation in these sectors and vice versa. As such, I aim to understand the societal and public consequences of platformization and its accompanying algorithms in Dutch public sectors.
Levi	Kingfisher	Vrije Universiteit Amsterdam	My research is exploring the potential role that blockchain technology can play in facilitating food system transformation. I am interesting how blockchain is being applied to food systems in various contexts: as a transparency and traceability solution, as a financial mechanism, and so on. In particular, I am interested in how narratives about the role of technology in mediating our relationship with nature are developing within this space.
Daniella	Pauly Jensen	Maastricht University	Ethnographic research about diversity and biases in AI and media recommender systems. It is part of the 'Trustworthy AI for Media Lab' (TAIM), one of 17 labs connected to the Innovation Center for Artificial Intelligence (ICAI). The research is qualitative, notably using ethnographic and digital methods, to study and reflect on the practices, motivations, discussions, and output in designing 'trustworthy AI'.

